CHECKLIST

WELL CONSTRUCTION PERMIT

WELL NAME or LOCATION: North Wilkes 182 ISLAND: M</p></code>
Division of Water and Land Development
1990

Waihee

(North Scale in Miles)

Waihee 1&2
(Well No. 5631-02,03)
CLOSING AGREEMENT

By and Between
BOARD OF WATER SUPPLY and
WAILUKU AGRIBUSINESS CO., INC.
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At the meeting on Maui on January 24, 1996, you asked the staff to look into the best way to include the North Waihee wells in the proposed Iao Aquifer ground water designation. The two options are described below along with time estimates:

1. DESIGNATE THE WAIHEE AQUIFER SYSTEM

**Process:**
- Recommendation to initiate designation by the chairperson at a regular meeting.
- Chair consults with Mayor and Board of Water Supply.
- Decision to proceed within 60 days.
- CWRM holds public hearing on Maui.
- Staff prepares Findings of Fact Report.
- Chair consults with Council and BWS.
- CWRM designates.

**Time:** 7 months plus

**Analysis:**

The criteria for ground water designation are listed in HRS §174C-44. The criterion that may be met is HRS §174C-44(1):

Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach ninety percent of the sustainable yield of the proposed water management area.

In the Windward Oahu designation, all areas of Oahu connected by water transmission infrastructure were included in the calculation of authorized planned use and sustainable yield. Similarly, the sustainable yields of both Iao and Waihee Aquifers should be included. The sustainable yield of Iao Aquifer is 20 mgd and for Waihee Aquifer it is 8 mgd, totalling 28 mgd.
Authorized planned use means the use or projected use of water by a development that has received the proper state land use designation and county development plan/community plan approvals. There are two possible ways to calculate the authorized planned use for the Maui situation: 1) the Board's water commitments, and 2) projected water use from land use plans.

The Board has notified the Commission that they have about 8.4 mgd in water commitments, which would put the authorized planned use at 101% of the combined sustainable yields for lao and Waihee Aquifers (28 mgd). The Maui Water Use and Development Plan projects a demand of 25 to 30 mgd by the year 2010 for the Wailuku System. This would calculate to 89% to 107% of the combined sustainable yields of the lao and Waihee Aquifers (28 mgd).

2. AMEND THE BOUNDARY OF THE LAO AQUIFER TO INCLUDE THE NORTH WAIHEE WELLS

Process:

- Hold a noticed public hearing to amend the Hawaii Water Plan (90 days notice required).
- Hold a decision-making meeting immediately after the hearing.

Time: 4 months

Analysis:

The reason to amend the boundary would have to be given. There appears to be no hydrologic reason why there should be separate lao and Waihee aquifers. Although this method appears shorter, the CWRM may need to go through the entire lao Aquifer designation process again because the boundaries are different.

I will appreciate your comments and thoughts on these options.
Ms. Marie Kimmey, Chairperson  
Maui Board of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793-7109

Dear Ms. Kimmey:

Pump Installation Permit Transfer  
North Waihee Wells 1 & 2  
(Well Nos. 5631-02 & 03)

By your February 20, 1996 letter, the Commission on Water Resource Management acknowledges the transfer of the captioned permit from C. Brewer Properties, Inc. to the Maui Board of Water Supply.

Enclosed are copies of the permit and its extensions. Please be advised that the permit requires that work be started by May 14, 1996, and be completed by March 1, 1997. Should you be unable to meet those deadlines, please submit a request to extend them, showing cause why the permit should not be revoked.

Aloha,

[Signature]

MICHAEL D. WILSON  
Chairperson

Enclosures

c: C. Brewer Homes, Inc.
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CLOSING AGREEMENT

This Agreement is made this 21st day of December, 1995, by and between the BOARD OF WATER SUPPLY of the County of Maui, 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "BOARD") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, 90 Waiko Road, P.O. Box 520, Wailuku, Maui, Hawaii 96793 ("WAILUKU").

RECITALS: WAILUKU owns certain land in North Waihee Maui described in Exhibits "1" through "7" attached hereto and made a part hereof containing 2 improved wells and several well sites and easement areas, together with certain agreements, plans and specifications, and permits as further described in Exhibit "5" attached hereto. The purpose of this Agreement is to set forth the terms and conditions under which the parties shall close the transfer of certain real property title and other interests described in Section 5 below (collectively, the "Property") from WAILUKU to the BOARD for the consideration related below.

AGREEMENT: For valuable consideration WAILUKU and the BOARD mutually agree as follows:

1. Definitions. The following terms shall have the following means:
   a. "Sector A Property" shall mean that real property comprising approximately 5,306 acres, identified as TMK 3-2-14:01, more particularly reflected on Exhibit "1" and shown in yellow and purple on Exhibit "2".
   b. "Sector A-1 Property" shall mean that portion of Sector A Property comprising approximately 2,000 + acres, being sometimes referred to as the North Waihee Aquifer Recharge Area and shown in yellow on Exhibit "2".
   c. "Sector A-2 Property" shall mean that portion of Sector A Property comprising approximately 3,000 + acres, sometimes referred to as the Conservation Easement area and shown in purple on Exhibit "2".
   d. "Sector B Property" shall mean that real property comprising of approximately 380.318 acres, being that property sometimes referred to the Well Field/Easement area, more particularly described in Exhibit "3" and shown in pink on Exhibit "2".
   e. "Sector C Property" shall mean that real property referred to as the Pipeline Easement area, more particularly reflected in Exhibit "4" and shown in green on Exhibit "2".
f. "Personal Property" shall mean the two improved well sites on Sector B, the engineering studies, plans and specifications, permits, reports and other matters, all more particularly described and delineated on Exhibit "5".

g. "The Aquifer" or "The North Waihee Aquifer" shall mean the ground water resource(s) north of Waihee stream, including the recharge area of the North Waihee Aquifer as shown in yellow on Exhibit "2".

2. **Sale of Property.** WAILUKU agrees to sell and the BOARD agrees to purchase the Property on the terms and conditions set forth herein.

3. **Purchase Price.** The purchase price for the Property shall be approximately $3,820,000 (U.S. dollars), which shall be paid by the BOARD to WAILUKU in cash at closing. The price will be adjusted at closing to reflect the agreed upon reimbursement costs (currently estimated at $270,000).

4. **Closing Date.** For the purpose of this Agreement, closing shall be the date when all appropriate conveyance documents are recorded. WAILUKU and the BOARD agree to promptly execute appropriate and customary documents when requested by escrow to do so. The "scheduled closing date" shall be on or before February 15, 1996. There is no automatic right to extend. Time is of the essence and the "scheduled closing date" may not be extended unless both the BOARD and WAILUKU so agree in writing. This transaction shall be escrowed by Title Guaranty Escrow Services of Hawaii (Wailuku branch).

5. **Conveyances at Closing.** At closing, WAILUKU will convey the Property and the BOARD will pay to WAILUKU the total purchase price in cash, all as follows:

   a. **Sector A.** WAILUKU shall convey to the BOARD an undivided approximate 40% interest in Sector A, such that WAILUKU and the BOARD shall hold Sector A as tenants in common subject to all encumbrances and covenants. The price has been allocated as follows: $2,500,000 for Sector A Property; $700,000 for the existing improvements, including the two existing wells; $350,000 for the easements on Sectors B and C to be conveyed at closing; $270,000 representing the estimate of expenses expended by WAILUKU (or affiliates) to be reimbursed by the BOARD for all engineering and entitlement costs (plans, studies, governmental processing costs) the final expense to be determined during the due diligence period.
concerning the same and further subject to the tenancy in common agreement, further described below.

1. **Covenants Concerning Sector A.** The deed to Sector A Property to be executed by the parties will be subject to existing encumbrances including, but not limited to, the Deed of Exchange between Hawaiian Commercial and Sugar Company and Wailuku Sugar Company dated June 23, 1924, as amended by Agreement dated March 24, 1937 and will have the following covenants (and other covenants which may be agreed to by the parties prior to closing).

   a. Within Sector A, there will be a covenant that neither party will take any action including the creation of improvements, which would result in any significant negative impact to the surface or ground water resources within or emanating from the area. The parties would agree that there would be no further surface or ground water development by either party within Sector A without the mutual consent of both parties. The consent of either party shall not be unreasonably withheld, provided, it is agreed that consent is not unreasonably withheld, if the reason for the withholding is that the proposed activity will either have a significant negative impact on (1) the aquifer, or (2) the rights emanating from the aquifer, or (3) the ground or surface water sources and rights related to the aquifer, or (4) that the requesting party is in breach of its covenants relating to Sectors A, B or C. ("Significant negative impacts" shall be defined in the closing documents).

   b. For water source development within Sector A, WAILUKU will be granted a right of first refusal to participate in the source development on a pro rata (cost of development) basis up to 50 percent (50%) of the resource. Any joint development would be implemented consistent with the Board of Water Supply rules concerning source development and source credits.

   c. WAILUKU will have the right and ability to satisfy any rights and obligations to maintain the stream and the existing surface water system improvements within the area, at its discretion and consistent with past practices. WAILUKU would provide to the Board of Water Supply a periodic plan of surface water system maintenance within the area.
d. The parties would provide notice to each other if they wish to undertake any type of activity within the area other than WAILUKU's on-going maintenance of the surface water systems within the area.

b. **Sector B.** WAILUKU shall grant easements to the BOARD encumbering Sector B Property with the well site easements, access easements, tank site easements and pipeline easements, as more particularly defined in Exhibits "6" and "7".

At closing, WAILUKU and the BOARD will execute a declaration on Sector B Property reflecting that the BOARD, with the consent of WAILUKU, would have the ability to modify the location of the well site areas. WAILUKU’s consent would not unreasonably be withheld, and the obligation of the BOARD and WAILUKU would be to identify a needed relocated site which would have the least amount of impact on the utility of Sector B property. Within Sector B, WAILUKU would reserve and be granted the right of first refusal to participate in any ground water source development by the BOARD in excess of five million gallons per day from Sector B. The right of first refusal would be on a pro rata basis (cost of development) up to 50% of the resource, consistent with the BOARD’s rules and water source development and credits.

(The specifics of the right of first refusal for Sectors A and B, including the election period procedures, shall be provided in the closing documents).

c. **Sector C.** WAILUKU shall grant a pipeline easement to the BOARD encumbering Sector C Property with said pipeline easement as more particularly described in Exhibits "6" and "7".

At closing WAILUKU would create a declaration on Sector C Property covenanting that it would not create new improvements or other activity within Sector C which would have a negative impact on the volume of ground water developed by the BOARD within Sector B.

d. **Personal Property.** WAILUKU shall convey and assign to the BOARD all of that personal property identified in Exhibit "5".

e. **Tenancy in Common Agreement.** WAILUKU and the BOARD shall enter into a tenancy in common agreement concerning their joint interests in Sector A. The tenancy in common agreement will identify the rights and obligations of the parties concerning Sector A-1 and A-2, as well as providing for the subdivision of Sector A into Sectors A-1 and A-2 and the conveyance of A-1 Property from WAILUKU to the BOARD after the subdivision of Sector A-1 from
Sector A and the release by the BOARD to WAILUKU of its remaining undivided interest in Sector A-2. The tenancy in common agreement will provide for the grant of a conservation easement from WAILUKU to the BOARD concerning Sector A-2 Property after Sector A-2 is subdivided from Sector A. The agreement shall also authorize the BOARD to subdivide Sector A Property and will provide that the BOARD will perform all services and all acts and pay all costs necessary to create the referenced subdivision. The agreement will provide that the Property will remain in a tenancy in common status with the BOARD and WAILUKU maintaining their tenancy in common interests should the Property not be subdivided. The tenancy in common agreement will contain other covenants, as agreed upon between the BOARD and WAILUKU, concerning the respective rights, obligations and material declarations and covenants concerning Sector A.

6. **Due Diligence.** The BOARD shall have a "due diligence period" from the date of this Agreement to January 31, 1996, during which the BOARD may review all aspects of the Property, perform studies, tests, and generally to satisfy itself that the Property is acceptable to the BOARD in the BOARD's discretion. During this period, the following will also occur:

   a. Within five (5) days after the execution of this Agreement by both parties, WAILUKU will provide to the BOARD a copy of all WAILUKU’s studies, plans, surveys, environmental assessments, permits, approvals, and other reports relevant to the Property for the BOARD’s review.

   b. The BOARD and its agents may enter the Property for the purpose of conducting surveys, tests and other work as the BOARD may deem appropriate, provided that if the ground is disturbed, the BOARD, at its expense, shall return the surface to the grade as existed prior to it being disturbed.

   c. WAILUKU shall obtain and deliver to the BOARD a title report on the Property from Title Guaranty of Hawaii, Inc. (together with copies of all encumbrance documents).

   d. Counsel for WAILUKU and the BOARD will prepare closing documents in the form satisfactory to each counsel, including the deed of the BOARD’s interest in Sector A from WAILUKU to BOARD; the deed shall convey title and warrant the same during the period WAILUKU has had title, subject to all encumbrances identified therein or shown on said title report or visible upon physical inspection of the Property. The closing documents shall also include the easements and the transfer of personal property as provided herein.

   e. The BOARD and WAILUKU shall petition the Commission on Water Resource Management to transfer the pump installation permit from
WAILUKU to the BOARD such that, at closing, the BOARD shall obtain and hold said permit under terms satisfactory to the BOARD.

If the BOARD is not satisfied as to any matter referred to above or any other matter, whether related to the Property or not related to the Property, the BOARD may cancel this Agreement by written notice to WAILUKU no later than January 31, 1996, in which event this Agreement will terminate. If counsel for the BOARD and WAILUKU shall be unable to agree on the form and content of all closing documents, WAILUKU may cancel this Agreement by written notice to the BOARD no later than January 31, 1996. In each such instance, prior to February 1, 1996, the BOARD will return to WAILUKU all of WAILUKU’s studies, plans and other material in the BOARD’s possession and the parties shall be relieved from any liability hereunder.

7. Closing Costs.

a. WAILUKU will pay for the preliminary title report, cost of preparing the deed, Hawaii conveyance tax, one-half of the escrow fee and WAILUKU’s legal fees. BOARD will pay the cost of BOARD’s title insurance, recording fees for the deed, one-half of the escrow fee and BOARD’s legal fees.

b. Although BOARD agrees to pay the purchase price in cash at closing, WAILUKU may request that BOARD participate in a Section 1031 tax deferred exchange for the benefit of WAILUKU. In that event, WAILUKU may assign its interest in this Agreement to a "qualified intermediary" (as defined in the Internal Revenue Code or IRS regulations) as part of an exchange agreement and BOARD agrees to cooperate in said transaction and participate with WAILUKU in accepting the tax-deferred exchange, provided, however, that: (a) BOARD shall not be required to pay any additional costs or assume any exposure of liability with respect to the exchange; and (b) BOARD shall have no liability concerning the legal or tax effects of the exchange.

8. Default/Remedies.

a. In the event BOARD fails to perform BOARD’s obligations under this Agreement, (WAILUKU not being in default), WAILUKU may (a) bring an action for damages for breach of contract, and (b) BOARD shall be responsible for any costs incurred in accordance with this Agreement.

b. In the event WAILUKU fails to perform WAILUKU’s obligations under this Agreement (BOARD not being in default), BOARD may (a) bring an action for damages for breach of contract, (b) seek specific performance of this
Agreement, and (c) WAILUKU shall be responsible for any costs incurred in accordance with this Agreement.

c. The foregoing shall not exclude any other remedies available under this Agreement to either WAILUKU or BOARD on account of the other party's default.

d. In the event of default by a party and/or a legal action, the prevailing party shall be entitled to recover all costs incurred, including reasonable attorney's fees. All expenses incurred by escrow shall be deducted from any deposited funds prior to any disbursement to the prevailing party.

9. Acceptance of Property As-Is. BOARD accepts the Property in completely "as-is" condition without any representations or warranties whatsoever by WAILUKU, express or implied, except as otherwise expressly provided in this Agreement.

10. Facsimiles. Fax (facsimile) copies of the executed Agreement shall be fully binding and effective for all purposes whether or not originally executed documents are transmitted to escrow. Fax signatures on documents will be treated the same as original signatures. However, each party agrees that it will promptly forward originally executed documents to each other. The parties understand that they must physically execute and deliver original conveyance and other recordable documents prior to closing.

11. Counterparts. This Agreement may be executed in counterparts and all counterparts together shall constitute the agreement among all of the parties hereto, in the same way as if the parties physically signed the same document.

12. Notices. Any notice by one party to the other shall be deemed effective: (a) personally delivered; (b) 36 hours after mailing by first-class U.S. mail, postage prepaid, to the other party at its address stated at the beginning of this Agreement; (c) or at such other address as said other party shall have notified the party giving the notice as the address for receiving notices hereunder. Notices sent by telecopier (fax) shall be effective when transmitted to the current fax number of the receiving party at the said address provided that the sending party shall receive the electronic confirmation that the fax transmission was received at the said number, and the sending party mails a confirming copy on the same date to the receiving party at said address.

13. Consent/Approval of Agreement. Whenever a party is requested herein, to consent to, to agree to, or to provide any approval of the actions, plans, or requirements of the other party, the party being requested to "consent/approve,
agree to" shall consider the same in good faith and shall not unreasonably withhold or delay such consent, approval or agreement.

14. **Survival of Warranties, Covenants and Representations.** The warranties, covenants and representations of WAILUKU and the BOARD shall survive the closing of the transaction and shall not be binding to any person or entity not a party to this Agreement other than the successors and assigns of the parties.

15. **Miscellaneous.** Time is of the essence of this Agreement. WAILUKU and the BOARD will comply with all requirements of HRPTA and FRPTA (if applicable) and the other applicable laws.

16. **Governing Law.** This Agreement shall be governed by the laws of Hawaii.

17. **Agreement Under Threat of Condemnation.** The parties hereto agree that this Agreement is being executed by the parties under its right of condemnation by the BOARD and the Agreement is entered into by WAILUKU in lieu of, and as a compromise alternative to, the condemnation proceedings threatened by the BOARD.

IN WITNESS WHEREOF, the parties have signed this Agreement on the date indicated above.

WAILUKU AGribusiness CO., INC.
a Hawaii corporation

By

\[signature\]

Its: Chairperson  Vice president

By

\[signature\]

Its:  Vice president
BOARD OF WATER SUPPLY

By

Marie Kimmey

Its: Chairperson

By

Its:

APPROVED AS TO FORM
AND LEGALITY:

GARY P. ZABUL

Director, Engineering & Construction
County of Maui
On this 21st day of December, 1995, before me personally appeared Kent T. Luce and W.K. Tallent, to me personally known, who, being by me duly sworn, did say that they are the Vice President and Vice President respectively, of Wailuku Agribusiness Co., Inc., a Hawaii corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Alphonse A. Marques
Notary Public, State of Hawaii.

My commission expires: 02/10/96
STATE OF HAWAII  
COUNTY OF MAUI  

On this _26th_ day of _December_, 1995, before me appeared MARIE KIMMEY, to me personally known, being by me duly sworn, did say that she is the Chairperson of the BOARD OF WATER SUPPLY of the County of Maui, and that the seal affixed to the foregoing instrument is the lawful seal of the said BOARD OF WATER SUPPLY, and that the said instrument was signed and sealed on behalf of the said BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged the said instrument to be the free act and deed of the said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]

Notary Public, State of Hawaii
My commission expires: 4/19/98
On this ___ day of ________, 1995, before me personally appeared
__________________________, to me personally known, who being by me duly
sworn, did say that he is the Chairman of the Board of Water Supply of the County
of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to
the foregoing instrument is the lawful seal of the said County of Maui, and that the
said instrument was signed and sealed on behalf of said County of Maui, and the
said officer acknowledged the said instrument to be the free act and deed of the
said County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

__________________________
Notary Public, State of Hawaii.

My commission expires: ___________
STATE OF HAWAII )
COUNTY OF MAUI ) SS.

On this ___ day of __________, 1995, before me personally appeared
_________________________ and __________________________, to me
personally known, who being by me duly sworn, did say that they are the Chairman
and __________________________, respectively, of the Board of Water Supply of the County of
Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the
foregoing instrument is the lawful seal of the said County of Maui, and that the said
instrument was signed and sealed on behalf of said County of Maui, and the said
officers acknowledged the said instrument to be the free act and deed of the said
County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

________________________________
Notary Public, State of Hawaii.

My commission expires: ___________
TO: Commissioners  
FROM: Rae M. Loui  
SUBJECT: Inclusion of the North Waihee Wells in the Designated Area

At the meeting on Maui on January 24, 1996, you asked the staff to look into the best way to include the North Waihee wells in the proposed lao Aquifer ground water designation. The two options are described below along with time estimates:

1. DESIGNATE THE WAIHEE AQUIFER SYSTEM

Process:
- Recommendation to initiate designation by the chairperson at a regular meeting.
- Chair consults with Mayor and Board of Water Supply.
- Decision to proceed within 60 days.
- CWRM holds public hearing on Maui.
- Staff prepares Findings of Fact Report.
- Chair consults with Council and BWS.
- CWRM designates.

Time: 7 months plus

Analysis:

The criteria for ground water designation are listed in HRS §174C-44. The criterion that may be met is HRS §174C-44(1):

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2. AMEND THE BOUNDARY OF THE IAO AQUIFER TO INCLUDE THE NORTH WAIHEE WELLS

Process:

- Hold a noticed public hearing to amend the Hawaii Water Plan (90 days notice required).
- Hold a decision-making meeting immediately after the hearing.

Time: 4 months

Analysis:

The reason to amend the boundary would have to be given. There appears to be no hydrologic reason why there should be separate Iao and Waihee aquifers. Although this method appears shorter, the CWRM may need to go through the entire Iao Aquifer designation process again because the boundaries are different.

I will appreciate your comments and thoughts on these options.
Ms. Marie Kimmey, Chairperson
Maui Board of Water Supply
P.O. Box 1109
Wailuku, Hawaii 96793-7109

Dear Ms. Kimmey:

Pump Installation Permit Transfer
North Waihee Wells 1 & 2
(Well Nos. 5631-02 & 03)

By your February 20, 1996 letter, the Commission on Water Resource Management acknowledges the transfer of the captioned permit from C. Brewer Properties, Inc. to the Maui Board of Water Supply.

Enclosed are copies of the permit and its extensions. Please be advised that the permit requires that work be started by May 14, 1996, and be completed by March 1, 1997. Should you be unable to meet those deadlines, please submit a request to extend them, showing cause why the permit should not be revoked.

Aloha,

[signature]

MICHAEL D. WILSON
Chairperson

Enclosures

c: C. Brewer Homes, Inc.
DATE: 7/29/94

TO: Rae Louri

Fax No. 808-589-0719

Subject: NTP N. Waiehu Wells

No. of Pages (including this transmittal): 2

REMARKS:

Transmitter: D. Stedlick

NOTE: If you have not received all of the pages, please call

(808) 243-7816
February 29, 1996

Mr. Warren Unemori  
Warren S. Unemori Engineering, Inc.  
2145 Wells Street, Suite 403  
Wailuku, Maui, Hawaii 96793

Dear Mr. Unemori:

Subject: Independent Professional Services for the Development of North Waihee Wells

This letter constitutes NOTICE TO PROCEED for all work under the subject project.

You are hereby notified that the official commencement date of this project shall be February 29, 1996. The time allowed to complete the required services is specified in the contract, exclusive of time required for governmental review.

Please acknowledge receipt of this notice in the space provided below on the original and two copies and return them to the Department of Water Supply. Please keep the third copy of this letter for your files.

A copy of the fully executed contract will be forwarded for your files.

Sincerely,

David R. Craddick  
Director

cc: DWS Fiscal  
DWS Contractor  
DWS Engineer  
Director

NOTICE TO PROCEED RECEIVED  
THIS 29TH DAY OF February  
1996.

Warren S. Unemori
Selected critical path items for the four source alternatives are listed below:

**Waihee/Iao Ditch**
- Obtain membranes by March 1, 1996
- Reach land use agreement by April 1, 1996
- Complete design, EA and permits by Aug 1, 1996
- Bid line construction by Aug. 1, 1996
- Award line construction bid by Nov. 1, 1996
- Install membranes by Nov 1, 1996

**North Waihee**
- Execute purchase agreement by February 15, 1996
- Issue bid specs by July 1, 1996
- Award Bid by Sept 1, 1996
- Start pump installation by Nov. 1, 1996
- Complete pump installation by March 1, 1997
- Complete construction by Aug 1, 1997

**Wailuku Shaft**
- Extend use agreement by Aug 1, 1996
- Complete design by Feb 1, 1997
- Obtain pipe easements by May 1, 1997

**Waikapu Tank Well**
- Obtain well site agreement by June 1, 1996
- Complete design by June 1, 1996
- Complete EA by June 1, 1996
- Issue bids by Sept 1, 1996
- Award Bids by Nov 1, 1996
- Complete construction by May 1, 1997

**Status of C. Brewer agreement:** (1/31/96 telecon with Dave Craddick)

- Purchase includes 3000 acres of a conservation easement, 2000 acres in fee simple. C. Brewer would retain about 400 acres at the mauka end.

- Due diligence extended to Feb. 7 from Jan. 31.

- C. Brewer asking for things that MBWS cannot agree to:
  1) MBWS can't transfer land interest after acquisition
  2) MBWS must underground electric lines
  3) C. Brewer wants to be the arbitrator if existing uses (C. Brewer's ditches and tunnels) are impacted

- Dave says it doesn't look good, expects to negotiate over the weekend for a special Board meeting on Tuesday, Feb. 6.
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01/96
February 20, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2 (Well Nos. 5631-02 & 03)

Dear Ms. Loui:

Pursuant to your letter dated February 1, 1996 relative to the subject permits, we are writing to inform you that the transaction between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply, has closed as of this date. This transaction, pursuant to the parties' earlier agreement, will enable the installation of the pumps, and construction of other improvements, by the Board of Water Supply, to augment the water resources of Central Maui.

As a result, we hereby respectfully request that you, as previously authorized by the Commission, transfer the subject permits to the Board of Water Supply, according to the terms of the agreement.

Thank you for your assistance in this matter.

Sincerely,

C. BREWER HOMES, INC.

By ____________________________
Senior Vice President

By ____________________________
Vice-President
Facsimile Transmittal

To Facsimile Number:  

Pages including this cover: 7

Please deliver directly to:

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

Date of Transmission: February 23, 1996

Regarding: North Waiakea Wells 1 & 2

Client Matter Number:

From:

Douglas W. MacDougal, Esq.
Ashford & Wriston

Telephone Direct Line
Facsimile Direct Line

Comments:

See attached letter.

The information contained in this facsimile message is attorney privileged and confidential information intended only for use by the individual or entity named above. If the reader of this message is not the intended recipient, or employee or agent responsible to deliver it to the intended recipient, you are hereby notified that dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone, and return the original message to us at the above address via the U.S. Postal Service. Thank you.
VIA FAXSIMILE

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

Re: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 & 03)

February 23, 1996

Dear Ms. Loui:

Attached is a copy of the formal notification letter dated February 20, 1996 to the Commission on Water Resource Management confirming the closing of the County of Maui BWS/Wailuku Agribusiness North Waihee transaction. The letter is signed by C. Brewer Homes, Inc., Wailuku Agribusiness Company and the Maui Board of Water Supply.

The original of this letter will be forwarded to you for your files as soon as we receive it from escrow.

Yours truly,

[Signature]

Douglas W. MacDougal

DWM:net
Enclosure

cc: Mr. David Craddick (via facsimile)
Gary Zakian, Esq. (via facsimile)
C. Brewer Homes, Inc.

February 20, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 & 03)

Dear Ms. Loui:

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As a result, we hereby respectfully request that you, as previously authorized by the Commission, transfer the subject permits to the Board of Water Supply, according to the terms of the agreement.

Thank you for your assistance in this matter.

Sincerely,

C. BREWER HOMES, INC.

By
Senior Vice President

By
Vice-President

24 N. Church Street, Suite 205
P.O. Box 1437 / Wailuku, Maui, Hawaii 96793

(808) 652-5806 / FAX: (808) 652-5807
Ms. Rae M. Loui  
February 20, 1996  
Page 2

WAILUKU AGRIBUSINESS COMPANY

By        
Kathleen J. O'Hara  
Secretary

By        
J. Allen King  
Chief Engineer  
Chairman of the Board

BOARD OF WATER SUPPLY,  
COUNTY OF MAUI

By        
Ryan Walter  
Authorized Signatory
On this 21st day of February, 1996, before me personally appeared CRAIG CHAMPION and G. C. WENTWORTH, to me personally known, who, being by me duly sworn, did say that they are the Senior Vice President and Vice President, respectively, of C. BREWER HOMES, INC., a Delaware corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, State of Hawaii

My Commission Expires: 01/21/97
STATE OF HAWAII

CITY & COUNTY OF HONOLULU

On this 21st day of FEBRUARY, 1996, before me personally appeared J. ALAN KUGLE and KATHLEEN F. OSHIRO, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board and Secretary, respectively, of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

[Signature]
Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAI'I

COUNTY OF MAUI

On this 20th day of February, 1996, before me appeared BYRON WALTERS, to me personally known, who, being by me duly sworn, did say that he is a Member of the Board of Water Supply of the County of Maui, and was authorized by the BOARD OF WATER SUPPLY on February 15, 1996 to execute any and all documents as set forth in the COUNTY OF MAUI BOARD OF WATER SUPPLY RESOLUTION RELATING TO THE PURCHASE OF THE WAIHEE VALLEY PROPERTY, and that the said instrument was signed on behalf of the said Board of Water Supply, and the said BYRON WALTERS acknowledged the said instrument to be the free act and deed of the said Board of Water Supply.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 11/25/96
DATE: February 22, 1996

TO: Charley Ice, Water Commission C. Brewer Homes: ATT: Val Milton Arakawa

FROM: Paul R. Mancini

SUBJECT: North Waihee Wells

TRANSMITTING THE FOLLOWING:

Copy of letter dated February 20, 1996 to Department of Land and Natural Resources, Commission on Water Resource Management from C. Brewer Homes, Inc.

REMARKS:

PLEASE CALL AFTER REVIEW
PER YOUR REQUEST
SEE REMARKS BELOW

( ) FOR YOUR REVIEW AND COMMENT
( ) FOR APPROVAL AND RETURN
(x) FOR YOUR INFORMATION AND FILES
( ) AS WE DISCUSSED
C. Brewer Homes, Inc.

February 20, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 & 03)

Dear Ms. Loui:

Pursuant to your letter dated February 1, 1996 relative to the subject permits, we are writing to inform you that the transaction between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply, has closed as of this date. This transaction, pursuant to the parties' earlier agreement, will enable the installation of the pumps, and construction of other improvements, by the Board of Water Supply, to augment the water resources of Central Maui.

As a result, we hereby respectfully request that you, as previously authorized by the Commission, transfer the subject permits to the Board of Water Supply, according to the terms of the agreement.

Thank you for your assistance in this matter.

Sincerely,

C. BREWER HOMES, INC.

By

[Signature]
Senior Vice President

By

[Signature]
Its Vice-President

24 N. Church Street, Suite 205
P.O. Box 1437 / Wailuku, Maui, Hawaii 96793
(808) 242-6833 / FAX: (808) 244-0542
Ms. Rae M. Loui
February 20, 1996
Page 2

WAILUKU AGRIBUSINESS COMPANY

By

By

By

Kathleen M. Burns
Secretary

J. Alan Kugler
Chairman of the Board

Ryan Wallace
Authorized Signatory

BOARD OF WATER SUPPLY,
COUNTY OF MAUI
STATE OF HAWAII

CITY & COUNTY OF HONOLULU

On this 21st day of February, 1996, before me personally appeared CRAIG CHAMPION and G. C. WENTWORTH, to me personally known, who, being by me duly sworn, did say that they are the Senior Vice President and Vice President, respectively, of C. BREWER HOMES, INC., a Delaware corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

[Signature]
Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII

CITY & COUNTY OF HONOLULU

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Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII
COUNTY OF MAUI

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IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 11/25/96
WAILUKU AGRIBUSINESS COMPANY

By Katherine J. Blais

Its Secretary

BOARD OF WATER SUPPLY,
COUNTY OF MAUI

By

Its Authorized Signatory
STATE OF HAWAII )
) ss.
CITY & COUNTY OF HONOLULU )

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Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII       )  SS.
COUNTY OF MAUI        )

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IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public, State of Hawaii

My commission expires: 11/25/96
Media Contact: David Craddick

Waihee Watershed Purchase

Wailuku, Maui – on Thursday, February 15, 1996, the Maui Board of Water Supply approved the purchase of watershed land from Wailuku Agribusiness for 2000 acres north of Waihee Stream, and a conservation easement of 3000 acres south of the Waihee Stream in the Waihee watershed area.

In addition to the watershed purchase, the Board acquired two existing wells and easements for eight additional well sites, a reservoir site, and the transmission pipeline to develop water from the North Waihee Aquifer. The sustainable yield for North Waihee Aquifer is approximately 8 million gallons per day. The purchase price is $3.84 million.

The purchase represents long hours of work by Gary W. Zakian, Deputy Corporation Counsel, with the assistance of Douglas W. MacDougal and Jill M. Teutsch with the law firm of Ashford and Wriston, working for the Board, and local attorney Paul R. Mancini, representing Wailuku Agribusiness. The Board of Water Supply has held meetings over the past four years to conclude this agreement.

-end-

"By Water All Things Find Life"
Mr. James M. Murray  
C. Brewer Homes, Inc.  
24 North Church Street, Suite 205  
Wailuku, Hawaii 96793  

Dear Mr. Murray:  

Extension of Start Date for Pump Installation Permits  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)  

At its January 24, 1996 regular meeting, the Commission granted relief from its revocation of the captioned permits and approved a four-month extension of the start date to May 14, 1996, contingent upon receipt of written confirmation by February 25, 1996 that the Agreement between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply has been closed.  

If confirmation is not received by that date, the permit shall be immediately revoked.  

The Chairperson is authorized to transfer the pump installation permits to the agreed party, according to the terms of the Agreement, upon receipt of a petition properly signed by the Board, Wailuku Agribusiness, and the permittee's successor in interest C. Brewer Homes, Inc.  

If you have any questions, please contact Charley Ice at [Redacted]  

Sincerely,  

[Signature]  

RAE M. LOUI  
Deputy Director  

Class
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 821
HONOLULU, HAWAII 96809

STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
January 24, 1996
Wailuku, Maui

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use
TMK 3-2-1:4 Waihee, Wailuku, Maui

APPLICANT:
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

LANDOWNER:
Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

ACTION REQUESTED:
Permission to extend start date four months, from January 14, 1996 to May 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

WELL LOCATION/TAX MAP KEY:
The wells are located at Waihee Valley, Maui, at Tax Map Key: 3-2-1:4 (Exhibit 1).

BACKGROUND:
March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995
Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in two months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
May 5, 1995 to Nov. 14, 1995

The start date for work under the Pump Installation Permits was extended two months on three separate occasions. In September, Commissioners expressed the inclination to deny further extensions if the matters under consideration were not resolved. In November, the Commission denied further extension of the start date, allowing for revocation of the permit as of January 13, 1996, unless, by January 8, 1996:

1. C. Brewer Properties, Inc. and the Maui Department of Water Supply could document an agreement causing the initiation of the pump installation work; and

2. A schedule of actual installation work were provided by the permittee to the Commission.

January 5, 1996

The applicant filed a copy of a "Closing Agreement" between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply, transferring real property title at Waihee, including the well properties, easements, and appurtenances. A Gantt chart schedule for 1996-97 was attached, indicating contract bids & awards in March and April 1996 and the pump installation beginning by May 1996 (Exhibit 3).

The Agreement includes a "due diligence" clause, extending through January 31, 1996, during which time the Board may review all aspects of the transfer, and by which deadline either party may cancel the Agreement. The agreed "closing date" is February 15, 1996. The document copy has notarized signatures of both parties.

During the "due diligence" period, the two parties are to submit to the Commission a petition to transfer the pump installation permit to the Board, such that, at closing, the Board will hold the permit under satisfactory terms.

WELL DESCRIPTION: (See Exhibit 2):

- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 363 ft.
- Grouted annulus: 0 to 200 ft.
- Proposed pump capacity: 1400 gpm (each)

WATER AVAILABILITY:

The wells are located in the Waihee System near the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Total proposed use is 4 mgd; 2 mgd from
each well. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan, although the Plan acknowledges that withdrawals above 4 mgd would require justification through field demonstration.

ANALYSIS:

The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it. Further, John Mink’s assessment of the Pump tests is that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low.

RECOMMENDATION:

A. That the Commission grant relief from its revocation of the pump installation permits for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) and approve a four-month extension of the start date of the pump installation permits for North Waihee Wells to May 14, 1996, contingent upon receipt of confirmation, by February 25, 1996, that the Agreement between the parties has closed. If confirmation is not received by that date, the permit shall be immediately revoked.

B. That the Commission authorize the Chairperson to transfer the pump installation permits to the agreed party upon receipt of a petition properly signed by the Board, Wailuku Agribusiness, and the permittee’s successor in interest, C. Brewer Homes, Inc.

Respectfully submitted,

[Signature]

RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

[Signature]

MICHAEL D. WILSON, Chairperson
Mr. James M. Murray  
C. Brewer Homes, Inc.  
24 North Church St., Suite 205  
Wailuku, Hawaii 96793

Dear Mr. Murray:

Transfer of Pump Installation Permits

We received your letter of January 9, 1996, requesting confirmation of the process for transferring the pump installation permits for North Waihee Wells 1 & 2 (Well Nos. 5631-01 & 02) from C. Brewer Properties, Inc. to the Maui Board of Water Supply (Board).

You have indicated by phone that an escrow company will be handling the technical details of the "Closing Agreement" between the Board and Wailuku Agribusiness Co., Inc. upon conclusion of the due diligence period January 31, 1996, and wish to have confirmation from our office that the Commission on Water Resource Management (Commission) will officially transfer the pump installation permits to the Board upon fulfillment of procedural requirements.

The "Closing Agreement" states (item 6e, page 5) that, during the due diligence period, the Board and Wailuku Agribusiness Co., Inc. shall petition the Commission to transfer the pump installation permit from Wailuku (sic) to the Board such that, at closing, the Board shall hold the permit under terms satisfactory to the Board. The petition can be in letter form addressed to the Chairperson, in simple language, and should be signed by both parties to the Agreement, as well as by the permittee's successor in interest, C. Brewer Homes, Inc. Staff is recommending that the Chairperson be authorized to respond by letter upon receipt of such petition.

If you have any questions, please call Charley Ice at [ ]

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director
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There's no permit until last week.

Correct

Pump test results submitted prior to last meeting.

"Closing Agreement" will be finalized with the implementation schedule showing pump installation elements, etc. submitted in "Agreement"
January 9, 1996

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

SUBJECT:  Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 and 5631-03) Waihee, Maui, Hawaii

Dear Ms. Loui:

We have submitted to you a letter dated January 2, 1996 requesting that the subject pump installation permits be extended. As noted in the letter, the County of Maui Board of Water Supply and Wailuku Agribusiness Co. Inc. have executed a "Closing Agreement" which would allow the Board of Water Supply to be the responsible implementing entity for the project which includes the installation of pumps at North Waihee Wells 1 and 2. The "Closing Agreement" requires, in part, that the pump installation permits be transferred to the Board of Water Supply.

The applicant for the original pump installation permits was C. Brewer Properties, Inc. As discussed with the CWRM staff, we would like to confirm that, in order to transfer the permits, C. Brewer Homes, Inc. (the successor company to C. Brewer Properties, Inc.) and the County of Maui Board of Water Supply must write a letter requesting that the permits be transferred; and that, upon receiving the letter, CWRM staff will transfer the permits to the Board of Water Supply.
Please confirm your understanding of this process, and inform us in writing as soon as possible. The due diligence period for the "Closing Agreement" ends January 31, 1996. If you or your staff have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

C. BREWER HOMES, INC.

[Signature]

James M. Murray
Project Manager

JMM:vp
cc: David Craddick, Director, Department of Water Supply
    Paul Mancini, Mancini, Rowland & Welch
    Milton Arakawa, Munekiyo & Arakawa, Inc.
To: Charley Ice  
Commission on Water Resource Management  
Fax No.: (808)  

From: Milton Arakawa  
No. of Pages including Cover Letter: 3  

Subject: Pump Installation Permit for North Waihee Wells 1 and 2  

Attached Is/are:

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<td>Letter to Rae Loui, Deputy Director from James Murray, C. Brewer Homes</td>
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Comments: Charley, attached is a copy of the letter from C. Brewer Homes requesting a response from the CWRM staff regarding the transfer of the subject permits. An expedited response would be appreciated. If you have any questions, please feel free to call me. Thank you.

(Initials)  

If you have any problems or do not receive the entire fax, kindly call me at 244-2015.

CONFIDENTIAL COMMUNICATION: This message is intended for the use of the designated recipient(s) named above. If you have received this message in error, kindly notify us immediately by telephone. Thank you.

Planning • Environmental Studies • Project Management  
1823 Wells Street, Suite 3 • Wailuku, Hawaii 96793 • Phone: (808)  • Fax: (808)  

January 9, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 and 5631-03) Waihee, Maui, Hawaii

Dear Ms. Loui:

We have submitted to you a letter dated January 2, 1996 requesting that the subject pump installation permits be extended. As noted in the letter, the County of Maui Board of Water Supply and Wailuku Agribusiness Co. Inc. have executed a "Closing Agreement" which would allow the Board of Water Supply to be the responsible implementing entity for the project which includes the installation of pumps at North Waihee Wells 1 and 2. The "Closing Agreement" requires, in part, that the pump installation permits be transferred to the Board of Water Supply.

The applicant for the original pump installation permits was C. Brewer Properties, Inc. As discussed with the CWRM staff, we would like to confirm that, in order to transfer the permits, C. Brewer Homes, Inc. (the successor company to C. Brewer Properties, Inc.) and the County of Maui Board of Water Supply must write a letter requesting that the permits be transferred; and that, upon receiving the letter, CWRM staff will transfer the permits to the Board of Water Supply.
Please confirm your understanding of this process, and inform us in writing as soon as possible. The due diligence period for the "Closing Agreement" ends January 31, 1996. If you or your staff have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

C. BREWER HOMES, INC.

James M. Murray
Project Manager

JMM:vp
cc: David Craddick, Director, Department of Water Supply
Paul Mancini, Mancini, Rowland & Welch
Milton Arakawa, Munekiyo & Arakawa, Inc.
January 2, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2 (Well Nos. 5631-02 and 5631-03) Waihee, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of November 8, 1995, the Commission on Water Resource Management (CWRM) considered the extension of the construction start date for the subject project. The CWRM determined that if two (2) conditions were met within 60 days, or by January 8, 1996, relief from revocation of the permit would be possible. The two (2) conditions imposed by the CWRM are:

1. C. Brewer Properties, Inc. and the Maui Department of Water Supply can document an agreement causing the initiation of the pump installation work and submit it to the CWRM; and

2. A schedule of actual installation work is provided by the permittee to the CWRM.

With regard to Condition No. 1, we have enclosed a copy of the "Closing Agreement" between the Board of Water Supply and Wailuku Agribusiness, Co. Inc. which sets forth the transfer of certain real property title and other interests from Wailuku Agribusiness to the Board of Water Supply. (For clarification purposes, Wailuku Agribusiness Co., Inc. is the landowner of the property and is a subsidiary of C. Brewer & Co., Ltd. At the time of application for the pump installation permit, C. Brewer Properties, Inc. was also a subsidiary of C. Brewer & Co., Ltd. Since then, C. Brewer Homes, Inc. was formed through a stock offering and is the successor company of C. Brewer Properties, Inc. However, C. Brewer Homes Inc. is not a subsidiary of C. Brewer and Company, Limited.)
The purpose of the transfer of property is to allow the Board of Water Supply to be the responsible implementing entity for the project which includes the use of Waihee Well Nos. 1 and 2, installation of production pumps (pursuant to the referenced permits), and appurtenant facilities, construction of a new 500,000 gallon water tank, and approximately 4.26 miles of underground waterline.

It should be noted that the "Closing Agreement" provides for a due diligence period which extends to January 31, 1996. Upon the subsequent closing of the transaction, the Agreement calls for the transfer of the pump installation permit to the Board of Water Supply. Refer to Item 6.e. of the Agreement.

With regard to Condition No. 2, we have attached a schedule of proposed construction for the project which includes the installation work for the pumps. The schedule has been developed by the Department of Water Supply. The schedule anticipates that pump installation for testing will be initiated by May 1, 1996. Thus, we request that construction start for the pump installation permits be extended to this date.

We respectfully request that the issue of extension of the permit be placed on the Commission's January 24, 1996 agenda. If you or your staff have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray
Project Manager

cc: David Craddick, Director, Department of Water Supply (with enclosures)
cbhnww.ext.ie42
Mr. James Herberk  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, Hawaii 96793

Dear Mr. Herberk:

Revocation of Pump Installation Permits  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

At its regular meeting of November 8, 1995, at which a representative from C. Brewer Properties, Inc. was present, the Commission on Water Resource Management (CWRM) directed staff to notify the permittee that the permit shall be revoked on January 13, 1996. However, if two conditions were met within sixty (60) days, or by January 8, 1996, relief from revocation would be possible. The two conditions imposed by the CWRM are:

1. C. Brewer Properties, Inc. and the Maui Department of Water Supply can document an agreement causing the initiation of the pump installation work and submit it to the CWRM.

2. A schedule of actual installation work is provided by the permittee to the CWRM.

The next regularly scheduled CWRM meeting is January 24, 1996. The CWRM will reconsider this revocation matter on that date if conditions 1 and 2 are met by January 8, 1996.

Very truly yours,

MICHAEL D. WILSON
PROJECT: North Waimea Options
CURRENT DATE: 12/18/95
AS OF DATE: 01/01/96

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First 1 MGD On-Line
Pump Installed with 1 MGD Phase
WQ Data with 1 MGD Phase
Preliminary Engineering Report submitted with 1 MGD Phase
All 3 MGD On-Line
Staff Submittal for the Meeting of the Commission on Water Resource Management

November 8, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

Applicant: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend start date two months, from November 14, 1995 to January 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1-4 (Attachment A).

Background:

March 25, 1993 - Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995 - Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in 2 months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.

May 5, 1995 - The start date for work under the Pump Installation Permits was extended two months, from May 14, 1995 to July 14, 1995, following the applicant's request for a four-month extension.

July 19, 1995 - The start date for work under the Pump Installation Permits was extended two months, from July 14, 1995, to September 14, 1995, following the applicant's request for a six-month extension.
September 13, 1995 The start date for work under the Pump Installation Permits was extended two months, from September 14, 1995 to November 14, 1995, following the applicant's request for a six-month extension. The applicant and the Maui Department of Water Supply believed that the two parties were close to an agreement. The Commissioners expressed the inclination to deny further extensions if the matters under consideration were not resolved.

October 26, 1995 The applicant requested a two-month extension of the start date, from November 14, 1995 to January 14, 1995, stating that the parties had agreed "in principle" to purchase of land in fee, requisite easements, and reimbursements for certain development costs (See Attachment C). It was anticipated that a letter of intent by the Maui Board of Water Supply would be ready for action at a November 7, 1995 Board Meeting.

Well Description (See Attachment B):
- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 363 ft.
- Grouted annulus: 0 to 200 ft.
- Proposed pump capacity: 1400 gpm (each)

Water Availability: The wells are located in the Waihee System near the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Total proposed use is 4 mgd; 2 mgd from each well. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan, although the Plan acknowledges that withdrawals above 4 mgd would require justification through field demonstration.

Analysis: The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has opined that pump tests from May 14 to 19, 1989 have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous, while salinity is very low during these tests. However, staff has only received pump test data from 1982.

According to §13-168-12(j), HAR:

Every Well construction and pump installation permit issued or caused to be issued by the commission shall be for a specified period not to exceed two years, unless otherwise specified in the permit and shall contain the commencement and completion dates for the permitted activity. In determining the commencement and completion dates of the activity, the commission shall take into consideration the:

1. Cost and magnitude of the project;
2. Engineering and physical features involved;
(3) Existing conditions; and
(4) Public interest affected.

The commission may extend the completion dates of the activity prescribed in any permit upon a showing of good cause and good-faith performance. If the commencement or completion date is not complied with, the commission shall cause the permittee to be notified by certified mail that the permit shall be revoked within sixty days unless the permittee can show good cause that it should not be revoked.

Staff believes this rule implies that the well construction and pump installation permits and timelines are specifically aimed at the actual well construction and pump installation activities rather than the planning or negotiation stages of a ground water development project. Since the history of this permit has been more in the arena of planning and negotiations, staff believes that the permittee should reapply when they are ready to actually install their pump. However, staff has, again, been informed by the permittee that the actual installation date is near.

RECOMMENDATION:

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to March 14, 1996 if:

1. By November 8, 1995, both C. Brewer Properties, Inc. and the Maui Department of Water Supply can show that an agreement which will cause initiation of the pump installation work has been reached;

2. A schedule of actual installation work is provided by the permittee to the Commission.

3. All past pump test data for both wells is provided by the permittee to the Commission.

If items 1, 2, and 3 are not met by the permittee by November 8, 1995, then staff recommends that the Commission direct staff to notify the permittee that the permit shall be revoked on January 13, 1996, in accordance with §13-168-12(j), HAR.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Waihee 1&2
(Well No. 5631-02,03)
PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Ground Elevation: 283 ft., msl*

Cement Grout: 200 ft.

Solid Casing: ASTM Designation A-242
Material Steel Kaiser
Length 289 ft.
Diameter 16 in.
Wall thickness 0.3125 in.

Casing: □ Perforated □ Screen
Material Steel Kaiser
Length 20 ft.
Diameter 16 in.
Wall thickness 0.25 in.
Openings 100 sq. in./L.F.

Rock Packing: 108 ft.

Open Hole:
Length 79
Diameter 15 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.
October 26, 1995

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

SUBJECT: Pump Installation Permits for North Waihe'e Wells 1 and 2 (Well Nos. 5631-02 and 5631-03) Waihe'e, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of September 13, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to November 14, 1995. We would like to respectfully request an extension of the start date to January 14, 1996.

We are pleased to note that after a number of discussions with the County of Maui Board and Department of Water Supply, we have reached an agreement "in principle" with the Board on October 24, 1995. After a Board of Water Supply proposal and C. Brewer Homes, Inc. counter proposal were discussed in September and October, the agreement "in principle" involves Board of Water Supply purchase of land in fee simple, a perpetual conservation easement and other necessary easements, and reimbursement for engineering and other development costs expended thus far by C. Brewer Homes, Inc.

At this point, we are anticipating that a letter of intent will be drafted by the Department of Water Supply for review by C. Brewer Homes, Inc. It is hoped that the letter of intent can be accepted by C. Brewer Homes, Inc. and the acceptance confirmed by the Board of Water Supply at its November 7, 1995 meeting.

For your information, we have attached an updated chronology of the major project tasks which have taken place since the project's inception, and a status report on the various permits required for development.
Ms. Rae M. Loui, Deputy Director
October 26, 1995
Page 2

We ask that our pump installation permit extension request be placed on the Commission’s November 8, 1995 agenda. If you have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray, Jr.
Project Manager

Attachments
cc: Milton Arakawa, Munekiyo and Arakawa, Inc.
NWW2
FACSIMILE COVER SHEET

November 6, 1995

To: Charley Ice
Commission of Water Resource Management

From: Milton Arakawa

Subject: North Waihee Wells 1 and 2

Attached is/are:

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<td>Appendix C - Excerpts from Central Maui Water Source Development</td>
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Comments: Charley, attached for your information is a copy of Appendix C which was included in the Final Environmental Assessment for the project.

If you have any problems or do not receive the entire fax, kindly call me at [redacted].

CONFIDENTIAL COMMUNICATION: This message is intended for the use of the designated recipient(s) named above. If you have received this message in error, kindly notify us immediately by telephone. Thank you.

Planning • Environmental Studies • Project Management
1823 Wells Street, Suite 3 • Wailuku, Hawaii 96793 • Phone: (808) [redacted] • Fax: (808) 244-8729
Appendix C

Excerpts from Central Maui Water Source Development, Norman Saito Engineering Consultants, Inc. and John F. Mink
**Source Area 1: Waihee Aquifer System (Waihee to Kahakuloa)**

The region between Waihee Valley and Kahakuloa Valley embraces about 12 square miles of humid, mountainous terrain where rainfall varies from an annual average of 40 inches at the coast to more than 300 inches at the headwaters of Waihee Stream. The combination of moderate to very high rainfall with geology featuring both poorly permeable and highly permeable rocks has created a complex suite of water resources. The major streams of Waihee, Makamakaole and Kahakuloa are perennial while lesser ones are not. Marshes form the headwaters of streams, and groundwater occurs in high level as well as basal aquifers.

Waihee Stream is one of the largest water courses in the State, discharging an average of 55 mgd and never experiencing a low of less than 14 mgd. The minimum flow of record (approximately 7 years) was 14.2 mgd in early 1985 following the most severe drought of the century. Below the USGS gaging station the river is diverted into the Waihee Ditch, and still further downstream into the Spreckels Ditch. The average combined flow of these ditches is 37 mgd on a 24 hour basis, placing Waihee among the most prolific sources of ditch water in the State.

The large base flow of Waihee is sustained principally by seepage from high level dike water and secondarily by headwater marshes. The low flow of Makamakaole, on the other hand, originates entirely in marshes and the perched aquifers that sustain them. Kahakuloa receives about equal volumes of low flow from perched water marshes and dike aquifers. Wailena is perennial at its origin where it is fed by perched water, but low flows are quickly lost by infiltration in the mid and lower reaches of the stream.

In contrast to the extraordinary discharges of Waihee Stream, those in Kahakuloa and Makamakaole are modest. The average flow at 330 feet elevation in Kahakuloa as measured at the USGS gage...
station is 10 mgd, and the base flow, which is exceeded more than 90 percent of the time, is 3.5 mgd. For the Left Branch of Makamakaole at elevation 1500 feet the average is 1.9 mgd and the base flow is about 0.6 mgd. The large base flow of Waihee, about 20 to 25 mgd, and the smaller yet significant base flow of Kahakuloa are manifestation of the presence of voluminous dike impounded groundwater resources in the region. Nearer the coast basal aquifers occur.

**Hydrogeology and Groundwater Occurrence**

The primary geological formation underlying the entire region is basaltic lava of the Wailuku volcanic series. All major aquifers, both high level dike and basal, occur in this formation. The Wailuku series is analogous to the Honomanu series in East Maui and the Koolau series in Oahu, and like these formations it is extremely permeable. To the south the productive Iao aquifer consists of Wailuku basalt.

Over much of the region the Wailuku series is covered by the much paler Honolua formation. Composed of andesite and trachyte, the Honolua is normally dense, massive and light gray in contrast to the dark, more broken lavas of the Wailuku formation. Its permeability is significantly lower than that of the older basalt. It does not constitute major aquifers but carries the perched water that sustains marshes.

The Honolua formation forms a blanket, hundreds of feet thick at times, reaching from Eke to the coast. Its characteristics are most strikingly illustrated in the resistant trachyte dome of Puu Olai on the coast between Wailena and Waiolai Gulches. Other prominent trachyte domes are Eke, Puu Koae and Puu Olelo.

In the reach between Waihee and Makamakaole the Honolua may behave as a caprock on the Wailuku basalt aquifer, creating high heads a short distance inland. The head no more than 2000 feet
from the coast is 10 feet, which would be impossible in an unconfined basal aquifer. An alternative explanation for the high head is that groundwater flow is controlled by dikes.

Striking northerly from the original volcanic caldera in upper Iao Valley is a rift zone which passes through the Waihee Aquifer System, especially its northern part. The dikes trend from NNW to N to NNE but appear to favor the NNE strike. The rift formed during extrusion of the Wailuku formation, but dikes of the later Honolua series also follow the trend. The Wailuku dikes are normally one to two feet thick and black in fresh exposures. The Honolua dikes, which occur much less frequently, tend to be thicker and lighter in color.

The trachyte domes at Puu Koae and Puu Olai are contemporaneous with Puu Eke, which suggests that Honolua dikes cut through the region and may control groundwater movement even toward the coast. A large trachyte dike is exposed at the ditch intake on Waihee Stream, and its projected trace lies between Makamakaole and Waihee. Whether or not it affects groundwater behavior will be determined when a Makamakaole exploratory well is finally drilled.

As far as is known from experience elsewhere in West Maui, high level dike water is restricted to basalts of the Wailuku volcanic series and is far more voluminous than perched water in Honolua andesites. The seaward boundary of the high level aquifers by coincidence is about along the Forest Reserve line. In Kahakuloa a major spring (Kapuna Spring) overflows from a dike compartment where the stream leaves the Forest Reserve, and in Waihee the first visible dike spring cascades from the valley wall about two miles inland of the line. High level groundwater, however, seeps into the stream channel for a considerable distance downstream of this first dramatic canyon wall spring.
One or more basal aquifers exist seaward of the rift zone but are not hydraulically connected all the way from Waihee to Kahakuloa. These aquifers between Waihee and Makamakaole are probably confined at the coast, but beyond Makamakaole toward Wailena they are likely to be unconfined because the Honolua formation pinches out.

**Groundwater Development**

Aside from diversions to Waihee and Spreckels Ditches, only a small quantity of groundwater is being developed at this time, but not by wells, galleries or other common extraction techniques. Groundwater that collects as seepage in streams is withdrawn either at the source or, more often, downstream by users. The total volume taken is negligible, no more than thousands of gallons per day on the average.

Two successful wells were drilled on the north bank of Waihee in 1981 by C. Brewer Co. but have not yet been connected to a distribution system. These wells penetrated an aquifer of Wailuku basalt and produced low salinity (less than 50 mg/l chlorides) water at rates to 1700 gpm during the initial testing. In May of this year a more comprehensive test was conducted using one well for pumping while the other served as an observation well. Also used as an observation well was the monitor boring drilled at Kanoa during the field phase of the investigation. The recent test confirmed the earlier indications of the presence of a sizeable aquifer capable of being developed with high capacity pumps.

**Pump Test Results**

The test was conducted uninterruptedly between 12 noon May 15 and 12 noon May 19, a total of 96 hours. North Waihee Well 2 (makai well) was pumped at an average rate of 2450 gpm (3.5 mgd). North Waihee Well 1 (mauka well) and Kanoa served as principal observation wells. Each was equipped with a continuous water level recorder. A recorder was also placed on an unused well in Wailena.
Gulch, and tape measurements of water levels were made in boring A-1 in the Iao basal aquifer. Neither the Wailena well nor A-1 exhibited fluctuations induced by pumping. Both are too far away from the North Waihee wells, and in the case of A-1 an effective barrier consisting of the Waihee Valley fill and possibly dikes separate the Iao aquifer from North Waihee.

Maximum drawdown at the pumping well was 6.85 feet when the rate was temporarily at 2900 gpm; at the steady rate of 2450 gpm it was stable at 5.1 feet. These were expected values on the basis of the original step drawdown test in 1981. When the pump was turned off, recovery to within a few tenths of a foot of the original static level was instantaneous.

The curve of drawdown at observation wells as a function of time at constant pumping rate yields fundamental information about aquifer characteristics. Data from observation wells are uncluttered by perturbations except for the harmonic tidal swing. Analyses of drawdown at both observation wells give an aquifer transmissivity of 320,000 sq.ft./day and storativity in the range of .05 to .30. Transmissivity is the measure of how easily water moves through an aquifer; the results indicate a highly permeable aquifer comparable in properties to the Iao and Lahaina aquifers. A further calculation gives hydraulic conductivity of approximately 2000 ft./day, which is capable of handling high capacity pumps. Storativity is equivalent to effective porosity, or the pore volume which gives up water to pumping. The high value is typical of unconfined conditions. The aquifer sector between the North Waihee wells and the Kanoa boring is not confined, but near the coast the cap of Honolua trachyte covering the Wailuku formation may be a confining stratum.

If aquifer barriers are encountered during a pump test, the drawdown curve will deflect so that the rate of drawdown will increase. No such deflections occur in the data from either North
Waihee 1 or Kanoa. Evidently potential impediments to groundwater flow, such as dikes, do not behave as barriers but are subsumed in the aquifer's global characteristics. This means that groundwater moves freely in the reach between North Waihee and Kanoa and for a considerable distance beyond. Application of groundwater hydraulics equations to the data suggest that the minimum distance to an effective barrier is more than a mile away.

Salinity of the pumped water was very low, less than 30 mg/l chloride, and did not vary over the period of the test. The low and invariant salinity in view of the high pump rate suggests that the fresh water portion of the aquifer is poorly connected to sea water.

The test was highly successful in providing fundamental information about aquifer characteristics as well as extent and exploitability.

Potential Development and Sustainable Yield

The North Waihee aquifer is highly permeable, enjoys a high static water level, and is extensive. It has never been forcibly drafted for municipal or irrigation needs. It presents an opportunity to add a significant increment of new water to the Central Maui Water System.

The recommended first phase in development of the aquifer is to drill two new wells to add to the already existing two North Waihee wells. The new wells will be in the reach between North Waihee and Kupaa Gulch. Access is easy and pipeline layout and construction should not pose unusual problems. Each well can be equipped with a 2 mgd (1400 gpm) pump, providing a total installed capacity of 8 mgd. However, average output of the aquifer on an annual basis must not exceed 4 mgd. The full capacity of the wells could be used temporarily during high demand periods as long as the annual average is held.
Another increment of several mgd is likely to be developable between Kupaa and Makamakaole, and several more beyond. Beyond Kupaa the cost of development and transmission construction will increase sharply because of the inhospitable terrain. The expectable sustainable yield in the 3.5 mile distance from Waihee to Kahakuloa is at least 10 mgd and may be 12 to 15 mgd. Not all of it may be feasibly developable, but in the next few years it should not be difficult to add an average of 4 mgd to the Central Maui network.
FACSIMILE COVER SHEET

November 2, 1995

To: Charley Ice
Commission on Water Resource Management

Fax No.: (808) [Redacted]

From: Milton Arakawa

No. of Pages Including Cover Letter: 6

Subject: North Waihee Wells 1 and 2

Attached is/are:

<table>
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<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
</tr>
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</table>

Comments: Charley, attached is a copy of the summary report of the North Waihee Wells Pump Test, as you requested.

cc: Jim Murray (Fax no. [Redacted])

(Initials) [Signature]

If you have any problems or do not receive the entire fax, kindly call me at [Redacted]

CONFIDENTIAL COMMUNICATION: This message is intended for the use of the designated recipient(s) named above. If you have received this message by error, kindly notify us immediately by telephone. Thank you.
NORTH WAIHEE WELLS PUMP TEST
May 15 - 19, 1989

Summary Report

John F. Mink and Norman Saito Engineering Inc.
June 3, 1989

In 1981 two deep wells were drilled for C. Brewer on the north bank of Waihee Stream from an elevation of 282 feet, about 2300 feet upstream of Kahekili Highway. They were tested and proved capable of yielding more than 2 mgd per well but were never fitted with pumps and have remained idle since then. The aquifer which they penetrate appears to be so poorly connected to the main Iao-Waiehu aquifer as to be virtually independent of it. The northward extent toward Kahakuloa is uncertain but likely reaches to beyond Makamakaole. One of the objectives of the recent pump test was to determine whether low permeability boundaries constrain the size of the aquifer; no boundaries could be detected by analysis of the test results.

In 1987 a reconnaissance hydrological survey of the region from Waihee to Kahakuloa was made as part of an effort to identify additional water sources for Central Maui. A test boring was drilled at the nose of Kanoa Ridge about 2000 feet north of the North Waihee wells to measure fresh water head, and another was planned for a site where Makamakaole Stream crosses the highway. The Makamakaole boring has not been drilled because the State Department of Water Resources Management plans eventually to drill an exploratory well...
there, one large enough to be pumped. The water table in the
Kanoa boring is about the same as at North Waihee, suggesting
aquifer continuity between the two sites. The Kanoa boring
was carefully monitored during the recent test and clearly
established that continuity does indeed exist in the region.

The delay by the State in drilling the Makamakaole
exploratory well denied the opportunity to ascertain whether
the aquifer continued to and beyond Makamakaole Valley.
Drilling a small diameter boring, which was originally
planned by the Joint Venture, was raised again, but the cost
seemed excessive for the type of data obtainable (water level
and salinity). The alternative of a long term pump test, the
results of which could be analyzed to give aquifer parameters
and an estimate of extent, was selected instead.

Pump Test and Results

The test was conducted uninterruptedly between 12 noon
May 15 and 12 noon May 19, a total of 96 hours. North Waihee
Well 2 (makai well) was pumped at a rate of 2400 gpm (3.43
mgd) except for a period of 9 to 10 hours on May 18 when the
rate was raised to 2900 gpm (4.1 mgd) in response to an
incorrect belief that the steady rate had decreased. The
average rate for the 96 hour period was 2450 gpm (3.5 mgd).

North Waihee Well 1 (mauka well) and Kanoa served as
principal observation wells. Each was equipped with a
continuous water level recorder. A recorder was also placed
on the Wailena well, and tape measurements of water levels
were made in boring A-1 in the Waiehu-Iao aquifer. Neither the Wailena well nor A-1 exhibited fluctuations induced by pumping. Both are too far away, and in the case of A-1 an effective barrier consisting of Waihee Valley fill and perhaps dikes separates Waiehu-Iao from North Waihee.

Maximum drawdown at the pumping well was 6.85 feet when the rate was 2900 gpm; at the steady rate of 2400 gpm drawdown was stable at 5.1 feet. These were expected values on the basis of the original step drawdown tests in 1981. When the pump was turned off, recovery to within a few tenths of a foot of the original static level was instantaneous.

At North Waihee 1 the static head before the start of pumping was 11.45 feet. At the end of the test maximum drawdown was 0.70 feet. North Waihee 1 is just 178 feet from North Waihee 2. Water levels respond to sea tides, displaying a tidal efficiency of about 4 percent (range of 0.07 feet). Distance from the sea is 4000 feet.

The pre-test static water level at Kanoa was 12.42 feet. Maximum drawdown at the end of the test was 0.44 feet (tape measurement). The distance between North Waihee 2 and Kanoa is 2000 feet. Tidal efficiency is about 6 percent (range 0.11 feet), which is greater than at North Waihee 1 because Kanoa is only 2000 feet from the coast. Tidal efficiencies are interesting because they suggest the ease with which water moves through an aquifer. Manifestly the North Waihee aquifer is very permeable.
The curve of drawdown as a function of time at constant pumping rate yields fundamental information about aquifer characteristics. Data from observation wells are uncluttered by perturbations except for the harmonic tidal swing. Preliminary analyses of drawdown at both observation wells give an aquifer transmissivity of 320,000 sq.ft./day and storativity in the range .05 to .30. Transmissivity is the measure of how easily water moves through an aquifer; the results indicate a highly permeable aquifer comparable in properties to the Waiehu-Iao and Lahaina aquifers. A further calculation gives hydraulic conductivity of about 2000 ft./day, which is capable of handling high capacity pumps. Storativity is equivalent to effective porosity, or the pore volume which gives up water to pumping. The high value is typical of unconfined conditions. The aquifer sector between North Waihee 1 and Kanoa is not confined, but near the coast the cap of Honolua trachyte covering the Wailuku formation may be a confining stratum.

If aquifer barriers are encountered during a pump test, the drawdown curve will deflect so that the rate of drawdown will increase. No such deflections occur in the data from either North Waihee 1 or Kanoa. Evidently potential impediments to groundwater flow, such as dikes, do not behave as barriers but are subsumed in the aquifer's global characteristics. This means that groundwater moves freely in the reach between North Waihee and Kanoa and for a considerable distance beyond. Application of groundwater
hydraulics equations to the data suggest that the minimum distance to a an effective barrier is more than a mile away.

The salinity of the pumped water was very low, less than 30 mg/l chloride as determined from Hach kit analyses, and did not vary over the period of the test. The low and invariant salinity in view of the high pump rate suggests that the fresh water portion of the aquifer is poorly connected with sea water.

In summary, the test was very successful in providing fundamental information about aquifer characteristics as well as extent and exploitability. The final report will include technical appendices dealing with the test protocol, data, analysis of results, and determination of aquifer properties and groundwater flow behavior.

Preliminary Conclusions and Recommendations

The North Waihee aquifer is highly permeable, enjoys a high static water level, and is extensive. This combination of features will allow it to be developed with moderately large wells yielding a total average of 4 mgd in the region between Waihee Valley and the land boundary just north of Kupaa Gulch. Four wells can be located in this region, two of which (North Waihee) already exist. Each well can be equipped with a 2 mgd (1400 gpm) pump. Average output of the aquifer on an annual basis must not exceed 4 mgd. The full capacity of the wells (8 mgd) can be used temporarily in high demand periods, however, so long as the annual average is held.
C. Brewer Homes, Inc.

October 26, 1995

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

SUBJECT: Pump Installation Permits for North Waihe`e Wells 1 and 2 (Well Nos. 5631-02 and 5631-03)
Waihe`e, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of September 13, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to November 14, 1995. We would like to respectfully request an extension of the start date to January 14, 1996.

We are pleased to note that after a number of discussions with the County of Maui Board and Department of Water Supply, we have reached an agreement “in principle” with the Board on October 24, 1995. After a Board of Water Supply proposal and C. Brewer Homes, Inc. counter proposal were discussed in September and October, the agreement “in principle” involves Board of Water Supply purchase of land in fee simple, a perpetual conservation easement and other necessary easements, and reimbursement for engineering and other development costs expended thus far by C. Brewer Homes, Inc.

At this point, we are anticipating that a letter of intent will be drafted by the Department of Water Supply for review by C. Brewer Homes, Inc. It is hoped that the letter of intent can be accepted by C. Brewer Homes, Inc. and the acceptance confirmed by the Board of Water Supply at its November 7, 1995 meeting.

For your information, we have attached an updated chronology of the major project tasks which have taken place since the project’s inception, and a status report on the various permits required for development.

24 V. Church Street, Suite 205
P.O. Box 1437 / Wailuku, Maui, Hawaii 96793
(808) 242-6633 / FAX: (808) 244-0513
Ms. Rae M. Loui, Deputy Director  
October 26, 1995  
Page 2

We ask that our pump installation permit extension request be placed on the Commission's November 8, 1995 agenda. If you have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray, Jr.  
Project Manager

Attachments  
cc: Milton Arakawa, Munekiyo and Arakawa, Inc.  
NWW2
NORTH WAIHEE SOURCE/TRANSMISSION PROJECT
Chronology of Source Development Program

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September 1991  First substantive meeting towards joint venture

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March 1995  Stream Channel Alteration Permit approved (3/1)

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March 1995  BWS forms two committees to assess alternatives

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## North Waihee Wells, Storage & Transmission System

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C. Brewer Homes, Inc.

October 26, 1995

24 N. Church Street, Suite 205
P.O. Box 1437 / Wailuku, Maui, Hawaii 96793

FAX: (808) 244-0519
Ms. Rae M. Loui, Deputy Director  

October 26, 1995  

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Very truly yours,

[Signature]

James M. Murray, Jr.  
Project Manager

Attachments

cc: Milton Arakawa, Munekiyo and Arakawa, Inc.
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BOARD OF WATER SUPPLY, COUNTY OF MAUI  
SPECIAL MEETING

DATE: Tuesday, October 17, 1995
TIME: 9:00 a.m.
PLACE: Board of Water Supply Conference Room  
County Building, Fifth Floor  
200 South High Street  
Wailuku, Maui, Hawaii

AGENDA

I. CALL TO ORDER

II. ATTENDANCE

III. DISCUSSION AND POSSIBLE ACTION ON C. BREWER'S RESPONSE TO THE OFFER MADE BY THE BOARD REGARDING THE NORTH WAIHEE AQUIFER.

For this matter, the board may convene in executive session pursuant to HRS 92-5(3) in order to deliberate concerning the authority of persons designated by the board to conduct labor negotiations or to negotiate the acquisition of public property, or during the conduct of such negotiations; and pursuant to HRS 92-5(4) in order to consult with its attorney on questions and issues pertaining to the board's powers, duties, privileges, immunities, and liabilities.

IV. ADJOURNMENT

If you have special needs or require an accommodation that will assist in your successful participation in the meeting (i.e. large print, taped materials, Sign Language interpreter, accessible parking, etc.), please call Jerry Wells at [redacted] on or before October 12, 1995.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

September 13, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use
TMK 3-2-1:4 Waihee, Wailuku, Maui

Applicant:
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner:
Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend start date six months, from July 14, 1995 to January 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993

Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.
March 1, 1995  
Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in two (2) months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.

May 5, 1995  
The start date for work under the Pump Installation Permits was extended two (2) months, from May 14, 1995 to July 14, 1995, following the applicant’s request for a four-month extension.

July 19, 1995  
The start date for work under the Pump Installation Permits was extended two months, from July 14, 1995, to September 14, 1995, following the applicant’s request for a six-month extension.

August 24, 1995  
The applicant requested a six-month extension of the start date, to March 14, 1996, due to continuing discussions with the Maui Department of Water Supply. In response to Commission comments at the July 19, 1995 meeting, the applicant attached a chronology of the source development program and a table showing the status of various relevant permits (see Attachments C & D). Under separate cover, the applicant also sent construction drawings for the pump assembly (Attachment E). The chronology indicates that the parties have agreed, before Judge Fong in August 1995, to continue discussions, and that the BWS was meeting August 24, 1995 to discuss settlement options. The letter also emphasizes that plans and specifications for well improvements and related facilities were transmitted to the Department of Water Supply on March 10, 1995.

Well Description:  (See Attachment B)  
Ground elevation:  283 ft.  
Casing diameter:  16 inches  
Solid casing depth:  289 ft.  
Screen casing depth:  309 ft.  
Open hole:  79 ft.  
Total depth:  363 ft.  
Grouted annulus:  0 to 200 ft.  
Proposed pump capacity:  1400 gpm (each)
**Water Availability:** The wells are located in the Waihee Aquifer System near the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Total proposed use is 4 mgd; 2 mgd from each well. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan, although the Plan acknowledges that withdrawals above 4 mgd would require justification through field demonstration.

**Hydrologic Analysis:** The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it. Pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low.

**RECOMMENDATION:**

Not having heard any contrary indications

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to March 14, 1996. The conditions of the permit issued March 14, 1995 remain in effect except for the start date. Discussions and reviews described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

Respectfully submitted,

RAE M. LOUI
Deputy Director

**Attachments**

Michael D. Wilson, Chairperson

3
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Ground Elevation: 283 ft., msl*

Cement Grout: 200 ft.

Solid Casing: ASTM Designation A-242
USS Cor-ten, Kaiser
Material: Steel Kaiseloy
Length: 289 ft.
Diameter: 16 in.
Wall thickness: 0.3125 in.

Hole Diameter: 20 in.

Casing: Perforated Screen
Kaiser Malarial Steel
Material: Steel Kaiseloy
Length: 20 ft.
Diameter: 16 in.
Wall thickness: 0.25 in.
Openings: 100 sq. in./L.F.

Rock Packing: 108 ft.

Total Depth: 363 ft.

Open Hole:
Length: 79 in.
Diameter: 15 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.
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## North Waihee Wells, Storage & Transmission System
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PUMP UNIT AND PIPING PLAN
NOT TO SCALE
Mr. James Herberg, Manager
Maui Operations
C. Brewer Properties
P.O. Box 1437
Wailuku, Hawaii 96793

Dear Mr. Herberg:

Request for Extension of Start Date of Pump Installation
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

At its regular meeting of September 13, 1995, the Commission on Water Resource Management (Commission) approved the extension of the start date for work on the pump installation permit issued March 14, 1995.

By this letter, the start date is extended two months, from September 14, 1995 to November 14, 1995. The completion date remains March 14, 1997.

Any requests for additional extensions must be submitted for consideration by the Commission prior to November 14, 1995.

Aloha,

Michael D. Wilson
BOARD OF WATER SUPPLY, COUNTY OF MAUI
RULES COMMITTEE MEETING

DATE: Thursday, September 14, 1995
TIME: 11:00 a.m.
PLACE: Board of Water Supply Conference Room
County Building, Fifth Floor
200 South High Street
Wailuku, Maui, Hawaii

AGENDA

I. CALL TO ORDER

II. ATTENDANCE

III. APPROVAL OF MINUTES

IV. COMMITTEE DISCUSSION/ACTION

A. Com. 95-22. Request from Wayne Arakaki for a waiver of the subdivision requirements for water, Paehau Subdivision, TMK 2-1-08:3, SD 91-54.

B. Com. 95-28. Request from Greg Davidge for a waiver to install a domestic water storage tank and buy water to fill the tank, TMK 2-2-06:109, SD 95-21.

C. Com. 95-29. Request from Wayne Arakaki for a 50% reimbursement after the installation of the waterline for the Garrison Subdivision, TMK 2-4-5:73.

D. Com. 95-30. Request from Cindy Moelter for approval of a non-conforming private water system to satisfy the subdivision requirements for domestic use and fire protection, Pali Uli Subdivision, TMK 2-2-004:088, SD 95-2.

E. Com. 95-31. Request from Valerie Harte for a waiver of the shortage declaration, Virginia Caires Subdivision, TMK 2-7-014:062.

V. ADJOURNMENT

If you have special needs or require an accommodation that will assist in your successful participation in the meeting (i.e. large print, taped materials, Sign Language interpreter, accessible parking, etc.), please call Jerry Wells at [phone number] on or before September 12, 1995.
BOARD OF WATER SUPPLY, COUNTY OF MAUI
FINANCE COMMITTEE MEETING

DATE: Thursday, September 14, 1995
TIME: 1:00 p.m.
PLACE: Board of Water Supply Conference Room
County Building, Fifth Floor
200 South High Street
Wailuku, Maui, Hawaii

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I. CALL TO ORDER

II. ATTENDANCE

III. APPROVAL OF MINUTES

IV. COMMITTEE DISCUSSION/ACTION

A. Discussion/possible action on proposed new rates.

B. Discussion/possible action on C. Brewer's response to the offer made by the Board regarding the North Waihee Aquifer.

For this matter, the board may convene in executive session pursuant to HRS 92-5(3) in order to deliberate concerning the authority of persons designated by the board to conduct labor negotiations or to negotiate the acquisition of public property, or during the conduct of such negotiations; and HRS 92-5(4) in order to consult with its attorney on questions and issues pertaining to the board's powers, duties, privileges, immunities, and liabilities.

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If you have special needs or require an accommodation that will assist in your successful participation in the meeting (i.e. large print, taped materials, Sign Language interpreter, accessible parking, etc.), please call Jerry Wells at \[redacted\] on or before September 12, 1995.
August 24, 1995

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

SUBJECT: Pump Installation Permits for North Waihe`e Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihe`e, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of July 19, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to September 14, 1995. We would like to respectfully request a six (6) month extension of the start date to March 14, 1996.

There has been a significant amount of work done on the project to date in securing permits and in engineering. For your consideration and review, we have included a chronology of the major project tasks which have taken place since the project’s inception, and a status report on the various permits required for development. We should also emphasize that the plans and specifications for the well improvements and related facilities were transmitted to the Department of Water Supply on March 10 of this year. These were prepared by Warren S. Unemori Engineering, Inc.

We are continuing to discuss our involvement in this project with the Department of Water Supply, and progress is being made in these discussions. Our intent is to continue working with the Department of Water Supply to bring this project to fruition. We ask that we be allowed to continue pursuing the implementation of this project through a further extension of the pump installation permits.
If you have any questions, please feel free to call me. Thank you for your consideration.

Sincerely,

James M. Murray, Jr.
Project Manager

Attachments
cc: Milton Arakawa, Munekiyo & Arakawa, Inc.
Attached is material I sent to Rae Loui yesterday on this subject; this fax copy is provided for your immediate use as required. Milton Arakawa had indicated that today is the deadline for submittals for the September 13 meeting.

If you have any questions, don’t hesitate to call me. Thanks for your help.
C. Brewer Homes, Inc.

August 24, 1995

Rae M. Loui, Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission of Water Resource Management
P. O. Box 621
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NORTH WAIHEE SOURCE/TRANSMISSION PROJECT
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STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 19, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

Applicant:
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner:
Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend start date six months, from July 14, 1995 to January 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993 Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995 Pump Installation Permits were extended, with a new completion date of March 1, 1997. The start date was set to expire in 2 months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
May 5, 1995

The start date for work under the Pump Installation Permits was extended two months, from May 14, 1995 to July 14, 1995, following the applicant’s request for a four-month extension.

June 30, 1995

The applicant requested a six-month extension of the start date, to January 14, 1995, due to other ongoing, related regulation requirements. Preparation of a response to the Department of Health comments concerning a Section 401 Water Quality Certification and a still-pending application for a Coastal Zone Management Program Consistency Assessment are required before work can begin. A Department of the Army Permit and a Stream Channel Alteration Permit have been conditionally approved. Work on pump improvement design is nearing completion.

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</tr>
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<td>Solid casing depth:</td>
<td>289 ft.</td>
</tr>
<tr>
<td>Screen casing depth:</td>
<td>309 ft.</td>
</tr>
<tr>
<td>Open hole:</td>
<td>79 ft.</td>
</tr>
<tr>
<td>Total depth:</td>
<td>363 ft.</td>
</tr>
<tr>
<td>Grouted annulus:</td>
<td>0 to 200 ft.</td>
</tr>
<tr>
<td>Proposed pump capacity:</td>
<td>1400 gpm (each)</td>
</tr>
</tbody>
</table>

Water Availability: The wells are located on the Waihee side of the Waihee-lao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of lao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Proposed use is 2 mgd from both wells together. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan.

Hydrologic Analysis: The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it.
RECOMMENDATION:

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to January 14, 1996. The conditions of the permit issued March 14, 1995 remain in effect except for the start date. Pending work described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachment

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Shipper's authorization and signature
TO: Charley Ice  
Commission on Water Resource Management  
1151 Punchbowl, Room 227  
Honolulu, Hawaii 96813

DATE: September 5, 1995

SUBJECT: Pump Installation Permit  
Extension for North Waihee Wells 1 & 2

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>Pump Unit and Piping Plan</td>
</tr>
</tbody>
</table>

( ) For approval  
( ) For your use  
(x) As requested  
( ) Returned for corrections  
( ) For your files  
( ) For necessary action  
( ) For review and comment  
( ) For your signature  
( ) Returning

REMARKS: Attached is the Pump Unit and Piping Plan, as you requested. Please call me if you have any questions.

Signed: Milton Arakawa
### MATERIALS LIST

<table>
<thead>
<tr>
<th>ITEM NO.</th>
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<th>DESCRIPTION</th>
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<td>12&quot; Flange Coupling Adapter M/12 7/8</td>
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<td>12&quot; F.E.-P.E. Pipe, 12&quot; Min. Length</td>
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<td>3</td>
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<td>12&quot; X 6&quot; Flange Reducer</td>
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<td>1</td>
<td>8&quot; Metal Seated Butterfly Valve W/Drain/Alarm Operator</td>
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<td>12&quot; F.E. Center Guided Check Valve</td>
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<td>12&quot; F.E. Pipe, 8&quot; D. Length</td>
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<td>12&quot; F.E. Universal Venturi Tube</td>
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<td>12&quot; F.E. Center Guided Check Valve</td>
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<td>6&quot; F.E. Pump Vacuum Release Check Valve</td>
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<td>6&quot; Check &amp; Fitting, Detail Sheet M-2</td>
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<td>6&quot; F.P. Pump Control Valve</td>
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<td>6&quot; F.E. Pipe, Length to Fit</td>
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<td>Flow Switch</td>
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<tr>
<td>24</td>
<td>1</td>
<td>3/4&quot; Air Release Valve</td>
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</table>

### NOTES (FLANGED PIPING):
- Flanged pipe and fittings shall conform to all requirements of Project Specifications.

### NOTES (PIPING SMALLER THAN 6"):
1. All pipes, fittings, valves and strainers shall be brass unless otherwise noted.
2. Fittings and valves shall be Crane or Approved Equal.
3. Strainers shall be ASCO or Approved Equal.
4. Pressure reducing valves shall be WASHCOHN or Approved Equal.
5. Flow control valves shall be ASCO or Approved Equal.
6. Pressure snubbers shall be Ray or Approved Equal.
7. Pressure gauges shall be ASHCROFT or Approved Equal.
8. Copper pipe shall be Type K.
9. Solder joint fittings shall be Mueller or Approved Equal.
10. Minimum ground cover for all copper & PVC piping shall be 12 inches.

---

**SECTION A**

**SECTION B**

**SECTION C**

---

**PUMP UNIT AND PIPING PLAN**

**NOT TO SCALE**

---

**NEW DEEP WELL PUMPS AND PIPING PLAN**

---

**NOTE:**

- Flanged pipe and fittings shall conform to all requirements of Project Specifications.

---

**NEW DEEP WELL PUMPS AND PIPING PLAN**

---

**NOTE:**

- Flanged pipe and fittings shall conform to all requirements of Project Specifications.

---

**NEW DEEP WELL PUMPS AND PIPING PLAN**

---

**NOTE:**

- Flanged pipe and fittings shall conform to all requirements of Project Specifications.
HIGH\~ CHAIN LINK FENCE

AREA TO BE PAVED

Wailuku Agribusiness Co., Inc.
(Owner)
TO: Mr. Charley Ice
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

DATE: August 28, 1995

SUBJECT: Waihee Wells Pump Installation Permit Extension

Enclosed is/are:

<table>
<thead>
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<th>Copies</th>
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<th>Description</th>
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<td>1</td>
<td>---</td>
<td>Site Plan for Wells 1 and 2</td>
</tr>
</tbody>
</table>

( ) For approval
(x) For your use
(x) As requested
( ) Returned for corrections
( ) For your files
( ) For necessary action
( ) For review and comment
( ) For your signature
( ) Returning

REMARKS: The attached site plan is submitted pursuant to your request.

Signed: Milton Arakawa

Copy to: Jim Murray (w/ enclosure)
FROM: E. Hirano  
DATE: 7/6/85  
SUSPENSE DATE: 

TO: INIT:  
TO: INIT: FOR: PLEASE:  
___ ___ R. LOUI  
___ ___ J. UWAINIE  
___ ___ F. CHING  
___ ___ S. SUBIA  
___ ___ K. YODA  
SURVEY BRANCH  
___ ___ E. HIRANO  
___ ___ G. BAUER  
___ ___ R. HARDY  
___ ___ N. FUJII  
___ ___ M. OHYE  
___ ___ I. KUNIMURA  
REGULATION BRANCH  
___ ___ E. SAKODA  
___ ___ D. HIGA  
___ ___ L. NAKAMA  
___ ___ C. ICE  
___ ___ R. JINNAI  
___ ___ S. SWANSON  
APPROVAL SIGNATURE INFORMATION  
___ ___ See Me  
___ ___ Review & Comment  
___ ___ Take Action  
___ ___ Type Draft  
___ ___ Type Final  
___ ___ File  
___ ___ Xerox ___ copies  
PLANING BRANCH  
___ ___ S. EDMUNDS  
___ ___ L. MIZUNO  

PLEASE: 

02/95
June 30, 1995

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

SUBJECT: Pump Installation Permits for North Waihe‘e Wells 1 and 2
Wells Nos. 5631-02 and 5631-03
Waihe‘e, Maui Hawaii

Dear Ms. Loui:

At its regular meeting of May 5, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to July 14, 1995. We would like to respectfully request an extension of the start date to January 14, 1996.

We are continuing to discuss our involvement in this project with the Department of Water Supply, but have not reached agreement regarding implementation of the project.

We have recently received comments from the State Department of Health regarding the Section 401 Water Quality Certification application on the project and will provide a response in order to seek final approval. The Coastal Zone Management Program Consistency Assessment application is still pending. Other permits, such as the Department of the Army Permit and the Stream Channel Alteration Permit have been conditionally approved.

We continue to pursue the engineering of the project, which has been contracted to Warren S. Unemori Engineering, Inc. Design of the pump improvements, and related facilities, is nearing completion.
Ms. Rae M. Loui  
June 30, 1995  
Page 2

We feel that implementation of this project is important to provide supplies of water needed to meet the near-term needs of Central and South Maui. We ask that we be allowed to continue pursuing the implementation of this project.

If you have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray, Jr.  
Project Manager

JMM:jh  
cc: Milton Arakawa, Munekiyo & Arakawa, Inc.  
M-Water
Mr. David W. Blane  
C. Brewer Properties  
P.O. Box 1437  
Wailuku, Hawaii 96793

Dear Mr. Blane:

Request for Extension of Start Date of Pump Installation  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

At its regular meeting of July 19, 1995, the Commission on Water Resource Management approved the extension of the start date for work on pump installation for the permit issued March 14, 1995.

By this letter, the start date is extended two months, from July 14, 1995, to September 14, 1995. The completion date remains March 14, 1997.

Should delays prevent work from starting by September 14, 1995, additional extension must be approved by the Commission prior to that date. The Commission requires that such a request be accompanied by a written report of the status of the pump installation project, including a sketch of the pump improvement design.

Aloha,

MICHAEL D. WILSON
ITEM 1  MINUTES OF THE JULY 5, 1995 MEETING

UNANIMOUSLY APPROVED. (NOBRIGA/GIRALD)

ITEM 2  OLD BUSINESS/ANNOUNCEMENTS

NONE.

ITEM 3  C. BREWER PROPERTIES, INC. REQUEST FOR EXTENSION OF START DATE, NORTH WAIHEE WELLS 1 & 2, (WELL NOS. 5631-02 & 03), REQUEST TO INSTALL 1400 GPM PUMPS FOR DOMESTIC USE, WAIHEE, WAILUKU, MAUI (TMK 3-2-1:4)

STAFF PRESENTATION: Mr. Charley Ice

STAFF RECOMMENDATION:

Staff recommended that the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to January 14, 1996. The conditions of the permit extensions issued March 14, 1995 remain in effect except for the start date. Pending work described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

TESTIMONIES:

Mr. David Craddick of the Maui Department of Water Supply stated that he would prefer a two month extension. Future requests for extension should include a status report, including construction drawings for the well and pump assembly.

AMENDMENT: Commissioner Nobriga moved to amend the staff's recommendation for an extension of the start date from six months to two months, and to require a status report, including construction plans.
ITEM 4
WAIALUA SUGAR COMPANY VOLUNTARY REDUCTION OF PERMITTED WATER USE, PUMPS 25 & 26 (WELL NOS. 3203-01 & 02), WAHIAWA GROUNDWATER MANAGEMENT AREA, OAHU (TMK 6-4-03:1)

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

Staff recommended that the Commission:

1. Revoke the water use permit, permanently and in whole, for Pump 25 (Well No. 3203-01).

2. Require the owner or former operator of Pump 25 (Well No. 3203-01) to properly secure the well, in accordance with the requirements of Chapter 13-168, Water Use, Wells and Stream Diversion Works, Hawaii Administrative Rules, to prevent contamination of the groundwater aquifer.

3. Accept Waialua Sugar Company’s voluntary permanent reduction in the allocation to Pump 26 (Well No. 3203-02) from 2.76 mgd to 1.72 mgd.

AMENDMENT: Staff requested to amend the staff recommendation by removing the word "permanently" and "permanent" in #1 and #3 to read as follows:

1. Revoke the water use permit, in whole, for Pump 25 (Well No. 3203-01).

2. Require the owner or former operator of Pump 25 (Well No. 3203-01) to properly secure the well, in accordance with the requirements of Chapter 13-168, Water Use, Wells and Stream Diversion Works, Hawaii Administrative Rules, to prevent contamination of the groundwater aquifer.

3. Accept Waialua Sugar Company's voluntary reduction in the allocation to Pump 26 (Well No. 3203-02) from 2.76 mgd to 1.72 mgd.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 19, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

TMK 3-2-1:4 Waihee, Wailuku, Maui

Applicant: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend start date six months, from July 14, 1995 to January 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993 Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995 Pump Installation Permits were extended, with a new completion date of March 1, 1997. The start date was set to expire in 2 months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
May 5, 1995

The start date for work under the Pump Installation Permits was extended two months, from May 14, 1995 to July 14, 1995, following the applicant's request for a four-month extension.

June 30, 1995

The applicant requested a six-month extension of the start date, to January 14, 1995, due to other ongoing, related regulation requirements. Preparation of a response to the Department of Health comments concerning a Section 401 Water Quality Certification and a still-pending application for a Coastal Zone Management Program Consistency Assessment are required before work can begin. A Department of the Army Permit and a Stream Channel Alteration Permit have been conditionally approved. Work on pump improvement design is nearing completion.

Well Description:

- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 363 ft.
- Grouted annulus: 0 to 200 ft.
- Proposed pump capacity: 1400 gpm (each)

Water Availability: The wells are located on the Waihee side of the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing groundwater uses from the Waihee Aquifer System at present. Proposed use is 2 mgd from both wells together. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan.

Hydrologic Analysis: The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it.
RECOMMENDATION:

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to January 14, 1996. The conditions of the permit issued March 14, 1995 remain in effect except for the start date. Pending work described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachment

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Mr. David W. Blane  
C. Brewer Properties  
P.O. Box 1437  
Wailuku, Hawaii 96793

Dear Mr. Blane:

Request for Extension of  
Start Date of Pump Installation  
North Waihee Wells 1 & 2  
(Well Nos. 5631-02 & 03)

At its regular meeting of May 5, 1995, the Commission on Water Resource Management approved the extension of the start date for work on pump installation for the permit issued March 14, 1995.

By this letter, the start date is extended two months, from May 14, 1995 to July 14, 1995. The completion date remains March 14, 1997.

Should delays prevent work from starting by July 14, 1995, additional extension must be approved by the Commission prior to that date.

Sincerely,

RAE M. LOUI  
Deputy Director
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: [Signature]
DATE: 4/19
SUSPENSE DATE: __________

TO: INIT: TO: INIT: FOR: PLEASE:

REGULATION BRANCH
R. LOUI J. UWANE F. CHING
S. SUBIA K. YODA

APPROVAL SIGNATURE INFORMATION
E. SAKODA D. HIGA
L. NAKAMA C. ICE
R. JINNAI S. SWANSON

PLANING BRANCH
E. HIRANO G. BAUER R. HARDY
N. FUJI M. CHYE I. KUNIMURA

S. EDMUNDS L. MIZUNO

DATE: __________

PLEASE: See Me
Review & Comment
Take Action
Type Draft
Type Final
File
Xerox ____ copies

1) Extend 2 mo. in keeping with Hrbiriga's amendment?
2) Comment on "resource valuation"?

Today would you draft a submission for May 5 to attend
Start date to Sept. 14, 1995. [We see two options: (1) (2) for submittal]
approval (2) denial woout prejudice
SUBJECT: Pump Installation Permits for North Waihe‘e Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihe‘e, Maui, Hawaii

Dear Ms. Loui:

Pump installation permits for the subject wells were extended by the Commission on Water Resource Management on March 1, 1995. We have enclosed a signed copy of the extension for your files.

Condition No. 6 of the extension notes in part that the "permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified."

Since the Commission action on March 1, 1995, we have met a number of times with the Board of Water Supply (BWS) regarding the implementation of this project. As you know, the project involves Waihe‘e Well Nos. 1 and 2 as well as construction of a new 500,000 gallon water tank and approximately 4.26 miles of transmission lines to link with the existing County water system.

Although a joint venture with the BWS has been discussed over the past several years, an agreement has not been reached. The current approach favored by the BWS involves purchase of the wells and implementation of the entire project by the BWS. We are currently working with the BWS on the valuation of the well resource as well as the value of work done on the project thus far by C. Brewer Homes, Inc. and our consultants.
In the interim, construction plans for installation of the pumps have been submitted to the Department of Water Supply for approval.

We would like to request that the construction start date for Waihe`e Well Nos. 1 and 2 be extended to September 14, 1995 which is six (6) months after the issuance for the extension. We believe that progress is being made toward the implementation of this important project and we will continue to work with the BWS in coming up with a mutually agreeable solution.

If you have any questions, please feel free to call me. Thank you for your consideration of our request.

Very truly yours,

[Signature]

David W. Blane
Senior Vice President

Attachment - Pump Installation Permit Extension
cc: David Craddick, Department of Water Supply (w/attachment)  
    Milton Arakawa, Munekiyo & Arakawa, Inc. (w/attachment)
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809
MAR 14 1995
EXTENSION
PUMP INSTALLATION PERMIT
for
North Waihee Wells 1 & 2
Well Nos. 5631-02 & 03
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request to extend the permit to install pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03), is approved subject to the following conditions:

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

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

2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission's September 16, 1992 direction on reporting requirements.
6. The permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

Michael D. Wilson, Chairperson
Commission on Water Resource Management
MAR 14 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: [Signature]
Date: Apr 15/95

Printed Name: [Name]

Firm or Title: [Company Name]

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

cc: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Wastewater Branch
Maui Department of Water Supply
EXTENSION PUMP INSTALLATION PERMIT

for

North Waihee Wells 1 & 2
Well Nos. 5631-02 & 03
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request to extend the permit to install pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03), is approved subject to the following conditions:

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3. The proposed use 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 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.

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Chairperson and Members
Commission on Water Resource Management
State of Hawaii

Gentlemen:

Request for Extension
C. Brewer Properties, Inc.
Request to Install 1400 gpm Pumps in
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
TMK 3-2-1:4 Waihee, Maui

Applicant: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend permit to install a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (see attached map).

Well Description:
- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 363 ft.
- Grouted annulus: 0 to 200 ft.
- Proposed pump capacity: 1400 gpm (each)

Background: Pump Installation Permits for North Waihee Wells 1 & 2 were issued on March 25, 1993. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved. In December, the applicant inquired as to a preferred approach to the coming March permit expiration date, and consequently submitted this request to extend the permit.

Water Availability: The wells are located on the Waihee side of the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Proposed use is 2 mgd from both wells together. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd.

Analysis: The well will develop fresh, basal water for private municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it. Further, Mr. Mink states that pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous; salinity is very low.
RECOMMENDATION:

That the Commission approve the extension of the pump installation permits for North Waihee Wells, subject to the same following original conditions:

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission’s September 16, 1992 direction on reporting requirements.

6. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittal approved by the Commission at its March 3, 1993 and March 1, 1995 meetings are incorporated into the permit by reference.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachment

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
UNANIMOUSLY APPROVED AS AMENDED. (NOBRIGA/GIRALD)

ITEM 14
REQUEST FOR EXTENSION, C. BREWER PROPERTIES, INC., REQUEST TO INSTALL 1400 GPM PUMPS IN NORTH WAIHEE WELLS 1 & 2 (WELL NOS. 5631-02 & 03), TMK 3-2-1:4, WAIHEE, MAUI

PRESENTATION OF SUBMITTAL: Edwin Sakoda

AMENDMENT: Staff recommended approval with an amendment to delete the word "original" from the Recommendation, so as to read:

"That the Commission approve the extension of the pump installation permits for North Waihee Wells, subject to the same following conditions."

PRESENTATION BY APPLICANT: None; however, Mr. Jim Murray of C. Brewer Homes was present and available for questioning.

TESTIMONIES:

Mr. David Craddick of the Maui Board of Water Supply asked to have an amendment to the staff recommendation (#6) so that the applicant must face the Commission again for review if work is not started within six months.

QUESTIONS/CLARIFICATIONS:

Commissioner Nobriga wondered whether six months was too long.

Mr. Murray responded that, in regards to time table, they are in the "engineering" process for this project. They are also in the final stages of discussing, with the Board of Water Supply, the manner in which this will be developed. Also, C. Brewer anticipates that this will become the Board of Water Supply's project. He is very confident that the project will be started within the six months; less than that will be too "tight".

Commissioner Nobriga asked if the Board of Water Supply is ready to take over the project, once it's developed. He also asked why C. Brewer is taking so long to complete the project and turn it over to the Board of Water Supply.

Mr. Craddick replied that is what they are negotiating for. The Board meeting will be held on March 7, 1995 and the terms of the agreement will be discussed at that time. After the meeting, they will know whether they will be able to start the project within six months.

AMENDMENT: Page Two, Condition # 6 was amended from six (6) months to two (2) months.

UNANIMOUSLY APPROVED AS AMENDED. (NOBRIGA/NAKATA)

ITEM #4
ACCEPTANCE OF THE PRE-FINAL DRAFT NONPOTABLE WATER MASTER PLAN AND APPROVAL OF A PUBLIC REVIEW PROCESS

PRESENTATION OF SUBMITTAL: Rae Loui

UNANIMOUSLY APPROVED. (NOBRIGA/MIIKE)
6. The permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

[Signature]

MICHAEL D. WILSON, Chairperson
Commission on Water Resource Management
MAR 1-4 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: _____________________________ Date: ______________

Printed Name: ______________________________________________________________________________

Firm or Title: ________________________________________________________________________________

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

cc: USGS
    Department of Health
    Safe Drinking Water Branch
    Ground Water Protection Program
    Wastewater Branch
    Maui Department of Water Supply
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

### PROPOSED SECTION OF WELL

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<th>Description</th>
<th>Measurement</th>
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*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
Waihee 1&2
(Well No. 5631-02,03)
Extension of Pump Installation Permits
North Waihee Wells 1 & 2 (5631-02, 03)
Waihee, Maui

Dear Mr. Blane:

We have received your request for an eighteen (18) month extension of the pump installation permit approved by the Commission on Water Resource Management on March 25, 1993.

Please be advised that we intend to submit this request to the Commission at its regular meeting on March 1, 1995, in Honolulu. Please call Ed Sakoda at [redacted] if you have any questions.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

cc: Mr. Milton Arakawa, Munekiy & Arakawa
TO: Rae M. Loui  
Deputy Director  
Commission of Water Resource Management  
Department of Land & Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809

DATE: December 21, 1994

SUBJECT: Waihe'e Wells and Transmission System

Enclosed is/are:

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<tbody>
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<td>Orig.</td>
<td>12/20/94</td>
<td>Letter from David W. Blane to Commission of Water Resource Management</td>
</tr>
</tbody>
</table>

(X) For necessary action  
( ) For approval  
( ) For your use  
( ) As requested  
( ) Returned  
( ) For your files  
( ) For review and comment  
( ) For your signature  
( ) Returning

REMARKS: Please refer to the attached letter.

Signed: ____________________________
Milton Arakawa

Copy to:  
David W. Blane, C. Brewer Homes, Inc. (w/enclosure, via fax)  
Warren Unemori, Warren S. Unemori Engineering, Inc. (w/enclosures, via fax)  
David Craddick, Department of Water Supply (w/enclosure, via fax)
December 20, 1994

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

SUBJECT: Pump Installation Permits for North Waihe’e Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihe’e, Maui, Hawaii

Dear Ms. Loui:

Pump installation permits for the subject wells were issued with conditions by the Commission on Water Resource Management on March 25, 1993. Condition No. 8 of both permits note in part that the work must be started within six (6) months of the date of permit issuance. Moreover, construction must be completed within two (2) years of the date of permit issuance, or by March 25, 1995.

Extensions on the construction start date have been granted administratively, to January 25, 1995.

We would like to request a six (6) month extension of the construction start date to July 25, 1995 and an eighteen (18) month extension of the construction completion date to September 25, 1996.

As you recall, we are working with the County of Maui, Department of Water Supply (DWS), on improvements to the water system including two (2) additional wells to be drilled and equipped by the DWS, a water storage tank, and approximately 4.26 miles of waterline. Before we proceed with installation of the pumps, we would like to be reasonably certain that a connection to the County water system can be made and that applicable governmental approvals can be obtained in a timely manner. We have been working on securing the necessary permits to implement the entire project.

The Final Environmental Assessment for the project was filed in April 1994 and this process is completed.
Since the proposed waterline crosses five (5) streams or gulches, other permit requirements apply to the subject project. These include the U.S. Department of the Army permit, Section 401 Water Quality Certification, Coastal Zone Management (CZM) Consistency, and Stream Alteration Permit. The Army, Section 401, CZM and Stream Alteration Permit applications were submitted to the appropriate agencies in July 1994. A Department of the Army Provisional Nationwide Permit was issued on November 30, 1994. Action on the Section 401, CZM and Stream Alteration Permit applications are still pending.

In this regard, our requests for time extensions will allow us to continue working with the State Department of Health, the Office of State Planning and the Commission on Water Resource Management to secure the respective permit approvals for project implementation. If you or your staff have any questions, please feel free to call me. Thank you for your consideration.

Very truly yours,

C. BREWER HOMES, INC.

David W. Blane
Senior Vice-President

cc: David Craddick, Department of Water Supply
    Milton Arakawa, Munekiyo & Arakawa, Inc.
researched and addressed. The negative declaration was published in the Office of Environmental Quality Control Bulletin of April 8, 1994.

Work is also ongoing for several permits required for waterline crossings of five streams and gulches. These include the Corps of Engineers Permit, Section 401 Water Quality Certification, Coastal Zone Management Consistency, and Stream Channel Alteration Permit. Filing of these permits is anticipated in mid-1994.

If you or your staff have any questions, please feel free to call me.

Very truly yours,

[Signature]

David W. Blane
Senior Vice-President
C. Brewer Homes, Inc.

DWB:It
cc: Pete C. Moynahan, C. Brewer Properties, Inc.
    David Craddick, Department of Water Supply
    Milton Arakawa, Munekiyo & Arakawa, Inc.
Mr. David W. Blane, Senior Vice-President
C. Brewer Homes, Inc.
P.O. Box 1437
Wailuku, HI 96793-1437

Dear Mr. Blane:

Request for Second Extension of Start of Construction Date for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

We acknowledge receipt of your letter requesting a ten-month extension of the start of construction date. By this letter we are extending your start date an additional ten months to January 25, 1995. Please note that the well should be completed by March 25, 1995, two years from the date the permit was issued.

Please notify the Commission on Water Resource Management, in writing, before any work covered by the permit begins, or if work cannot begin by January 25, 1995.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

cc:  Pete C. Moynahan, C. Brewer Properties, Inc.
     David Craddick, Maui Department of Water Supply
     Milton Arakawa, Munekiy & Arakawa, Inc.
April 22, 1994

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihee, Maui, Hawaii

Dear Ms. Loui:

We would like to request a ten (10) month extension (to January 25, 1995) on the start date for the above pump installation permits.

Permits for the subject wells were issued with conditions by the Commission on Water Resource Management on March 25, 1993. Condition No. 8 of both permits state in part that 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." Accordingly, a six month extension on the start date was granted to March 25, 1994.

Our intent is to install the pumps in accordance with the other conditions of the permits, including the condition that construction be completed by March 25, 1995. Should difficulties arise regarding construction start and completion dates, we will notify the Commission in January 1995.

Before we proceed with installing the pumps, we would like some assurance that a connection to the existing County water system can be made and that applicable governmental approvals can be obtained in a timely manner. The pump installation permits are envisioned to be part of a larger project jointly undertaken by C. Brewer Homes, Inc. and the County of Maui, Department of Water Supply (DWS). This includes two additional wells to be drilled and equipped by the DWS, a water storage tank, and approximately 4.26 miles of waterline.

We have been working on filing the Final Environmental Assessment (EA) for the project. Public comments raised during the 30-day comment period of the Draft EA were
Request for Extension of Start of Construction Date
for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

We acknowledge receipt of your letter requesting a six-month extension of the start of construction date. By this letter we are extending your start date an additional six months to March 25, 1994. Please note that the well should be completed by March 25, 1995, two years from the date the permit was issued.

Please notify the Commission on Water Resource Management, in writing, before any work covered by the permit begins, or if work cannot begin by March 25, 1994.

Sincerely,

RAE M. LOUI
Deputy Director
September 8, 1993

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

Dear Ms. Loui:

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihee, Maui, Hawaii

Pump installation permits for the subject wells were issued with conditions by the Commission on Water Resource Management on March 25, 1993. Condition No. 8 of both permits state in part that the "permit may be revoked if work is not started within six (6) months of the date of issuance or if work is suspended or abandoned for six months."

We would like to request a six (6) month extension to the start date for the work on the subject wells. Our request would extend the start date for work on the wells to March 25, 1994. Our intent is to install the pumps in accordance with the other conditions of the permits. However, before we proceed with installing the pumps, we would like some assurance that a connection to the existing County water system can be made. The County is also interested in drilling additional wells in the area to the north of Well Nos. 5631-02 and 5631-03.

We are working with the County of Maui, Department of Water Supply (DWS), on improvements to the water system including two additional wells to be drilled and equipped by the DWS, a water storage tank, and approximately 4.36 miles of waterline. A Draft Environmental Assessment has been filed with the Office of Environmental Quality Control. The 30-day review period for the Draft EA started on August 23, 1993. Should there be no significant environmental impacts as a result of the project, then the EA process should be completed prior to March 1994. Our intent is to start work covered by the subject pump installation permits upon completion of the environmental review process.
If you or your staff have any questions, please feel free to call me. Thank you for your consideration.

Very truly yours,

David W. Blane
Senior Vice President
C. Brewer Properties, Inc.

cc: Pete Moynahan, C. Brewer Properties, Inc.
    Michael T. Munekiyo, Michael T. Munekiyo Consulting, Inc.
    David Craddick, Department of Water Supply
5. The permit application and staff submittal approved by the Commission at its meeting on March 3, 1993 shall be incorporated herein by reference.

6. The following shall be submitted to the Commission staff within 30 days after completion of the work:
   a. Well Completion Report.
   b. As-built sectional drawing of the installed pump.

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 two years from the date of permit issuance.

KEITH W. AHUE, Chairperson
Commission on Water Resource Management

MAR 25 1993
Date of Issuance
I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: [Signature]
Date: 3/29/93

Printed Name: Davio W. Blane

Firm or Title: SR. V.P. & C. BREWER PROPERTIES

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Enc. (Well Completion Report form)
c: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Maui Department of Water Supply
Michael T. Munekiyo Consulting, Inc.
Mink & Yuen, Inc.
PUMP INSTALLATION PERMIT

for

North Waihee Well 2
Well No. 5631-03
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

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 install a pump in Waihee Well 2 for private/municipal use is approved, subject to the following conditions:

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

2. The permit shall be for installation of up to a 1400 gpm capacity pump in the well. The total pumpage from North Waihee Wells 1 & 2 shall average 2 mgd or less.

3. The proposed use 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 pump water from the 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 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.
PUMP INSTALLATION PERMIT

for

North Waihee Well 1
Well No. 5631-02
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

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 install a pump in Waihee Well 1 for private/municipal use is approved, subject to the following conditions:

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

2. The permit shall be for installation of up to a 1400 gpm capacity pump in the well. The total pumpage from North Waihee Wells 1 & 2 shall average 2 mgd or less.

3. The proposed use 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 pump water from the 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 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.
5. The permit application and staff submittal approved by the Commission at its meeting on March 3, 1993 shall be incorporated herein by reference.

6. The following shall be submitted to the Commission staff within 30 days after completion of the work:
   a. Well Completion Report.
   b. As-built sectional drawing of the installed pump.

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 two years from the date of permit issuance.

KEITH W. AHUE, Chairperson
Commission on Water Resource Management

MAR 25 1993

Date of Issuance
I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant's Signature: 

[Signature]

Date: 3/29/93

Printed Name: 

DAVID W. BLAZE

Firm or Title: SR. V. P. / C. BREWER PROPERTIES

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Enc. (Well Completion Report form)

c: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Maui Department of Water Supply
Michael T. Munekiyo Consulting, Inc.
Mink & Yuen, Inc.
Water Availability: The wells are located in the Wailuku Sector, Waihee System of Maui. Sustainable yield of the Waihee System is estimated at 8 mgd. There is no pumpage from the aquifer. Ground water use from the aquifer system is expected to be about 4.2 mgd by the year 2010. The wells are listed for potential development in the Maui County Water Use and Development Plan.

RECOMMENDATION:

That the Commission approve the issuance of pump installation permits for North Waihee Wells 1 & 2, subject to the following conditions:

1. The Commission on Water Resource Management (Commission) shall be notified before work commences.

2. The permits shall be for installation of 1400 gpm capacity pumps in the wells. The total pumpage from both wells shall average 2 mgd.

3. The proposed uses shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. These permits or the authorization to pump water from the wells 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 each well could be reduced by the Commission in the future. These permits are not a commitment that the pump capacities permitted here or even some lesser amount are guaranteed in the future.

4. 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.

5. The following shall be submitted to the Commission within 30 days after completion of the work:
   a. Well Completion Reports.
   b. As-built sectional drawings of the pump installations.

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

7. These permits may be revoked if work is not started within six months of the dates of issuance or if work is suspended or abandoned for six months. The work proposed in these permit applications shall be completed within two years from the dates of permit issuance.

Respectfully submitted,

[Signature]
Deputy Director

Approved for Submittal:

[Signature]
RAE M. LOUI
Deputy Director

Attach.
Chairperson and Members  
Commission on Water Resource Management  
State of Hawaii  
Honolulu, Hawaii

Gentlemen:

C. Brewer Properties, Inc.  
Application for Pump Installation Permits  
North Waihee Wells 1 & 2, Waihee, Maui

Applicant:  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, HI 96793

Landowner:  
Wailuku Agribusiness Company, Inc.  
P.O. Box 520  
Wailuku, HI 96793

Action Requested:  Permission to install 1400 gallons per minute (gpm) pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for private/municipal use. The proposed total amount of use from both wells is 2,000,000 gallons per day (2 mgd).

Well Location/Tax Map Key: The wells are located at Tax Map Key: 3-2-01:4 (see attached map).

Well Description (typical):

- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 388 ft.
- Proposed pump capacity: 1400 gpm per well

Agency Review: The application has been sent to the Maui Department of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and to the State Departments of Health and Hawaiian Home Lands for review. There have been no objections to the project.

Analysis: The well will develop fresh, basal water, for private/municipal use. The wells tap a basal aquifer with a static head standing about 10 ft. above mean sea level. John Mink, in a letter to C. Brewer Properties, Inc. states, "The water table in the North Waihee wells lies 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level. A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table." The wells were drilled and tested in 1981 and tested again in 1989. A pumping test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride. No adverse impacts are expected.
Mr. Nakata asked for the location of the wells in relation to the stream. Mr. Sakoda said the wells were about 400-500 feet from the stream but were on a slope. Discussion followed regarding the any relationship between the stream and the surrounding wetlands. Mr. Nakata was concerned about where the water for the wetlands was coming from and whether or not there was a relationship between the basal and the wetland. Mr. Sakoda explained that the water would come from the overflow of the dikes plus whatever recharge. In regards to the relationship, Mr. Sakoda said there must be a relationship but was not sure what it was. Mr. Bauer pointed out that the heads on the south side of the stream (the basal portion) was higher than the north side. Therefore, there are wetlands on the south side but not on the north.

Mr. Jim Murray of C. Brewer summarized the project and answered questions of the Commission. He stated that the water distribution system would be dedicated to the County Department of Water Supply and the final terms of the joint development agreement are being worked out. A meeting was scheduled for Friday, March 5th. Mr. Murray said the DWS had encouraged them to submit this application.

Mr. Ing asked Mr. Murray if he had seen Mr. Craddick's letter of March 3 indicating that negotiations have not yet resulted in an agreement with C. Brewer and also commented that he would not want to see any action taken by the Commission that would infringe on the need to supply water to the area. Mr. Ing asked for the status of the negotiations. Mr. Murray had not seen the letter, but explained that a meeting was held last week and that there was a conceptual agreement on how to proceed on the development of the source. This conceptual agreement would be presented to the DWS Technical Committee.

Mr. Craddick explained that he was not asking that the application be deferred but that it be approved. Negotiations have been ongoing since 1986, although it has not resulted in any agreements. He hoped the agreement would be resolved this month then DWS may not need to drill their well and could look at other areas where a well would be more beneficial.

Discussion followed regarding locations of proposed DWS wells in the area, spacing, which aquifer systems they would impact. The applicant's well would be located in Waihee aquifer while the proposed DWS well would be in the lao aquifer with the Waihee Stream as the dividing point between the two aquifers (if streams can be that definitive). Mr. Craddick said it is known that the head on one side of the stream is 10 feet while the other side has a 14 foot head.

Ms. Loui added that the USGS model for Pearl Harbor showed that cones of depression can cross non-conformities so even if there is a difference in heads there could still be some effects. Mr. Craddick said that was the reason for his letter but he did not intend to stop the permit. He felt staff's recommendations were sufficient to handle the situation mentioned by Ms. Loui.

Mr. Nakata asked if there would be any impact on the stream or wetlands from the proposed DWS well and if USGS had been asked to look at it. Mr. Sakoda did not think it would affect the stream but effects on the wetlands needs to be looked at more closely. The USGS were given copies of John Mink's letter and they have not stated any objections. Ms. Loui added that not enough is known on whether or not the stream is gaining and where it's gaining, therefore Mr. Meyer from USGS could not make any recommendations and deferred to Mr. Mink's statement.

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significant amount with the intent of having some reserved right to use the water. The nature of that right has not been determined but it would be a sharing of the source.

Mr. Craddick added that when an agreement is reached, DHHL would have water made available to them.

Staff recommendation unanimously approved (Fujimura/Lewin).

**ITEM 5**

EXTENSION; HUEHUE RANCH ASSOCIATES, L.P., PUMP INSTALLATION PERMITS, KUKIO IRRIGATION (KI) WELLS 1 TO 3, KUKIO, NORTH KONA, HAWAII

Mr. Dustin Crimmins, representing the applicant, stated approval had been received for the Water Quality Monitoring and Management Plan from the Department of Health. A copy of the approved permit would be sent to the Commission’s staff.

Staff recommendation unanimously approved (Fujimura/Ing).

**ITEM 6**

JOHN D. MOOD JR., APPLICATION FOR A STREAM CHANNEL ALTERATION PERMIT, A STREAM DIVERSION WORKS PERMIT, AND AN AMENDMENT TO THE INTERIM INSTREAM FLOW STANDARD FOR HUALOLO STREAM, NINOLE, HAWAII

Mr. Martin questioned whether or not the approval of all landowners adjacent to the streams was needed before the stream was restored. Ms. Loui said several letters were received from landowners who were in favor of restoring the stream. The first step would be to determine who built the diversion, then work with the landowners.

Staff recommendation unanimously approved (Nakata/Lewin).

**ITEM 7**

BOUNDARY RECLASSIFICATIONS WITHIN THE HONOLULU, PEARL HARBOR, AND WAI‘ALUA GROUND WATER MANAGEMENT AREAS INCLUDING THE PEARL HARBOR CAPROCK AREA, OAHU

Mr. Hardy explained the boundaries and sectors being presented to the Commission.

Mr. Martin stated (testimony in Commission file) that in future refinement of the aquifer system and sector boundaries, the Commission should “utilize readily available additional output from USGS modelling that was not mentioned nor presented at the public information meeting”.

Mr. Bowles cautioned that if boundaries and definition of rules and regulations become too rigid, the real purpose will be lost. Ground water modeling is helpful as a tool but field knowledge is equally, if not more important and that if modeling is not working it should be modified.

Since at the informational meeting the Windward area were numbers were left blank, Mr. Gary Lee asked if the information included on the map presented by Mr. Hardy was for information only or would the Commission be acting on that also. Mr. Hardy said it was just general information which was attached at the request of the Commission. The Windward area numbers were approved at an earlier meeting.

Mr. Charley Ice of Hawaiian Home Lands asked if the Central Sector is a high level aquifer does it suggest that there is an overlap of the North and Pearl Harbor Aquifer. Mr. Hardy said that it is recognized and that was the reason staff is proposing to set the sustainable yield at a status quo.
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Staff recommendation unanimously approved (Nakata/Lewin).

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Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

C. Brewer Properties, Inc.
Application for Pump Installation Permits
North Waihee Wells 1 & 2, Waihee, Maui

Applicant: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to install 1400 gallons per minute (gpm) pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for private/municipal use. The proposed total amount of use from both wells is 2,000,000 gallons per day (2 mgd).

Well Location/Tax Map Key: The wells are located at Tax Map Key: 3-2-01:4 (see attached map).

Well Description (typical):

- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 388 ft.
- Proposed pump capacity: 1400 gpm per well

Agency Review: The application has been sent to the Maui Department of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and to the State Departments of Health and Hawaiian Home Lands for review. There have been no objections to the project.

Analysis: The well will develop fresh, basal water, for private/municipal use. The wells tap a basal aquifer with a static head standing about 10 ft. above mean sea level. John Mink, in a letter to C. Brewer Properties, Inc. states, "The water table in the North Waihee wells lies 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level. A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table". The wells were drilled and tested in 1981 and tested again in 1989. A pumping test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride. No adverse impacts are expected.
**Water Availability:** The wells are located in the Wailuku Sector, Waihee System of Maui. Sustainable yield of the Waihee System is estimated at 8 mgd. There is no pumpage from the aquifer. Ground water use from the aquifer is expected to be about 4.2 mgd by the year 2010. The wells are listed for potential development in the Maui County Water Use and Development Plan.

**RECOMMENDATION:**

That the Commission approve the issuance of pump installation permits for North Waihee Wells 1 & 2, subject to the following conditions:

1. The Commission on Water Resource Management (Commission) shall be notified before work commences.

2. The permits shall be for installation of 1400 gpm capacity pumps in the wells. The total pumpage from both wells shall average 2 mgd.

3. The proposed uses shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. These permits or the authorization to pump water from the wells 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 each well could be reduced by the Commission in the future. These permits are not a commitment that the pump capacities permitted here or even some lesser amount are guaranteed in the future.

4. 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.

5. The following shall be submitted to the Commission within 30 days after completion of the work:
   a. Well Completion Reports.
   b. As-built sectional drawings of the pump installations.

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

7. These permits may be revoked if work is not started within six months of the dates of issuance or if work is suspended or abandoned for six months. The work proposed in these permit applications shall be completed within two years from the dates of permit issuance.

Respectfully submitted,

[Signature]
RAE M. LODI
Deputy Director

Attach.

APPROVED FOR SUBMITTAL:

[Signature]
JOHN P. KEPPELER II, Acting Chairperson
average will be 2 mgd. Eventually additional wells may be drilled in the aquifer about half a mile north of the existing wells to allow total average pumpage of 4 mgd.

Sincerely,

John F. Mink
March 3, 1993

Mr. John Keppeler, II  
Acting Director  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, HI 96809

Dear Mr. Keppeler:

We are planning on constructing a well along the south side of N. Waihee stream at about the 200 foot elevation. The purpose of the well is to spread the pumping of Iao aquifer and to supply the new Department of Hawaiian Homes subdivision of Waiehu Kou and other Hawaiian Homes areas in Waiehu. Withdrawal would be in the amount of 1 MGD.

The County of Maui Board of Water Supply has been negotiating with Brewer on joint development of water in this area. These negotiations have not resulted in agreement at this time. We would not want any action taken here to infringe on our need to supply water to the areas listed above.

Thank you for your consideration in this matter.

Sincerely,

David Craddick, Director

DRC/ao/N Waihee wells

cc: Charles Ice, Dept of Hawaiian Home Lands  
David Blane, C. Brewer Properties
February 12, 1993

David Blane
C. Brewer Properties, Inc.
PO Box 1437
Wailuku, HI 96793

Dear David:

Subject: Effect of North Waihee Wells 1 and 2 pumpage on Waihee Stream flow.

I understand that C. Brewer Properties, Inc. application for pump installation permits to install a 1400 gpm pump in each of the North Waihee wells (nos. 1 and 2) was delayed because a point was raised concerning the possible effect pumping the wells might have on Waihee stream flow. This is an exaggerated concern in view of the position of the water level in the aquifer with respect to the channel invert of Waihee Stream.

The water table in the North Waihee wells lies at 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level (see attached location map). A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table.

A pump test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa (see map) as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride.

Although each well will be fitted with a 1400 gpm pump (2 mgd) to give a total capacity of 4 mgd, during normal operations only 2 mgd will be pumped, and annually the
Date: February 16, 1993

To: Ed Sakoda
Dept. of Land and Natural Resources

From: Michael T. Munekiyo

Fax No.: 587-0219

No. of Pages including Cover Letter: 4

Subject: C. Brewer Properties, Inc., North Waihee Wells No. 1 and 2

Comments: Ed, per our telephone conversation this morning, attached is John Mink's letter response regarding the effects of the North Waihee Wells on Waihee Stream flows. Please call me after you have had a chance to review to discuss placing this matter back on the Commission's agenda. Thank you.

cc: David W. Blane (242-7068)

If you have any problems or do not receive the entire fax, kindly call me at 244-2015.
FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: Bill Meyer

Company: USGS

From: Ed Sakoda

Date: 2/22/93

Time: 12:13 pm

Message: For your info & comments. Pump installation permits for Wahee Well #2 tentatively scheduled for March 17, 1993 at Commission meeting.

Total number of pages (including Transmittal Page): 4

If you do not receive all of the pages legibly, please call back: (808) 587-0225

Sending Facsimile Number: (808) ___ ___ ___
Receiving Facsimile Number: (808) 541-3611

TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE) WAS SENT

** COUNT **

# 4

*** SEND ***

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<th>COMMENT</th>
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<td>12:58PM</td>
<td>3:35'</td>
<td>4</td>
</tr>
</tbody>
</table>

TOTAL 0:03'35" 4

XEROX TELECOPIER 7020
TO: Mr. Ed Sakoda  
Department of Land and Natural Resources  
Water Resources Management  
P. O. Box 621  
Honolulu, HI 96809

SUBJECT: C. Brewer Properties, Inc., Application for Pump Installation Permit, North Waihee Wells 1 & 2, Waihee, Maui

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2/4/93</td>
<td>Check #2221 in the amount of $25.00 for permit fee</td>
</tr>
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</table>

   () For approval   () For necessary action
   () For your use   () For review and comment
   () As requested   () For your signature
   () Returned for corrections   () Returning
   () For your files

REMARKS: Ed, as we discussed we are enclosing the permit fee to cover the second well.

Signed: Michael T. Munekiyo, A.I.C.P.

Copy to:
MICHAEL T. MUNEKIYO CON LTING, INC.
1623 Wells St. #3
WAILUKU, HI 96793

PAY TO THE ORDER OF: Department of Land and Natural Resources

$25.00

Feb. 4, 1993

First Hawaiian Bank
CBP-N-Waihe Wells
Filing fee-Pump Inst. Permit

Lori T. Munekey

2221
TO: Ed
DATE: 2/6
TIME: 10:08 a.m.

WHILE YOU WERE OUT

Mike Shunkeiko
of (Maui)
Phone: 244-2015

<table>
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<tr>
<th>TELEPHONED</th>
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<tr>
<td>CALLED TO SEE YOU</td>
<td>WILL CALL AGAIN</td>
</tr>
<tr>
<td>WANTS TO SEE YOU</td>
<td>URGENT</td>
</tr>
</tbody>
</table>

Message: Spoke w/Mike on 2/2/23. He will check on status & let back to me.

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

Dear Ms. Loui:

SUBJECT: PUMP INSTALLATION PERMIT APPLICATION
WAIHEE WELLS 1 AND 2
STATE WELL NOS. 5631-02 AND -03
WAIHEE, MAUI

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

1. The application indicates that the subject wells will be for domestic use. If the wells will 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 Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.

2. 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.

3. 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 the wells 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.

4. If the wells are also used for irrigation purposes, adequate measures must be taken to eliminate cross-connections and backflow conditions. The potable and irrigation water systems should be clearly labeled and
physically separated by an air gap or an approved backflow preventer to avoid contaminating the potable water supply.

If you should have any questions, please contact Stuart Yamada of the Safe Drinking Water Branch at [redacted]

Sincerely,

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

SY:la

c: David Blane
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, Maui, HI 96793
Mr. David Blane  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, HI 96793  

Dear Mr. Blane:

We have received your application and filing fee for a permit to install pumps in two wells (Well Nos. 5631-02,03) at Waihee, Maui, (TMK: 3-2-01:4). We are reviewing the application for completeness.

Should you have questions, please call the Commission on Water Resource Management staff at [redacted].

Sincerely,

RAE M. LOUI  
Deputy Director  

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

Dear Ms. Drake:

Well Construction and Pump Installation Permit Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
<thead>
<tr>
<th>Island</th>
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<td>Wahikuli-MAU</td>
<td>5441-01</td>
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<td>Waihee 1&amp;2</td>
<td>5631-02,03</td>
<td>Pump Installation</td>
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Please review the applications 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 Rae M. Loui, Deputy Director, at 587-0214.

Very truly yours,

[Signature]

WILLIAM W. PATY  
DEPUTY
Mr. Clayton H.W. Hee  
Chairman & Trustee At Large  
Office of Hawaiian Affairs  
711 Kapiolani Blvd., Suite 500  
Honolulu, Hawaii 96813-5249

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

Dear Mr. Hee:

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Should you have any questions, please contact Rae M. Loui, Deputy Director, at [contact information removed].

Very truly yours,

[Signature]

WILLIAM W. PATY
DEPUTY
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:

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Please review the applications 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 the Commission on Water Resource Management staff at [ REDACTED ]

Sincerely,

[ SIGNED ]

RAE M. LOUI  
Deputy Director

JZ:ky  
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 Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
<thead>
<tr>
<th>Island</th>
<th>Well Name</th>
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Should you have any questions, please contact the Commission on Water Resource Management staff at [contact information redacted].

Sincerely,

RAE M. LOUI
Deputy Director

JZ:ky
Enc.
MEMORANDUM

TO: Don Hibbard, Director
   Historic Preservation Program

FROM: Rae M. Loui, Deputy Director
       Commission on Water Resource Management

SUBJECT: Well Construction and Pump Installation Permit Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
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Should you have any questions, please contact the Commission on Water Resource Management staff at [contact information]

JZ:ky
Enc.
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Please review the applications 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 the Commission on Water Resource Management staff at [redacted]

Sincerely,

RAE M. LOUI
Deputy Director

JZ:ky
Enc.
Mr. Kazu Hayashida  
Manager and Chief Engineer  
Board of Water Supply  
630 South Beretania Street  
Honolulu, Hawaii 96813  

Dear Mr. Hayashida:  

Well Construction and Pump Installation Permit Applications  

Transmitted for your review and comment are copies of the following permit applications:  

<table>
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<tr>
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Please review the applications 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 the Commission on Water Resource Management staff at [contact information]  

Sincerely,  

RAE M. LOUI  
Deputy Director  

JZ:ky  
Enc.
MEMORANDUM

TO: Rae M. Loui, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator

SUBJECT: Historic Preservation Review of Well Construction and Pump Installation Permit Applications
Waihee, Wailuku & Wahikuli, Lahaina, Maui
TMK 3-2-1: 4 & 4-5-14: 14

We believe that both applications will have "no effect" on significant historic sites. The wells in Waihee already exist in farmed land and the proposed well in Wahikuli will be located along the highway, an area that has been previously disturbed. Both areas are not likely to contain historic sites.

Please call Annie Griffin at extension 7-0013 if you have any questions.

AG:aal
TO: Ed Sakoda  
DLNR  
Div. of Water Resources Management  
P. O. Box 621  
Honolulu, HI 96809

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>Application for Pump Installation Permit with attachments</td>
</tr>
<tr>
<td>1</td>
<td>---</td>
<td>$25.00 Filing Fee</td>
</tr>
</tbody>
</table>

( ) For approval  
( ) For your use  
( ) As requested  
( ) Returned for corrections  
( ) For your files  
(x) For necessary action  
( ) For review and comment  
( ) For your signature

REMARKS: The attached materials are submitted for processing. If there are any questions or if additional information is needed, please call me at [REDACTED] Thank you.

Signed: [SIGNED]  
Michael T. Munekiyo, A.I.C.P.

Copy to: [COPY TO]
PAY TO THE ORDER OF Department of Land and Natural Resources

$25.00

***Twenty five and no/100*** DOLLARS

WAILUKU BRANCH
First Hawaiian Bank
P.O. BOX 310
WAILUKU, HAWAII, 96793

CBP-N. Waihee Wells

Arie T. Munekiyo
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 Hydrology/Geology Section for assistance.

1. WELL LOCATION/NAME: North Waihee Wells 1 and 2
   State Well Nos. 5631-02 and 5631-03
   Island Maui
   Address Waihee, Maui, Hawaii
   Tax Map Key 3-2-014
   (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 C. Brewer Properties, Inc.
   Contact Person David Blane
   Address P. O. Box 1437
   Wailuku, HI 96793
   Ph.

   (b) LANDOWNER:
   Firm Name Wailuku Agribusiness Company, Inc.
   Contact Person Stephen W. Knox
   Address P. O. Box 520
   Wailuku, HI 96793
   Ph.

3. PROPOSED CONTRACTOR:
   Name Not available. Project to be bid following receipt of permit.
   Contractor’s License No.
   Address
   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.)
   □ Industrial
   □ Domestic (individual, noncommercial water sys.)
   □ Irrigation (specify)
   □ Military
   □ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL: 4.0 Million gallons per day Total (2.0 MGD per well)

7. PROPOSED PUMP INFORMATION:
   Pump Type: □ Vertical Turbine
   □ Submersible
   □ Centrifugal
   Motor: □ Diesel
   □ Gas
   □ Electric, at a rated horsepower of 150
   Rated Pump Capacity: Gallons per minute 1400

Well Owner (print) C. Brewer Properties, Inc.
Signature David W. Blane
Date September 16, 1992

Landowner (print) Wailuku Agribusiness Co., Inc.
Signature Stephen W. Knox
Date September 16, 1992

For Official Use Only:
Field Checked By __________________________
Date __________________________
Latitude __________________________
Longitude __________________________
Hydrologic Unit __________________________
State Well No. __________________________
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Cement Grout: 200 ft.

Hole Diameter: 20 in.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Ground Elevation: 283 ft., msl*

Solid Casing: ASTM Designation A-242 USS Cor-ten, Kaiser
Material ____________ Steel Kaisaloy ____________
Length _________ 289 ft.
Diameter _________ 16 in.
Wall thickness _________ 0.3125 in.

Casing: □ Perforated □ Screen
Material ____________ Steel Kaisaloy ____________
Length _________ 20 ft.
Diameter _________ 16 in.
Wall thickness _________ 0.25 in.
Openings _________ 100 sq. in./L.F.

Open Hole:
Length _________ 79
Diameter _________ 15 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.
APPLICATION FOR: ☐ Well Construction or ☐ Pump Installation PERMIT

COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
Division of Water Resource Management

Instructions: Please print or type and send completed application with attachments to the Div. of Water Resource Management, c/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. If necessary, phone Hydrology/Geology Section for assistance.

1. WELL LOCATION/NAME: North Waihee Wells 1 and 2
   State Well Nos. 5631-02 and 5631-03
   Island Maui
   Address Waihee, Maui, Hawaii
   Tax Map Key 3-2-O1-4
   (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 C. Brewer Properties, Inc.
   Contact Person David Blane
   Address P. O. Box 1437
   Wailuku, HI 96793
   Ph: _______

   (b) LANDOWNER:
   Firm Name Wailuku Agribusiness Company, Inc.
   Contact Person Stephen W. Knox
   Address P. O. Box 520
   Wailuku, HI 96793
   Ph: _______

3. PROPOSED CONTRACTOR:
   Name bid following receipt of permit.
   Contractor's License No. _______
   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)

6. PROPOSED AMOUNT OF WITHDRAWAL: 4.0 Million gallons per day
   Total (2.0 MGD per well)

7. PROPOSED PUMP INFORMATION:
   Pump Type:
   ☐ Vertical Turbine ☐ Submersible ☐ Centrifugal
   Motor:
   ☐ Diesel ☐ Gas ☐ Electric, at a rated horsepower of 150
   Rated Pump Capacity: Gallons per minute 1400

Well Owner (print) C. Brewer Properties, Inc. Landowner (print) Wailuku Agribusiness Co., Inc.
Signature ___________________ ___________________
Date September 16, 1992 Date ___________________

For Official Use Only:
Field Checked By ___________________
Latitude ____________ Hydrologic Unit ____________
Date ___________________ Longtitude ____________ State Well No. ____________
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

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Elevation at top of casing: 284 ft., msl.

Ground Elevation: 283 ft., msl*

Cement Grout: 200 ft.

Solid Casing: ASTM Designation A-242
USS Cor-ten, Kaiser
Material Steel Kaisaley
Length 289 ft.
Diameter 16 in.
Wall thickness 0.3125 in.

Hole Diameter: 20 in.

Casing: □ Perforated □ Screen
USS Cor-ten, Kaiser
Material Steel Kaisaley
Length 20 ft.
Diameter 16 in.
Wall thickness 0.25 in.
Openings 100 sq. in./L.F.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Open Hole:
Length 79
Diameter 15 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.
Dr. David Henderson Brown, M.D.
RR#1 Box 138
Wailuku, HI 96793

Dear Dr. Brown:

**Waihee Valley Wells 1 & 2 (Well Nos. 5631-02 & 03)**

Your letter indicates that you are looking for a way to require Wailuku Agribusiness to do an environmental assessment and an environmental impact statement before they draw any water from the Waihee Valley Wells.

The administrative rules of the State Water Code require only that a water user obtain a pump installation permit from the Commission on Water Resource Management prior to installing a pump in a well. In designated water management areas, an additional water use permit is required. Presently, there are no water management areas on Maui.

The State Water Code also provides for dispute resolution and citizen complaints for water-related matters whether or not they are in a water management area.

An environmental assessment and environmental impact statement are not required by the Commission on Water Resource Management prior to the owner or applicant using water from the Waihee Valley Wells. However, they must obtain a pump installation permit from the Commission. If there are any disputes or complaints about the issuance of such a permit, the Commission will hear them and act accordingly.

Call Ed Sakoda at [-number-redacted] if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

- Elevation at top of casing: 284 ft., msl
- Cement Grout: 200 ft.
- Hole Diameter: 20 in.
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  - Length: 289 ft.
  - Diameter: 16 in.
  - Wall thickness: 0.3125 in.
- Casing: Perforated
  - Material: USS Cor-ten, Kaiser
  - Length: 20 ft.
  - Diameter: 16 in.
  - Wall thickness: 0.25 in.
  - Openings: 100 sq. in./L.F.
- Open Hole:
  - Length: 79
  - Diameter: 15 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.
June 13, 1990

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

Gentlemen:

Re: PUMP INSTALLATION PERMITS

Pursuant to your letter of May 30, 1990, we are submitting applications for pump installation permits for the following projects:

5. Kapalua Well, Pump Installation. 0801-03

Kualapuu, Na`uka

Additional information requested are as follows:

1. Wai`iu Wells "A" and "B" both have 40 horsepower motors and have capacities of 350 gpm.

2. Waihee Wells #1, #2, and #3 all flow through the same meter.

If any additional information is required, please contact us.

Sincerely,

Vince G. Bagoyo, Jr.
Director

ab
Enclosures
North Waihee Wells
Pump Test Protocol

John F. Mink
April 4, 1989

The pump rate will be held constant at 2000 gpm over a continuous period of 96 hours. The continuous rate may be prolonged another 24 hours at the discretion of the test supervisor.

In the Waihee-Kahakuloa sector water level measurements will be taken in the pumping well, the other North Waihee well, the Kanoa boring and the Wailena well. In the Waihee-Waiehu sector, measurements will be taken in Test Hole A-1. The unpumped North Waihee well is outfitted with a continuous water level recorder and in the Kanoa boring a bubbler will be installed. The Wailena well and A-1 are open. Manual measurements will be made with an insulated copper wire equipped with an electrode, or a steel tape.

Static water level measurements by steel tape or wire will be taken as follows.

1. Both North Waihee wells and the Kanoa boring.
   a. Three days before the start of the test in the A.M.
   b. One day before the start, also A.M.
   c. 30 minutes before the start.

2. Wailena well.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

3. Test Hole A-1.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

After the test is started, water level measurements will be taken as follows.

1. Pumping North Waihee well (manual measurements preferred; airline if manual not possible).
   a. 1 reading per minute for 5 minutes.
   b. 1 reading per 5 minutes for 25 minutes.
   c. 1 reading per 10 minutes for 60 minutes.
   d. 1 reading every hour thereafter.
2. Unpumped North Waihee well. Drawdowns will be traced on the continuous recorder, but manual measurements should be made as follows to check the reliability of the recorder.
   a. At 10 minutes
   b. At 30 minutes.
   c. Every hour thereafter.

3. Kanoa boring. Drawdowns will be determined by the bubbler arrangement but need to be checked manually. Recognizable drawdown of about 0.1 feet will not occur until 48 hours after the start of the test if the aquifer is unconfined and not narrowly bounded. If the aquifer is confined, drawdown will be measurable sooner. The sequence of readings should be:
   a. At 10 minutes.
   b. At 30 minutes.
   c. Every hour thereafter.

4. Wailena well. The Wailena well is so distant from North Waihee that drawdown of 0.1 feet and more isn’t likely to occur unless the aquifer is confined. Nevertheless, manual measurements should be made as follows.
   a. At 6 hours.
   b. At 24 hours.
   c. at 30 hours.
   d. At 48 hours.
   e. At 54 hours.
   f. At 72 hours.
   g. At 78 hours.
   h. At 96 hours.

   If a response is noted, the frequency of measurements will be increased as practicable.

5. Test Hole A-1. Same schedule as the Wailena well.

   Recoveries will be measured after the pump is turned off. Recovery measurements at the pumped well, the unpumped North Waihee well and the Kanoa boring will follow the same schedule as the drawdown measurements over a period of 12 hours. Thereafter single measurements will be made in the A.M. for the following 5 days. Recovery measurements will be made at Wailena and A-1 only if these wells experienced measurable drawdown. The schedule for such measurements will be drawn up before the end of the test.
Memo To: Joint Venture
From: John F. Mink and Norman Saito Engineering
Re: Location of new well sites in aquifer north of Waihee Valley
Date: July 17, 1989

The aquifer starting at Waihee Valley and extending northward toward Makamakaole is capable of providing approximately 4 mgd on a sustained basis. To meet maximum demands pumpage can be greater temporarily, but over the long term the average draft should be restricted to 4 mgd. This is the sustainable yield that has been estimated from analysis of the successful pumping test conducted recently on one of the North Waihee wells.

The high groundwater head in the aquifer will allow withdrawal of potable water employing relatively high capacity pumps. Drawdowns during the test were modest and recovery was rapid. Pumps having a capacity of 2 mgd (1400 gpm) each are recommended for the existing two North Waihee wells and the proposed two new wells between Waihee and Kupaa Gulch.

Sites for the new wells are plotted on the accompanying map. Three sites have been selected, but only two new wells are recommended at this time. The remaining site should be reserved for a future well in the event the sustainable yield of the aquifer proves to be greater than the estimate of 4 mgd. The first new well should be drilled at Site 2, and the next at Site 3. Site 1 is the reserve location.
Site 2 is close by the Kanoa test boring where an unnamed gulch becomes too narrow to allow uncomplicated land development. The new well can be drilled within 150 feet of the test boring at an elevation of about 300 feet. The boring will be an important monitor to track behavior of the aquifer. The site is 2000 feet north of the North Waihee wells. An access road already exists.

Site 3, where the second new well should be drilled, is on the south bank of Kupaa Gulch where it is crossed by Kahekili Highway. The usable space is small but adequate for drilling operations and construction of a pumping station. Clearing and leveling will be required. Otherwise, north of Site 2 the terrain is difficult and elevation quickly rises above 400 feet. Elevation at the site is about 350 feet; distance north of Site 2 is 1000 feet.

The reserve location, Site 1, is 500 feet south of Site 2 and 1500 feet northeast of the North Waihee wells at elevation 300 to 350 feet. The site is on the slope forming the head of an attractive small valley.

Although four wells, each fitted with a 2 mgd pump, are proposed for the reach between Waihee valley and Kupaa Gulch, on the average only 4 mgd will be pumped. The total capacity of 8 mgd can be exercised during periods of unusual demand, but on an annual basis pumpage should be equivalent to 4 mgd.

The average of 4 mgd should not be taken from the two North Waihee wells alone. One of these wells should act as a standby except during the highest demand periods.
**WAILENA WELL**

**ELEVATION = 608.23**

**(AT TOP OF PIPE)**

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<th>DATE</th>
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<th>COMMENTS</th>
</tr>
</thead>
<tbody>
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<td>x</td>
<td>Poor reading - chloride content 87.5 mg/l</td>
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<td>03/01/89</td>
<td>6.63</td>
<td>Good results; 3:00 p.m. - NaCl 87.5 mg/l</td>
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<td>03/08/89</td>
<td>6.67</td>
<td>4:30 p.m.; river nearby flowing</td>
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<td>03/15/89</td>
<td>6.44</td>
<td>4:00 p.m.; river not flowing</td>
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<tr>
<td>03/22/89</td>
<td>6.16</td>
<td>4:00 p.m.; river not flowing</td>
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<tr>
<td>04/03/89</td>
<td>6.61</td>
<td>10:15 a.m.; no water in river</td>
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<td>04/11/89</td>
<td>6.54</td>
<td>1:30 a.m.; 150 mg/l - river running strong</td>
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<tr>
<td>04/17/89</td>
<td>6.20</td>
<td>9:00 a.m.; from chart</td>
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</table>
PUMP TEST AT WELL A-1

ELEVATION = 248.11
(Water Level In Feet)

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<th>5/17/89</th>
<th>5/18/89</th>
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<td>10:00 a.m.</td>
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<td>18.05</td>
<td>18.06</td>
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<td>18.05</td>
<td>17.99</td>
<td>18.09</td>
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</table>
WELL A-1

Elevation: 248.11 feet  
(Water Level in Feet)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/15/89</td>
<td>8:00 am</td>
<td>18.17</td>
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<tr>
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<td>10:40 am</td>
<td>18.04</td>
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<td>5/16/89</td>
<td>8:00 am</td>
<td>18.01</td>
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<td>5:10 pm</td>
<td>18.05</td>
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<tr>
<td>5/17/89</td>
<td>8:30 am</td>
<td>17.96</td>
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<tr>
<td></td>
<td>5:00 pm</td>
<td>17.99</td>
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<tr>
<td>5/18/89</td>
<td>8:00 am</td>
<td>17.88</td>
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<td>5:00 pm</td>
<td>18.09</td>
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<tr>
<td>5/19/89</td>
<td>8:00 am</td>
<td>18.08</td>
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<td>5:10 pm</td>
<td>18.05</td>
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<tr>
<td>5/20/89</td>
<td>8:40 am</td>
<td>18.08</td>
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</tbody>
</table>

All measurements taken by steel tape.

The A-1 well is located far enough away from the test well, North Waihee #2, that any effect on A-1 would be doubtful.

A final reading of Well A-1 was taken on Monday, May 22, 1989 at 8:00 a.m. with a water level elevation of 18.08 feet above sea level.
# TEST WELL DATA
## NORTH WAIHEE WELL #2

<table>
<thead>
<tr>
<th>Description</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>Test well elevation at top of casing</td>
<td>281.98</td>
</tr>
<tr>
<td>Measure point at base of gearing</td>
<td>282.73</td>
</tr>
<tr>
<td>Pump location (-300 feet from M.P.)</td>
<td>-17.27</td>
</tr>
<tr>
<td>Air line location (top of bowl assembly)</td>
<td>-6.27</td>
</tr>
<tr>
<td>Pressure gauge reading at beginning of test (to 1/10)</td>
<td>17.5</td>
</tr>
</tbody>
</table>

Distance from North Waihee Well #1 to North Waihee Well #2: 176 feet

Chloride readings were taken twice daily. All were between 37.5 mg/l and 50 mg/l. NaCl measured with the HACH chloride test kit, Model 7-P, using low range measure 0-250 mg/l.
**PUMP TEST AT**
**NORTH WAIHEE WELL NO. 2**

*MP Elevation = 282.73 (Bottom of Housing)*

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>PUMPING RATES × 100</th>
<th>WATER LEVEL (FT.)</th>
<th>WATER LEVEL (FT.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon. 5/15</td>
<td>Noon</td>
<td>Begin Pump Test</td>
<td>Begin. Level</td>
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<tr>
<td></td>
<td>2:15 p.m.</td>
<td>409651</td>
<td>14.00</td>
<td>7.7</td>
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<td>Tued. 5/16</td>
<td>8:25 a.m.</td>
<td>436445</td>
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<td>2:05 p.m.</td>
<td>444088</td>
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<td>5:20 p.m.</td>
<td>449715</td>
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<td>Wed. 5/17</td>
<td>8:30 a.m.</td>
<td>472020</td>
<td>12.20</td>
<td>5.9</td>
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<td>Wed. 5/17</td>
<td>12:00 noon</td>
<td>477283</td>
<td>12.50</td>
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<td>Wed. 5/17</td>
<td>3:00 p.m.</td>
<td>481693</td>
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<td>Wed. 5/17</td>
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<td>485400</td>
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<tr>
<td>Thur. 5/18</td>
<td>9:00 a.m.</td>
<td>Increased Pump Rotation</td>
<td>1700 rpm - 1900 rpm</td>
<td>12.20</td>
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<tr>
<td>Thur. 5/18</td>
<td>9:05 a.m.</td>
<td>Increased Pump Rotation</td>
<td>1700 rpm - 1900 rpm</td>
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<td>Thur. 5/18</td>
<td>9:10 a.m.</td>
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<td>Reduced Pump Rotation</td>
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<td>8:00 a.m.</td>
<td>1900 rpm - 1700 rpm</td>
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<td>Fri. 5/19</td>
<td>10:30 a.m.</td>
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<td>Stopped Pump Test</td>
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<td>DATE</td>
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<td>TOTALIZER LEVEL (X'S 100)</td>
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### NORTH WAIHEE WELL NO. 2
### PUMP TEST FIELD DATA
### 5/15/89 TO 5/19/89

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>WATER METER TOTALIZER (X’S 100)</th>
<th>PUMP RATE</th>
<th>RECORDER LEVEL</th>
<th>WATER LEVEL ELEVATION</th>
<th>NaCl (mg/l)</th>
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<td>12.20</td>
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<tr>
<td>5/15/89</td>
<td>9:00 a.m.</td>
<td><em>(8.28 a.m.)</em></td>
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<td>37.5-50 mg/l</td>
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<td>5/15/89</td>
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5/19/89

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<th>RECORDER LEVEL</th>
<th>WATER LEVEL ELEVATION</th>
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<td>Pump Rate</td>
<td>Recorder Level</td>
<td>Water Level</td>
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# PUMP TEST AT
# NORTH WAIHEE WELL NO. 2

MP Elevation = 282.73 (Bottom of Housing)

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<tr>
<th>DATE</th>
<th>PUMPING TIME</th>
<th>RATES X 100</th>
<th>RATE (GPM)</th>
<th>WATER LEVEL (FT.)</th>
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<td>2:15 p.m.</td>
<td>409651</td>
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<td>&gt; 1840 +</td>
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(Increased Pump Rotation 1700 rpm - 1900 rpm)

Flow meter malfunction.

At 6 p.m. 5/16 reduced rpm to 1700. Water level went up to 12.2.

J. F. N. Field notes
5/15/64 Due to hurry = 0.4 mile. \( A(NW^1 \rightarrow NW^2) = 176 \) ft. short,

MP (hp cut coming through) 281.98; +0.75 + misc. = 282.73 ft.

Start test 4:06:19
Pump setting 1200 (-17.27) DMW 272 (6-10-73)
Start test 2 1200 7/6:18 4.3244 1.9400

Water is at 17.19 ft. (below WT). \( A(12.20) = 2.8 \) \( A(12.40) = 3.0 \) \( A = 0.26 \) \( A = 0.08 \) \( A = 0.26 \) \( A = 0.08 \)
<table>
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<th>DATE</th>
<th>TIME</th>
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<th>PUMP RATE</th>
<th>RECORDER LEVEL</th>
<th>WATER LEVEL ELEV.</th>
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Figure 2

NORTH WAIHEE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST

APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)
5/18/89 17:10

Call from El Pemulco -

Bill Moore, meter not reading correctly,

@ 1700 RPM, Q = 2400 gpm

@ 1900 RPM (to which change was made at 5/18/89) Q = 2400 gpm

Advised to return to 1700 RPM. Will calculate flow
by other means.

5/19/89 07:30 Call from El Pemulco:

Bill Moore calculated rate at 2900 gpm when RPM = 2000

i.e. from 5/18 at 1700 RPM to 5/18 1800 (?) at this rate. Cut back to
2400 gpm (1700 RPM). New pump sounds, i.e. pumping shouldn't
operate properly. Confusion caused by malfunction of water meter.
The pump test at North Waihee Well #2 began on Monday, May 15, at noon.

Pumping was to be at a constant rate of 2,400-2,500 gpm for 5 days.

Between 6:00 p.m. on Wednesday, May 17 and 9:00 a.m. on Thursday, May 18 the in-line flow meter malfunctioned. Not knowing this, we increased the pump's rpm to keep up the 2,450 gpm rate.

The pumping was at this increased rate (1,900 rpm) from 9:00 a.m. on Thursday, May 17 to 6:00 p.m. on Thursday, May 17. At that time the pumping was reduced to approximately 2,450 gpm by reducing the pump rotation to the original 1,700 rpm. The remainder of the test was run at this rate.

Pumping at the test well was stopped at 12:00 p.m. (noon) on Friday, May 18, 1989.

Recovery was almost immediate and by 2:00 p.m. the pressure gauge at the test well read 17.2 feet. By 5:00 p.m., Friday it was back to the original 17.5 feet on the gauge.

On Saturday at 8:00 a.m. the water level at the test well was measured by tape to be 11.25 feet above sea level. At this time the gauge was at 17.5 feet.

With the air line at -6.27 feet and water level at 11.25 feet, the gauge reading should be at 17.52 feet. The gauge reading correlates well with these results.
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**KANOA WELL**

**Elevation:** 305.94 feet  
*(Bubbler System)*

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*(noon-begin test)*

*Measured by steel tape.

On Monday, May 22, 1989, at 8:30 a.m. a final measure was taken by tape to read 12.35 feet.
**KANOA WELL**

Elevation = 305.94
(Bubbler System)

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<td></td>
<td>12.10</td>
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<tr>
<td>8:00 p.m.</td>
<td>12.31 (8:30)</td>
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<tr>
<td>9:00 p.m.</td>
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<tr>
<td>10:00 p.m.</td>
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<tr>
<td>11:00 p.m.</td>
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<tr>
<td>12:00 a.m.</td>
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</tr>
</tbody>
</table>

**Notes:**

5/15/89 \( h_0 = 12.42 \text{ (tape) } + 0.930 \) hour by 14:30

5/16/89 \( h = 11.98 \text{ (tape) } \)

12:0 (chart) \( \Delta = 12.42 - 11.98 = 0.44 \)

**CL** 1345 \( A = \frac{3.2}{0.2} \) Benny Mining

\( \Delta = 12.14 \)
<table>
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<tr>
<th>Date</th>
<th>Time</th>
<th>Elevation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
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<td>11:34</td>
<td>11.74</td>
<td></td>
</tr>
<tr>
<td>12/9/89</td>
<td>10:54</td>
<td>10.54</td>
<td></td>
</tr>
<tr>
<td>12/9/89</td>
<td>11:30</td>
<td>11.90</td>
<td></td>
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<tr>
<td>12/9/89</td>
<td>11:30</td>
<td>11.96</td>
<td></td>
</tr>
<tr>
<td>11/23/89</td>
<td>11:09</td>
<td>11.09</td>
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<tr>
<td>11/27/89</td>
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<td>11.55</td>
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<tr>
<td>2/3/89</td>
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</tr>
<tr>
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<td>11:59</td>
<td>11.59</td>
<td></td>
</tr>
<tr>
<td>2/17/89</td>
<td>11:57</td>
<td>11.57</td>
<td></td>
</tr>
<tr>
<td>2/21/89</td>
<td>11:50</td>
<td>11.50</td>
<td>Cl cont. 30 mg/l</td>
</tr>
<tr>
<td>3/1/89</td>
<td>11:52</td>
<td>11.52</td>
<td>Cl cont. 38 mg/l</td>
</tr>
<tr>
<td>3/15/89</td>
<td>11:66</td>
<td>11.66</td>
<td></td>
</tr>
<tr>
<td>3/15/89</td>
<td>11:60</td>
<td>11.60</td>
<td></td>
</tr>
<tr>
<td>3/22/89</td>
<td>11:60</td>
<td>11.60</td>
<td></td>
</tr>
<tr>
<td>4/1/89</td>
<td>11:48</td>
<td>11.48</td>
<td></td>
</tr>
<tr>
<td>4/10/89</td>
<td>11:54</td>
<td>11.54</td>
<td>Cl cont. 38 mg/l</td>
</tr>
<tr>
<td>5/1/89</td>
<td>12:34</td>
<td>12.34</td>
<td>11:30 am</td>
</tr>
<tr>
<td>5/6/89</td>
<td>12:31</td>
<td>12.31</td>
<td></td>
</tr>
<tr>
<td>5/17/89</td>
<td>12:05</td>
<td>12.05</td>
<td>9 am (Chlor reading)</td>
</tr>
</tbody>
</table>
NORTH WAIHEE WELLS

Site Description
Pump Test Results

JOHN F. MINK

Submitted to:
Hawaiiana Investment Co., Inc.
October 20, 1981
NORTH WAIHEE WELLS

Summary

The basal aquifer extending southward from Waihee Stream to Waikapu Stream, which is now referred to as the Waiehu aquifer, is being exploited nearly to the limit of its sustainable yield, and an additional significant contribution from it to Central Maui's water supply is not reasonable to expect. To develop more water different sources must be explored, and to this purpose an exploration-production well field was proposed in the region north of Waihee Stream where the aquifer was thought to be either separate or only poorly connected to the aquifer south of the valley. A separate aquifer would provide a new exploitable source of water supply, while proof of connection with the Waiehu aquifer would extend the limits of that aquifer and increase the overall allowable sustainable yield.

Two wells have now been drilled on the north side of Waihee Valley by Roscoe Moss Co. for Hawaiiana Investment Co., Inc. (See Figure 1 for location). Both have been successfully tested and have proved that a substantial, highly transmissive aquifer extends toward Kohakuloa from Waihee. A sustained rate of about 1,700 gpm over 48 hours was pumped from each well with very small drawdown and with no change in
the low initial salinity (15 mg/l chloride). Interpretation of the initial conditions and the pump test results indicate that the aquifer, to be referred to as the North Waihee aquifer, is essentially independent of the Waiehu basal aquifer. If a hydraulic connection exists, it is very weak.

The two wells can be safely fitted with 1,750 gpm pumps. The North Waihee aquifer is large enough to support more production than can be provided by the completed well field. The site of the next well is proposed in the small valley about 1,600 feet northward at a ground elevation of 400 to 500 feet.

**North Waihee Aquifer**

The region north of Waihee Stream toward Kohakulua over a width of about two miles is probably underlain by a basal aquifer, perhaps modified by stray dikes, in the Wailuku volcanic series, a highly permeable basaltic formation. Dense trachytic flows of the Honolua series overlie the Wailuku series except in the deeper valleys where erosion has exposed the basaltic rocks. The trachytes do not constitute a principal aquifer and should be avoided if possible because they are difficult to drill through.

The North Waihee wells were located to avoid the trachyte but as a result had to penetrate about 100 feet of
talus and alluvium before striking the basalt. Drilling logs indicate that bedrocks of the Wailuku series was encountered 70 to 100 feet below ground surface. The deep alluvial fill of Waihee Valley was successfully avoided. Dikes were not observed in the vicinity of the well field but are known to occur about 3,500 feet upstream, approximately coincident with the forest reserve line. The rift zone is close enough to the wells that local geohydrologic conditions may be dike-basal rather than strictly basal.

The Wells

The North Waihee wells lie 2,150 feet inland of Kahekili Highway about 250 feet from the stream channel. Ground elevation is 280 to 283 feet. The wells are fitted with 16 inch casing and were drilled to a depth of 105 feet below sea level. The casing is perforated from five to 25 feet below sea level, and the remainder of the bore is open (uncased). The wells are on a line parallel to the stream, 178\(\frac{3}{4}\) feet apart. The most inland well is called North Waihee 1, the other is called North Waihee 2. They are identical in design and nearly so in performance. The first well was completed in March of 1981 and tested in April and June. The second well was completed in July and tested in August.
Step Drawdown

Step drawdown tests were conducted on North Waihee 1 on April 15 and June 3 and on North Waihee 2 on August 3. Initial head was nine to ten feet at each well and initial chloride about 15 mg/l. Behavior of the wells was similar during pumping; in each drawdown was small even at high rates of draft and recovery was instantaneous. The specific capacity of Well 1 was 450 gpm/ft. drawdown at 1,765 gpm, and of Well 2 550 gpm/ft. drawdown at 1,715 gpm. Tables 1 and 2 list the step drawdown results and Figure 2 shows a plot of $s = f(Q)$ for each.
TABLE 1
NORTH WAIHEE WELL 1
Step Drawdown Pump Test
April 15, 1981

Ground elev. 283 ft.; Bowls set 309.5 ft.; Airline at 310 ft.; uncased.

<table>
<thead>
<tr>
<th>Time</th>
<th>Min.</th>
<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:14</td>
<td>0</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
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<tr>
<td>08:16</td>
<td>2</td>
<td>17.1</td>
<td>.92</td>
<td>577</td>
</tr>
<tr>
<td>08:19</td>
<td>5</td>
<td>17.0</td>
<td>1.16</td>
<td>588</td>
</tr>
<tr>
<td>08:26</td>
<td>12</td>
<td>17.0</td>
<td>1.16</td>
<td>732</td>
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<td>08:38</td>
<td>24</td>
<td>17.0</td>
<td>1.16</td>
<td>750</td>
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<tr>
<td>08:43</td>
<td>29</td>
<td>17.0</td>
<td>1.16</td>
<td>769</td>
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<tr>
<td>08:48</td>
<td>34</td>
<td>17.0</td>
<td>1.16</td>
<td>769</td>
</tr>
<tr>
<td>08:50</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:52</td>
<td>38</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:00</td>
<td>46</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:43</td>
<td>89</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:44</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:45</td>
<td>91</td>
<td>16.5</td>
<td>2.31</td>
<td>1364</td>
</tr>
<tr>
<td>09:48</td>
<td>94</td>
<td>16.5</td>
<td>2.31</td>
<td>1333</td>
</tr>
<tr>
<td>10:13</td>
<td>119</td>
<td>16.4</td>
<td>2.54</td>
<td>1333</td>
</tr>
<tr>
<td>10:38</td>
<td>144</td>
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<td>10:43</td>
<td>149</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
<tr>
<td>10:51</td>
<td>157</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
<tr>
<td>11:12</td>
<td>178</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
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<td>11:17</td>
<td>183</td>
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</tr>
<tr>
<td>11:18</td>
<td>184</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
TABLE 2
NORTH WAIHEE WELL 2
Step Drawdown Test
August 3, 1981

Ground elevation 282.21 feet; airline set 304 feet; cased.

<table>
<thead>
<tr>
<th>Time</th>
<th>Min.</th>
<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
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<td>0</td>
<td>13.75</td>
<td>0</td>
<td>0</td>
<td>Start pump</td>
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<tr>
<td>08:20</td>
<td>5</td>
<td>13.25</td>
<td>1.16</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>08:23</td>
<td>8</td>
<td>13.25</td>
<td>1.16</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>08:35</td>
<td>20</td>
<td>13.50</td>
<td>0.58</td>
<td>346</td>
<td></td>
</tr>
<tr>
<td>08:38</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td>Increase rate</td>
</tr>
<tr>
<td>08:39</td>
<td>24</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td></td>
</tr>
<tr>
<td>08:41</td>
<td>26</td>
<td></td>
<td></td>
<td>1,071</td>
<td></td>
</tr>
<tr>
<td>08:47</td>
<td>32</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td></td>
</tr>
<tr>
<td>09:00</td>
<td>45</td>
<td>13.0</td>
<td>1.73</td>
<td>1,071</td>
<td></td>
</tr>
<tr>
<td>09:13</td>
<td>58</td>
<td>13.0</td>
<td>1.73</td>
<td>1,132</td>
<td></td>
</tr>
<tr>
<td>09:39</td>
<td>84</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td></td>
</tr>
<tr>
<td>09:40</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td>Increase rate</td>
</tr>
<tr>
<td>09:48</td>
<td>93</td>
<td></td>
<td></td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>09:57</td>
<td>102</td>
<td>12.6</td>
<td>2.66</td>
<td>1,539</td>
<td></td>
</tr>
<tr>
<td>10:10</td>
<td>115</td>
<td>12.6</td>
<td>2.66</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>10:15</td>
<td>120</td>
<td>12.5</td>
<td>2.89</td>
<td>1,715</td>
<td>Increase rate</td>
</tr>
<tr>
<td>10:38</td>
<td>143</td>
<td>12.4</td>
<td>3.12</td>
<td>1,715</td>
<td></td>
</tr>
<tr>
<td>10:43</td>
<td>148</td>
<td></td>
<td></td>
<td></td>
<td>Stop. Instant recovery.</td>
</tr>
</tbody>
</table>
Sustained Pump Test

Both wells were subjected to 48 hours of continuous pumping at a constant rate. The first well was tested before the second was drilled so that drawdown measurements were restricted to the pumping well. While Well 2 was being pumped, Well 1 was available for use as an observation well. Sustained pumping at Well 1 at 1,715 gpm for 48 hours was successful on the first try and the results indicated the aquifer to be highly transmissive. At Well 2, two attempts to sustain a constant rate for 48 hours failed, the first after 30 hours and the other after 26 hours, but the third attempt succeeded at a rate of 1,680 gpm. During all three attempts, drawdown measurements were taken at Well 1, a distance of 178.5 feet away. With these drawdown observation it was possible to compute the transmissivity and specific yield of the aquifer. Drawdown at Well 1 caused by draft at Well 2 and a summary of aquifer characteristics is given in Figure 3. The aquifer was proved to be extensive and highly transmissive, conditions needed for successful exploitation.

Drawdown at pumping wells during sustained tests give well efficiency but generally are not adaptable for calculating aquifer characteristics. The North Waihee wells are very efficient, having specific capacities in excess of
500 gpm/ft. drawdown. During the sustained test at Well 1 drawdown stabilized at 2.54 feet at 1,715 gpm and at Well 2 it stabilized at 3.0 feet at 1,680 gpm.

The drawdowns induced at Well 1 by constant pumping at Well 2 were carefully analyzed to determine, in addition to the aquifer constants, the following:

1. whether the aquifer is effectively closed by impermeable boundaries at short to moderate distances from the well field
2. whether the aquifer has unimpered hydraulic connection with the Waiehu aquifer
3. whether the aquifer is extensive and effectively unconnected, or poorly connected, with the Waiehu aquifer.

The values for transmissivity and specific yield (effective porosity) were computed by employing the short form (Jacob's method) of the non-equilibrium well hydraulic formula. The short form is permissible because the drawdown data at Well 1 for sustained Test 1 at Well 2 includes early and late measurements that fall on a continuous curve expressed by:

\[ s = \frac{Q W(u)}{4\pi T} \]

in which \( s \) is drawdown, \( Q \) is constant pumping rate, \( T \) is transmissivity, and \( W(u) \) is the solution for the series
that expands the variable, \( u = \frac{r^2 S}{4\pi t} \), in which 

\( r \) is distance between the pumping and observation wells, \( S \) is specific yield, and \( t \) is time. Units are in feet and days. Proof that the \( s = f(u) \) curve is continuous was demonstrated by assuming that the straight line portion of the plot (after about three hours) fit the Jacob criteria, then employing the computed \( S \) and \( T \) values in calculating the ratio, \( s/W(u) \), for the early part of the curve to check its values against the fixed value of \( Q/4\pi T \). The accord is good and thus it is permissible to conclude that all of the drawdowns fall along a continuous curve. Table 3 below summarizes the computations.

TABLE 3

Aquifer Characteristics by Jacob Method
Continuity of \( s = f(u) \)

\( (T = 320,000 \text{ ft}^2/\text{d}; S = .284; r = 178 \text{ ft.}; Q/4\pi T = .0737) \)

<table>
<thead>
<tr>
<th>Time</th>
<th>( u )</th>
<th>( W(u) )</th>
<th>( s(\text{ft.}) )</th>
<th>( s/W(u) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0417</td>
<td>.1686</td>
<td>1.3648</td>
<td>.11</td>
<td>.0805</td>
</tr>
<tr>
<td>.0625</td>
<td>.1125</td>
<td>1.7172</td>
<td>.12</td>
<td>.0699</td>
</tr>
<tr>
<td>.0833</td>
<td>.0844</td>
<td>1.9777</td>
<td>.14</td>
<td>.0698</td>
</tr>
<tr>
<td>.1042</td>
<td>.0675</td>
<td>2.1853</td>
<td>.16</td>
<td>.0709</td>
</tr>
<tr>
<td>.1250</td>
<td>.0562</td>
<td>2.3564</td>
<td>.17</td>
<td>.0717</td>
</tr>
<tr>
<td>.50</td>
<td>.0141</td>
<td>3.7012</td>
<td>.26</td>
<td>.0702</td>
</tr>
<tr>
<td>1.0</td>
<td>.0070</td>
<td>4.3874</td>
<td>.32</td>
<td>.0738</td>
</tr>
<tr>
<td>2.0</td>
<td>.0035</td>
<td>5.0770</td>
<td>.38</td>
<td>.0739</td>
</tr>
</tbody>
</table>
The aquifer parameters are comparable to those of the best aquifers in Hawaii. The transmissivity is about 320,000 ft$^2$/day, which implies a hydraulic conductivity of 2,000 to 3,000 ft./day, based on partial penetration of 100 feet in the saturated aquifer, and an average specific yield of at least .20.

Continuity of the early and later drawdown data implies that the aquifer is extensive. On the other hand, hydraulic connection between it and the Waiehu aquifer is, at best, very weak. The nearest test hole in the Waiehu aquifer is A-1, which lies 5,100 feet south of the North Waihe'e wells. Head in this test hole quickly responds to pumping by the Mokuhau and Waiehu wells in the Waiehu aquifer, and the speed of the response indicates that head changes are transmitted under confined aquifer conditions. No such response showed up on the recorder chart at A-1 as a result of the pumping at North Waihe'e. If continuous confined conditions existed between North Waihe'e and A-1, a drawdown of 0.1 feet would have been recorded at A-1 within 70 minutes of the start of each pump test.

For unconfined conditions between the two sites almost ten days would be required for transmittal of 0.1 feet of drawdown. The record at A-1 is too responsive to pumping starts and stops at the Mokuhau and Waiehu wells to unambiguously display any long term effects from North Waihe'e
if they occurred. Following is a summary of behavior at A-1 during the North Waihee tests.

TEST 4

Head Changes at A-1
Pump Tests at North Waihee

<table>
<thead>
<tr>
<th>Date</th>
<th>Time of Test</th>
<th>Type of Test</th>
<th>Rate (GPM)</th>
<th>Head-changes at A-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/15/81</td>
<td>08:14 - 11:18</td>
<td>Step</td>
<td>1765</td>
<td>No change.</td>
</tr>
<tr>
<td>6/3 - 5/81</td>
<td>07:30 - 07:30</td>
<td>Sustained</td>
<td>1715</td>
<td>No significant change during test; slight gain in head 6/3-6/10; abrupt drawdown of 0.1 ft. on 6/12, probably caused by Mokuhau-Waiehu pump start up. Gradual increase of .15 ft. by 6/18. Head at A-1 20.5 to 21.0 ft.</td>
</tr>
<tr>
<td>8/3/81</td>
<td>08:15 - 10:43</td>
<td>Step</td>
<td>1715</td>
<td>No change.</td>
</tr>
<tr>
<td>8/3 - 4/81</td>
<td>13:00 - 19:00</td>
<td>Sustained</td>
<td>1540</td>
<td>Head at A-1 about 15.5 ft. Variable small head changes, up and down. Same head at end of period as at start.</td>
</tr>
<tr>
<td>8/10 - 11/81</td>
<td>09:00 - 11:00</td>
<td>Sustained</td>
<td>1580</td>
<td></td>
</tr>
<tr>
<td>8/12 - 14/81</td>
<td>15:00 - 15:00</td>
<td>Sustained</td>
<td>1680</td>
<td></td>
</tr>
</tbody>
</table>

A more telling argument against free hydraulic connection between North Waihee and Waiehu is the large difference in head between A-1 and the new wells. At A-1 the head is about 20 feet when Mokuhau and Waiehu are not pumping,
or 15 to 16 feet when they are, while at North Waihee the head is nine to ten feet. The hydraulic gradient in the Waiehu aquifer is 1 ft./mile, but between A-1 and North Waihee it is five to ten feet per mile, an impossible gradient if free connection prevailed. Whatever connection exists is highly damped by the alluvial fill and weathered rock in Waihee Valley. For planning purposes it is reasonable to consider the North Waihee aquifer to be effectively separate from the Waiehu aquifer.

**Water Quality**

Analyses by Brewer Analytical Laboratories of water collected in April during the pump test at Well 1 and in August at Well 2 showed no change in chloride from 15 mg/l. A more complete analysis for Well 1 is given below.

**TABLE 5**

North Waihee Water Quality

<table>
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<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>pH</td>
<td>7.58</td>
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<tr>
<td>Conductance</td>
<td>272 micromhos</td>
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<tr>
<td>Alkalinity as CaCO₃</td>
<td>108 mg/l</td>
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<tr>
<td>Sodium</td>
<td>9.43 mg/l</td>
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<tr>
<td>Chloride</td>
<td>14.0 mg/l</td>
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<tr>
<td>Nitrate-Nitrogen</td>
<td>2.03 mg/l</td>
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<tr>
<td>Calcium</td>
<td>10.7 mg/l</td>
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<tr>
<td>Magnesium</td>
<td>8.94 mg/l</td>
</tr>
</tbody>
</table>
The quality of the water is excellent for any purpose. Chloride content did not increase during the tests.

Conclusions and Recommendations

The North Waihee aquifer is extensive and potentially very productive. The aquifer consists of Wailuku basalt with hydraulic conductivity of 2,000 to 3,000 ft./day and specific yield of .20. The aquifer is basal, possibly affected by widespread dikes, with a static head of about ten feet. The two wells drilled to date are very efficient, displaying specific capacities in excess of 500 gpm/ft. drawdown at high pumping rates. Water quality is excellent.

The two wells at North Waihee could safely be outfitted with 1,750 gpm pumps to provide a potential field output of five mgd. Northward toward Kohakuloa more water could be developed from the aquifer. When an additional water supply is planned, a well field could be located in the next valley about 0.3 miles north of Waihee Stream at an elevation of 400 to 500 feet (See Figure 1).

JOHN F. MINK
SUSTAINED PUMP TEST
NORTH WAIHEE WELL FIELD, MAUI
WELL 2 PUMPING : WELL 1 OBSERVATION

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<tr>
<th>TEST</th>
<th>DATE</th>
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<td>START</td>
<td>END</td>
<td>GPM</td>
<td>FT²/DAY</td>
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<tr>
<td>1</td>
<td>8/3 (1300)</td>
<td>8/4 (1900)</td>
<td>1540</td>
<td>320,000</td>
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<tr>
<td>2</td>
<td>8/10 (0900)</td>
<td>8/11 (1100)</td>
<td>1580</td>
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<tr>
<td>3</td>
<td>8/12 (1500)</td>
<td>8/14 (1500)</td>
<td>1680</td>
<td>329,000</td>
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NORTH WAIHEE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST
APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)
TO
STATE OF HAWAI'I
DEPT. LAND & NAT'L RESOURCES
Attn: Ed Sakodo
DIV OF WATER & LAND DEVELOPMENT

1-18-82
No. Waihee Wells - Sustained Pump-Test Results.

Attached are copies of the sustained pump test results wells No. 1 & 2, North Waihee, Maui.

[Signature]

HAWEIANA INVESTMENT CO., INC.
2123 KAOU STREET, P.O. BOX 1157
WAILUKU, MAUI, HAWAII 96793

PHONE: [Redacted]
<table>
<thead>
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<th>Airline</th>
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November 4, 1981

Mr. Warren A. Suzuki  
Warren S. Unemori Engineering, Inc.  
Wells Street Professional Center  
2145 Wells Street, Suite 403  
Wailuku, Maui, Hawaii 96793

Dear Mr. Suzuki:

Thank you for sending the location maps for Waihee Valley Wells 1 & 2, State Well Numbers 5631-02 and 5631-03.

We appreciate your cooperation very much.

Very truly yours,

ROBERT T. CHUCK  
Manager-Chief Engineer

ES:ko
October 19, 1981

Mr. Robert T. Chuck
Manager - Chief Engineer
State of Hawaii
Dept. of Land and Natural Resources
Division of Water and Land Development
P. O. Box 373
Honolulu, Hawaii  96809

Dear Mr. Chuck,

Subject: Request for Location of Waihee Valley Wells 1 & 2

As per your request, we are transmitting herewith:

1. Two (2) copies of map showing location of subject wells.
2) One (1) print location map.

If you need any additional information, please feel free to call me.

Mahalo,

Warren A. Suzuki

cc: Dave Wissmar
October 2, 1981

Mr. Warren S. Unemori  
2145 Wells St., Suite 403  
Wailuku, Maui, Hawaii 96793

Dear Mr. Unemori:

Request for Location of Waihee Valley  
Wells 1 & 2

Enclosed herewith is a map of the two Waihee Valley wells project. Please send us a surveyed plot plan of the wells, if available; or accurately mark the location of the wells on the enclosed map and return to our office. Thank you very much for your cooperation.

Very truly yours,

ROBERT T. CHUCK  
Manager-Chief Engineer

RTC:MO:ko  
Encl.
Date of report: Sept. 3, 1981  

**DESCRIPTION**

- **A. OWNER**: Hawaiian Invest.  
- **B. GENERAL LOCATION**: Waimea Valley  
- **C. DRILLING COMPANY**: Roscoe Moss Company  
- **D. TYPE OF RIG**: DRILLING COMPLETED  
- **E. ELEVATION**: msl: Top of drilling platform
- **F. HOLE SIZE**: 20 in. dia. to 320 ft. below drilling platform.  
- **G. CASING INSTALLED**: 16 in. I.D. x 312 in. wall solid section to 290 ft. below drilling platform.  
- **H. ANNULUS**: Grouted  
- **I. PERMANENT PUMP INSTALLATION**:  
  - Pump type, make, serial no.  
  - Motor type, H.P., voltage, r.p.m.  
- **J. INITIAL WATER LEVEL**: 271 ft. below drilling platform, Date of measurement: June 3, 1981  
- **K. INITIAL CHLORIDE**: 25 ppm, total depth of well
- **L. PUMPING TESTS**:  
  - Rate (ppm)  
  - Draw-down (ft.)  
  - Temp. (F)  
- **M. DRILLER'S LOG**:  
  - Depth  
  - Rock Description & Remarks
  - Water Level (ft.)
  - Depth (ft.)
  - Water Level (ft.)
- **N. REMARKS**

**FOR DRILLER'S USE**

INSTRUCTIONS: Send three (3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809.


FOR OFFICIAL USE

Latitude 20° 56' 51"  
Longitude 156° 31' 32"  
Well No. 5631-02
GENTLEMEN:

WE ARE SENDING YOU □ Attached □ Under separate cover via __________________ the following items:

☐ Shop drawings  ☐ Prints  ☐ Plans  ☐ Samples  ☐ Specifications

☐ Copy of letter  ☐ Change order  ☐ __________________

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<td>Drillers Reports for Waihee Valley # 1 and 2</td>
</tr>
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</table>

THESE ARE TRANSMITTED as checked below:

☐ For approval  ☐ Approved as submitted  ☐ Resubmit_____ copies for approval

☐ For your use  ☐ Approved as noted  ☐ Submit_____ copies for distribution

☐ As requested  ☐ Returned for corrections  ☐ Return____ corrected prints

☐ For review and comment  ☐ __________________

☐ FOR BIDS DUE ___________________ 19  ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

COPY TO __________________________

SIGNED: __________________________
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1/22/81 reminder Ed. Submit 1/21/82. Review & comment.还需看EDK yet?
1/22/82 contacted Bruno Suzuki - he will contact Hawaiian Islands and send maps later data.
December 15, 1980

Mr. Robert Chuck
State of Hawaii
Dept. of Water & Land Development
P. O. Box 373
Honolulu, HI 96809

Dear Mr. Chuck,

Subject: Well, Waihee, Maui, within Tax Map Key 3-2-01:1

The Department of Water Supply is requesting a copy of an "as-built" sectional drawing of the well, and a copy of the pumping test records.

Your assistance and response would be appreciated concerning this matter.

Sincerely,

William S. Haines, Director

CK/tm

cc: Engr. File
    Waihee Well

Enclosure
WELL DRILLING PERMIT

TO: Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Co., Inc.
2180 Main Street, Suite 417
Wailuku, Maui 96793

Your application, received on October 14, 1980, for a permit to drill two wells within Tax Map Key 3-2-01:1 at Waihee, Maui, is approved subject to the following conditions:

1. That within 30 days after completion of the well, the applicant shall submit a completed Driller's Report, a copy of the Driller's logs, an "as-built" sectional drawing of the well, and a copy of the pumping test records.

2. That the user of the wells shall submit a monthly record of water pumpage and use.

3. That this well drilling permit does not confer or imply any rights regarding the use of water from the wells.

November 26, 1980
Date of issuance

cc: Maui Dept of Water Supply
WELL DRILLING PERMIT

TO: Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Co., Inc.
2180 Main Street, Suite 417
Wailuku, Maui 96793

Your application, received on October 14, 1980, for a permit to drill two wells within Tax Map Key 3-2-01:1 at Waihee, Maui, is approved subject to the following conditions:

1. That within 30 days after completion of the well, the applicant shall submit a completed Driller's Report, a copy of the Driller's logs, an "as-built" sectional drawing of the well, and a copy of the pumping test records.

2. That the user of the wells shall submit a monthly record of water pumpage and use.

3. That this well drilling permit does not confer or imply any rights regarding the use of water from the wells.

Susumu Ono, Chairman, Board of Land and Natural Resources

November 26, 1980
Date of issuance

cc: Maui Dept of Water Supply
November 17, 1980

Mr. Robert T. Chuck
Manager-Chief Engineer
Division of Water & Land Development
Department of Land & Natural Resources
State of Hawaii
P. O. Box 373
Honolulu, Hawaii 96809

Dear Bob:

Subject: Application for Well Drilling Permit by Wailuku Sugar Company, TMK 3-2-01:1

In response to your letter of November 3, 1980, the subject application is being coordinated with our office. We have been informed by Hawaiiana Investment Company that if the tests successfully show that the safe yield of the proposed wells is sufficient, the two completed wells will be dedicated to the Department of Water Supply, County of Maui, via a second Central Maui Joint Venture to which Hawaiiana Investment Company will be a party.

Hawaiiana Investment Company is anxious to proceed with the test drilling at the site as soon as possible in order to verify the quantity of water available prior to formulation of the Joint Venture. We are in agreement with this approach.

Sincerely,

[Signature]
William S. Haines, Director
Department of Water Supply
November 3, 1980

Mr. William Haines
Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui 96793

Dear Bill:

For your information, transmitted is a copy of the Application for Well Drilling Permit submitted to us by Warren S. Unemori Engineering, Incorporated on behalf of Wailuku Sugar Company and its subsidiary, Hawaiian Investment Company.

We intend to issue them a permit under the provisions of Regulation 9. of the Department of Land and Natural Resources. Before we issue this permit will you please let us know if this proposal is being coordinated with your office.

Very truly yours,

ROBERT T. CHUCK
Manager-Chief Engineer

Encl.
ES:ai
State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES

APPLICATION FOR (check one)
☐ WELL DRILLING PERMIT  ☐ WELL MODIFICATION PERMIT

Instructions: Send completed application and attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809.

Reference: Regulation 9, Dept. of Land & Natural Resources.

Is the well located in a Designated Ground Water Control Area?  Yes  ☑ No

If "yes", application must be accompanied by a Water Use and/or Water Supply Permit and a non-refundable filing fee of $100 payable to the Department of Land & Natural Resources. However, if application is for minor modification of well, filing fee may be waived. If "no", no filing fee is required. Filing fee is waived for federal, state, and county government agencies.

1. WELL LOCATION: Island __________ Tax Map Key 3-2-01:1. Attach a plot plan showing well location referenced to established property boundaries.

2. WATER USER subsidiary, Hawaiiana Investment Co., Inc.

   Address Suite 417, 2180 Main Street, Wailuku, Maui, HI. Zip Code __________

3. PROPOSED DRILLING COMPANY: Water Resources International or Roscoe Moss Company

4. PROPOSED WORK: ☐ Drill new well  ☐ Deepen  ☐ Redrill  ☐ Alter  ☐ Seal  ☐ Abandon  ☐ Install new pump  ☐ Replace pump  ☐ Modify pump

   Fill in the diagram and briefly describe the proposed work (use back of form if necessary):

   PROPOSED SECTION OF WELL

   Elevation at top of casing 321'2" ft. msl.

   Ground Elev. 320'7" ft. msl.

   Cement Grout 200 ft.

   Hole Dia. 20 in.

   Total Depth 420 ft.

   Rock Packing 125 ft.

   *Approximate elev. at filing. Final elev. (msl) by a surveyor licensed by the State must be submitted at start of construction.

   Steel

   Structural Carbon

   Material Perforated

   Length 326 ft

   Diameter 16 in.

   Wall thickness 0.250 in.

   Openings 85 ft in. L.F.

   Length 79 ft

   Diameter 15 in.

3. PROPOSED USE: ☐ Municipal  ☐ Military  ☐ Agriculture  ☐ Industrial

☐ Domestic  ☐ Disposal  ☐ Other (specify) __________

4. PROPOSED AMOUNT OF WITHDRAWAL: Check most appropriate box and fill in amount.

☐ Daily 4 million gallons total  ☐ Monthly ________ gallons  ☐ Yearly ________ gallons

☐ (2 M.G. or more per well)

5. PROPOSED PUMP OR FLOW CAPACITY: 1500 gpm per well for total of ________ gallons per minute

   3,000

Signature: ____________________________  Date: __________

   Water User

Signature: ____________________________  Date: __________

   Landowner of Well Site

For Official Use:

State Well No. ____________________

DLNR Permit No. ____________________

DLNR Application No. ____________________
October 9, 1980

Department of Land and Natural Resources
P. O. Box 373
Honolulu, Hawaii 96809

Gentlemen:

Re: Regulation 9, Dept. of Land and Natural Resources
Application for Well Drilling Permit

We are submitting herewith a well drilling permit application for our client, Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Co., Inc., in accordance with Regulation 9. Also enclosed for your use are the following:

1. 2000 scale U.S.G.S. map which shows the approximate elevation of the proposed well site.

2. Two copies of tax maps.

3. One print of 100 scale survey map which shows the relative locations of the proposed well site to a known boundary corner.

We believe all the information needed for evaluation have been provided. If not, please call us. We will be working with Hydrologist, John Mink, on this project.

Very truly yours,

Warren S. Unemori

cc: Charles G. Street, Jr.
    John Mink
    Don Cataluna
State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
APPLICATION FOR (check one)
☐ WELLS DRILLING PERMIT ☐ WELLS MODIFICATION PERMIT

Instructions: Send completed application and attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809.
Reference: Regulation 9, Dept. of Land & Natural Resources.

Is the well located in a Designated Ground Water Control Area? ☐ Yes ☐ No
If "yes", application must be accompanied by a Water Use and/or Water Supply Permit and a non-refundable filing fee of $100 payable to the Department of Land & Natural Resources. However, if application is for minor modification of well, filing fee may be waived. If "no", no filing fee is required. Filing fee is waived for federal, state, and county government agencies.

1. WELL LOCATION: Island Maui Tax Map Key 3-2-01:1. Attach a plot plan showing well location referenced to established property boundaries.

2. WATER USER subsidiary, Hawaiian Investment Co., Inc.
   Address Suite 417, 2180 Main Street, Wailuku, Maui, HI.
   Telephone ___________ Zip Code 96793

3. PROPOSED DRILLING COMPANY: Water Resources International or Roscoe Moss Company

4. PROPOSED WORK: ☐ Drill new well ☐ Deepen ☐ Redrill ☐ Alter ☐ Seal
   ☐ Abandon ☐ Install new pump ☐ Replace pump ☐ Modify pump

Fill in the diagram and briefly describe the proposed work (use back of form if necessary):

PROPOSED SECTION OF WELL

<table>
<thead>
<tr>
<th>Elevation at top of casing</th>
<th>Ground Elev. 320'</th>
<th>Solid casing Structural Carbon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hole Dia. 20 in.</td>
<td>Wall thickness 0.3125 in.</td>
<td></td>
</tr>
<tr>
<td>Total Depth 420 ft.</td>
<td>Casing X-Perforated Material Length 20 ft.</td>
<td></td>
</tr>
<tr>
<td>Rock Packing 125 ft.</td>
<td>Diameter 16 in.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wall thickness 0.250 in.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Openings 85 sq in. L.F.</td>
<td></td>
</tr>
</tbody>
</table>

*Approximate elev. at filing. Final elev. (msl) by a surveyor licensed by the State must be submitted at start of construction.

5. PROPOSED USE: ☐ Municipal ☐ Military ☐ Agriculture ☐ Industrial
   ☐ Domestic ☐ Disposal ☐ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL: Check most appropriate box and fill in amount.
   ☐ Daily 4 million gallons ☐ Monthly gallons ☐ Yearly gallons
   (2 M.G. or more per well)

7. PROPOSED PUMP OR FLOW CAPACITY: 1500 gpm per well for total of gallons per minute
   (3,000)

Signature: ____________________________ Date: 10/7/00
Water User

Signature: ____________________________ Date: 10/7/00
Landowner of Well Site

For Official Use:
State Well No. ____________________________
DLNR Permit No. ____________________________
DLNR Application No. ____________________________
Waihee 1&2
(Well No. 5631-02,03)
December 22, 2008

Mr. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, HI 96793

Dear Mr. Eng:

Certificate of Pump Installation Completion for North Waihee Well 1
Well No. 5631-02 (TMK (2) 3-2-001:004)

We are pleased to inform you that the Pump Installation work permitted for the North Waihee Well 1 Well (Well No. 5631-02) is complete and acceptable. This certificate of pump installation completion allows you to continue pumping your well for reasonable & beneficial water use.

To protect Hawaii’s natural ground water resources for the benefit of all, the following requirements apply to the use of your well:

1. If the well is not in use it must be properly capped.

2. If the well is to be abandoned then the landowner must cause a licensed contractor to apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

3. In the event that the well operator and/or landowner changes, the Commission shall be notified prior to the change.

4. In the event the benchmark in the concrete base of the well is altered in any way, an updated version of the Well Elevation page of the Well Completion Report Part I shall be submitted to the Commission. If a licensed surveyor had estimated the original benchmark elevation then a licensed surveyor must establish the new benchmark elevation. The Well Elevation portion of the Well Completion Report Part I can be obtained by contacting Commission staff or at www.hawaii.gov/dlnr/cwrm/forms.htm.

5. Your approved pump has a capacity of 1050 gpm at a head of 420 ft. In the future, pump replacements of equal or lesser capacity will not require an additional permit from the Commission, but will require the submission of a Well Completion Report Part II by the licensed pump installer. If the pump replacement is greater than the existing pump, you will need to apply for a new pump installation permit.
6. The landowner shall cause the well operator to maintain the installed meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached), in accordance with §13-168-7, HAR. Blank water use report forms are also available at www.hawaii.gov/dlnr/cwrm/resources_permits.htm

7. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. The authorization to drill a well and/or install a pump shall not constitute a determination of correlative water rights. The landowner and well operator are notified that the quantity of water taken from the well and/or the pump capacity could be reduced by the Commission in the future.

Because groundwater in Hawaii is a public trust, and adverse effects at one well may affect other water resources, any violation of the above conditions, or any other provision of the Hawaii Administrative Rules, may be subject to fines of up to $5,000/day. The Commission needs your help and asks that you do your part in utilizing this shared resource. We prefer to work with you in meeting the goal of protecting our ground water resources together.

If you have any questions, please contact Charley Ice of the Commission staff at [redacted] or toll-free at [redacted] (Maui), extension 70218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

CI:ss

c: Mel's Water Works
Edward Lusk
Mr. Mel Lima  
Mel's Water Works  
95-646 Lawena Street  
Mililani, HI 96789  

Dear Mr. Lima:

Well Completion Report Part II for Well No. 5631-02

We received your Well Completion Report Part II for the North Waihee Well (Well No. 5631-02) on September 5, 2008 and acknowledge that it is complete.

This completes your obligations under the pump installation permit. A certificate of pump installation completion will be issued to the well operator/landowner and you will receive a copy. The certificate transfers responsibility of all aspects of well usage and maintenance from you to the well operator/landowner.

If you have any questions, please contact Charley Ice of the Commission staff at [contact information redacted].

Sincerely,

[Signature]

KEN C. KAWAHARA, P.E.  
Deputy Director

Cl:ss

c: Edward Lusk  
Maui Department of Water Supply
MEMO and ROUTE SLIP (ver. 09/08/08) 09/08/08

Pump Replacement for Well No. 5631-02 (regulation/survey route)

1. Previous Pump Tests Check

<table>
<thead>
<tr>
<th>Check</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Current Well Transmissivity in database?</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>Current Well Specific Capacity in database?</td>
<td>☑</td>
<td>☐</td>
</tr>
</tbody>
</table>

For a "No" above, is there any previous Pump Test Data in the file? Yes No (circle one)

IF DATA EXISTS, THEN GO TO 2. IF NO DATA EXISTS, THEN GO TO 3.

2. Pump Tests Analysis

<table>
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<tr>
<th>Analysis</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Step-Drawdown Test:</td>
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<td>☐</td>
</tr>
<tr>
<td>followed WCPI Stds analysis attached</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Aquifer Pump Test:</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>followed WCPI Stds T &amp; S analysis attached proposed pump cap o.k.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Potential Well Interference</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Potential Stream Impacts:</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Additional Testing or Data Required</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pump Test Comments Attached</td>
<td>☐</td>
<td>☐</td>
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3. Pump Installation Check

<table>
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<tr>
<th>Check</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>data complete?</td>
<td>☐</td>
<td>☐</td>
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<td>elevation benchmark changed?</td>
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<td>☐</td>
</tr>
<tr>
<td>well database updated?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

4. Charley/Denise/Ryan (initial) take action based on above analysis

ATTACHMENTS FOR ACCEPTANCE:

1. WCR2 ACCEPTANCE LETTER
2. PUMP INST. COMPLETION CERTIFICATE
3. METER INSTALL. REPORT (IF NECESSARY)
4. WUR FORM (if necessary)
5. USGS MAP UPDATED
6. PARCEL CHECK
7. WELL DATABASE INPUT CHECK
8. PUMP TEST WORKSHEET
9. PUMP AS-BUILT CHECK PRINT

To be sent to driller
To be sent to landowner/operator
Staff internal checks

5. Roy (initial) check(Entered PICC accept date into database)
6. Susan Haagbin (initial) finalize
7. Ken (initial) signature
8. Charley/Denise/Ryan File

Roy

Who is owning file? (please still seems to be).
Assessed Values reflect tax year 2008.

Search criteria: TMK Taxkey 2-3-2-1-4

PUBLIC RECORD DATA

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<tr>
<th>Taxkey</th>
<th>Subdiv/Condo</th>
<th>Tnr</th>
<th>Address</th>
<th>Owner/Lessee</th>
<th>Bds</th>
<th>Bths</th>
<th>Land area</th>
<th>Liv area</th>
<th>Last Sale Inst</th>
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<td>Waihee</td>
<td>F</td>
<td>WAIHEE LUSK, EDWARD</td>
<td>0</td>
<td>0</td>
<td>12.12 ac</td>
<td>0</td>
<td>2/26/2003 DEEI</td>
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<td></td>
<td></td>
<td></td>
<td>H &amp; SUPAPORN</td>
<td></td>
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</tr>
</tbody>
</table>

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Edward H. Lusk

Tax bill address: 632 Mealohi St Wailea 76793
Hi Charley,

See attachment.

Mel wells 010.jpg  Test Curve NORTH WAIHEE WELL #1.pdf  North Waihee Well Completion.pdf  wells 006.jpg  wells 007.jpg
wells 008.jpg  wells 009.jpg
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>State Well No.</td>
<td>5631-02</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Address</td>
<td>County of Maui</td>
<td>Tax Map Key (2) 3-2-004 004</td>
</tr>
<tr>
<td>3</td>
<td>Pump Installation Company</td>
<td>Wiel's Water Works, Hawaii, Inc.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Date Pump Installed</td>
<td>August 13, 2008</td>
<td></td>
</tr>
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<td>5</td>
<td>PERMANENT PUMP INFORMATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pump Type, Make, Serial No.</td>
<td>Submersible, Goulds 12 CPE 7</td>
<td></td>
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<tr>
<td></td>
<td>Rated Capacity</td>
<td>1250 gpm at head of 420 ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motor Type, H.P., Voltage, rpm</td>
<td>Hitachi, 150 HP, 460V, 1800</td>
<td></td>
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<tr>
<td></td>
<td>Pump type (check one)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deep Well Turbine</td>
<td>Rotary</td>
<td>Propeller</td>
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<tr>
<td></td>
<td>Submersible</td>
<td>Rotary-Displacement</td>
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<td>Centrifugal</td>
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<td>6</td>
<td>Method of flow measurement</td>
<td>Flowmeter w/ totalizer</td>
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</tr>
<tr>
<td></td>
<td>Other, explain and attach schematic</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Fill in the as-built section on the other side of this sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Attach the rating curve for the installed pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Attach photograph of well clearly showing the benchmark on the concrete pad, the well head, and the method of flow measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Well Owner Company</td>
<td>County of Maui</td>
<td>Contact Jeffrey K. Eng.</td>
</tr>
<tr>
<td></td>
<td>Address</td>
<td>3005 High Street</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone</td>
<td>808-270-7816</td>
<td>Fax 808-270-7816</td>
</tr>
<tr>
<td>11</td>
<td>Land Owner Company</td>
<td></td>
<td>Contact</td>
</tr>
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<td></td>
<td>Address</td>
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<td>Fax</td>
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<tr>
<td>12</td>
<td>Remarks</td>
<td></td>
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**State of Hawaii**
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
WELL COMPLETION REPORT - PART II
Pump Installation
Instructions: Please print in ink or type and send completed report (with attachments, if applicable) to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may not accept incomplete reports. This form shall be submitted within 60 days of the completion of work. For assistance, please consult the Hawaii Well Construction and Pump Installation Standards or call the Regulation Branch at 587-2225. For updates to this form or additional information, please visit our website at http://www.hawaii.gov/dlnr/dsw/

---

**Pump Installation Contractor** (print) Wiel's Water Works C-57/C-57A \ A Lic No F 18734
Signature (print) Jeffrey K. Eng. Date August 23, 2008
**Global Pumps & Equipment™**

**Engineered Products Division**

**Fluid In Motion**

**GPE**

**Engineered Products Division**

**Customer:** MEL'S WATER WORKS HAWK

**Project:** NORTH WAIHEE WELL #1

**Order #:** 69418

**Date:** 7/17/2008 11:01:19AM

---

**Test Data**

<table>
<thead>
<tr>
<th>GPM</th>
<th>RPM</th>
<th>PSI</th>
<th>TDH (ft)</th>
<th>Vel Head Loss (ft)</th>
<th>Pipe Friction (ft)</th>
<th>Total TDH (ft)</th>
<th>KW</th>
<th>HP*</th>
<th>EFF (%)</th>
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<td>0</td>
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<td>295.01</td>
<td>686.81</td>
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* Motor HP from manufacturer's curve minus losses.
** Design Point.

---

**Converted Data**

<table>
<thead>
<tr>
<th>RPM</th>
<th>GPM</th>
<th>TDH (ft)</th>
<th>Bowl HP</th>
<th>EFF (%)</th>
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<tr>
<td>1700</td>
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<td>1700</td>
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<td>555.70</td>
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**NPSH Typical Catalog Data**

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Certified Test

By: [Signature]

Title: Chief Engineer

Date: 7-7-08
<table>
<thead>
<tr>
<th>WELL NO</th>
<th>Head</th>
<th>Diameter</th>
<th>Aquifer Thickness</th>
<th>Active Length</th>
<th>THEIS</th>
<th>COOPER-JACOB</th>
<th>HARR 10^4</th>
<th>HARR 10^6</th>
<th>RECOVERY</th>
<th>ZANGAR</th>
<th>POLUBARIN THOMAS OVA</th>
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</tr>
<tr>
<td>5840-01</td>
<td>0.8</td>
<td>0.20</td>
<td>3.0</td>
<td>6.0</td>
<td></td>
<td>120</td>
<td></td>
<td></td>
<td>120</td>
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<tr>
<td>5840-04</td>
<td>0.8</td>
<td>0.15</td>
<td>6.0</td>
<td>6.0</td>
<td></td>
<td>1100</td>
<td></td>
<td></td>
<td>1100</td>
<td>1100</td>
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</tr>
<tr>
<td>5938-02</td>
<td>2.1</td>
<td>0.36</td>
<td>18.5</td>
<td>18.5</td>
<td></td>
<td>520</td>
<td>570</td>
<td>860</td>
<td>650</td>
<td>650</td>
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<tr>
<td>5938-03</td>
<td>1.6</td>
<td>0.36</td>
<td>12.2</td>
<td>14.5</td>
<td></td>
<td>380</td>
<td>420</td>
<td>580</td>
<td>460</td>
<td>460</td>
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<tr>
<td>5938-04</td>
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<td>0.38</td>
<td>23.2</td>
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<td>440</td>
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<td>730</td>
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<tr>
<td>5939-02</td>
<td>0.1</td>
<td>0.15</td>
<td>3.0</td>
<td>12.0</td>
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<td>150</td>
<td>240</td>
<td>280</td>
<td>130</td>
<td>200</td>
<td>200</td>
<td></td>
<td></td>
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</tbody>
</table>
Revised Measuring-Point Elevations for Selected Wells in the Waihee and Iao Aquifer Areas on the Island of Maui

The USGS has been working with the National Geodetic Survey (NGS) to update benchmark and well measuring-point elevations in central Maui as part of a ground-water availability study with the Maui Department of Water Supply. The purpose of this effort is to ensure that water-level monitoring wells used in this study are tied to a common and accurate vertical datum. Benchmark and reference-mark elevations were determined by the NGS using differential GPS (Global Positioning System) methods during September 2-4, and November 18-20, 2003. Well measuring-point elevations were determined by the USGS using vertical leveling surveys from NGS benchmarks and USGS reference marks during September 22-26, and December 15-19, 2003.

Measuring-point elevations for selected wells in the Waihee and Iao aquifer areas are provided below. The difference between the previously reported and the revised measuring-point elevation for each well is also provided. Leveling notes and photographs of the measuring points are available in well folders maintained by the USGS Water Resources office in Honolulu.

It is important to recognize that the revised well measuring-point elevations will result in a modification of the absolute water levels (referenced to mean sea level), but not the relative change in water levels measured over time (trend). Historical water levels measured in these wells may be revised pending further research into possible causes for the differences between the previously reported and the revised well measuring-point elevations. Future water-level measurements will be based on the revised well measuring-point elevations.

Related links:
Ground-Water Availability in Central Maui - Project description
Recent Hydrologic Conditions, Iao Aquifer area, Maui - Updated every three months

Well measuring-point elevations, in feet above mean sea level, for selected wells in the Waihee and Iao aquifer areas on Maui

<table>
<thead>
<tr>
<th>Well name</th>
<th>Well no.</th>
<th>Revised¹</th>
<th>Previous</th>
<th>Difference ²</th>
<th>Notes regarding previous well measuring-point elevations ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kupaa 1</td>
<td>5731-03</td>
<td>638.77</td>
<td>639.37</td>
<td>-.60</td>
<td>C. Takumi Engineering report (1/31/00) provides MP elevation of 639.37 ft for top of casing, based on leveling from a benchmark elevation of 631.87 ft located about 200 ft from well (Exhibit A-1, Mink &amp; Yuen, 6/21/99). Driller’s well-completion report provides MP elevation of 638.10 ft for top of casing (5/20/99). No record of MP survey notes and initial benchmark. Wallani Drilling and Ed Valera (surveyor) combined trigonometric leveling (using a total station and vertical angles) from Tanaka’s work and a carpenter’s level to get the initial height of casing.</td>
</tr>
</tbody>
</table>

¹ RM, reference mark; MP, measuring point; ft, feet; --, no data
² Difference = Revised - Previous
³ Field notes regarding previous well measuring-point elevations.
<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Old Elevation</th>
<th>Old Elevation</th>
<th>Difference</th>
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</thead>
<tbody>
<tr>
<td>Kanoa TH</td>
<td>5731-05</td>
<td>303.56</td>
<td>305.22</td>
<td>-1.66</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Kanoa 1</td>
<td>5731-02</td>
<td>306.14</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kanoa 2</td>
<td>5731-04</td>
<td>280.48</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Waihee 1</td>
<td>5631-02</td>
<td>283.76</td>
<td>285.23</td>
<td>-1.47</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>North Waihee 2</td>
<td>5631-03</td>
<td>283.62</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

USGS reports MP elevation of 305.22 ft for top of casing, based on leveling from nearby RM - 1-inch pipe (1/22/03). RM elevation of 304.50 ft provided by C. Takumi Engineering. No record of RM survey notes and initial benchmark. K. Tanaka set the 1/2-in. pipe using trigonometric leveling (using a total station and vertical angles).

Driller's well-completion report has elevation of 309.15 ft for top of pump base plate (5/29/99). No record of MP survey or initial benchmark.

Driller's well-completion report has MP elevation 281.83 ft for top of sounding tube (6/7/00). C. Takumi Engineering report (Aug. 2000) has 281.38 ft for top of sounding tube (Exhibit A, Mink & Yuen, 7/12/00).

USGS reports MP elevation of 285.23 ft for top of measuring tube, based on leveling from nearby RM - 3/4 inch pipe (8/12/97). RM elevation of 266.63 ft given by W.S. Unemori Engineering. No record of RM survey notes and initial benchmark in well folder, however, Unemori confirms this elevation from their notes. From information provided by Reed Ariyoshi of W.S. Unemori, and Wendy Taomoto, MDWS, the best estimate of the difference between the top of the casing prior to pump installation and the measuring tube after installation is 1.01 ft (old casing higher in elevation). As a result, the old mp for data prior to August 1997, 284.78 ft, is very close to the new measuring tube elevation plus 1.01 ft (284.77 ft).

Height of measuring point modified after pump installation. Measuring tube modified twice since pump installation in 1997 and leveling on 8/12/97. USGS reports MP elevation of 284.39 ft for top of measuring tube on 8/12/97. USGS reports MP elevation of 284.33 ft for top of measuring tube on 3/30/99 after first modification, based on measuring up from base plate elevation of 284.11 ft. Previous leveling on 8/12/97 and 3/30/99 are based on RM (3/4-inch pipe) elevation of 266.63 ft provided by W.S. Unemori Engineering. No record of RM survey notes and initial benchmark in well folder, however, Unemori confirms this elevation.
<table>
<thead>
<tr>
<th>Well Name</th>
<th>MP Year</th>
<th>MR Year</th>
<th>MR Value</th>
<th>MEA Value</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waihee TH A1</td>
<td>5631-01</td>
<td>246.17</td>
<td>248.05</td>
<td>-1.88</td>
<td></td>
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<tr>
<td>Waiehu TH D</td>
<td>5430-04</td>
<td>380.95</td>
<td>380.66</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Waiehu Deep</td>
<td>5430-05</td>
<td>381.16</td>
<td>380.84</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>Waiehu TH B</td>
<td>5431-01</td>
<td>492.15</td>
<td>492.51</td>
<td>-0.36</td>
<td></td>
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<tr>
<td>Waiehu Heights 2</td>
<td>5430-02</td>
<td>338.05</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Waiehu THE</td>
<td>5430-03</td>
<td>415.65</td>
<td>416.75</td>
<td>-1.10</td>
<td></td>
</tr>
</tbody>
</table>


USGS reports MP elevation of 380.66 ft for top of 1.75-inch PVC casing, based on leveling from nearby RM - "X" chiseled in concrete at entrance to TH D shelter (8/23/85). RM elevation of 380.01 ft provided by Dan Lum, DOWALD (8/29/83). No record of RM survey notes and initial benchmark.

USGS reports MP elevation of 380.84 ft for top of 10-inch casing, based on leveling from RM - "X" chiseled in concrete at entrance to TH D shelter (8/23/85). RM elevation of 380.01 ft provided by Dan Lum, DOWALD (8/29/83). No record of RM survey notes and initial benchmark.

USGS reports MP elevation of 492.51 ft for top of 1.5-inch PVC casing (9/24/75). However, later field notes show top of casing as 491.79, and top of surrounding wooden box as 492.51. No record of MP survey notes and initial benchmark. Probably surveyed from State of Hawaii benchmark U-6: 250.37 ft (1974). Driller's report provides elevation of 493.97 ft for top of drilling platform. Well has been measured from top of wooden box since USGS started measuring well in July, 1982. Well modified 3/31/04 by USGS, adding 0.74 ft to top of PVC casing. Revised MP (top of PVC casing) combines changes due to recent surveying and modification. Elevation of top of box was lowered by 0.42 ft from results of 2003/2004 surveying.

Notes in well folder show pump refurbishment in 1998. Measurement tube likely installed at that time. No prior leveling notes or references in USGS well folder.

<table>
<thead>
<tr>
<th>Location</th>
<th>Code</th>
<th>Previous</th>
<th>Revised</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mokuha 1 (Pump 2)</td>
<td>5330-09</td>
<td>353.37</td>
<td>353.79</td>
<td>-0.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wailuku Shaft 33</td>
<td>5330-05</td>
<td>32.33</td>
<td>32.17</td>
<td>0.16</td>
</tr>
<tr>
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<tr>
<td>Waikapu 1</td>
<td>5130-01</td>
<td>551.04</td>
<td>551.33</td>
<td>-0.29</td>
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</tr>
<tr>
<td>Waikapu 2</td>
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<td>764.87</td>
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</table>


USGS reports MP elevation of 32.17 ft for top of casing, based on leveling from Wailuku Courthouse NGS benchmark elevation of 331.066 ft (4/17/97).

USGS reports MP elevation of 551.33 ft for top of 6-inch coupling, based on leveling from RM - 0.5 inch pipe located on the east side of the concrete foundation (4/11/75). RM elevation of 550.61 ft provided by Norman Saito Engineering, based on leveling from Wailuku Courthouse NGS benchmark (12/74). Dan Lum (DOWALD) provides elevation of 552.08 ft for top of 6-inch casing, and 551.15 ft for top of conductor pipe (5/14/74).

USGS reports MP elevation of 519.33 ft for top of casing, based on leveling from Waikapu 1 well MP elevation of 551.33 ft (6/21/83). DOWALD as-built drawing provides elevation of 519.47 ft for top of 20-inch casing.

USGS surveying on 12/29/03 to top of 6-inch threaded coupling welded to plate that is welded to the top of the 18-inch casing (highest point after removing plug). CWRM well completion report and Water Resources International as-built drawing provides elevation of 764.7 ft for top plate welded to 18-inch casing.

1 Revised well measuring-point elevations were determined by the USGS using vertical leveling from National Geodetic Survey benchmarks and reference marks in December 2003. NGS benchmark and reference mark elevations provided by NGS on 1/20/04. Levelling notes and photographs of the measuring points are available in well folders maintained by the USGS Hawaii District Office.

2 Difference calculated by subtracting the previous from the revised well measuring-point elevation.

3 All information contained in USGS well folder.

4 Maui Department of Water Supply refers to this well as Mokuha Pump 2 (Well 502) whereas Commission on Water Resource Management well index refers to this well as Mokuha 1.
WCR 2 Check for Well No. 5631-02 (survey to regulation memo)

1. **Pump Tests Check** (special condition of PIP? Yes/No) Glenn Bauer (initial if yes)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If no, describe deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

   **Step-Drawdown Test:**
   - acceptable ✔
   - followed WCPI Stds ☐
   - analysis attached ☐
   - proposed pump cap o.k. ☐

   *Analysis was done by Mike several years ago and it is in the well file*

   **Aquifer Pump Test:**
   - acceptable ☐
   - followed WCPI Stds ☐
   - T & S analysis attached ☐

   **Well Interference:**
   - estimated Steady-State drawdown at 1-mile radius is ________ ft.
   - analysis attached ☐

   **Stream Surface Water Impacted:**
   - ☐
   - ☐ ← If yes, identify most probable stream

2. **Pump Installation Check** Mitch Ohye (initial)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If no, describe deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>

   - data complete ☐
   - followed WCPI Stds ☐
   - wellphys.dbf updated ☐
   - welaplic.dbf updated ☐
WCR 2 Check for Well No. 5631-03 (survey to regulation memo)

1. **Pump Tests Check** *(special condition of PIP? Yes/No)*
   - Glenn Bauer (initial if yes)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If no, describe deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

   **Step-Drawdown Test:**
   - acceptable □ □
   - followed WCPI Stds □ □
   - analysis attached □ □
   - proposed pump cap o.k. □ □

   **Aquifer Pump Test:**
   - acceptable □ □
   - followed WCPI Stds □ □
   - T & S analysis attached □ □

   **Well Interference:**
   - estimated Steady-State drawdown at 1-mile radius is □ □
   - analysis attached □ □

   **Stream Surface Water Impacted:** □ □ ← if yes, identify most probable stream

2. **Pump Installation Check** Mitch Ohye (initial)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If no, describe deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   - data complete □ □
   - followed WCPI Stds □ □
   - wellphys.dbf updated □ □
   - welaplic.dbf updated □ □
August 11, 1998

Honorable Timothy E. Johns
Deputy Director
State of Hawaii
Department of Land & Natural Resources
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. Box 621
Honolulu, Hawaii  96809

Dear Mr. Johns:

Subject: North Waihee Wells 1 and 2
         State Well Nos. 5631-02 and 5631-03
         North Waihee Water Source Project

Transmitting, for your use, are the completed pump installation reports and as-built drawings.

Should you have any questions, please contact Andy Pascua, Acting Plant Maintenance Superintendent, (808) [redacted]

Sincerely,

David Craddick, Director

By Water All Things Find Life
**State of Hawaii**  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
**Department of Land and Natural Resources**

### WELL COMPLETION REPORT

- **Date:** 3/20/96  
- **Form:** WCR Form

#### Instructions:
- Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at [number] or Extension 70225.

#### 1. State Well No.: 5631-02  
- **Well Name:** N. Waihee Water Source  
- **Island:** Maui

#### 2. Location/Address: North Waihee Well No. 1  
- **Tax Map Key:** 3-2-0104

### PART I. WELL CONSTRUCTION REPORT

<table>
<thead>
<tr>
<th>3. Drilling Company:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Name of driller who performed work:</td>
</tr>
<tr>
<td>5. Type of rig/construction:</td>
</tr>
<tr>
<td>6. Date(s) Well Construction and pump tests (if any) completed:</td>
</tr>
<tr>
<td>7. GROUND ELEVATION (referenced to mean sea level, msl):</td>
</tr>
<tr>
<td>Well Bench Mark (description/location):</td>
</tr>
<tr>
<td>Elevation(msl):</td>
</tr>
<tr>
<td>8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)</td>
</tr>
<tr>
<td>Depths (ft.)</td>
</tr>
<tr>
<td>Depths (ft.)</td>
</tr>
<tr>
<td>(If more space is needed, continue on back.)</td>
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<tr>
<td>9. Total depth of well below ground:</td>
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<td>10. Hole size:</td>
</tr>
<tr>
<td>inch dia. from</td>
</tr>
<tr>
<td>inch dia. from</td>
</tr>
<tr>
<td>inch dia. from</td>
</tr>
<tr>
<td>11. Casing installed:</td>
</tr>
<tr>
<td>in. I.D. x in. wall solid section to</td>
</tr>
<tr>
<td>in. I.D. x in. wall perforated section to</td>
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<tr>
<td>Casing Material/Slot Size:</td>
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<td>12. Annulus:</td>
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<tr>
<td>Grouted from</td>
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<tr>
<td>Gravel packed from</td>
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<td>13. Initial water level:</td>
</tr>
<tr>
<td>ft. below ground.</td>
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<tr>
<td>14. Initial chloride:</td>
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<tr>
<td>ppm</td>
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<td>15. Initial temperature:</td>
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<tr>
<td>°F</td>
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<tr>
<td>16. PUMPING TESTS: Reference Point (R.P.) used:</td>
</tr>
<tr>
<td>which elevation is</td>
</tr>
<tr>
<td>Start Drawdown Test Date</td>
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<tr>
<td>(1) Step-Drawdown Test Date</td>
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<td>Start water level</td>
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<tr>
<td>End water level</td>
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<tr>
<td>(2) Long-term Aquifer Test Date</td>
</tr>
<tr>
<td>Start water level</td>
</tr>
<tr>
<td>End water level</td>
</tr>
<tr>
<td>17. Aquifer Pump Test Procedures data &amp; graphs (1/96 LTAT Form) attached?</td>
</tr>
<tr>
<td>18. As-built drawings attached?</td>
</tr>
<tr>
<td>19. Other remarks/comments:</td>
</tr>
</tbody>
</table>

### Well Drilling Contractor (print)  
- **C-57 Lic. No.:**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

### Surveyor (print)  
- **Lic. No.:**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

### Applicant (print)  
- **Signature:**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>
SUBMERSIBLE OUTLINE
STANDARD WELL SEAL — JUNCTION BOX CONSTRUCTION

DATE __________________________

NAME OF CUSTOMER DEPARTMENT OF WATER SUPPLY

PROPOSITION NO. TOR No. 95-10

ORDER NO. 58-910-D

PURCHASE ORDER NO. __________________________

NO. OF UNITS ONE

SURFACE PLATE 2 7/8” O.D. 13/4” TH’K

8-7/8” FOUNDATION HOLES. STR. & ON 25’ B.C.

8” 8 T.P.I. 3/4” TAPER T&C ST’D. COLUMN

10” 250 150# F.F. (STEEL) DISCHARGE FLANGE

BOWL ASSEMBLY 12 MOL / 7 STGS.

150 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE M

12” SIZE 3 PH. 60 CYCLE 460 VOLTS

1050 GPM 420 F.T. TDH

CABLE SIZE 400 MCM VOLTAGE 460 LENGTH 300’

REMARKS: WELL PUMP No. 1

CABLE: 400 MCM

COLUMN PIPE: 8” SCH. 40 GALVANIZED

TRANS. PIPE: SCH 80 PVC 1”

“NORTH WAIMEA WATER SOURCE”

PHASE II - DEVELOPMENT OF WELLS 1 & 2

WELL NO. 5631-02

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

JOB NO. __________________________ PROP. NO. __________________________

CERTIFIED CORRECT __________________________ DATE __________________________
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

---

PROPOSED SECTION OF WELL

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevation at top of casing</td>
<td>284 ft., msl.</td>
</tr>
<tr>
<td>Ground Elevation</td>
<td>283 ft, msl</td>
</tr>
<tr>
<td>Cement Grout</td>
<td>200 ft.</td>
</tr>
<tr>
<td>Hole Diameter</td>
<td>20 in.</td>
</tr>
<tr>
<td>Total Depth</td>
<td>363 ft.</td>
</tr>
<tr>
<td>Rock Packing</td>
<td>108 ft.</td>
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<tr>
<td>Solid Casing</td>
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</tr>
<tr>
<td>Material</td>
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</tr>
<tr>
<td>Length</td>
<td>289 ft.</td>
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<tr>
<td>Diameter</td>
<td>16 in.</td>
</tr>
<tr>
<td>Wall thickness</td>
<td>0.3125 in.</td>
</tr>
<tr>
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<td></td>
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<tr>
<td>Material</td>
<td>Steel Kaisaloy</td>
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<tr>
<td>Length</td>
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<td>Diameter</td>
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<tr>
<td>Wall thickness</td>
<td>0.25 in.</td>
</tr>
<tr>
<td>Openings</td>
<td>100 sq. in./L.F.</td>
</tr>
<tr>
<td>Open Hole</td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>79</td>
</tr>
<tr>
<td>Diameter</td>
<td>15 in.</td>
</tr>
</tbody>
</table>

EXHIBIT 2
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: Tim  DATE: 8/3/1  SUSPENSE DATE

TO:  INIT.  TO:  INIT.  FOR:  PLEASE:
1. BAUER, G.  LUM, A.  ____ Approval  ____ See Me
2. CHING, F.  NAKAMA, L.  ____ Signature  ____ Review & Comment
3. FUJII, N.  NAKANO, D.  ____ Information  ____ Take Action
4. HARDY, R.  OHYE, M.  ___ Type Draft
5. HIGA, D.  SAKODA, E.  ___ Type Final
6. HIRANO, E.  SUBIA, S.  ___ File
7. ICE, C.  SWANSON, S.  ___ ___ Xerox ___ copies
8. IMATA, R.  UWAINA, J.  ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
### WELL COMPLETION REPORT

**Part I. WELL CONSTRUCTION REPORT**

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<tbody>
<tr>
<td>3.</td>
<td>Drilling Company: __________________________</td>
</tr>
<tr>
<td>4.</td>
<td>Name of driller who performed work: __________________________</td>
</tr>
<tr>
<td>5.</td>
<td>Type of rig/construction: __________________________</td>
</tr>
<tr>
<td>6.</td>
<td>Date(s) Well Construction and pump tests (if any) completed: __________________________</td>
</tr>
<tr>
<td>7.</td>
<td>GROUND ELEVATION (referenced to mean sea level, msl): __________________________ ft.</td>
</tr>
<tr>
<td></td>
<td>Well Bench Mark (description/location): __________________________ Elevation(msl): __________________________ ft.</td>
</tr>
<tr>
<td>8.</td>
<td>DRILLER'S LOG: Please attach geologic log (if available or if required by permit)</td>
</tr>
<tr>
<td></td>
<td>Depths (ft.) Rock Description, Water Level, Dates, etc. Depths (ft.) Rock Description, Water Level, Dates, etc.</td>
</tr>
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<td></td>
<td></td>
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<tr>
<td>9.</td>
<td>Total depth of well below ground: __________________________ ft.</td>
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<tr>
<td>10.</td>
<td>Hole size: __________________________ inch dia. from __________________________ ft. to __________________________ ft. below ground</td>
</tr>
<tr>
<td></td>
<td>__________________________ inch dia. from __________________________ ft. to __________________________ ft. below ground</td>
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<tr>
<td></td>
<td>__________________________ inch dia. from __________________________ ft. to __________________________ ft. below ground</td>
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<tr>
<td>11.</td>
<td>Casing installed: __________________________ in. I.D. x __________________________ in. wall solid section to __________________________ ft. below ground</td>
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<tr>
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<td>__________________________ in. I.D. x __________________________ in. wall perforated section to __________________________ ft. below ground</td>
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<td></td>
<td>Casing Material/Slot Size: __________________________</td>
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<td>12.</td>
<td>Annulus: Grouted from __________________________ ft. below ground to __________________________ ft. below ground</td>
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<tr>
<td></td>
<td>Gravel packed from __________________________ ft. below ground to __________________________ ft. below ground</td>
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<td>13.</td>
<td>Initial water level: __________________________ ft. below ground. Date and time of measurement: __________________________</td>
</tr>
<tr>
<td>14.</td>
<td>Initial chloride: __________________________ ppm Date and time of sampling: __________________________</td>
</tr>
<tr>
<td>15.</td>
<td>Initial temperature: __________________________ °F Date and time of measurement: __________________________</td>
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<tr>
<td>16.</td>
<td>PUMPING TESTS: Reference Point (R.P.) used: __________________________, which elevation is __________________________ ft.</td>
</tr>
<tr>
<td></td>
<td>(1) Step-Drawdown Test Date __________________________ (2) Long-term Aquifer Test Date __________________________</td>
</tr>
<tr>
<td></td>
<td>Start water level __________________________ ft. below R.P. Start water level __________________________ ft. below R.P.</td>
</tr>
<tr>
<td></td>
<td>End water level __________________________ ft. below R.P. End water level __________________________ ft. below R.P.</td>
</tr>
<tr>
<td>17.</td>
<td>Aquifer Pump Test Procedures data &amp; graphs (1/9/96 LTAT Form) attached? __________________________ Yes __________________________ No</td>
</tr>
<tr>
<td>18.</td>
<td>As-built drawings attached? __________________________ Yes __________________________ No</td>
</tr>
<tr>
<td>19.</td>
<td>Other remarks/comments: (On back of this form) __________________________</td>
</tr>
</tbody>
</table>

---

Well Drilling Contractor (print) __________________________ C-57 Lic. No. __________________________

Signature __________________________ Date __________________________

Surveyor (print) __________________________ Lic. No. __________________________

Signature __________________________ Date __________________________

Applicant (print) __________________________

Signature __________________________ Date __________________________
SUBMERSIBLE OUTLINE
STANDARD WELL SEAL — JUNCTION BOX CONSTRUCTION

DATE ____________________
NAME OF CUSTOMER County of Maui DEPARTMENT OF WATER SUPPLY
PROPOSITION NO. Job No. 95-10 ORDER NO. 58-96D
PURCHASE ORDER NO. ____________________
NO. OF UNITS ONE
SURFACE PLATE 27 ¾” O.D. 13/4” TH’K
8—7/8” FOUNDATION HOLES, STR. Ø ON 25” B.C
8” — 8 T.P.I. — ¾” TAPER T&C ST’D. COLUMN
10” — 20” F.F. (STEEL) DISCHARGE FLANGE
BOWL ASSEMBLY 12MQL 1 STGS.
150 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE N
12” SIZE 3 PH. 60 CYCLE 460 VOLT
1050 GPM 420 FT. TDH
CABLE SIZE 400 MCM VOLTAGE 460 LENGTH 310 FT.
REMARKS: WELL PUMP No. 2
CABLE: 400 MCM
COLUMN PIPE: 8” SCH. 40 GALVANIZED
TRANSJUER PIPE: SCH. 80 PVC. 1”
“NORTH WAIMEA WATER SOURCE”
PHASE II — DEVELOPMENT OF WELLS 1 & 2

WELL NO. 9631-03

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED
JOB NO. _______________ PROP. NO. _______________
CERTIFIED ____________________ DATE ____________
PUMP INSTALLATION PERMIT

North Waihe'e Wells 1 & 2, Well Nos. 5631-02 & 03

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management’s Administrative Rules, Section 13-168, entitled “Water Use, Wells, and Stream Diversion Works”, this document permits the pump installation for North Waihe'e Wells 1 & 2 Well (Well Nos. 5631-02 & 03) at Waihe'e Stream, Maui, TMK: 3-2-1-4, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96808, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 1400 gpm capacity, or less, pump in each well. The total pumpage from both wells shall average 2 mgd.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use 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 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.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within thirty (30) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit issuance, unless otherwise specified.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

Date of Approval: March 14, 1995
Expiration Date: March 14, 1997

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until I and the pump installer have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee’s Signature: __________________________ Date: __________
Printed Name: ___________________________ Firm or Title: __________

Installer’s Signature: __________________________ Date: __________
Printed Name: ___________________________ Firm or Title: __________

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

Attachments
C: USGS
Department of Health/ Safe Drinking Water & Wastewater Branches
Maui Department of Water Supply
Flash from the past: Dave Craddick requested a faxed copy of the actual permit. I see a letter transferring it from C.Brewer to the MBWS, referencing a permit extension incorporating the conditions. The extension was addressed to C.Brewer. (There's also a submittal with important wording a little different than was actually incorporated into the permit extension.) I thought we might have issued a new version naming MBWS as the permittee, but I see no record of that. Also, neither Brewer nor MBWS ever submitted signed copies! Shall we simply fax the extension naming C.Brewer or cut a new permit? (And we'll note the absence of validation)
Mr. Byron Walters, Chairman  
County of Maui  
Board of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793

Dear Mr. Walters:

Pump Installation Permit  
North Waihe'e Wells 1 & 2 (Well Nos. 5631-02 & 03)

It has come to our attention that your copies of the captioned permit may not have been transmitted in the name of the Board. Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) which authorizes permanent pump installation work for your wells.

Please note that the requirement for validating the permit is for the permittee to sign and return one copy. Our records indicate that neither the original permittee, C. Brewer, nor the Board returned signed, validated copies. We appreciate your cooperation in updating the record.

If you have any questions, please call Charley Ice at [redacted] or toll-free at [redacted] (Maui), extension 70251.

Aloha,

[Signature]

MICHAEL D. WILSON  
Chairperson

Enclosures
PUMP INSTALLATION PERMIT

North Waihe'e Wells 1 & 2, Well Nos. 5631-02 & 03

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for North Waihe'e Wells 1 & 2 Well (Well Nos. 5631-02 & 03) at Waihe'e Stream, Maui, TMK: 3-2-1:4, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 1400 gpm capacity, or less, pump in each well. The total pumpage from both wells shall average 2 mgd.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use 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 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.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within thirty (30) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit issuance, unless otherwise specified.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

Date of Approval: March 14, 1995
Expiration Date: March 14, 1997

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until I and the pump installer have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee’s Signature: ___________________________ Date: ___________
Printed Name: ___________________________ Firm or Title: ___________________________

Installer’s Signature: ___________________________ Date: ___________
Printed Name: ___________________________ Firm or Title: ___________________________

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

Attachments:

USGS
Department of Health/ Safe Drinking Water & Wastewater Branches
Maui Department of Water Supply
Transmitting PIP for N. Waihe'e Wells 1 & 2 (5631-02 & 03) and submitted outlining conditions (w/ additional information).

To follow: we will send a fresh permit in your (MBWS) name. Please note that we have no signed/returned copy to validate the permit. When you receive the new one (by mail), please follow those instructions in the cover letters. Mahalo!

Note the condition you seek: the battery (2 wells) was limited to 2 mgd. If your pump tests show greater capacity and this checks w/ USGS monitoring elsewhere, we can entertain a permit modification.
STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

FACSIMILE TRANSMITTAL

DATE: 12/3/97

TO: Rae Loui, Deputy Director
OFFICE: DLNR/Commission on Water Resource Management
FAX: 587-0219

FROM: Aureole Komori
OFFICE: SDWB
PHONE: (808) 586-4262
FAX: (808) [redacted]

MESSAGE:

0 The request for Bifice master
1 The well approval for North master well No. 2 Well
   for temporary usage not emergency.
2 A North master well No. 1 approval request was for emergency usage.
   
Sorry for the misinformation, I have attached the two requests for your information.

NOTE: If this transmittal was illegible or incomplete, please call the sender.
June 24, 1997

Mr. William Wong, Chief
Safe Drinking Water Branch
Environmental Management Division
Department of Health
919 Ala Moana Blvd., Room 308
Honolulu, Hawaii  96814

Dear Mr. Wong:

Re: PRELIMINARY ENGINEERING REPORT - NORTH WAIHEE WATER SOURCE PROJECT

Transmitted herewith for your review and approval are six copies of the Preliminary Engineering Report for the subject project.

Due to the necessity to alleviate the draw from the Iao Aquifer, we are requesting emergency domestic use of Well No. 1 of the North Waihee Water Source Project.

At present, the 12-month daily average daily water demand on the Iao Aquifer is approximately 20 plus MGD. The Commission on Water Resource Management Division has set a milestone on the Department of July 1, 1997 as the date to start draw of 1.5 MGD from the North Waihee Water Source. Hence, it is imperative that we obtain your approval to use the Well No. 1 as a source for domestic use before July 1, 1997.

The North Waihee Water Source Project will be constructed in five phases:

Phase 1

Construction of a transmission line from North Waihee Wells No. 1 & 2 to an existing 12-inch waterline along Kahekili Highway at Kohomua Street. This phase is under construction and will be completed before July 1, 1997.

"By Water All Things Find Life"
Phase 2

Installation of North Waihee Wells No. 1 & 2, emergency generator and sodium hypochlorite solution disinfection system. This phase is under construction and will be completed in August of 1997.

Phase 3

Construction of a transmission line from Kahekili Highway at Kuhinia Street to the existing 1.0 MG Waihee (Central Maui Joint Venture) Tank. Notice to proceed was given to start construction of this phase on June 1997.

Phases 4 & 5

Construction of a 1.0 MG tank and booster pump. The construction of this phase is pending the execution of a contract with Hawaiian Dredging & Construction Co.

Although Phase 2 will not be completed by July 1, 1997, the Department has hooked up a temporary generator to operate the Well No. 1 and chlorination unit with direct feed in the transmission pipeline at the well site. The first water service will be 1.0 miles away in Waihee Town. The chlorine residual is expected to be 0.3 MGL at the service.

Should you have any questions, please contact me at (808) _____________.

Your immediate attention and approval is very much appreciated.

Sincerely,

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

[Signature]

David E. Gaddick
Director

EK:as
Enclosures
June 25, 1997

Mr. William Wong, Chief
Safe Drinking Water Branch
Environmental Management Division
Department of Health
919 Ala Moana Blvd., Room 308
Honolulu, Hawaii 96814

Dear Mr. Wong:

Re: PRELIMINARY ENGINEERING REPORT - NORTH WAIHEE WATER SOURCE PROJECT

Referencing our letter of June 24, 1997, please revise the second sentence of the third paragraph to read:

"The Commission on Water Resource Management Division has set a milestone on the Department of July 1, 1997 as the date to start draw of 1.5 MGD from Iao Ditch. However, the water source from Iao Ditch is presently in question by your office. The North Waihe Well No. 1 has been accelerated to meet the milestone of reducing pumpage from the Iao Aquifer by 1.5 MGD by July 1, 1997."

Should you have any questions, please contact me at [redacted].

Sincerely,

[Signature]

David R. Craddick
Director

EK:as
September 23, 1997

Mr. William Wong
DEPARTMENT OF HEALTH - SDWA
919 Ala Moana Blvd., 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Wong:

Re: NORTH WAIHEE WELLS NOS. 1 & 2
STATE WELL NOS. 6-56311-02 AND -03

North Waihee Well No. 2 is ready to supply water to our Central Maui system. The permanent sodium chloride unit is in operation, and the wells are now powered by Maui Electric Co. As a result, we are requesting your approval to allow us to use Well No. 2 on the same temporary basis the use of Well No. 1 is being allowed under. Enclosed is the test results for Well No. 1.

Should you have any questions, please contact Ed Kagehiro of my staff at [Redacted].

Sincerely,

David R. Craddick
Director

EK:as
Enclosure
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<tr>
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<td>LOUI, R.</td>
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<td>See Me</td>
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<tr>
<td>CHING, F.</td>
<td></td>
<td>NAKAMA, L.</td>
<td></td>
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<td>Review &amp; Comment</td>
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<tr>
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<td>UWAIN, J.</td>
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<td>YODA, K.</td>
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<tr>
<td>KUNIMURA, I.</td>
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</table>
October 28, 1997

Ms. Rae Loui
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

Subject: NORTH WAIHEE WATER SOURCE PHASE II
         WELL NO. 2

We request your approval to continuously pump water from North Waihee Well No. 2 for a period of 2 to 4 weeks. The purpose of pumping is to flush the well and take samples for water quality analysis. The water will be discharged into Waihee Stream.

If you have any questions, please call our Engineering Division at

Sincerely,

David R. Craddick
Director

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

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 212, DWS WAILUKU
EMERGENCY SOURCE APPROVAL
NORTH WAIHEE WELL NOS. 1 and 2
STATE WELL NOS. 6-5631-02 AND -03

We have completed our current review of the engineering report for the North Waihee Well Nos. 1 and 2. Due to the bacterial problems encountered at the North Waihee Well No. 1, the Department of Health hereby grants temporary conditional approval for the use of the wells as drinking water sources. During this time period the Maui Department of Water Supply will be given the opportunity to demonstrate its ability to properly treat and deliver potable water from the subject sources. This temporary conditional approval shall expire at midnight, April 30, 1998. In addition, the use of these wells as drinking water sources shall be subject to the following conditions:

1. The North Waihee Well Nos. 1 and 2 shall deliver potable water of the quality in compliance with Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems. The water quality shall be subject to verification by the Department of Health.

2. The Maui Department of Water Supply, in its operation of the North Waihee Well Nos. 1 and 2, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.

3. The Maui Department of Water Supply shall notify the Department of Health of any condition which may arise or be revealed that may contaminate the sources and pose a threat to human health.
4. Due to the high levels of heterotrophic bacteria found in North Waihee Well No. 1, the following initial conditions must be met prior to placing the North Waihee Well Nos. 1 and 2 in service:

a) **Sampling Taps:** Before using these wells, the Maui Department of Water Supply must install sampling taps at each well prior to disinfection.

b) **Well Disinfection:** Each well must be disinfected, flushed, and tested prior to use in accordance with the AWWA Standard for Disinfection of Wells (C654-87). The required bacteriological testing shall show the absence of coliform bacteria and a heterotrophic plate count of less than 500 per ml before the wells can be placed in service. This event shall be documented and subsequently noted in the monthly report described under condition no. 6.

5. Due to the high levels of heterotrophic bacteria at North Waihee Well No. 1, water from North Waihee Well Nos. 1 and 2 must be adequately disinfected. In addition, the following disinfection and monitoring conditions shall apply throughout the temporary conditional approval period:

a) **Well Disinfection:** Whenever a well has not been in use for more than 24 hours, the subject well must be disinfected, flushed, and tested prior to use in accordance with the AWWA Standard for Disinfection of Wells (C654-87). The required bacteriological testing shall show the absence of coliform bacteria and a heterotrophic plate count (HPC) of less than 500 per ml before the well can be placed in service. These events shall be documented and subsequently noted in the report described under condition no. 6.

The Department of Health may consider relaxing this additional treatment and testing requirement if subsequent data indicates that the heterotrophic plate counts are consistently below 500 per milliliter (ml). Any such request must be made in writing and accompanied by supporting data. Similarly, the Department of Health may impose more stringent disinfection requirements if the heterotrophic plate counts are consistently above 500 per ml.

b) **Routine Monitoring:** The Maui Department of Water Supply must sample and analyze the source, prior to treatment, the total and fecal coliform, heterotrophic
bacteria (measured as heterotrophic plate count) and nitrates, each day (Monday through Thursday) that either well is utilized during this period. In addition, total and fecal coliform, heterotrophic bacteria, and if chlorine is used as a disinfectant, free chlorine residual must be sampled and analyzed at one of the routine Waihee Valley Road sample sites, once each week. All of this data shall be documented and subsequently noted in the monthly report described under condition no. 6.

The Department of Health may consider reducing the monitoring frequency if the data indicates that the heterotrophic plate counts are consistently below 500 per ml. Any such request must be made in writing and accompanied by supporting data.

6. The Maui Department of Water Supply must submit a monthly report summarizing the North Waihee Well Nos. 1 and 2 water quality results during the emergency approval period by the 15th day of the following month (e.g., the October results must be submitted to DOH by November 15, etc.). The report must include all of the water quality data (including, but not limited to, total and fecal coliform, HPC, free chlorine residual, nitrates, etc.) at both wells and Waihee Valley Road sample sites, noting when the wells were in operation, when they were disinfected, flushed, and the subsequent bacteriological test results, as well as any other information that may help demonstrate that the source bacteria can be consistently controlled.

7. Anytime after December 31, 1997, the Maui Department of Water Supply may request a longer term approval if it has consistently demonstrated its ability to control the bacteria in these sources. Any such request must be made in writing and accompanied by supporting data.

This emergency conditional approval supersedes the July 1, 1997 emergency conditional approval issued by the Department of Health.

We must emphasize that this emergency conditional approval is strictly limited to the specified time period. The Department of Health will be prepared to issue a longer conditional approval when it is assured that the water quality will meet drinking water standards and public health is protected at all times.
The Department of Health reserves the right to suspend or revoke this conditional approval upon either a finding of violation on any of the above conditions or a determination of a threat to public health from factors which may arise in the future. Thank you for your attention and concern to these matters.

Sincerely,

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

c: SDWB Monitoring Section
SDWB Enforcement Section
Gordon Muraoka, Maui SDWB Sanitarian
Charles Ice, DLNR
Cari Cerizo, Maui Dept. of Water Supply
Mr. Thomas E. Arizumi, P.E., Chief
Department of Health
Environmental Management Division
P.O. Box 3378
Honolulu, HI 96801

Dear Mr. Arizumi:

North Waihee Wells 1 & 2 Engineering Report (Well Nos. 5631-02 & 03)

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

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

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

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

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

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

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

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

If the proposed project diverts additional water from streams or if new or modified stream diversions are planned, the project may need to obtain a stream diversion works permit and petition to amend the interim instream flow standard for the affected stream(s).
Based on the information provided, it appears that a Stream Channel Alteration Permit pursuant to Section 13-169-50, HAR will be required before the project can be implemented.

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

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

OTHER: Monitoring efforts by the US Geological Survey, Water Resource Division (USGS) indicate that, even without pumping at these wells, the water levels are declining. This is believed due to overpumpage of the adjacent Iao Aquifer System.

This overpumpage has led the Commission to consider designated Iao Aquifer System as a ground water management area. The intended use of these wells is to reduce pumpage in the Iao Aquifer System. Similarly, the Maui Board of Water Supply (MBWS) is planning to drill wells at Waikapu to spread pumpage within the Iao Aquifer.

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

Sincerely,

[Signature]
RAE M. LOUI
Deputy Director
The Honorable Michael D. Wilson  
Chairman of the Board  
ATTN: Rae Loui  
Department of Land and Natural Resources  
1151 Punchbowl Street  
Honolulu, Hawaii 96813  

Dear Mr. Wilson:

SUBJECT: PROPOSED SOURCE OF POTABLE WATER

Enclosed for your review and comments is a copy of the engineering report for the following source:

North Waihee Wells #1 and #2  
State Well No. 6-5631-02 and 6-5631-03  
Waihee, Maui, Hawaii

This report has been prepared pursuant to Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems, section 11-20-29.

The Department of Health will use your comments in determining the potential impacts which may result by the proposed project. It is also important for you to verify that the coordinate locations provided in the engineering report match those shown in your Groundwater Index.

Please submit your comments to the Safe Drinking Water Branch within 30 days from the date of this letter. You may also return the engineering report to this office if you do not need it for future reference.

If you should have any questions, please call the Safe Drinking Water Branch, Engineering Section, at [REDACTED]

Sincerely,

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

MY:la

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

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 212, DWS WAILUKU EMERGENCY SOURCE APPROVAL
NORTH WAIHEE WELL 1
STATE WELL NO. 6-5631-02

We would like to acknowledge receipt of three (3) copies of the engineering report for the North Waihee Wells 1 and 2 and the June 24 and 25, 1997 transmittal letters requesting an emergency approval to meet the Commission on Water Resource Management Division's July 1, 1997 milestone. After a preliminary review of the water quality data, the Department of Health hereby grants temporary conditional approval for use of the North Waihee Well 1 as a source of drinking water for a six-month period. This temporary approval shall expire at midnight, January 30, 1998. In addition, the use of this well is subject to the following conditions:

1. All water from the North Waihee Well 1 shall be disinfected before entering the distribution system.

2. The North Waihee Well 1 shall deliver potable water of the quality in compliance with Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems. The water quality shall be subject to verification by the Department of Health.

3. The Department of Water Supply, in its operation of the North Waihee Well 1, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.
Mr. David Craddick  
July 1, 1997  
Page 2  

4. The Department of Water Supply shall notify the Department of Health of any condition which may arise or be revealed that may contaminate the source and pose a threat to human health.

5. This temporary approval does not imply acceptance of the engineering report for the North Waihee Wells 1 and 2. The Department of Water Supply must submit the required water quality analyses for the North Waihee Well 2 as well as any other relevant information that may be needed by the Department of Health. Final approval of this new source of potable water will be withheld until the report is completed and all of the reviewing agencies have had the opportunity to study the engineering report.

If you have any questions, please contact Stuart Yamada of the Safe Drinking Water Branch at [redacted] or call from Maui the direct toll free number [redacted] ext. 64258.

Sincerely,

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

SY:gm  
c: Gordon Muraoka, Maui SDWB Sanitarian  
Wendell Sano, Monitoring Section  
Ann Zane, Enforcement Section  
Warren S. Unemori Engineering, Inc.  
2145 Wells Street, Suite 403  
Wailuku, Maui, HI 96793

WELLS(5631-02A.MSY)
Mr. David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 212, DWS WAILUKU
EMERGENCY SOURCE APPROVAL
NORTH WAIHEE WELL 1
STATE WELL NO. 6-5631-02

We would like to acknowledge receipt of three (3) copies of the engineering report for the North Waihee Wells 1 and 2 and the June 24 and 25, 1997 transmittal letters requesting an emergency approval to meet the Commission on Water Resource Management Division's July 1, 1997 milestone. After a preliminary review of the water quality data, the Department of Health hereby grants temporary conditional approval for use of the North Waihee Well 1 as a source of drinking water for a six-month period. This temporary approval shall expire at midnight, January 30, 1998. In addition, the use of this well is subject to the following conditions:

1. All water from the North Waihee Well 1 shall be disinfected before entering the distribution system.

2. The North Waihee Well 1 shall deliver potable water of the quality in compliance with Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems. The water quality shall be subject to verification by the Department of Health.

3. The Department of Water Supply, in its operation of the North Waihee Well 1, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.

July 1, 1997
Mr. David Craddick  
July 1, 1997  
Page 2

4. The Department of Water Supply shall notify the Department of Health of any condition which may arise or be revealed that may contaminate the source and pose a threat to human health.

5. This temporary approval does not imply acceptance of the engineering report for the North Waihee Wells 1 and 2. The Department of Water Supply must submit the required water quality analyses for the North Waihee Well 2 as well as any other relevant information that may be needed by the Department of Health. Final approval of this new source of potable water will be withheld until the report is completed and all of the reviewing agencies have had the opportunity to study the engineering report.

If you have any questions, please contact Stuart Yamada of the Safe Drinking Water Branch at [redacted] or call from Maui the direct toll free number [redacted] ext. 64258.

Sincerely,

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

SY:gm

c: Gordon Muraoka, Maui SDWB Sanitarian  
Wendell Sano, Monitoring Section  
Ann Zane, Enforcement Section  

Warren S. Unemori Engineering, Inc.  
2145 Wells Street, Suite 403  
Wailuku, Maui, HI 96793

WELLS(5631-02A.MSY)
May 19, 1997

Ms. Rae Loui
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND & NATURAL RESOURCES
STATE OF HAWAII
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

Re: NORTH WAIHEE WELLS 1 AND 2
STATE WELL NOS. 5631-02 AND 5631-03
NORTH WAIHEE WATER SOURCE PROJECT

Attached, for your use, are the completed pump installation reports and as-built drawings.

Should you have any questions, please contact our Engineering Division at

Sincerely,

David R. Craddick
Director

Enclosures
PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: Roscoe Moss Hawaii, Inc.

21. Name of person performing work: John Mole

22. Date Pump Installation Completed: April 9, 1997

23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: Sub, Byron Jackson, 96WR007382
   Capacity: 1050 gpm
   Motor type, H.P., Voltage, rpm: Sub, 150 HP, 460, 1751
   Depth of Pump Intake Setting 317 ft. below Grade, which elevation is 284.08 ft.
   Depth to bottom of airline 304 ft. below Grade, which elevation is 284.08 ft.
   Pumping Head is 420 ft. Type of flow meter: ____________ which measures in ____________

24. As-built drawings attached? X Yes ___ No

25. Other remarks/comments: (See below)

   Pump Installation Contractor (print) Roscoe Moss Hawaii, Inc.
   Signature William C. Moore, Vice President
   Date 4/30/97

   Applicant (print)
   Signature
   Date

8.(cont'd) DRILLER'S LOG (cont'd):

Water Level Dates Water Level Dates
Depth (ft.) Rock Description, Remarks, Depth (ft.) Rock Description, Remarks,

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PART I: WELL CONSTRUCTION REPORT

1. State Well No.: 5631-03  
   Well Name: N. Waihee Water Source  
   Island: Maui

2. Location/Address: N. Waihee Well No. 2  
   Tax Map Key: 3-2-0104

3. Drilling Company: ____________________________

4. Name of driller who performed work: ____________________________

5. Type of rig/construction: ____________________________

6. Date(s) Well Construction and pump tests (if any) completed: ____________________________

7. GROUND ELEVATION (referenced to mean sea level, msl): ____________________________ ft.
   Well Bench Mark (description/location): ____________________________  
   Elevation(msl): ____________________________ ft.

8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)

   Depths (ft.) Rock Description, Water Level, Dates, etc.  
   Depths (ft.) Rock Description, Water Level, Dates, etc.

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

9. Total depth of well below ground: ____________________________ ft.

10. Hole size: ____________________________ inch dia. from ________ ft. to ________ ft. below ground

     ____________________________ inch dia. from ________ ft. to ________ ft. below ground

     ____________________________ inch dia. from ________ ft. to ________ ft. below ground

11. Casing installed: ____________________________ in. I.D. x ____________________________ in. wall solid section to ________ ft. below ground

     ____________________________ in. I.D. x ____________________________ in. wall perforated section to ________ ft. below ground

     Casing Material/Slot Size: ____________________________

12. Annulus: Grouted from ________ ft. below ground to ________ ft. below ground

     Gravel packed from ________ ft. below ground to ________ ft. below ground

13. Initial water level: ________ ft. below ground.  
   Date and time of measurement: ____________________________

14. initial chloride: ____________________________ ppm.  
   Date and time of sampling: ____________________________

15. Initial temperature: ____________________________ °F  
   Date and time of measurement: ____________________________

16. PUMPING TESTS: Reference Point (R.P.) used: ____________________________  
   which elevation is ____________________________ ft.

   (1) Step-Drawdown Test Date ____________________________
   Start water level ________ ft. below R.P.
   End water level ________ ft. below R.P.

   (2) Long-term Aquifer Test Date ____________________________
   Start water level ________ ft. below R.P.
   End water level ________ ft. below R.P.

17. Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form) attached? __ Yes __ No

18. As-built drawings attached? __ Yes __ No

19. Other remarks/comments: (On back of this form)

Well Drilling Contractor (print) ____________________________  
C-57 Lic. No. ____________________________

Signature ____________________________ Date ____________________________

Surveyor (print) ____________________________  
Lic. No. ____________________________

Signature ____________________________ Date ____________________________

Applicant (print) ____________________________

Signature ____________________________ Date ____________________________
PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: Roscoe Moss Hawaii, Inc.
21. Name of person performing work: John Mole
22. Date Pump Installation Completed: April 7, 1997
23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: Sub/Byron Jackson/96WR007381
   Capacity: 1050 gpm
   Motor type, H.P., Voltage, rpm: Sub/150/460/1751
   Depth of Pump Intake Setting: 307 ft. below Grade, which elevation is 284.08 ft.
   Depth to bottom of airline: 294 ft. below Grade, which elevation is 284.08 ft.
   Pumping Head is: 420 ft. Type of flow meter: ________ which measures in ________

24. As-built drawings attached? X Yes No
25. Other remarks/comments: (See below)

Pump Installation Contractor (print) Roscoe Moss Hawaii, Inc. C-57 Lic. No. C-16437
Signature William C. Olsen Date 4/30/97
Applicant (print) William C. Moore, Vice President
Signature ___________________________ Date ___________________________

8.(cont'd) DRILLER'S LOG (cont'd):

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19. & 25. Remarks: WEL 9631-02 N. WALTER 1
WELL COMPLETION REPORT

1. State Well No.: 5631-02  Well Name: N. Waiehe Water Source  Island: Maui
2. Location/Address: North Waiehe Well No. 1  Tax Map Key: 3-2-0104

PART I. WELL CONSTRUCTION REPORT

3. Drilling Company: ____________________________
4. Name of driller who performed work: ____________________________
5. Type of rig/construction: ____________________________
6. Date(s) Well Construction and pump tests (if any) completed: ____________________________
7. GROUND ELEVATION (referenced to mean sea level, msl): ____________________________ ft.
   Well Bench Mark (description/location): ____________________________ Elevation(msl): ____________________________ ft.
8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)
   Depths (ft.)  Rock Description, Water Level, Dates, etc.  Depths (ft.)  Rock Description, Water Level, Dates, etc.
   ____________________________________________  ____________________________  ____________________________  ____________________________
   ____________________________________________  ____________________________  ____________________________  ____________________________
   (If more space is needed, continue on back)
9. Total depth of well below ground: ____________________________ ft.
10. Hole size: ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
    ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
    ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
11. Casing installed: ____________________________ in. I.D. x ____________________________ in. wall solid section to ____________________________ ft. below ground
    ____________________________ in. I.D. x ____________________________ in. wall perforated section to ____________________________ ft. below ground
    Casing Material/Slot Size: ____________________________
12. Annulus: ____________________________ ft. below ground to ____________________________ ft. below ground
    Gravel packed from ____________________________ ft. below ground to ____________________________ ft. below ground
13. Initial water level: ____________________________ ft. below ground. Date and time of measurement: ____________________________
14. Initial chloride: ____________________________ ppm  ____________________________ Date and time of sampling: ____________________________
15. Initial temperature: ____________________________ °F  ____________________________ Date and time of measurement: ____________________________
16. PUMPING TESTS: Reference Point (R.P.) used: ____________________________ which elevation is ____________________________ ft.
   (1) Step-Drawdown Test Date ____________________________  (2) Long-term Aquifer Test Date ____________________________
   Start water level ____________________________ ft. below R.P.  Start water level ____________________________ ft. below R.P.
   End water level ____________________________ ft. below R.P.  End water level ____________________________ ft. below R.P.
17. Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form) attached? ____________________________ Yes  ____________________________ No
18. As-built drawings attached? ____________________________ Yes  ____________________________ No
19. Other remarks/comments: ____________________________ (On back of this form)

Well Drilling Contractor (print) ____________________________  C-57 Lic. No. ____________________________
Signature ____________________________  Date ____________________________
Surveyor (print) ____________________________  Lic. No. ____________________________
Signature ____________________________  Date ____________________________
Applicant (print) ____________________________
Signature ____________________________  Date ____________________________
SUBMERSIBLE OUTLINE
STANDARD WELL SEAL — JUNCTION BOX CONSTRUCTION

DATE ________________________

NAME OF CUSTOMER COUNTY OF MAUI

DEPARTMENT OF WATER SUPPLY

PROPOSITION NO.: JOB NO. 95-10

ORDER NO. 58-960 D

PURCHASE ORDER NO. ______________________

NO. OF UNITS ___________ 

SURFACE PLATE ________ O.D. ________ TH'K

8 - ¾” FOUNDATION HOLES. STR. ¢ ON ______ B.C

8” — 8 T.P.I. — ¾” TAPER T&C ST'D. COLUMN ______

10” ______ 250 # F.F. (STEEL) DISCHARGE FLANGE

BOWL ASSEMBLY _______ STGS.

150 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE M

12” SIZE ______ PH. ______ CYCLE ______ VOLT

1050 ______ GPM ______ FT. TDH

CABLE SIZE ______ VOLTAGE ______ LENGTH ______

REMARKS: WELL PUMP No. 1

CABLE: 400 MCM

COLUMN PIPE: 8” SCH 40 GALVANIZED

TRANSFORMER PIPE: SCH 80 PVC. 1”

"NORTH WAIMEE WATER SOURCE"

PHASE II — DEVELOPMENT OF WELLS 1 & 2

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

JOB NO. ___________ PROP. NO. ___________

CERTIFIED CORRECT ___________ DATE ___________
Mr. David R. Craddick, Director  
Maui Department of Water Supply  
200 S. High Street  
Wailuku, Hawaii 96793  

Dear Mr. Craddick:  

North Waihee Wells 1 & 2 Pump Installation  

Thank you for our copy of your March 20, 1997 letter to the contractor for the captioned project. This letter anticipates pump delivery date and subcontractor commencement of work the first week of April. Commissioner Nobriga reports that work is indeed underway.  

We draw your attention to the permit conditions requiring surveyed elevation for the top of the casing and provision of means to measure water levels. These should be included in the Well Completion Report (Part II). Please advise us how you plan to measure water levels.  

If you have any questions, please call Charley Ice at [redacted] or toll-free at [redacted] extension 70251.  

Sincerely,  

RAE M. LOUI  
Deputy Director  

Cl:ss
April 2, 1997

Rae M. Loui, Deputy Director
State of Hawaii, Dept. Of Land & Natural Resources
Commission on Water Resource Management
Post Office Box 621
Honolulu, Hawaii 96809

Re: North Waihe'e Pump Installation (Well No. 5331-02 & 03)
   After-the-fact Kepaniwai Pump replacement permit
   Well No. 5332-05

Dear Ms. Loui:

At our March 18, 1997 Board of Water Supply meeting, the Board conditionally approved the Water Use Development Plan contract amendment to redo the Water Use Development Plan. The conditions were that it be subject to the Commission’s concurrence that it meets the needs of the Kepaniwai pump permit and that $25,500 be applied to the Water Use Development Plan integrated resource planning process in lieu of the $51,000 permit fine.

I realize you can not commit to Commission action. However, we need immediate clarification that we are not subject to a $25,500 fine plus the $25,500 applied to the Water Use Development Plan integrated resource planning process.

Sincerely,

David Craddick, Director

DC/fn
cc: Gary Zakian, Deputy Corporation Counsel
March 20, 1997

Mr. Eric Pilotin  
Goodfellow Brothers, Inc.  
P.O. Box 220  
Kihei, HI 96753-0220

Dear Mr. Pilotin:

SUBJECT: PUMP INSTALLATION, NORTH WAIHEE #1 AND #2

On March 19, 1997, the State Commission on Water Resource Management (CWRM) approved an extension of the pump installation permits for the North Waihee Wells #1 and #2. As you know, CWRM has focused on this project as a means to reduce pumping from the Iao Aquifer. It is important to us that the pumps be installed and the well completion reports be submitted to CWRM by May 1, 1997.

We understand that the pumps will be on site the week of March 24 and that your subcontractor will commence work the first week of April. Should any problems affecting the installation develop, please contact us immediately.

A copy of CWRM's agenda and the approved staff recommendation is enclosed for your information.

Very truly yours,

[Signature]

DAVID CRADDICK  
Director

Enclosure  
xc: Commission on Water Resource Management  
Engineering  
Planning

"By Water All Things Find Life"
Nov. 14, 1995  Following three separate two-month extensions of the start date, all of which went to the Commission for action, the Commission denied further extension of the start date, allowing for revocation of the permit as of January 13, 1996, unless the site ownership was successfully transferred and a schedule of actual installation work was provided to the Commission.

January 24, 1996  The Commission rescinded the revocation of the permit, as its conditions for doing so were met. Transfer of the permit was duly recorded. In a separate action concerning designation of Iao Aquifer as a water management area, action milestones were set in place, including a start deadline for pump installation at North Waihee (Phase 1 - first well/1.5 mgd) of November 1, 1996. On March 18, 1996, staff received a written request for a two-month start date extension under the original permit extension, with a work schedule attached; the extension was accepted administratively, from May 14, 1996 to July 14, 1996. Another written request was submitted June 10, for a start date extension to September 14, 1996; no staff action was taken at this point in view of the November 1, 1996 deadline set under the Iao milestones.

December 9, 1996  Staff received a letter from the applicant 1) indicating that a notice to proceed had been issued October 14, 1996; and 2) requesting an extension of the permit beyond the original March 1, 1997 deadline to June 16, 1997 to be consistent with a new contract schedule of work. BWS staff indicated that the contractor was beginning to marshal materials and grub the site, while a shipping delay meant that the pump would be installed in February 1997.

At a meeting on Maui to discuss designation of the Iao Aquifer, the Commission approved new action milestones, including commencement of work on pump installation by February 1, 1997, with evidence to be provided by February 8, 1997.

February 18, 1997  The Commission extended the permit to April 1, 1997. If work is not completed by April 1, 1997, the permit will be allowed to expire and the Board would have to reapply.

March 12, 1997  Maui Board of Water Supply requested being placed on the agenda to extend the permit's completion date until May 1, 1997 because rains at the construction site have delayed work (Exhibit 3).

WATER AVAILABILITY:

Waihee Aquifer System (at Iao System boundary) of Wailuku Sector.
Estimated Sustainable Yield: 8 mgd. Existing Use: none.
Proposed Use: 2-3 mgd.
Anticipated pump capacity: 1050 gpm.
ISSUES/ANALYSIS:

The wells will develop fresh, basal water for municipal use. The wells' static head currently stands about 7-8 feet above sea level. Pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low. Recent work by USGS indicates that these wells interact with the Iao Aquifer system and that current water levels and well depths may limit the capacity to produce water from these wells with chlorides below 250 mg/l. The applicant has chosen to reduce the pump size from 1400 to 1050 gpm, with the expectation that the total safe yield from these wells is probably closer to 3 mgd than the original prospective 4 mgd. Phase 1 will install the first pump in one of two wells, with capacity of 1.5 mgd; Phase 2, to install a pump in the other well for a total capacity of 3 mgd, is scheduled about four months behind Phase 1.

John Mink believes that there should be no stream effects because the stream channel in this vicinity is 200 feet above sea level.

While the BWS witnessed the lengthy period of failure to perform on this permit by the previous permittee and the Commission's determination to have the project problems resolved, the BWS has continued to make optimistic estimates of time for completing this project. The Commission has accommodated new work schedules by the applicant, extending the start date for twice the normal period once the permit was transferred.

The pumps are scheduled to arrive on March 25, 1997, as evidenced by the attachment to Exhibit 3. Milestone 3 established in December, 1996 required delivery of materials by February 1, 1997 (Exhibit 4). This milestone was not met. The staff also requested submittal of the well completion report, which has not been submitted.

RECOMMENDATION:

That the Commission:

1. Approve the request to extend the pump installation permit for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) to May 1, 1997, and

2. Require the submittal of the well completion reports Part I (Well Construction) for North Waihee Wells 1 and 2 by May 1, 1997.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Exhibit(s) 1 (Location Map)  2 (Proposed Well Section)  3 (Maui BWS letter)  4 (Milestone letter)
March 12, 1997

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

Dear Ms. Loui:

Subject: North Waihee Pump Installation Permit  
Wells No. 5631-2 and 5631-3

Reference your letter of March 7 concerning CWRM's action on the subject permit. We respectfully request reconsideration of the Commission's action and extend the permit deadline from April 1, 1997 to May 1, 1997 and allow this request to be put on the March 18, 1997 meeting agenda.

The pumps are scheduled to arrive on Maui on March 25, see attachment. Installation of the pumps to start in mid-April. Barring any unforeseen delays, such as rain delays, the installation of the pumps are anticipated to be completed the latter part of April.

Your favorable consideration is appreciated.

Sincerely,

David Craddick, Director  
EK/aw  
Attachment
UNITED STATES POSTAL SERVICE

PRINT/SEND ORIGINATED BY HULC

BILL TRACER 03/12/97 17:00 PS

PRO NUMBER DATE DES ORG
006-525629 2/28/97 HUL TUL

6 PCS 97010 TOTAL FRT CHG $1827.45 PPD

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BU/P INTERNATIONAL INC
PO BOX 473250
TULSA OK 74147

***CONSIGNEE***
ROSCOE HOSS HAWAII INC
91-238A OLAI ST
KAPOLEI HI 96707

TRLR MATU660103

LAST TRLR DUE#6646664
BILL ARV 03/06/97 01:59A CB

GUE 08 03/08/97 10:00A PB
HUL 1B 03/10/97 22:00P PB

ISLAND HUL
CUBE 279
VEG LURLINE
ETD 3/6/97
ETA 3/10/97

SERVICE DATE N/A

MR. ERIC PILOTIS

THIS IS TO ADVISE YOU THAT THIS SHIPMENT REFERENCING NORTH HAUHEE DUE TO ARRIVE INTO HOBOSLEE TODAY. WE HAVE MARKED THIS ORDER - RUSH SO THAT WE CAN GET THIS OUT TO ROSSO HOSS-ATTN: GLEN DAVIS AS SOON AS POSSIBLE. WE ARE PRESENTLY SLOUGHING TO GET THIS OUT TO THEM THIS FRIDAY. IF YOU HAVE FURTHER QUESTIONS, PLEASE CALL US AS (800) 220-8201

THANK YOU,
ARLAX WIND-FELL FORK SYSTEM-HUL

** TOTAL PAGE 01 **
Dear Mr. Craddick:

Iao Aquifer Milestones

We received your letter of February 10, 1997, reporting on the ten milestones set by the Commission for February 1, 1997 in the matter of designating the Iao Aquifer as a ground water management area. This response incorporates our understanding following a meeting with you in our office on Friday, February 21, 1997.

The Commission set ten milestones on December 9, 1996:

1) Water Shortage Plan: this is reported underway, and you are requesting guidance on "response triggers" for the various features mentioned in Milestone #1. In our February 24, 1997 meeting, you expressed concern that the Council would not approve a rule-change for invoking a cutback without these triggers. A water shortage plan is a preparedness measure outlining action to be taken in the event the Commission declares a water shortage or emergency. If the County wishes to exercise its own management in this regard, it is incumbent upon the Board to determine its own triggers and to undertake rule-making as necessary. This is separate from the Commission's shortage or emergency powers. We again request you provide details on the actions you are willing to take to reduce consumption by 1 mgd, 2 mgd, and 3 mgd.

2) A finalized site agreement for the Waikapu Tank Well (by February 1, 1997): a copy of the agreement, signed by both parties, was received from the attorney for Wailuku Agribusiness Co., Inc., (Mancini, Rowland & Welch) on February 21, 1997.

3) Delivery of materials and commencement of pump installation work at North Waihe'e Wells 1 & 2: photos, with the penned date of February 3, 1997 and showing concrete work at the wellhead, appear to show finish work on the well construction via completion of the pump pad, prior to pump installation work. We request your completion of marked items on enclosed well completion report Part 1 (Well Construction), that are not on file from the previous owner, and documentation of delivery of the pump equipment.
1.0 mgd brought on-line from North Waihe'e Wells 1 & 2 by August 1997, and the Iao Aquifer pumpage reduced accordingly: Historic Preservation Division reports that work on the pipeline to North Waihe'e had proceeded without an approved survey and mitigation plan, and that in the course of work, human burials had been found. You report that this was not a critical path item and that there should be no delay to the schedule.

5) Submittal of EA for North Waihe'e Wells 3 & 4: the schedule submitted corrects earlier representation that this EA could be scheduled as an alternative to the Hāmākuapoko EA, and would be submitted not in February but mid-May. The milestone is therefore adjusted to May 15, 1997.

6) A finalized agreement for extended use of the Wailuku Shaft 33: the Right of Entry and Operating Agreement has been executed, and the attorney for Wailuku Agribusiness Co., Inc. and C. Brewer Homes has forwarded a copy to us.

7) Submit the EA for Hāmākuapoko Wells by April 1, 1997: this is reported on track.

8) Notice To Proceed on the Paia phase of construction for the East Maui Water Development project by May 1, 1997: this milestone was based on Board staff belief that this phase could proceed while the SEIS was being completed. This assumption is incorrect, as this phase is also subject to completion of the SEIS. This milestone will have to be modified or deleted.

9) Iao Ditch facility to provide 2 mgd beginning in July, with evidence of 50% completion by April 1, 1997: you correctly point out that, although the operating capacity of the filters is 2.0 mgd, the average flow is only 1.5 mgd. The milestone amount will be corrected accordingly, while the date remains unchanged.

10) Updated schedules and plans for Wailuku Tank Well and East Maui Water Development (to be submitted by December 23, 1996): these were submitted January 9, 1997.

If you have any questions, please call Charley Ice at extension 70251 or toll-free at extension 70251.

Sincerely,

RAE M. LOUI
Deputy Director

Enclosure

Mayor Linda Crockett Lingle
Pat Kawano, Maui County Council
Norma Piltz, Maui Board of Water Supply
March 12, 1997

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

Dear Ms. Loui:

Subject: North Waihee Pump Installation Permit  
Wells No. 5631-2 and 5631-3

Reference your letter of March 7 concerning CWRM’s action on the subject permit. We respectfully request reconsideration of the Commission’s action and extend the permit deadline from April 1, 1997 to May 1, 1997 and allow this request to be put on the March 18, 1997 meeting agenda.

The pumps are scheduled to arrive on Maui on March 25, see attachment. Installation of the pumps to start in mid-April. Barring any unforeseen delays, such as rain delays, the installation of the pumps are anticipated to be completed the latter part of April.

Your favorable consideration is appreciated.

Sincerely,


David Craddick, Director  
EK/jaw  
Attachment

"By Water All Things Find Life"
THIS DOCUMENT IS NOT INTENDED TO BE USED FOR STATING PURPOSES

**SHIPPER**

BU/IP INTERNATIONAL INC
PO BOX 472250
TULSA OK 74147

**CONSIGNEE**

ROSCOE MOSS HAWAII INC
91-259A OLAI ST
KAPOLEI HI 96707

TRLR MATU660103

LAST TRLR UBE#666666
BILL ARV 03/06/97 01:59A CS

806-525629 2/28/97 HUL TUL

THIS IS TO ADVISE YOU THAT THIS SHIPMENT—REFERENCING NORTH HAWAII—DUE TO ARRIVE INTO HONOLULU TODAY. WE HAVE MARKED THIS ORDER—RUSH—SO THAT WE CAN GET THIS OUT TO ROSCOE MOSS—ATTN: GLEN DAVIS—AS SOON AS POSSIBLE. WE ARE PRESENTLY SHOOTING TO GET THIS OUT TO THEM THIS FRIDAY. IF YOU HAVE FURTHER QUESTIONS, PLEASE CALL US AS (800) [REDACTED]

THANK YOU,

ARLEEN MIHO—YELLOW FREIGHT SYSTEM—HUL

** TOTAL PAGE.01 **
Ms. Norma Piltz, Chairperson
Maui Board of Water Supply
P.O. Box 1109
Wailuku, HI 96793

Dear Ms. Piltz:

North Waihe'e Pump Installation (Well No. 5631-02 & 03)

This letter replaces a letter dated March 7, 1997, and corrects the paragraph detailing the Commission's action of February 18, 1997 on the North Waihe'e Wells 1 & 2 Pump Installation Permit. The Commission's action was to extend the permit to April 1, 1997, at which time work must be completed.

The Commission on Water Resource Management (Commission) took action on the captioned matters on February 18, 1997 in Honolulu. The Commission noted that these two sources are critical to reducing the overpumping in the Iao Aquifer System, and that the problems encountered in these two instances are not a good sign of progress away from designation. Noting the vote of confidence given the Board of Water Supply (Board) by several interested parties at the hearing concerning designation of the Iao Aquifer, the Commission directed staff to communicate to them the Commission's concerns for proper management as represented in these two cases.

North Waihe'e Wells 1 & 2

The North Waihe'e Wells 1 & 2 Pump Installation Permit was extended from March 1 (when the permit is scheduled to expire) to April 1, 1997. If work is not completed by April 1, 1997, the permit will be allowed to expire and the Board would have to reapply.

The Commission asked that the Board Chairperson respond to the Commission on the status of pump installation. This permit has a long history of delinquencies that had caused the Commission to adopt the unusual practice of reviewing and conditioning each request for extension. The permit expiration has been extended twice, and there have been five start date extensions with one revocation hearing. Commission action on designating the Iao Aquifer on December 9, 1996 included a February 8, 1997 milestone to provide evidence of the delivery of materials and commencement of this pump installation work. On February 12, 1997, we received photos of concrete work in progress at the well heads, with the date February 3, 1997 penned below. This appears to be well construction finish work, including installation of the pump pad, and might normally be associated with the original construction work. The Commission wants to see evidence of pump delivery to the site.
Additionally, the Commission was concerned that no one from the Maui Board of Water Supply, County Council, or Mayor’s Office was present to testify or answer questions regarding this permit.

Kepaniwai Pump Replacement

The after-the-fact Pump Installation Permit to replace the Kepaniwai Well pump was approved, with a finding that the Board was in violation of the Water Code by knowingly proceeding without a permit. The Board staff member present was unable to explain how the work at Kepaniwai proceeded without a permit, but indicated that the Board now has procedures in place to prevent such an occurrence in the future. The Commission approved a fine of $51,000, or in the alternative to apply $25,500 to a revision of the Water Use and Development Plan using an integrated resource planning process, requiring the Board to enter an agreement with Commission within 100 days to retain a consultant for this purpose.

County Representation

The Commission Chairperson directed staff to request that representatives of the County Council and Mayor attend all Commission meetings involving the Iao Aquifer, and that a letter be sent to the Maui Chamber of Commerce and Maui Hotel Association informing them of the numerous delays at North Waihe’e and that no representative of the Board, Council, or Mayor was present to testify or answer questions on these serious issues.

If you have any questions, please call me at [redacted] or toll-free at [redacted] extension 70214.

Sincerely,

RAE M. LOUI
Deputy Director

C: Mayor Linda Crockett Lingle
   David Craddick, Maui Department of Water Supply
   Pat Kawano, Maui County Council
   Alice Lee, Maui County Council, Public Works and Water Committee
   Lynne Woods, Maui Chamber of Commerce
   Terryl Vencel, Maui Hotel Association
   Terry Tomlin, Maui Board of Realtors
   CWRM Commissioners
Ms. Norma Piltz, Chairperson
Maui Board of Water Supply
P.O. Box 1109
Wailuku, HI 96793

Dear Ms. Piltz:

North Waihe'e Pump Installation (Well No. 5631-02 & 03)
After-the-fact Kepaniwai Pump Replacement Permit (Well No. 5332-05)

MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT
DATE: February 18, 1997
TIME: 8:00 a.m.
PLACE: DLNR Board Room

5. Maui Board of Water Supply, Extension of Permit, North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03), Request to Install 1050 gpm Pumps for Domestic Use, TMK 3-2-1:4, Waihee, Wailuku, Maui

PRESENTATION OF SUBMITAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

The staff recommendation was amended as follows:

A. That the Commission authorize the Chairperson to extend the pump installation permit for North Waihe'e Wells 1 & 2 (Well Nos. 5631-02 & 03) until April 1, 1997 and if work on the pump installation has not started, the permit will expire. "if work is not completed"

TESTIMONY BY APPLICANT:

Mr. Eric Okazaki, of the Maui Board of Water Supply, was available to answer questions.

Commissioner Mike asked Mr. Okazaki to have the Board of Water Supply Chairperson respond to the CWRM regarding the pumps.

Commissioner Wilson asked Deputy Director Rae Loui to send letters to the Maui Chamber of Commerce and Maui Hotel Association informing them of the numerous delays and that no one from the Maui Board of Water Supply, Maui County Council, or Maui County Mayor's office was present at the Commission to testify or answer questions. He also instructed that a letter be sent to the Maui Board of Water Supply Chairperson, Maui County Council, and the Mayor requesting that they be represented at all Commission meetings involving the Iao Aquifer.

MOTION: (MIKE/GIRALD)

To approve staff's recommendation as amended.

UNANIMOUSLY APPROVED AS AMENDED.
Additionally, the Commission was concerned that no one from the Maui Board of Water Supply, County Council, or Mayor's Office was present to testify or answer questions regarding this permit.

Kepaniwai Pump Replacement

The after-the-fact Pump Installation Permit to replace the Kepaniwai Well pump was approved, with a finding that the Board was in violation of the Water Code by knowingly proceeding without a permit. The Board staff member present was unable to explain how the work at Kepaniwai proceeded without a permit, but indicated that the Board now has procedures in place to prevent such an occurrence in the future. The Commission approved a fine of $51,000, or in the alternative to apply $25,500 to a revision of the Water Use and Development Plan using an integrated resource planning process, requiring the Board to enter an agreement with Commission within 100 days to retain a consultant for this purpose.

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The Commission Chairperson directed staff to request that representatives of the County Council and Mayor attend all Commission meetings involving the Iao Aquifer, and that a letter be sent to the Maui Chamber of Commerce and Maui Hotel Association informing them of the numerous delays at North Waihe'e and that no representative of the Board, Council, or Mayor was present to testify or answer questions on these serious issues.

If you have any questions, please call me at [redacted] or toll-free at [redacted] extension 70214.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

Cc: Mayor Linda Crockett Lingle
David Craddick, Maui Department of Water Supply
Pat Kawano, Maui County Council
Alice Lee, Maui County Council, Public Works and Water Committee
Lynne Woods, Maui Chamber of Commerce
Terry Venc, Maui Hotel Association
Terry Tomlin, Maui Board of Realtors
CWRM Commissioners
Burial sites halt work on water main

Project could be altered once, no more — Craddick

WAILEE — The discovery of two ancient burials under Kahekili Highway has caused the suspension of work on a 24-inch water main.

Department of Water Supply Director David Craddick says he believes resolving the problem will take three to four weeks. That should not endanger the department’s ability to meet “milestones” set by the state Commission on Water Resource Management to develop new water sources.

The new sources would relieve stress on the overused Iao aquifer that serves Central and South Maui.

“We knew we were in a sensitive area,” says Craddick, and the contract with Goodfellow Brothers included an archaeologist.

While digging the trench, two burials were found.

One was in the side of the trench and was bypassed. But the other was in the middle of the pipeline’s path.

Possible solutions include realigning the pipeline, but Craddick says he can do that just once.

The reason is that the big pipeline will carry water under a pressure of 200 pounds per square inch. This flow is so powerful that when it is forced to bend, it exerts a tremendous pressure, which is contained by concrete “reaction” or “thrust” blocks.

A series of jinks that required many blocks would guarantee a blowout, says Craddick.

So, he might be able to realign one section, but no more. The actual solution will be decreed by the state Historic Preservation Office after consultation with the Maui-Lanai Islands Burial Council.

In the past in Waiehe, the council has favored burial in place rather than removing ancient burials.

However, because of the likelihood of finding old burials in the Waiehe dunes, questions were raised, and a supplemental report was prepared in 1995.

The state says it has no record of ever receiving that report. “It was a mistake we made,” says Craddick.

If the state should force the county to send the pipeline “wigwagging” down the highway, Craddick says, the burials the realignment is meant to preserve would be destroyed anyway.

When the pipeline blows, the rush of water will “eat through the sand,” and “the crater will be so big, all archaeological evidence will be swept away.”

About 1,600 feet of road remains to be excavated for the big pipe. After that, the route turns up the mountain, and in that terrain it is hoped that burials will be rare or absent.
Craddick to abide by burial guidelines

By VALERIE MONSON

Staff Writer

WAILUKU -- Water Supply Director David Craddick said Thursday he will abide by state recommendations to keep the North Waihee waterline away from the sensitive sand dune areas on the makai side of Kahekili Highway, and described how he plans to gently bend the pipe around any mauka burials that may be encountered during future trenching.

Those statements were made during an occasionally heated 90-minute presentation before the Maui/Lanai Islands Burial Council in the Planning Department building.

Despite criticism about a Mainland firm he had brought in, by the end of the session Craddick was complimented for his proposal to preserve in place any human skeletons.

"I congratulate you," said Chairwoman Dana Naone Hall when told about the revisions.

Craddick must now put his words in writing and submit those plans to the State Historic Preservation Division of the Department of Land and Natural Resources for acceptance before work can resume. Because the preservation division had not received or approved an updated archaeological survey from the Board of Water Supply, it ordered that construction be halted two weeks ago after two ancient burials were disturbed during unauthorized digging. Division officials also said that any future trenching should be conducted mauka of the highway because the sand dunes on the makai side were known to contain unmarked burials and cultural artifacts.

One of the recent burials unearthed was discovered mauka and the other makai.

The first phases of the project will have a 24-inch pipeline running 4.3 miles through Waihee and Waiehu connect with two wells that were drilled in 1981. The additional water is needed to reduce stress on the lao aquifer, which is in danger of being overtapped. A 12-inch companion pipeline along the same route is also in the plans.

Water Supply Department officials continued to insist Thursday that an updated report had been sent to the Historic Preservation Division and must have been lost. Hall reminded them that the division had not asked for the report just once, but had made repeated documented requests for the paperwork over a two-year period to both Craddick and the Department of Public Works and Waste Management. Craddick again pleaded innocent.

"We were under the impression that all permits were approved," he said, "We now know they weren't. I don't want to say that's an excuse for not doing our job, but that's what happened."

The Burial Council echoed the preservation division's concerns by officially voting to recommend that future trenching be confined to the mauka side of the highway. The panel also
passed a motion to recommend that, in the future, an easement farther up on the mauka side should be obtained by Maui County, the Board of Water Supply, the Department of Hawaiian Home Lands or any other entity that has future plans to route utilities or pipelines through the area.

Both actions were unanimous among the five members who voted: Hall, Leslie Kuloloio, Charles Kauluwehi Maxwell Sr., Akoni Akana and Sam Kalalau. James Murray abstained, while Mercer "Chubby" Vincens had to leave and missed both votes. Loretta Hera of Lanai was not present.

When questioned what he would do next, Craddick said he "doesn't intend to" go makai into the sand dunes even if burials are found mauka during construction. He said he wants to test for any possible burials before starting work again "to incorporate their presence in aligning the pipeline." That would allow workers to plan the entire trench and gently shape the waterline around any burials rather than encounter a skeleton during digging and be forced to abruptly detour the pipe at sharp angles. Craddick fears the last scenario could lead to increased pressure on the joints, resulting in destructive blowouts.

Hall said later that Craddick should remember that any remains discovered during testing must still be reported to the Historic Preservation Division and discussed before the burial council.

Kuloloio and Maxwell were both visibly upset about a Mainland consultant brought in to perform "ground-penetrating radar" surveys to locate unknown burials. Rowland Cromwell, a geophysicist for Golder Associates of Redmond, Wash., admitted that while the technology can detect disturbances below the surface, it can't actually distinguish a group of rocks from human bones.

"It (the system) cannot prove or disprove the existence of a burial," conceded Cromwell.

"Then I don't know what you came here for," responded Kuloloio.

Craddick said the company and its sensing devices were brought in "because they can detect things underground. They can't tell the difference between rocks, nails or bones" but they can register signals that can be followed up by archaeological subsoil testing to see if burials are present. That would limit the number of random excavations.

Cromwell wanted members to know that "this machine is not to replace archaeologists or the burial council. It's a tool to aid the county in its decisions on where to send the archaeologists first."

After only one day on Maui, Cromwell said early radar suggests disturbances both mauka and makai of the highway in the pipeline's path. Hands-on testing by archaeologists will follow.

Maxwell was especially concerned that if the company compiles a high-tech listing of grave sites, it could lead to vandalism or the robbing of bones.

Craddick said the contract to Golder Associates was for $8,000.
Water department accused of violating burial site guidelines

By VALERIE MONSON

WAIHEE -- At least one of the ancient burials recently unearthed during the digging of a water main in Waihee by the Department of Water Supply might have been left in peace had repeated orders by the state Department of Land and Natural Resources been followed, according to Dana Naone Hall, chairperson of the Maui-Lanai Islands Burial Council.

Because Water Director David Craddick did not submit an acceptable archaeological survey to DLNR before construction began, neither the state nor the burial council had an opportunity to give the project the green light. Construction of such a project is forbidden by law without the approval of the State Historic Preservation Division of DLNR.

But Craddick admitted that digging began in January, without that approval.

"The burials and another cultural layer that was also encountered were affected, perhaps needlessly, because the review process had not been completed," said Hall. "This was clearly a violation of the law."

The pipeline is to carry water to Central Maui from a new well in Waihee. The county has been under pressure to open up another well to alleviate the demand on the central Lao aquifer, which some believe is in danger of being overtapped. The state Commission on Water Resources Management is still considering plans to take over the county's management of the aquifer, a move that the business community and Mayor Linda Crockett Lingle strongly oppose.

To obtain a stream channel alteration permit for the project in March of 1995 from DLNR Chairman Michael D. Wilson, Craddick had to sign papers along with the co-applicant, a representative of C. Brewer Homes Inc. One of the conditions was that an updated survey needed to be submitted and approved by SHPD before digging could begin.

Craddick said last week that his department had sent in the survey, as required, but later in the interview, he admitted that "the archaeological work was not in final form." DLNR officials wrote to Craddick, as recently as Feb. 3, that an acceptable survey had not been received and continued to ask the water department to comply.
Hall claims that, had the report been completed and sent out for comment before approval, the human remains uncovered might have been avoided.

In December of 1994, SHPD had requested an updated archaeological inventory survey from the county for review. The county was planning to dig in an area mauka of the road as well as on the makai side, where it was already well known that numerous Native Hawaiian burials and artifacts were contained in the sensitive sand dune area.

When reports of trenching reached Honolulu, officials were caught off guard.

"Our office was surprised to learn that they had begun the construction work," said Sara Collins, state archaeologist for Maui.

Although SHPD continued to ask for the updated survey, Craddick said he thought it had been completed.

"Let's put it this way," said Craddick when asked to comment on the missing report, "DLNR said they didn't receive it."

Craddick also told The Maui News that, in the future, he believes if burials are encountered in the area in construction of the pipeline, they should be moved.

"It's not his call," said Hall.

Once the two burials had been disturbed, SHPD administrator Don Hibbard ordered the project stopped via fax on Feb. 3. Craddick claimed this week that he had already halted the project the day before, but Hall disputed that.

In his Feb. 3 letter, Hibbard called commencement of the construction work at the site "premature" and said it "already had an 'adverse effect' on significant historic sites in the project area."

Hall was also concerned that permits needed for construction might have been issued. On Dec. 24, 1996, Hibbard asked engineer Bert Ratte of the county Land Use and Codes Administration "that the permit be held until we have an opportunity to submit our recommendations ...." Ratte refused to comment and referred all questions to Charles Jencks, director of Public Works and Waste Management for Maui County.

When contacted Wednesday, Jencks said that grading permits were not required for the project, but that a plumbing permit was. When asked if his department had issued a plumbing permit, Jencks said he didn't know, but he would get the information to The Maui News. He has yet to do so.
AGENDA
FOR THE MEETING OF THE
COMMISION ON WATER RESOURCE MANAGEMENT

DATE: February 18, 1997
TIME: 8:00 a.m.
PLACE: DLNR Board Room

1. Minutes of the January 23, 1997 meeting.

2. Old Business/Announcements

3. City and County of Honolulu, Department of Transportation Services, Request for Extension to Stream Channel Alteration Permit, Reconstruction of a Bikeway Bridge, Kaelepu Stream, Kailua, Oahu (TMK:4-3-10:84)

4. Department of Transportation, Application for a Stream Channel Alteration Permit, Construction of Bridge Abutments, Footing and Wing Walls For a Highway Widening Project, Pohakea Stream, North Kihei, Maui, (TMK 3-6-01:1,4 and 3-8-5)

5. Maui Board of Water Supply, Extension of Permit, North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03), Request to Install 1050 gpm Pumps for Domestic Use, TMK 3-2-1:4, Waihee, Wailuku, Maui

6. Maui Board of Water Supply, After-the-Fact Application for Well Permit, Kepaniwai Well (Well No. 5332-05), Pump Replacement: 700-gpm Pump for municipal use, Wailuku, Maui, TMK 3-3-3:5

7. Hawaii Country Club, Application for a Water Use Permit, Hawaii Country Club Well (Well No. 2603-01), TMK 9-4-2:8, Modification of Water Use Permit for Future Golf Course Irrigation Use for 1.0 mgd, Waipahu-Waiawa Ground Water Management Area, Oahu

8. Luana Hills Country Club (formerly Royal Hawaiian Country Club), Transferral of Water Use Permits, Royal Hawaiian Wells (Well Nos. 2145-01 and 2045-06), TMK 4-2-8:001 & 4-2-9:001, Waimanalo Ground Water Management Area, Kailua, Oahu
Agenda
Commission on Water Resource Management

9. Honolulu Board of Water Supply, Application for a Water Use Permit, Nuuanu Aerator Well, (Well No. 2149-03), TMK 1-09-07:2, Future Municipal Use for 0.5 mgd, Nuuanu Ground Water Management Area, Oahu

10. The Estate of James Campbell, Modification of a Water Use Permit, EP 7, 8 Well (Well No. 2202-15 to 20), TMK 9-1-17:04, Future Nonpotable Urban Use for 1.142 mgd, Waipahu-Waiawa Ground Water Management Area, Oahu

11. Land Process Service Corporation, Revocation of Water Use Permit, LandPro Well (Well No. 1849-07), TMK 2-8-09:76 for 0.001 mgd, Nuuanu Ground Water Management Area, Oahu

12. Other Business

Materials related to items on this agenda are available for review at our office at 1151 Punchbowl Street, Room 227, and also will be available at the meeting.

Any person may testify or present information on any meeting agenda item, unless the item involves a proceeding in an existing contested case. In addition, if you have a legal interest that may be adversely affected by the proposed action, you may have a right to an administrative contested case hearing. You must make the request for such a hearing either orally or in writing at the public hearing or meeting for which this notice is given. Hawaii Administrative Rules (H.A.R.) Section 13-167-52(a).

If you request a contested case hearing, you will have the opportunity to present to the Commission oral or written evidence or testimony or both to establish your standing. You may present your testimony or evidence on standing at the meeting or public hearing described above or, alternatively, at a hearing set by the Commission at a later date.

If you request a contested case hearing either orally or in writing, you must also complete and file (or mail and postmark) a written petition for a contested case with the Commission within ten days after the date of the public hearing or meeting noticed here. Petition forms are available from the Commission. H.A.R. Section 13-167-52(a).

If you do not make such a request or fail to file a timely written petition with the Commission, the consequence is that you will be precluded from later obtaining a contested case hearing and seeking judicial review of any adverse decision. H.A.R. Chapter 13-167.

Disabled individuals planning to attend the public hearing or meeting are asked to contact the Commission at the above address or phone (Kauai) ext. 70214, (Maui) ext. 70214, (Hawaii) 974-4000 ext. 70214, (Molokai or Lanai) 1-800-GOV-INHI ext. 70214 or 587-0214 to indicate if they have special needs which require accommodation.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

February 18, 1997
Honolulu, Oahu

Maui Board of Water Supply

Extension of Permit
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1050 gpm Pumps for Domestic Use
TMK 3-2-1:4 Waihee, Wailuku, Maui

APPLICANT:
Maui Board of Water Supply
P.O. Box 1109
Wailuku, HI 96793

LANDOWNER:
Same

ACTION REQUESTED:
Extension of pump installation permit four months, from March 1, 1997 to July 1, 1997, for installing a 1050 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

LOCATION: See Exhibit 1.
DIMENSIONS: See Exhibit 2.

BACKGROUND:
March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995
Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in two months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
Nov. 14, 1995  Following three separate two-month extensions of the start date, all of which went to the Commission for action, the Commission denied further extension of the start date, allowing for revocation of the permit as of January 13, 1996, unless the site ownership was successfully transferred and a schedule of actual installation work was provided to the Commission.

January 24, 1996  The Commission rescinded the revocation of the permit, as its conditions for doing so were met. Transfer of the permit was duly recorded. In a separate action concerning designation of Iao Aquifer as a water management area, action milestones were set in place, including a start deadline for pump installation at North Waihee (Phase 1 - first well/1.5 mgd) of November 1, 1996. On March 18, 1996, staff received a written request for a two-month start date extension under the original permit extension, with a work schedule attached; the extension was accepted administratively, from May 14, 1996 to July 14, 1996. Another written request was submitted June 10, for a start date extension to September 14, 1996; no staff action was taken at this point in view of the November 1, 1996 deadline set under the Iao milestones.

December 9, 1996  Staff received a letter from the applicant 1) indicating that a notice to proceed had been issued October 14, 1996; and 2) requesting an extension of the permit beyond the original March 1, 1997 deadline to June 16, 1997 to be consistent with a new contract schedule of work. BWS staff indicated that the contractor was beginning to marshal materials and grub the site, while a shipping delay meant that the pump would be installed in February 1997.

At a meeting on Maui to discuss designation of the Iao Aquifer, the Commission approved new action milestones, including commencement of work on pump installation by February 1, 1997, with evidence to be provided by February 8, 1997.

WATER AVAILABILITY:

Waihee Aquifer System (at Iao System boundary) of Wailuku Sector.
Estimated Sustainable Yield: 8 mgd. Existing Use: none.
Proposed Use: 2-3 mgd.
Anticipated pump capacity: 1050 gpm.
ISSUES/ANALYSIS:

The wells will develop fresh, basal water for municipal use. The wells' static head currently stands about 7-8 feet above sea level. Pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low. Recent work by USGS indicates that these wells interact with the Iao Aquifer system and that current water levels and well depths may limit the capacity to produce water from these wells with chlorides below 250 mg/l. The applicant has chosen to reduce the pump size from 1400 to 1050 gpm, with the expectation that the total safe yield from these wells is probably closer to 3 mgd than the original prospective 4 mgd. Phase 1 will install the first pump in one of two wells, with capacity of 1.5 mgd; Phase 2, to install a pump in the other well for a total capacity of 3 mgd, is scheduled about four months behind Phase 1.

John Mink believes that there should be no stream effects because the stream channel in this vicinity is 200 feet above sea level.

While the BWS witnessed the lengthy period of failure to perform on this permit by the previous permittee and the Commission's determination to have the project problems resolved, the BWS has continued to make optimistic estimates of time for completing this project. The Commission has accommodated new work schedules by the applicant, extending the start date for twice the normal period once the permit was transferred.

RECOMMENDATION:

A. That the Commission authorize the Chairperson to extend the pump installation permit for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for four (4) months, to July 1, 1997, based upon evidence that work actually started.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Exhibit(s) 1 (Location Map)
2 (Proposed Well Section)
Waihee 1&2
(Well No. 5631-02,03)
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Ground Elevation: 283 ft., msl.

Cement Grout: 200 ft.

Hole Diameter: 20 in.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Solid Casing: ASTM Designation A-242 USS Cor-ten, Kaiser
Material: Steel Kaisaloy
Length: 289 ft.
Diameter: 16 in.
Wall thickness: 0.3125 in.

Casing: □ Perforated □ Screen
USS Cor-ten, Kaiser
Material: Steel Kaisaloy
Length: 20 ft.
Diameter: 16 in.
Wall thickness: 0.25 in.
Openings: 100 sq. in./A.F.

Open Hole:
Length: 79 in.
Diameter: 15 in.
DATE: 07/15/96

TO: Rae Loui, Dep. Dir
       CWRM

Fax No. 581-02-19

Subject: N.Waihee Evaluation on Dispute
         between Waikoloa Arribus/ DWS

No. of Pages (including this transmittal): 5

REMARKS:


Transmitter: D. Wadieh

NOTE: If you have not received all of the pages, please call
       Roy @ (808) 243-7816
January 8, 1996

Mr. David Craddick
Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793

RE: C. BREWER HOMES & MAUI BOARD OF WATER SUPPLY

Dear Mr. Craddick:

In response to your letter of December 18, 1995, I submit the following information.

Pursuant to the Letter of Engagement, I agreed to serve as Evaluator on the dispute between Wailuku Agribusiness Co., Inc. and the Board of Water Supply concerning the Waihee Aquifer. The scope of my work was spelled out to be:

1. Assess the land and water resource, based on information provided by the parties or requested of the parties by the evaluator.

2. Assess the positions of the parties concerning the nature and scope of compensability for the value of the resources under consideration and the methods to quantify the value.

3. If requested by the parties, provide direction to the parties as to possible avenues and methods to narrow the gap in the positions of the parties, if any.

I met with the representatives of Wailuku Agribusiness and the Board of Water Supply on two occasions, July 17, 1995 in Wailuku, and again on August 10, 1995 in Honolulu at my office. The initial meeting was to enable me to gain a better understanding of my
Pursuant to a schedule established, briefs were submitted to me by the parties. Subsequent to reviewing the briefs and forming an understanding of the issues from the parties, I met with the Board of Water Supply representatives; John S. Rapacz, Esq., Deputy Corporation Counsel; Marie Kimmey, AIA; J. Alan Kugle, Executive Vice President/General Counsel of C. Brewer; Pete Moynahan, President/Chief Executive Officer of C. Brewer; and Paul Mancini, Esq., representing Wailuku Agribusiness.

During these sessions, I gained an understanding of the goals of the parties and perception each party had on legal and factual issues. In my discussions with the parties, I formulated and expressed to them an opinion that condemnation of the property by the Board pursuant to Eminent Domain powers would undoubtedly meet with vigorous resistance by Wailuku Agribusiness and would clearly not meet the objectives that each of the parties had established. It would be an unsatisfactory solution based on the considerable costs involved, the time consumed, and the great uncertainties for both parties. I emphasized to the parties that because of the more than 20 years of litigation involved in the Hanapepe litigation, there exists considerable confusion regarding the law on water rights in the State of Hawaii. Particularly with the wide split between Federal and State courts, there is great confusion presently because of this conflict. The valuation matter would also involve a battle of experts over valuation.

For these and other reasons, I explained that I did not believe, and they both concurred that a judicial resolution would not satisfy the business and political objectives of each of the parties. I suggested that the parties compromise their positions to resolve the valuation matters at hand. I understand that this has been accomplished and the matter is now proceeding to closing.
Mr. David Craddick  
January 8, 1996  
Page 3

I congratulate the parties on their ability to focus on the issues and to come to a resolution which I believe serves both purposes of the private and public sectors in a reasonable manner.

Very truly yours,

FONG & FONG  
Attorneys-at-Law

By ______  
ARTHUR S.K. FONG

ASKF:jfm
December 18, 1995

Mr. Arthur S.K. Fong  
FONG & FONG  
Attorneys At Law  
Grosvenor Center, PRI Tower  
733 Bishop Street, Suite 1550  
Honolulu, Hawaii 96813-4006

Dear Mr. Fong,

We would like to request a write-up on your analysis of the N. Waihee evaluation performed for the Board of Water Supply and C. Brewer.

We would pay for the write-up at the previously agreed rate. This write-up is needed for the record.

Your early response is greatly appreciated.

Sincerely,

David Craddick, Director  
DC/jaw

"By Water All Things Find Life"
FROM: [Signature]  DATE: 6/17  SUSPENSE DATE

TO: BAYER, G.  INIT.  TO: LOUI, R.  INIT.  FOR: Approval  PLEASE: See Me
CHING, F.  INIT.  NAKAMA, L.  INIT.  Signature  Review & Comment
FUJII, N.  INIT.  NAKANO, D.  INIT.  Information  Take Action
HARDY, R.  INIT.  OHYE, M.  INIT.  Type Draft  Type Final
HIGA, D.  INIT.  SAKODA, E.  INIT.  File  Xerox copies
HIRANO, E.  INIT.  SUBIA, S.  INIT.  JINNAI, R.  INIT.  SWANSON, S.  INIT.  KUNIMURA, I.  INIT.  UWAIN, J.  INIT.  YODAI, K.  INIT.

publ. for bid: July 5
opening date: Aug 8
award bid: Aug 21
NTP: Sep 17 Bd Mtg.  19-05-20

2 July 81: [Handwritten note: other text not legible]
June 10, 1996

Mr. Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Pump Installation Permit
North Waihee Wells 1 and 2
(Wells No. 5631-02 & 03)

We have reviewed our schedule and progress of the completed bid documents and have determined that our plans will not be completed in timely manner to meet the revised start date for the pump installation work.

We respectfully request an extension of two (2) months for a start date by September 14, 1996.

If there are any questions, please call our Engineering Division at [redacted]

Sincerely,

[Signature]

David R. Craddick
Director

hk

"By Water All Things Find Life"
March 15, 1996

Honorable Rae M. Loui
Deputy to Chairperson
State of Hawaii
Department of Land & Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

In response to your letter of March 12, we offer the following:

1. Enclosed are copies of Exhibits A & B for the Unemori Contract showing preparation of the bid package for the North Waihee well development were included in the contract;

2. Colored copy of attachment to, and documentation of the extension of the December 21, 1995 Closing Agreement with Wailuku Agribusiness;

3. Item #4 requests information regarding the relationship the "Purchase Agreement dated December 21, 1995 and the Grant of Easement for North Waihee Wells.

The Purchase Agreement referred to is the Closing Agreement. The Closing Agreement was used to outline each parties position prior to final agreement. After a due diligence period, the "deal" documents were executed and consideration given. "Deal documents" include:

- Limited Warranty Deed
- Co-Tenancy Agreement and Agreement for Restrictive Covenants;
- Grant of Easement (Well Field 1);
- Release and Quitclaim of Right in Easement Area (Well Fields 2 and 3);
- Grant of Easement (Well Fields 2 and 3);
- Notice of Agreement;
- Declaration of Restrictive Covenant.

"By Water All Things Find Life"
The Grant of Easement gives the Board of Water Supply (BWS) the unfettered right to drill and develop water on a number of sites and the right to relocate sites, if required. The Limited Warranty deal with the purchase of a portion of North Waihee watershed property (A-1 on Item 2) and a Conservation Easement for a portion of the South Waihee watershed and portions of Waiehu watershed (A-2 on Item 2).

Water Source credits are not being given to anyone in these agreements. There is a provision for participation with Brewer after 5 MGD of water is developed.

Item #5 and #6 are enclosed for your review.

The contract for installation of pumps into the Hamakuapoko Wells has been executed and a contract for an EIS Supplement has been executed. The pumps will be used for testing only until DOH & OEQC requirements have been met.

The Haiku Well is not connected to the Central Maui System and cannot be used to reduce Iao demand.

We hope these answers satisfy your requirements.

Sincerely,

David Craddick, Director
DC/jaw

copy: Marie Kimmey, BWS Chairperson
George Y. Tengan, Deputy Director
EXHIBIT A

SCOPE OF ENGINEERING SERVICES
FOR THE DESIGN OF
THE DEVELOPMENT OF THE
NORTH WAIHEE WELLS
IN WAIHEE, MAUI, HAWAII

WARREN S. UNEMORI ENGINEERING, INC. will proceed through a series of tasks comprising of the design of the development of the North Waihee Wells. The scope of the work is described in the attached letters.
Mr. David Craddick, Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waihee Wells Development

In response to your request of December 4, 1995 we are pleased to submit this proposal to complete the work necessary to finalize plans and specifications for the following:

PHASE I. INSTALLATION OF 24 INCH TRANSMISSION LINE ON KAHEKILI HIGHWAY BETWEEN KUHINIA STREET AND WELL SITE ACCESS ROAD. ALSO 16 INCH TANK FEEDER LINE BETWEEN WELL SITES 1 AND 2 AND KAHEKILI HIGHWAY

Scope of Services in Proposal to C. Brewer Homes, Inc.:

- **Task 1. Surveying Services.**

  - **Work Completed to Date:**

    1.1 Conducted topographic survey of Kahekili Highway between project limits. Located existing water meters, water lines, fire hydrants, valves, culvert crossings, sidewalks, power poles, etc.

    1.2 Developed topographic map therefrom plotting adjoining property boundaries, driveways, etc.

    1.3 Developed approximate right-of-way line for Kahekili Highway based on adjoining property descriptions and right-of-way maps available.

    1.4 Conducted topographic survey of access road between Well Site 1 and 2 and Kahekili Highway.
Task 2. Engineering Design Services.

Work Completed to Date:

2.1 Met with client, SDOT, and DWS to discuss objectives and scheduling of project.

2.2 Developed plan and profile for waterline along Kahekili Highway and Waihee Stream crossing.

2.3 Determined size of waterline needed to deliver minimum of 3 MGD, allowing for reasonable head losses.

2.4 Developed details for stream crossing and typical trench and pavement sections.

2.5 Developed construction traffic control plan per State DOT standards.

2.6 Submitted construction plans to State DOT and Department of Water Supply for approval. (First Submittal)

Work Remaining:

2.7 Incorporate agency comments after first review and resubmit for final.

2.8 Prepare NPDES permit application and Best Management Practice BMP plan for trench bewatering and submit to DOH for approval.

2.9 Develop technical specs.

2.10 Develop cost estimate.

2.11 Develop contract bid documents.

2.12 Assist client with the bidding and bid review process.
• Task 3. Installation of 16 Inch Tank Feeder Line Between Well Sites 1 and 2 and 24-inch Line on Kahekili Highway.

• Additional Work:

3.1 Develop plan and profile for 16-inch tank feeder line along existing access road.

3.2 Develop plans for temporary connection between 16-inch tank feeder line and 24-inch transmission line on Kahekili Highway.

• Task 4. Temporary Connection Between 24-inch Transmission line on Kuhinia Street and existing Distribution System on Kahekili Highway.

• Additional Work:

4.1 Prepare plans to connect new 24-inch transmission line to the existing 6-inch line on Kanekili Highway south of Kuhinia Street intersection.

4.2 Prepare plans to install pressure regulator assembly between the 24-inch transmission line and Waihee Village distribution system north of Kuhinia Street.

COMPENSATION

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>Engineering Design Services</td>
<td>$11,000</td>
</tr>
<tr>
<td>3.1</td>
<td>16-inch Feeder Line along Access Road</td>
<td>$13,000</td>
</tr>
<tr>
<td>4.0</td>
<td>Temporary Connection on Kanekili Highway in Vicinity of Kuhinia Street</td>
<td>$2,000</td>
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SUBTOTAL – PHASE I: $33,000
PHASE II. DEVELOPMENT OF NORTH WAIHEE WELLS 1 AND 2

Scope of Services in proposal to C. Brewer Homes Inc.

- Task 1. Civil Engineering.
  - Work Completed to Date:
    1.1 Prepared well site grading plan.
    1.2 Prepared site plan showing layout of equipment building, generator, electrical transformer pad and driveway.
    1.3 Prepared site drainage plan.
    1.4 Prepared plans to pave well site and access driveway.
    1.5 Prepared fencing plan to secure well site.
    1.6 Designed equipment building to house chlorinator, MCC, diesel generator and JCH & I system.
    1.7 Coordinated work with electrical and mechanical subconsultant and submitted plans and specs for agency review. (First Submittal)
  - Work Remaining:
    1.8 Incorporate agency review comments and resubmit plans and specs for final approval of DPW, IWS, JCH, and IINR.
    1.9 Prepare engineering report for approval by DOH Clean Water Branch.
    1.10 Prepare technical specs, proposal, and contract bid documents.
    1.11 Assist client solicit and review bids.
Mr. David Craddick  
North Waihee Wells Development  
December 7, 1995  
Page 5

• Task 2. Mechanical and Electrical Engineering.
  
  • Work Completed to Date:
    2.1 Prepared plans for deepwell pumps to be installed in existing wells.
    2.2 Prepared plans for two sets of discharge piping, control valves, flow switches, solenoid valves, and well level recording devices.
    2.3 Designed chlorination system, exhaust air system, compressor, and flow meter assembly.
    2.4 Prepared plans for Motor Control Center (MCC), electrical conduits and wiring, incoming power ducts and transformer pad, and meter system.
    2.5 Prepared plans for emergency generator, automatic transfer switch and concrete mounting pad for same.
    2.6 Prepared plans for SCADA and telemetry system.

• Task 3. Geologist (John Mink)
  
  • Work Remaining:
    3.1 Provide general advice on setting for installation of pumps in North Waihee Wells 1 and 2.
    3.2 Write protocol for engineering report to be submitted to DOH.
    3.3 Oversee pumping tests on these wells.

• Task 4. Temporary Pump Control for Wells 1 and 2 and Connection to Existing Distribution System.
  
  • Additional Work:
    4.1 Run pipe analysis to determine capacity of existing system.
4.2 Evaluate pump curve to determine whether deep-well pump needs to be modified for temporary hookup to existing low level water system.

4.3 Prepare plans and specifications for temporary pump control between Wells 1 and 2 and Waiehu Heights Tank.

COMPENSATION

We propose to provide the above mentioned remaining and additional work for the following fees:

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<th>Task</th>
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<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Civil Engineering</td>
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<tr>
<td>2.</td>
<td>Mechanical and Electrical Engineering</td>
<td>$7,000</td>
</tr>
<tr>
<td>3.</td>
<td>Geologist</td>
<td>$12,000</td>
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<tr>
<td>4.</td>
<td>Temporary Pump Control Between Wells 1 and 2 and Waiehu Heights Tank</td>
<td>$4,200</td>
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</table>

| SUBTOTAL - PHASE II: | $53,200 |

TOTAL FEE PROPOSED - PHASES I AND II: $70,200

The State GET (4.167%) will be added to all fees.

DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $4,100
SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases I and II within sixty (60) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project.

2. Environmental Assessment.
5. Soil Engineering, if required.

Thank you for giving us the opportunity to submit this proposal. If you have any questions, please call us. We look forward to receiving authorization to complete the design of Phases I and II of the project.

Sincerely,

Warren J. Memori
Mr. David Craddick, Director  
Department of Water Supply  
County of Maui  
300 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waiehu Wells Development

This proposal is being submitted to complete the unfinished scope of services for Phases III, IV, and V of subject project as requested in your letter of November 28, 1995. The proposal for Phases I and II, which had a higher urgency, was submitted yesterday.

The scope of services for Phases III, IV, and V are as follows:

PHASE III. INSTALLATION OF 24 INCH TRANSMISSION LINE BETWEEN KUHINIA STREET AND THE CMJV 1.0 MG RESERVOIR IN UPPER WAIEHU

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:

  1.1 Established horizontal and vertical survey controls along transmission line route between Kuhinia Street and CMJV well source.
  
  1.2 Conducted topographic survey of transmission line route including pipeline crossings, and developed topographic map therefrom.

- Work Remaining:

  1.3 Develop meters and bounds descriptions and maps for transmission line easement between Kuhinia Street and CMJV well source.
Task 2. Engineering Design Services

- Work Completed to Date:

  2.1 Set up preliminary plan and profile work sheets for transmission line.

  2.2 Prepared exhibits for stream alteration permit at four (4) drainage crossings.

- Work Remaining:

  2.3 Finalize plan and profile of water system.

  2.4 Design drainage structure at Waiehu Stream and Kope Gulch crossings.

  2.5 Develop typical details of pavement section and construction traffic control plan for Malaihi Road in Upper Waiehu.

  2.6 Prepare plan of water system details.

  2.7 Prepare plans for connection to existing 1.0 MG Upper Waiehu Reservoir.

  2.8 Develop technical specs, cost estimate and contract bid document.

  2.9 Submit plans and specs for agency review.

  2.10 Address review agency comments and resubmit plans for final approval.

  2.11 Prepare NPDES permit application and Best Management Practice (BMP) plan for stream crossing and disposal of water from hydrotesting and rewatering.

  2.12 Assist client with the bidding and bid review process.
COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$3,000</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$128,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE III: $131,000

PHASE IV. CONSTRUCTION OF 0.5 MG CONTROL TANK AND SITE IMPROVEMENTS, INCLUDING GrADING AND PAVING OF TANK SITE AND ACCESS ROAD, INSTALLATION OF 24 INCH INFLOW AND OUTFLOW LINES AND DRAINAGE SYSTEM

Scope of services in proposal to T. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:
  1.1 Established horizontal and vertical survey controls along tank access road and at tank site.
  1.2 Conducted topographic survey of 0.5 MG tank site.
  1.3 Conducted topographic survey of access road to tank site.
  1.4 Developed topographic map therefrom.

- Work Remaining:
  1.5 Develop subdivision map to cut out tank site from TMK 1-2-01:03 following establishment of the tank site limits.
  1.6 Prepare easement for tank access road.
1.7 Prepare metes and bounds description for tank site and tank access road easement.

1.8 Prepare subdivision application and transmit to DWS for submittal to LUCA for processing.

Task 2. Design Engineering Services

- Work Remaining:

2.1 Prepare mass grading plans for tank site and access road.

2.2 Prepare plans for tank access road.

2.3 Prepare drainage and soil erosion control report.

2.4 Prepare drainage plans for tank site and access road.

2.5 Prepare fencing plans to secure tank site.

2.6 Coordinate plans with MECO to extend overhead power to tank site for booster pumps.

2.7 Prepare Best Management Practice (BMP) Plan and NPDES permit application.

2.8 Prepare plans to construct 1.6 MG reinforced concrete control tank with required piping, valves, and appurtenances.

2.9 Prepare plans to install concrete diversion ditch, concrete gutter, drainage system and pavement around reservoir site.

2.10 Prepare plans to construct equipment building to house MCO, UHACA, and telemetry systems.

2.11 Prepare plan and profile for separate 14-inch inflow and outflow lines between Hanekili Highway and 1.5 MG control tank.
2.12 Prepare specs, cost estimate, and contract bid documents.

2.13 Submit plans and specs for agency review.

2.14 Address review agency comments and resubmit for final approval.

2.15 Assist client with the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$15,500</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$119,100</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE IV: $134,600

PHASE V. BOOSTER PUMP STATION AT CONTROL TANK SITE AND SCADA TIE-IN AT DWS BASEYARD IN KAULUI.

- **Task 1:**

  1.1 Prepare plans for two (2) short-coupled vertical booster pumping units.

  1.2 Prepare plans for two sets discharge piping, including control valves, flow switches, and solenoid valves.

  1.3 Prepare plans for Motor Control Center, electrical conduits and wiring, incoming power ducts and transformer pad, and metering system.

  1.4 Prepare plans for emergency generator, automatic transfer switch and concrete pad.
1.5 Design new instrument house to be located at Upper Waiehu Reservoir to house all SCADA and telemetry equipment, electrical and mechanical work.

1.6 Prepare plans to integrate SCADA system with Department of Water Supply's existing SCADA system.

1.7 Prepare cost estimate, specs and contract bid documents.

1.8 Submit plans and specs for agency review.

1.9 Address review agency comments and resubmit for final approval.

1.10 Assist client in the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fee:

<table>
<thead>
<tr>
<th>Tasks</th>
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<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design Engineering Services</td>
<td>$13,500</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE VII: $13,500

TOTAL FEE PROPOSED - PHASES III, IV, AND VII: $13,500

The State GET (4.167%) will be added to all fees.
DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $5,000

SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases III, IV, and V within one hundred fifty (150) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project:

1. Environmental Assessment.
2. Stream Alteration Permit.

We hope the foregoing reflects your understanding of the remaining work required to fully integrate Wells 1 and 2 with the TMJV transmission system. If not, please call us. We will be glad to meet with you to discuss any additional scope of services required.

Sincerely,

[Signature]

Warren G. Inemori
EXHIBIT B

TIME SCHEDULE

PHASE I AND PHASE II shall be completed within 60 days of the issuance on Notice to Proceed, exclusive of review time by governmental agencies.

PHASE III, PHASE IV, AND PHASE V shall be completed within 150 days of Notice to Proceed, exclusive of review time by governmental agencies.
GENERAL TERMS AND CONDITIONS OF CONTRACTS
OF THE DEPARTMENT OF WATER SUPPLY
FOR SERVICES OF CONSULTANTS

Section 1 - Definitions

1.01 Board
1.02 County
1.03 Consultant
1.04 Contract
1.05 Department
1.06 Director
1.07 HRS
1.08 Project

Section 2 - Award and execution of contract

2.01 Selection of consultant
2.02 Contract not binding unless properly executed
2.03 Agreements outside of the contract
2.04 Notice to proceed

Section 3 - Legal Relations and Responsibility

3.01 Independent contractor
3.02 Contracts by the consultant
3.03 Findings confidential
3.04 Ownership vested in department
3.05 Indemnity
3.06 Campaign contributions prohibited
3.07 Absence of interest
3.08 Laws, ordinances and codes, and rules
3.09 Arbitration
3.10 Professional liability insurance

Section 4 - Performance of contract

4.01 Time of performance
4.02 Delay
4.03 Liquidated damages
4.04 Prosecution of the work
4.05 Modification of contract
4.06 Authority of the director
4.07 Subcontracting or assignment of contract
4.08 Cooperation by the department
4.09 Use of department’s standards
4.10 Review by the department
Section 5 - Compensation

5.01 Compensation
5.02 Reduction or increase in compensation
5.03 Payments
5.04 Assignment of money due or payable

Section 6 - Remedies

6.01 Right of the board to suspend the performance of services
6.02 Right of the board to terminate the contract
6.03 Authority to withhold money due or payable
6.04 Remedies not exclusive

SECTION 1 - DEFINITIONS

1.01 "Board" means the Board of Water Supply, County of Maui.
1.02 "County" means the County of Maui, State of Hawaii.
1.03 "Consultant" means the individual, partnership, corporation, or joint venture engaged by the board to perform the services under the contract.
1.04 "Contract" means the written agreement covering the performance of certain professional services by the consultant. It shall include all referenced material, and all exhibits attached thereto and included therein. It shall also include all modifications of the contract by supplemental agreements thereto in writing and written orders of the director.
1.05 "Department" means the Department of Water Supply, County of Maui, including the Board of Water Supply.
1.06 "Director" means the director of the Department of Water Supply, County of Maui, or the director's representative.
1.07 "HRS" means Hawaii Revised Statutes.
1.08 "Project" means the undertaking under the contract.

SECTION 2 - SELECTION OF CONSULTANT AND EXECUTION OF CONTRACT

2.01 Selection of consultant. The consultant, upon being selected to render certain professional services for the project, will be notified of the consultant's selection by the director. The notice shall not be construed to be authorization to proceed with the performance of services.
2.02 Contract not binding unless properly executed. The contract shall not be binding or have any force until it has been fully and properly executed by all of the parties thereto, and the insurance policy required under subsection 3.10 is accepted by the director.

2.03 Agreements outside of the contract. The contract and this General Terms And Conditions Of Contracts Of The Department Of Water Supply For Services Of Consultants contain the complete understandings regarding the responsibilities of the department and the consultant, and as of the effective date of the contract, supersede all other understandings between the consultant and the department.

2.04 Notice to proceed. (a) The director shall issue a written notice to proceed, establishing the date on which the time of performance shall commence and authorizing the consultant to proceed with the performance of the consultant’s services.

(b) Services performed by the consultant prior to the date indicated in the notice to proceed shall be at the consultant’s own risk.

SECTION 3 - LEGAL RELATIONS AND RESPONSIBILITY

3.01 Independent contractor. The consultant shall perform the contract as an independent contractor. The consultant, the consultant’s subcontractors, agents, and employees shall not be entitled to the benefits and privileges of an employee of the county under the civil service system.

3.02 Contracts by the consultant. The consultant does not have the right to enter into any contract on behalf of or make any commitment on behalf of the department.

3.03 Findings confidential. Any report, information, or data prepared or assembled by the consultant under the contract shall not be made available to any individual or organization by the consultant without the prior written approval of the director.

3.04 Ownership vested in department. (a) Any and all data, information, field notes, designs, drawings, tracings, results, and any other thing derived or obtained directly or indirectly as a result of the contract shall be the sole and exclusive property of the department and the consultant shall not have any interest, right, or title in or to any of the foregoing.

(b) Prior to the release of retainage under subsection 5.03, or termination of the contract under subsection 6.02, the
consultant shall submit the items prepared pursuant to subsection (a) herein to the department.

3.05 Indemnity. The consultant shall defend, indemnify, and hold harmless the board, its officers, employees, and assigns, from and against any and all claims, suits, actions, injuries to persons, damages to property, and wrongful death, that may arise out of or in connection with any errors, omissions, or negligent acts by the consultant, the consultant's subcontractors, agents, and employees, in their performance of the contract until such time as any action against the consultant is barred by Chapter 657 HRS, as amended, and shall reimburse the board, its officers, employees, and assigns, for any judgments, costs, and expenses, including attorney's fees, incurred in connection with the defense of any such claim, or incurred by the board in enforcing this provision.

3.06 Campaign contributions prohibited. No portion of the consultant's compensation under the contract shall be used for campaign contributions.

3.07 Absence of interest. The consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. The consultant further covenants that in the performance of this contract, no person having any such interest shall be employed.

3.08 Laws, ordinances and codes, and rules and regulations. (a) The consultant shall be fully informed of all applicable federal and state laws, county ordinances and codes, and federal, state, and county rules and regulations, which in any manner affect the contract and the performance thereof, including but not limited to:

(1) Article 1 of Title 10, Maui County Code, as amended, relating to the traffic code,

(2) Title 12, Maui County Code, as amended, relating to streets, sidewalks, and public places,

(3) Article 1 of Title 14, Maui County Code, as amended, relating to improvement districts,

(4) Chapter 16.04, Maui County Code, as amended, relating to the Model Fire Code,

(5) Chapter 16.08, Maui County Code, as amended, relating to the Housing Code,

(6) Title 19, Maui County Code, as amended, relating to zoning,
(7) Chapter 16.24, Maui County Code, as amended, relating to the Building Code,

(8) Chapter 16.16, Maui County Code, as amended, relating to the Electrical Code,

(9) Chapter 16.20, Maui County Code, as amended, relating to the Plumbing Code,

(10) Chapter 103, HRS, as amended, relating to expenditure of public money,

(11) Chapter 104, HRS, as amended, relating to wages and hours of employees on public works,

(12) Chapter 22 of Title 12, Hawaii Administrative Rules, relating to wage determinations

(13) Chapter 102, HRS, as amended, relating to the fire marshal,

(14) Chapter 101, HRS, as amended, relating to the Health Department,

(15) Chapter 343, HRS, as amended, relating to environmental impact statements.

(16) Chapter 107, HRS, as amended, relating to fair employment practices,

(17) Chapter 106, HRS, as amended, relating to industrial safety,

(18) Chapter 386, HRS, as amended, relating to workers' compensation,

(19) Chapter 396, HRS, as amended, relating to occupational safety and health.

(20) Section 507-17, HRS, as amended, relating to recovery on bond for materials and labor used on public works.

(21) Chapter 200 of Title 11 of the department of health, relating to environmental impact statements.

(22) Part 3 of Subtitle 8 of Title 12, Hawaii Administrative Rules, relating to construction standards.

(23) Article II, Special Management Area Rules and Regulations of the County of Maui.

(24) Title 19 of the Maui County Code, relating to zoning.
(b) If any discrepancy or inconsistency is discovered between the contract and any such law, ordinance, code, or rule, the consultant shall forthwith advise the director, in writing, of such discrepancy or inconsistency.

(c) The consultant shall comply with all such current laws, ordinances and codes, and rules.

(d) If, in part, the consultant’s work includes the preparation of construction bid documents, the department’s furnishing of the general conditions, and forms of the proposal, bid bond, contract, and performance and payment bond under subsection 4.09, does not waive the consultant’s responsibility under this subsection and consultant shall be fully responsible for the design of the project.

3.09 Arbitration. (a) Any controversy arising out of the contract, the refusal to perform the contract or any portion thereof, or the breach thereof shall be settled by arbitration in accordance with the rules of the American Arbitration Association and judgment rendered by such arbitration shall be binding upon the board and the consultant. Each party shall bear its own costs and shall equally pay for any and all fees, costs, and expenses of the arbitrator.

(b) The consultant shall not delay the work because arbitration proceedings are pending or in progress, unless approved, in writing, by the board.

3.10 Professional liability insurance. The insurance to be procured and maintained under the contract shall not be less than one million dollars.

SECTION 4 - PERFORMANCE OF CONTRACT

4.01 Time of performance. Time is of the essence of the contract. Performance of the services shall be commenced on the commencement date designated in the notice to proceed, and shall be completed within the contract time specified in the contract.

4.02 Delay. (a) If any delay in the performance of the consultant’s services occur as a result of unforeseeable causes beyond the control and without the fault or negligence of the consultant, including but not limited to acts of God, acts of the public enemy, acts of the department with respect to the contract, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe unforeseeable causes beyond the control and without the fault or negligence of the consultant and the consultant’s subconsultants, the consultant shall be granted an
extension of the time of performance, corresponding to the length of the delay.

(b) If, as a result of the delay, completion of performance within the extended time causes undue hardship to the consultant, the director may, in the director's discretion, grant a further extension of the time of performance.

(c) No extension of time shall be granted unless a written application, stating in detail the cause or causes for such delays is filed by the consultant with the director within ten calendar days after the commencement of the delay. The period of time of each extension of time shall be determined by the director. No such extension shall be deemed a waiver of the right of the board to terminate the contract for any other or additional delay not covered by the specific terms of such an extension or extensions.

4.03 Liquidated damages. Due to the speculative character and difficulty of ascertaining damages to the department resulting from any delay beyond the contract time, the consultant, for the purpose of putting the question of damages beyond controversy and dispute, shall pay the board an amount equal to the daily rate set forth in the contract multiplied by the number of days beyond the contract time as liquidated damages and not as a penalty for work which remains incomplete beyond the contract time or as extended by the director; provided that the remedy of liquidated damages shall be in addition to any other rights and remedies otherwise available to the board and not expressly waived herein.

4.04 Prosecution of the work. (a) The consultant shall be available upon reasonable demand to discuss the progress of the services being performed. All questions arising during the performance of the contract which must be resolved by the director shall be brought to the director's immediate attention.

(b) The consultant shall perform the consultant's work in accordance with established practices for good exterior appearance, and the natural and man-made environment; provided that if the project is for an economic feasibility study or other study, the consultant shall direct the consultant's work to relate appropriately to and in accordance with established principles, practices, and standards for such study.

(c) The consultant shall furnish sufficient technical supervision and administrative personnel to insure the proper performance of the services under the contract.

(d) The consultant shall be responsible for the accuracy of all computations, completeness, and integrity of all designs and plans or studies.
(e) The director shall have access at all reasonable times to all notes, designs, drawings, tracings, or other technical data pertaining to the services being performed under the contract for the purpose of inspection or making copies thereof.

4.05 Modifications of contract. (a) The department may at any time revise the scope of the project or the consultant’s scope of work; provided that such revisions shall be made by an amendment to the contract.

(b) No waiver or modification of the contract, or any provision therein shall be valid unless such waiver or modification is in a form of an amendment to the contract and executed by the consultant and the board.

(c) No document, other than an amendment to the contract and executed by the consultant and the board, purported to be a waiver or modification of the contract, or any provision therein shall be offered or received in evidence of any proceeding, arbitration, or litigation arising out of or affecting the contract, or the rights or obligations of the consultant or the board.

4.06 Authority of the director. Any question or dispute concerning any provision of the contract which may arise during its performance shall be decided by the director. The decisions of the director shall be final and binding upon all parties unless such decisions is fraudulent, capricious, arbitrary, or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. Any appeal under this subsection shall be submitted to the board. Nothing herein shall be construed as making final and binding any decision of the director or the board, or both, on a question of law. Pending final decision of any dispute or question, the consultant shall proceed diligently with the consultant’s performance of services in accordance with the decision of the director or the board.

4.07 Subcontracting or assignment of contract. The consultant shall not subcontract or assign all or any part of the performance of the consultant’s services without the prior written consent of the director. Any consent by the director to subcontract any portion of the contract shall not be construed to relieve the consultant of any responsibility for the performance of the contract.

4.08 Cooperation by the department. The department, without cost to the consultant, shall cooperate fully with the consultant and will promptly place at the consultant’s disposal all available pertinent information which the department may have in its possession.

4.09 Use of department’s standards. (a) The consultant shall refer to the department’s standard details and shall not
duplicate such standard details in the consultant's work, unless the consultant makes modifications thereto.

(b) The department will provide the consultant with the general conditions, and formats of the proposal, bid bond, contract, performance and payment bond.

4.10 Review by the department. (a) The department will review the consultant's work, and may ask that certain modifications be made thereof. If, in the consultant's judgment, such modifications by the department affect the consultant's responsibilities under the contract, the consultant shall advise the director in writing.

(b) The inclusion of the department's comments does not waive the consultant's responsibilities under subsection 4.04.

SECTION 5 - COMPENSATION

5.01 Compensation. The consultant shall be paid the amount stated in the contract, reduced or increased pursuant to subsection 5.02, as full compensation for his services under the contract.

5.02 Reduction or increase in compensation. (a) The compensation of the consultant shall be reduced or increased in accordance with the modifications to the consultant's scope of work as the contract is amended under subsection 4.05.

(b) The compensation of the consultant shall be increased to reimburse the consultant for increased costs to perform the services if performance of the services is delayed by more than six months by an act or omission of the department; provided that the consultant submits within thirty days following the termination of the delay, in writing, a request for reimbursement containing:

(1) the reimbursement requested;

(2) the act or omission of the department causing the request for reimbursement;

(3) the services of the consultant affected by the department's act or omission;

(4) a breakdown of the requested reimbursement; and

(5) other information which the consultant and the director deem relevant to the request.
5.03 Payments. (a) As long as the services of the consultant are performed in accordance with the contract, the department may pay the consultant monthly progress payments based upon the value of the services performed by the consultant, as estimated by the consultant and the director.

(b) The department may retain up to five percent from each monthly progress payment, and after fifty percent of the compensation under the contract is paid, and the consultant’s performance is satisfactory, no additional amount will be retained; provided that if the consultant’s performance is not satisfactory, the director may retain up to five percent of all amounts due the consultant.

(c) Final payment, inclusive of amounts retained by the department, shall be made (1) upon determination by the director that the consultant has satisfactorily fulfilled his obligations under the contract, and (2) in accordance with chapters 103-53 and 237-45, HRS, upon receipt of a tax clearance from the department of taxation, certifying that the consultant has paid all delinquent taxes levied or accrued.

5.04 Assignment of money due or payable. Assignments of money due or to become payable to the consultant shall not be valid without the prior written consent of the director. The rights of the assignee to moneys due or to become due to the consultant shall be subject to subsection 6.03.

SECTION 6 - REMEDIES

6.01 Right of the board to suspend the performance of services. (a) The board has the right to order the suspension of the performance of the services or portions thereof at any time. The order shall:

(1) Be in writing;

(2) State the reason or reasons for the suspension;

(3) Specify the portions of the contract being suspended; and

(4) Specify the estimated period of suspension.

(b) If the board orders the suspension of the entire performance of services and the estimated period of suspension is more than six months, the consultant has the right to terminate the contract; provided that he submits a request for termination within six months following receipt of the order for suspension.
(c) If the contract is not terminated within six months, the consultant may request reimbursement for additional costs incurred due to the suspension of work.

6.02 Right of the board to terminate the contract. (a) The board has the right to order the termination of the contract at any time. The order shall be in writing and shall be forwarded to the address of the consultant stated in the contract.

(b) The board may terminate the contract if the consultant:

(1) fails to begin work under the contract at the time required;

(2) is unnecessarily delaying the performance of the contract or any part thereof;

(3) is failing to perform the contract with sufficient or adequate personnel, equipment, or materials, or is not making sufficient progress to ensure the completion of the contract within the time specified;

(4) fails to perform the contract in accordance with directions of the director;

(5) discontinues performance of the contract;

(6) fails to recommence performance of the contract within a reasonable time after service of a written order to do so is the performance had been suspended;

(7) becomes insolvent or is declared bankrupt;

(8) commits any act of bankruptcy or insolvency;

(9) allows any final judgment to stand against the consultant unsatisfied for a period of ten calendar days;

(10) makes an assignment for the benefit of creditors;

(11) fails to pay for all labor, tools, materials, and equipment;

(12) has abandoned the contract; or

(13) violates or fails to comply with any of the provisions of the contract or this General Terms and Conditions of Contracts of the Department of Water Supply for Services of Consultants.
(c) The board may also terminate the contract for reasons, which may include but are not be limited to, the abandonment, deferral, restudy, or revision of the project by the department.

(d) If the board terminates the contract due to the consultant’s default, the board may contract with another consultant to complete the remainder of the contract.

(e) In any termination, the consultant shall be compensated for all work performed until the termination order, upon the consultant’s compliance with subsections 3.04 and 5.03.

(f) Such compensation due the consultant shall take into account liquidated damages, and the value of materials, data, maps, plans, or other documents or information gathered, complied, produced, or obtained, which the consultant fails to deliver.

6.03 Authority to withhold money due or payable. The board may withhold such amounts from the money due or to become payable under the contract to the consultant, or any assignee under subsection 5.04, as may be necessary to protect the board against liability or to satisfy the obligations of the consultant to the board and to employees, subcontractors and material men who have performed labor or furnished material and equipment under the contract and may make such payments from such amounts as may be necessary to discharge such obligations and protect the board.

6.04 Remedies not exclusive. The express provision herein of certain measures which may be exercised by the board for its protection shall not be construed to preclude the board from exercising any other or further legal or equitable right to protect its interests.
FIRST AMENDMENT OF CLOSING AGREEMENT

This First Amendment is dated this 30th day of January, 1996 by and between the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, with its principal office and post office address at 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "Board") and WAILUKU AGribusiness Co., Inc., a Hawaii corporation, whose principal place of business and post office address is 90 Waiko Road, P. O. Box 520, Wailuku, Maui, Hawaii 96793 ("Wailuku").

RECITALS: Reference is made to the closing agreement dated December 21, 1995 between the Board and Wailuku (the "Agreement"). The purpose of this first amendment is to set forth the mutual agreement of the parties concerning the extensions of certain dates to the agreement.

AMENDMENT: For valuable consideration, the Board and Wailuku mutually agree as follows:

1. The last full paragraph in Section 6 of the agreement is amended to read in its entirety as follows:

"If the BOARD is not satisfied as to any matter referred to above or any other matter, whether related to the Property or not related to the Property, the BOARD may cancel this agreement by written notice to WAILUKU no later than February 7, 1996, in which event this Agreement will terminate. If counsel for the BOARD and WAILUKU shall be unable to agree on the form and content of all closing documents, WAILUKU may cancel this Agreement by written notice to the BOARD no later than February 7, 1996. In each such instance, prior to February 8, 1996, the BOARD will return to WAILUKU all of WAILUKU's studies, plans and other material in the Board's possession; and the parties shall be relieved from any liability hereunder."

2. In all other respects the agreement shall remain in full force and effect.

3. This amendment may be executed in counterparts. Signatures by facsimile transmission will be accepted as originals by each party.

Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By: [Signature]

Its Chairperson

[Signature]
WAILUKU AGRIBUSINESS CO., INC.

By J. Alan Keach
Its: Chairman of the Board

By Kathleen J. Ohira
Its: Secretary
On this 30th day of January, 1996, before me personally appeared MARIE KIMMEY, to me known, who being by me duly sworn, did say that she is the chairperson of the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument was signed and sealed in behalf of said BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged said instrument to be the free act and deed of said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]

Notary Public, in and for said County and State

My commission expires: 4/1/98
STATE OF HAWAII  
COUNTY OF MAUI  

On this 30th day of January, 1998, before me personally appeared J. MEW PUNGE and TAROH F. ISHIRO, to me known, who being by me duly sworn, did say that they are the Secretary and Chairman of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, and that said instrument was signed in behalf of said corporation by authority of its Board of Directors, and that said officers acknowledged said instrument to be the free act and deed of said corporation.

[Signature]

Notary Public, in and for said County and State of Hawaii

My commission expires: 02/10/96

STATE OF HAWAII  
COUNTY OF MAUI  

On this _____ day of __________, 1998, before me personally appeared ___________________ and ___________________, to me known, who being by me duly sworn, did say that they are the ___________________ and ___________________ of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, and that said instrument was signed in behalf of said corporation by authority of its Board of Directors, and that said officers acknowledged said instrument to be the free act and deed of said corporation.

[Signature]

Notary Public, in and for said County and State

My commission expires: ___________________
SECOND AMENDMENT OF CLOSING AGREEMENT

This Second Amendment is dated this \(6^{th}\) day of \(February\), 1996 by and between the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, with its principal office and post office address at 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "Board") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, whose principal place of business and post office address is 90 Wai'ko Road, P. O. Box 520, Wailuku, Maui, Hawaii 96793 ("Wailuku").

RECITALS: Reference is made to the closing agreement dated December 21, 1995 between the Board and Wailuku as amended by First Amendment of Closing Agreement dated January 30, 1996 (the "Agreement"). The purpose of this second amendment is to set forth the mutual agreement of the parties concerning the extensions of certain dates to the agreement.

AMENDMENT: For valuable consideration, the Board and Wailuku mutually agree as follows:

1. The last full paragraph in Section 8 of the agreement is amended to read in its entirety as follows:

"If the BOARD is not satisfied as to any matter referred to above or any other matter, whether related to the Property or not related to the Property, the BOARD may cancel this agreement by written notice to WAILUKU no later than February 16, 1996, in which event this Agreement will terminate. If counsel for the BOARD and WAILUKU shall be unable to agree on the form and content of all closing documents, WAILUKU may cancel this Agreement by written notice to the BOARD no later than February 16, 1996. In each such instance, prior to February 16, 1996, the BOARD will return to WAILUKU all of WAILUKU's studies, plans and other material in the Board's possession; and the parties shall be relieved from any liability hereunder."

2. In all other respects the agreement shall remain in full force and effect.

3. This amendment may be executed in counterparts. Signatures by facsimile transmission will be accepted as originals by each party.
Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By __________________________
MARIE KIMMEY
Its Chairperson

WAILUKU AGRIBUSINESS CO., INC.

By __________________________
J. Alan Kyle
Its: Chairman of the Board

By __________________________
Kathleen J. O'Brien
Its: Secretary

Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By ____________________________
MARIE KIMMEY
Its Chairperson

WAILUKU AGRIBUSINESS CO., INC.

By ____________________________
Its:

By ____________________________
Its:

STATE OF HAWAII )
 ) SS.
COUNTY OF MAUI )

On this ___ day of ____________, 1996, before me personally appeared MARIE KIMMEY, to me known, who being by me duly sworn, did say that she is the chairperson of the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument was signed and sealed in behalf of said BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged said instrument to be the free act and deed of said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public, in and for said County and State

My commission expires: ____________

STATE OF HAWAII )
 ) SS.
COUNTY OF MAUI )

On this ___ day of ____________, 1996, before me personally appeared J. Alan Kugle and Kathleen F. Oshiro, to me known, who being by me duly sworn, did say that they are the Chairman and Secretary of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, and that said instrument was signed in behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, in and for said County and State of Hawaii

My commission expires: 02/10/96
THIRD AMENDMENT OF CLOSING AGREEMENT

This Third Amendment is dated this 21st day of February, 1996 by and between the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, with its principal office and post office address at 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "Board") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, whose principal place of business and post office address is 90 Waiko Road, P. O. Box 520, Wailuku, Maui, Hawaii 96793 ("Wailuku").

RECITALS: Reference is made to the closing agreement dated December 21, 1995 between the Board and Wailuku as amended by First Amendment of Closing Agreement dated January 30, 1996 (the "Agreement") and Second Amendment of Closing Agreement dated February 6, 1996. The purpose of this third amendment is to set forth the mutual agreement of the parties concerning the extension of the closing date under the agreement to no later than February 22, 1996.

AMENDMENT: For valuable consideration, the Board and Wailuku mutually agree as follows:

1. Paragraph 4, page 2 of the agreement is amended to read in its entirety as follows:

   For the purpose of the agreement, closing shall be the date when all appropriate conveyance documents are recorded. WAILUKU and the BOARD agree to promptly execute appropriate and customary documents when requested by escrow to do so. The "scheduled closing date" shall be on or before February 22, 1996. There is no automatic right to extend. Time is of the essence and the "scheduled closing date" may not be extended unless both the BOARD and WAILUKU so agree in writing. This transaction shall be escrowed by Title Guaranty Escrow Services of Hawaii (Wailuku Branch).

2. In all other respects the agreement shall remain in full force and effect.

3. This amendment may be executed in counterparts. Signatures by facsimile transmission will be accepted as originals by each party.
Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By [Signature]

Its Authorized Signatory

WAILUKU AGRIBUSINESS CO., INC.

By [Signature]

Its CHAIRMAN OF THE BOARD

By [Signature]

Its Secretary

APPROVED AS TO FORM AND LEGALITY:

Gary W. Zakia
Deputy Corporation Counsel
On this 21st day of February, 1996, before me personally appeared J. ALAN KUGLE and KATHLEEN F. OSHIRO, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board and Secretary, respectively, of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII
COUNTY OF MAUI

On this 20th day of February, 1996, before me appeared BYRON WALTERS, to me personally known, who, being by me duly sworn, did say that he is a Member of the Board of Water Supply of the County of Maui, and was authorized by the BOARD OF WATER SUPPLY on February 15, 1996 to execute any and all documents as set forth in the COUNTY OF MAUI BOARD OF WATER SUPPLY RESOLUTION RELATING TO THE PURCHASE OF THE WAIHEE VALLEY PROPERTY, and that the said instrument was signed on behalf of the said Board of Water Supply, and the said BYRON WALTERS acknowledged the said instrument to be the free act and deed of the said Board of Water Supply.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 11/25/96
March 13, 1996

TO: Mr. David Craddick  
Department of Water Supply  
County of Maui  
P.O. Box 1109  
200 S. High Street, 5th Floor  
Wailuku, Maui, Hawaii 96793-7109

FROM: Jill M. Teutsch

RE: Wailuku Agribusiness Co., Inc./BWS

Transmitted is/are:

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<td>7.</td>
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<td>Declaration of Restrictive Covenant dated 2/21/96, recorded in said Bureau as Document No. 96-023921</td>
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RIGHT OF ENTRY AND OPERATING AGREEMENT - SECOND EXTENSION

THIS SECOND EXTENSION OF RIGHT OF ENTRY AND OPERATING AGREEMENT ("Second Extension Agreement") is entered into this 15th day of March, 1996, by and between MAUI LANI PARTNERS, a Hawaii general partnership, whose principal place of business and mailing address is 810 Richards Street, Suite No. 900, Honolulu, Hawaii, 96813 ("Grantor"), and the MAUI COUNTY BOARD OF WATER SUPPLY ("Board"), a body politic and corporate of the State of Hawaii, whose place of business and mailing address is 200 South High Street, Wailuku, Maui, Hawaii, 96793, collectively referred to as the "Parties".

RECITALS

1. The Grantor and Board entered into a RIGHT OF ENTRY AND OPERATING AGREEMENT dated July 27, 1992 ("Agreement") which, among other things, granted the Board a temporary license over a portion of the property described in Exhibit "A" attached to the Agreement ("Property") for the purpose of testing and drawing water from certain of the wells on the Property and conducting activities related and accessory to the use of the water by the Board.

2. The Grantor subsequently sent to the Board by certified mailing, a letter dated August 5, 1992, which clarified among other things, that based upon the effective date of the Agreement and the provisions contained therein, the Agreement would terminate on November 24, 1993.

3. The Board, through its Director of the Department of Water Supply ("Director" and "Department", respectively) verbally notified Grantor's designated representative on October 20, 1993, that an extension of the Agreement would be desirable and indicated that such an extension to July 27, 1994, would be acceptable.

4. The Grantor and the Board entered into a RIGHT OF ENTRY AND OPERATING EXTENSION AGREEMENT ("Extension Agreement") dated December 9, 1993, by which the terms of the Agreement were extended to July 27, 1994.

5. The Board, through the Director, verbally notified Grantor's designated representative of its desire for an additional extension of the Agreement.

6. The Agreement contains several provisions which address the right to an extension:
   (a) Paragraph 13(b) provides that in the event the Board desires an extension of the Agreement, and if the Grantor shall choose to consent to the extension, the Grantor shall be compensated by the Board who shall pay a pro rata portion of the Grantor's interest cost on the portion of the Property which could have otherwise been developed but had to be delayed;
(b) Paragraph 16 provides that the Board designates its Director of the Board of Water supply as its authorized agent and authorizes him to, among other things, act for the Board in matters that include extension of the Agreement; and

c) Paragraph 19 provides that the Agreement cannot be altered, amended, modified or otherwise changed except in writing executed by a duly authorized representative of the Grantor and the Board.

7. Bill Mills is the President of Bill Mills Development Company, Inc., and represents:
(a) Horita-Maui Lani, Inc. is no longer the Managing General Partner of Maui Lani Partners;
(b) Bill Mills Development Company, Inc., is now the Managing General Partner of Maui Lani Partners and that the address to which notice is to be sent to the Grantor should be changed.

BASED ON THE FOREGOING, GRANTOR AND BOARD HEREBY AGREE AS FOLLOWS:

1. The term of the Agreement shall be extended up to and including December 31, 1997.

2. Paragraph 1 is amended to read as follows:

"1. The "Licensed Area" is located on a parcel of land owned by Grantor, identified as Tax Map Key No. 2-3-8-7:121, as shown on the map attached hereto as Exhibit "B". The Licensed Area includes the "Maui Lani Wells" and State Well Number 5228-06, and any existing pumping stations, the existing unimproved roadways designated the "Primary Access Road", and the temporary pipelines located on the property.

3. Paragraph 9 is amended by deleting the last sentence which reads "The cost and expenses of all such relocation shall be paid for by the Board." and inserting in its place "Grantor may relocate the wells (at Grantor's cost) at anytime during the Agreement."

4. Paragraph 15 is amended to read as follows:

"15. Any notice by either party to the other shall be in writing and shall be personally delivered or sent by certified or registered mail to the Board or Grantor, as the case may be, addressed as follows:

If to the Board:
Maui County Board of Water Supply
200 South High Street
Wailuku, Maui, Hawaii 96893
Attention: Director
5. Paragraph 16 is amended to read as follows:

"The Board hereby designates and authorizes the Director of the Department of Water Supply as its authorized agent for the purpose of acting for the Board and communicating for the Board to the Grantor in all matters including extension under this Agreement. Grantor may conclusively rely on all actions of and communications from the Director as duly authorized by the Board and binding on it."

6. Rather than renumbering the entire Agreement, two new paragraphs are added as paragraphs 21 and 22, and the original paragraph 21 (the last paragraph in the Agreement) is renumbered to be paragraph 23. It is the intent of the Grantor and Board that these new paragraphs are to be read in their appropriate context as if they appeared elsewhere in the Agreement. New paragraphs 21 and 22 read as follows:

"21. The Board will utilize State Well No. 5228-06, located in the Licensed Area up to 250,000 gallons of water per day."

"22. The Board will issue to Grantor, or its designates, 417 five-eighths inch (5/8") water meters, or its equivalents based on departmental standards, upon payment of the then current Water System Development Fees and in accord with all applicable governmental rules, regulations, findings and proceedings."

7. As this extension of the Agreement will not delay development of the Property, or any portion thereof, the Grantor makes no claim for any pro rata portion of interest costs under Paragraph 13(b). This does not impair the Grantor's right to compensation for damages due to delay past December 31, 1997, or for compensation as provided for in Paragraph 13(a), or in any other portion of the Agreement.

8. The Board shall indemnify and defend the Grantor, and its directors, officers, employees, agents, successors, licensees, affiliates and assigns, from and against any loss, damage, cost, expense or liability, including without limitation any personal injury, wrongful death or property damage (real or personal) proximately arising out of, or attributable to the testing, transmission or use of the wells by the Board for public potable water, including without limitation, all reasonable costs and
expenses incurred by the Grantor in connection therewith.

9. All other provisions of the Agreement, including the Extension Agreement, shall remain in full force and effect. Should there be any conflict between the provisions of the Agreement, the Extension Agreement, and this Second Extension Agreement such that the provisions of all three documents cannot be given full force and effect, the provisions of this Second Extension Agreement shall prevail only to the extent there is an unresolvable conflict. All other provisions that may be carried into effect shall remain in effect.

10. This Second Extension may be executed in counterpart signature pages.

11. For purposes of this Second Extension, a signature transmitted via facsimile transmission is deemed to be the original.

In witness whereof the parties have executed this Second Extension Agreement on the date first written above.

MAUI LANI PARTNERS

By BILL MILLS DEVELOPMENT COMPANY, INC.
   Its Managing General Partner

By
   Bill Mills, Its President
   "Grantor"

BOARD OF WATER SUPPLY
COUNTY OF MAUI

By
   David R. Craddick, Its Director
   "Board"

Approved as to Form and Legality

Gary W. Zakian
Deputy Corporation Counsel
STATE OF HAWAII
} } SS.
COUNTY OF MAUI
)

On this 15th day of March, 1996, before me appeared DAVID R. CRADDICK, to me personally known, who, being by me duly sworn, did say that he is the Director of the DEPARTMENT OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument is the lawful seal of the BOARD OF WATER SUPPLY of the County of Maui, and that the said instrument was signed and sealed in behalf of the said DEPARTMENT OF WATER SUPPLY of the County of Maui, and the said DAVID R. CRADDICK, acknowledged that said instrument to be the free act and deed of the said DEPARTMENT OF WATER SUPPLY of the County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]

Notary Public, State of Hawaii

My commission expires: 4/19/98
RIGHT OF ENTRY AND OPERATING AGREEMENT - SECOND EXTENSION

THIS SECOND EXTENSION OF RIGHT OF ENTRY AND OPERATING AGREEMENT ("Second Extension Agreement") is entered into this day of ____, 1996, by and between MAUI LANI PARTNERS, a Hawaii general partnership, whose principal place of business and mailing address is 810 Richards Street, Suite No. 900, Honolulu, Hawaii, 96813 ("Grantor"), and the MAUI COUNTY BOARD OF WATER SUPPLY ("Board"), a body politic and corporate of the State of Hawaii, whose place of business and mailing address is 200 South High Street, Wailuku, Maui, Hawaii, 96793, collectively referred to as the "Parties".

RECITALS

1. The Grantor and Board entered into a RIGHT OF ENTRY AND OPERATING AGREEMENT dated July 27, 1992 ("Agreement") which, among other things, granted the Board a temporary license over a portion of the property described in Exhibit "A" attached to the Agreement ("Property") for the purpose of testing and drawing water from certain of the wells on the Property and conducting activities related and accessory to the use of the water by the Board.

2. The Grantor subsequently sent to the Board by certified mailing, a letter dated August 5, 1992, which clarified among other things, that based upon the effective date of the Agreement and the provisions contained therein, the Agreement would terminate on November 24, 1993.

3. The Board, through its Director of the Department of Water Supply ("Director" and "Department", respectively) verbally notified Grantor's designated representative on October 20, 1993, that an extension of the Agreement would be desirable and indicated that such an extension to July 27, 1994, would be acceptable.

4. The Grantor and the Board entered into a RIGHT OF ENTRY AND OPERATING EXTENSION AGREEMENT ("Extension Agreement") dated December 9, 1993, by which the terms of the Agreement were extended to July 27, 1994.

5. The Board, through the Director, verbally notified Grantor's designated representative of its desire for an additional extension of the Agreement.

6. The Agreement contains several provisions which address the right to an extension:

   (a) Paragraph 13(b) provides that in the event the Board desires an extension of the Agreement, and if the Grantor shall choose to consent to the extension, the Grantor shall be compensated by the Board who shall pay a pro rata portion of the Grantor's interest cost on the portion of the Property which could have otherwise been developed but had to be delayed;

   [Signature]

   David Cordack
   From  Bill Mills
(b) Paragraph 16 provides that the Board designates its Director of the Board [sic] of Water supply as its authorized agent and authorizes him to, among other things, act for the Board in matters that include extension of the Agreement; and

(c) Paragraph 19 provides that the Agreement cannot be altered, amended, modified or otherwise changed except in writing executed by a duly authorized representative of the Grantor and the Board.

7. Bill Mills is the President of Bill Mills Development Company, Inc., and represents:
   (a) Horita-Maui Lani, Inc. is no longer the Managing General Partner of Maui Lani Partners;
   (b) Bill Mills Development Company, Inc., is now the Managing General Partner of Maui Lani Partners and that the address to which notice is to be sent to the Grantor should be changed.

BASING ON THE FOREGOING, GRANTOR AND BOARD HEREBY AGREE AS FOLLOWS:

1. The term of the Agreement shall be extended up to and including December 31, 1997.

2. Paragraph 1 is amended to read as follows:

"1. The "Licensed Area" is located on a parcel of land owned by Grantor, identified as Tax Map Key No. 2-3-8-7:121, as shown on the map attached hereto as Exhibit "B". The Licensed Area includes the "Maui Lani Wells" and State Well Number 5228-06, and any existing pumping stations, the existing unimproved roadways designated the "Primary Access Road", and the temporary pipelines located on the property.

3. Paragraph 9 is amended by deleting the last sentence which reads "The cost and expenses of all such relocation shall be paid for by the Board." and inserting in its place "Grantor may relocate the wells (at Grantor's cost) at anytime during the Agreement."

4. Paragraph 15 is amended to read as follows:

"15. Any notice by either party to the other shall be in writing and shall be personally delivered or sent by certified or registered mail to the Board or Grantor, as the case may be, addressed as follows:

If to the Board:
Maui County Board of Water Supply
200 South High Street
Wailuku, Maui, Hawaii 96893
Attention: Director
If to the Grantor:
Maul Lani Partners
810 Richards Street, Suite 900
Honolulu, Hawaii 96813
Attention: Mr. Bill Mills

5. Paragraph 16 is amended to read as follows:

"The Board hereby designates and authorizes the Director of the Department of Water Supply as its authorized agent for the purpose of acting for the Board and communicating for the Board to the Grantor in all matters including extension under this Agreement. Grantor may conclusively rely on all actions of and communications from the Director as duly authorized by the Board and binding on it."

6. Rather than renumbering the entire Agreement, two new paragraphs are added as paragraphs 21 and 22, and the original paragraph 21 (the last paragraph in the Agreement) is renumbered to be paragraph 23. It is the intent of the Grantor and Board that these new paragraphs are to be read in their appropriate context as if they appeared elsewhere in the Agreement. New paragraphs 21 and 22 read as follows:

"21. The Board will utilize State Well No. 5228-06, located in the Licensed Area up to 250,000 gallons of water per day."

"22. The Board will issue to Grantor, or its designates, 417 five-eighths inch (5/8") water meters, or its equivalents based on departmental standards, upon payment of the then current Water System Development Fees and in accord with all applicable governmental rules, regulations, findings and proceedings."

7. As this extension of the Agreement will not delay development of the Property, or any portion thereof, the Grantor makes no claim for any pro rata portion of interest costs under Paragraph 13(b). This does not impair the Grantor's right to compensation for damages due to delay past December 31, 1997, or for compensation as provided for in Paragraph 13(a), or in any other portion of the Agreement.

8. The Board shall indemnify and defend the Grantor, and its directors, officers, employees, agents, successors, licensees, affiliates and assigns, from and against any loss, damage, cost, expense or liability, including without limitation any personal injury, wrongful death or property damage (real or personal) proximately arising out of, or attributable to the testing, transmission or use of the wells by the Board for public potable water, including without limitation, all reasonable costs and
expenses incurred by the Grantor in connection therewith.

9. All other provisions of the Agreement, including the Extension Agreement, shall remain in full force and effect. Should there be any conflict between the provisions of the Agreement, the Extension Agreement, and this Second Extension Agreement such that the provisions of all three documents cannot be given full force and effect, the provisions of this Second Extension Agreement shall prevail only to the extent there is an unresolvable conflict. All other provisions that may be carried into effect shall remain in effect.

10. This Second Extension may be executed in counterpart signature pages.

11. For purposes of this Second Extension, a signature transmitted via facsimile transmission is deemed to be the original.

In witness whereof the parties have executed this Second Extension Agreement on the date first written above.

MAUI LANI PARTNERS

By BILL MILLS DEVELOPMENT COMPANY, INC.
The Managing General Partner

By Bill Mills, Its President
"Grantor"

BOARD OF WATER SUPPLY
COUNTY OF MAUI

By

David R. Craddick, Its Director
"Board"

Approved as to Form and Legality

Gary W. Zakian
Deputy Corporation Counsel
### 1996

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**CENTRAL MAUI BASEYARD**

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* PENDING
Mr. David R. Craddick, Director  
Maui Department of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793-7109

Dear Mr. Craddick:

Extension of Start Date  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

We received your March 18, 1996 request to extend the start date for installing pumps in the captioned wells two months beyond the May 14, 1996 date permitted by the Commission. We understand that the Department has entered a contract to complete construction documents, and that the initiation of construction may occur after May 14, 1996. You state that a two-month extension will assure compliance with the start time.

By this letter, the start date for your pump installation permit is extended to July 14, 1996. All the other conditions of your permit remain the same. If you are unable to start work by July 14, 1996, please inform us thirty (30) days prior to that date, to allow time to prepare a submittal for the Commission.

If you have any questions, please call Charley Ice at [Redacted]

Sincerely,

RAE M. LOUI  
Deputy Director
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<th>TO:</th>
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PLEASE:
- See Me
- Review & Comment
- Take Action
- Type Draft
- Type Final
- File
- Xerox copies
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: [Name]  DATE: 3/26  SUSPENSE DATE:________

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**Did this need to go back to the Commission?**

Because we have a timetable, let's handle administratively; if it breaks down, let's go back to CWRM.
March 18, 1996

Mr. Michael D. Wilson, Chairperson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
P. O. Box 621  
Honolulu, Hawaii  96809

Dear Mr. Wilson:

Subject: Pump Installation Permit  
North Waihee Wells 1 and 2  
(Wells No 5631-02 & 03)

Thank you for the reminder dated March 5, 1996 regarding the subject wells. We are requesting an extension of the two months.

In the process of the agreement with C. Brewer Properties and transfer of permit, the Department has entered into a contract with the design consultants to complete the construction contract documents within sixty days. Based on this time table, the construction contracting process may not be completed by May 14, 1996. A two month extension will assure compliance with the start time.

Your favorable consideration will be greatly appreciated. If there are any questions, please call our Engineering Division at

Sincerely,

David R. Craddick  
Director

hk
EXTENSION
PUMP INSTALLATION PERMIT
for
North Waihee Wells 1 & 2
Well Nos. 5631-02 & 03
Waihee, Maui

TO:  C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request to extend the permit to install pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03), is approved subject to the following conditions:

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

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

2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission's September 16, 1992 direction on reporting requirements.
6. The permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant's Signature: ___________________________ Date: ________________

Printed Name: ________________________

Firm or Title: ________________________

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

cc: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Wastewater Branch
Maui Department of Water Supply
March 1, 1996

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

Dear Ms. Loui:

Subject: Iao Aquifer

Transmitting evidence of the following milestones achieved, as requested by the Commission:

1. Grant of Easement for the North Waihee Wells, Phase 1, is being sent under separate cover from our Attorney, Douglas W. MacDougal of Ashford & Wriston;

2. The membranes for treatment of Waihee/Iao Ditch water have been obtained, as evidenced by shipping notice (Attachment #1); and

3. A copy of the executed contract for professional services for the development of North Waihee Wells and a copy of the NTP (Attachment #2).

The final use of filter membranes being shipped are intended for Lahainaluna Treatment Facility. Upon arrival, we intend to utilize this equipment to perform testing required for DOH approvals, while we order the filters noted on the February 13, 1996 quotation from Memtec (Attachment #3).

Sincerely,

David Craddick, Director
DC/jaw

Attachments
copy w/o attachments: Marie Kimmey, BWS Chai
Douglas W. MacDougal

"By Water All Things Find Life"
Further to our telephone conversation, I confirm that 3 x 20' FCL containers have been booked to sail on board 'COLUMBUS CANADA' V16 which is due to sail Sydney 10.3.96 and arrive Honolulu 29.3.96 with a further 4 to 5 days to be added on for transhipment to Maui.

If I can be of any further assistance please do not hesitate to contact me.

Regards,

Lyn Cunliffe
Import/Export Clerk
CONTRACT NO. WC0053

CONTRACT FOR INDEPENDENT PROFESSIONAL SERVICES
RELATING TO THE PLAN AND DESIGN OF THE
THE DEVELOPMENT OF NORTH WAIHEE WELLS

Source of Funds: CENTRAL MAUI SOURCE

Certification requested: $384,150.00

THIS AGREEMENT, made and entered into this 29th day of February, 1996, by and between WARREN S.
UNEMORI ENGINEERING, INC., a Hawaii corporation authorized to do business in Hawaii, whose address is 2145 Wells Street, Suite 403, Wailuku, Maui, Hawaii 96793, referred to as the "Consultant", and the BOARD OF WATER SUPPLY of the County of Maui, whose address is 200 South High Street, Wailuku, Hawaii 96793, referred to as the "Board",

W I T N E S S E T H:

WHEREAS, the Board desires to engage the Consultant as an independent contractor to provide professional and technical engineering services to prepare a study and plans, specifications, and contract documents for design of the Development of the North Waihee Wells, referred to as the "PROJECT"; and

WHEREAS, the Consultant desires to render such services as an independent contractor for and on behalf of the Board; and
WHEREAS, the Consultant has been engaged to provide engineering professional services to C. Brewer Homes, Inc., referred to as "CBHI" for the development of said wells; and

WHEREAS, CBHI has paid for all services performed up to December 7, 1995; and

WHEREAS, the Board is obtaining the well site and the previously performed services in connection with development of the wells from CBHI; and

WHEREAS, Consultant agrees that all work performed for CBHI is included as part of this Contract; and

WHEREAS, the Board desires to enter into an agreement to facilitate the completion of the Project, based on the Consultant’s previous work on the Project; and

WHEREAS, time is of an essence to get the delivery of water to the water system; now therefore,

IN CONSIDERATION of the mutual promises and agreements hereinafter set forth, the parties hereto agree as follows:

1. **Scope of work.** The Consultant shall use the degree of care and skill normally exercised by members of the profession to carry out the following services as outlined in Exhibit "A" attached hereto and by reference made a part hereof.

2. **Time of performance.** Consultant shall complete Consultant’s services as set forth in Exhibit "A" in accordance with the time schedules set forth in Exhibit "B", attached hereto and by reference made a part hereof.

3. **General Terms and Conditions of Contracts of the**

2
Department of Water Supply of the County of Maui for Services of Consultants. The General Terms and Conditions of Contracts of the Department of Water Supply of the County of Maui for Services of Consultants attached hereto are made a part hereof as fully and completely as if the same were set forth in its entirety herein.

4. **Compensation.** The Board shall pay the Consultant the amount of THREE HUNDRED EIGHTY-FOUR THOUSAND ONE HUNDRED FIFTY AND NO/100 DOLLARS, ($384,150.00), which amount shall constitute full and complete compensation, inclusive of all applicable taxes, for the Consultant’s services as set forth in Section 1 Scope of Work. Compensation for the services shall be in accordance with the following Schedule of Fees:

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<th>Phase</th>
<th>Description</th>
<th>Fee</th>
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<tr>
<td>I</td>
<td>24-INCH TRANSMISSION BETWEEN KUHINIA STREET AND WELL SITE ACCESS ROAD</td>
<td>$33,000</td>
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<tr>
<td>II</td>
<td>DEVELOPMENT OF WELLS NO. 1 AND 2</td>
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<td>(G.E.T. for PH I &amp; II)</td>
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<td>(Direct Expense for PH I &amp; II)</td>
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<td>24-INCH TRANSMISSION BETWEEN KUHINIA STREET AND CMJV RESERVOIR</td>
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<td>IV</td>
<td>0.5 MG TANK AND 24-INCH INFLOW-OUTFLOW LINES</td>
<td>$123,100</td>
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<td>V</td>
<td>BOOSTER PUMP STATION AND SCADA TO KAHULUI BASEYARD</td>
<td>$38,600</td>
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<td>(G.E.T. for PH III, VI, &amp; V)</td>
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<td></td>
<td>(Direct Expense for PH III, VI, &amp; V)</td>
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<td><strong>Total</strong></td>
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<td><strong>$384,150</strong></td>
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As long as the services of the Consultant are being performed as required herein, the Board may pay the Consultant monthly progress payments based upon the value of services performed by the Consultant as estimated by the Consultant and approved by the Department. Of any progress payments deemed to be due and owing, the Board may retain up to five percent (5%) of the payments due the Consultant, and after fifty percent (50%) of the contract is completed, and performance is satisfactory, no additional sum shall be withheld; provided, however, that if progress is not satisfactory, the Director may continue to hold as retainage sums not exceeding five percent (5%) of the amounts due the Consultant.

Final payment, inclusive of amounts retained by the Board, shall be made upon written acceptance from the Department to the Consultant advising it of the satisfactory fulfillment of the agreement requirements, and, pursuant to Sections 103-53 and 237-45 of the Hawaii Revised Statutes, the receipt of a tax clearance from the State Department of Taxation verifying that the Consultant has paid all delinquent taxes levied or accrued. Upon acceptable completion of the agreement or upon termination of this agreement, the Consultant shall turn over to the Board all tracings, drawings, masters, computations, computer data, etc., prepared or obtained by the Consultant or furnished by the Board in connection with the work performed under this agreement or in connection with work performed by Consultant for CBHI relating to the development of North Waihee Wells, at no extra cost to the Board.

5. *Liquidated damages.* The Consultant recognizes and agrees
that time is of the essence under this contract and due to the speculative character and difficulty of ascertaining damages to the Board resulting from any delay beyond the date set herein for contract completion, the parties hereto, for the purpose of putting the question of damages beyond controversy and dispute, hereby agree that the Consultant shall pay to the Board the sum of TWO THOUSAND AND NO/100 DOLLARS ($2,000.00) as liquidated damages and not as a penalty, for each and every day that work contemplated in this contract remains uncompleted beyond the time set herein for completion unless such delay is attributable to the Board. The Consultant further understands and agrees that the remedy of liquidated damages shall be in addition to any other rights and remedies otherwise available to the Board and not expressly waived herein. The Consultant agrees that the aforesaid sum is a reasonable estimate, of and reasonably proportionate to, the damages which will probably be sustained by the Board as a result of any delay.

6. **Employment Status.** It is agreed and understood that the Consultant shall be engaged as an independent contractor and shall not be entitled to the benefits and privileges of an employee of the County of Maui under the County’s Civil Service System, and it is further agreed and understood that the Consultant shall be excluded from participating in any fringe benefits not specifically enumerated herein.

7. **Best Efforts.** Consultant agrees that it will, at all times, faithfully, industriously, and to the best of its ability,
experience and talents, perform all of the duties that may be required of it pursuant to the expressed and implicit terms hereof to the reasonable satisfaction of the Board.

8. **Consultant's Inability to Contract for Board.** Notwithstanding anything herein contained to the contrary, Consultant shall not have the right to make any contracts or commitments for or on behalf of the Board without first obtaining written consent of the Board.

9. **Agreements Outside of Contract.** This contract contains the complete agreement concerning the arrangement between the parties and shall, as of the effective date hereof, supersede all other agreements between the parties. The parties stipulate that neither of them have made any representation with respect to the subject matter of this agreement or any representations including the execution and delivery hereof except such representations as are specifically set forth herein and each of the parties hereto acknowledge that any payments or representations that may have hereinbefore been made by either of them to the other are of no effect and that neither of them have relied thereon in connection with its dealings with the other.

10. **Modification of Contract.** No waiver or modification of this agreement or of any covenant, condition, or limitation herein contained shall be valid unless in writing and duly executed by the party to be charged therewith and no evidence of any waiver or modification shall be offered or received in evidence of any proceeding, arbitration, or litigation between the parties hereto.
arising out of or affecting this agreement, or the rights or obligations of the parties hereunder, unless such waiver or modification is in writing, duly executed as aforesaid, and the parties further agree that the provisions of this section may not be waived except as herein set forth.

11. Changes. The Board may from time to time require changes in the scope of services of Consultant to be performed hereunder. Such changes, including any increase or decrease in the amount of Consultant’s compensation shall be incorporated by written amendment to this agreement.

12. Termination. The Board may terminate this contract without cause upon written notice to that effect delivered to the Consultant at the address set forth herein. It is agreed that the Consultant shall receive compensation from the Board for the time actually spent in the performance of the services hereunder to the date of termination. The Consultant shall also be entitled to recover any reasonable costs incurred in connection with the contract prior to the receipt of any notice of termination.

In the event the Consultant violates the terms of this agreement, the Board may elect any remedy available to it in law or in equity, without limitation, including, but not limited to:

A. Termination of this contract without prior notice in which event the Board shall be liable under this contract only for those services satisfactorily performed to the date of termination, if any. All materials, data, maps, plans or other documents or information gathered, compiled, produced or obtained pursuant to
this contract shall be the property of the Board and the Consultant shall immediately upon termination of this contract deliver said items to the Board.

B. Unilateral substitution of a suitable replacement for Consultant to complete the remainder of the contract in which event Consultant shall be liable to pay for the difference, if any, between the cost of the substituted Consultant and the cost of such similar services remaining to be completed under this contract by the Consultant at the time of termination.

13. Professional Liability Insurance. The insurance to be procured and maintained by Consultant pursuant to the General Terms and Conditions shall be in an amount not less than ONE MILLION AND NO/100 DOLLARS ($1,000,000.00).

14. Findings Confidential. Any reports, information, data given to or prepared or assembled by the Consultant under this agreement, which the County deems confidential, shall not be made available to any individual or organization by the Consultant without the prior written approval of the Director.

15. Ownership Vested in Board. It is expressly understood that any and all equipment, materials, data, information, results and any other thing derived or obtained directly or indirectly as a result of the Project herein, including but not limited to equipment, materials, data, information, and results shall be the sole and exclusive property of the Board and that the Consultant shall have no interest, right, or title in or to any of the foregoing.
16. **Indemnity.** The Consultant shall indemnify, defend and hold harmless the Board from claims, suits, actions, damages, including attorney’s fees, arising out of the Consultant’s errors, omissions, or negligent acts in connection with the Consultant’s performance under this agreement.

17. **Campaign Contributions Prohibited.** It is understood and agreed by the parties hereto that no portion of the Consultant’s compensation to be paid under the terms of this agreement shall be used as a campaign contribution.

18. **Absence of Interest.** The Consultant covenants that it has no interest and shall not acquire any interest, direct, or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this agreement. The Consultant further covenants that in the performance of this agreement, no person having any such interest shall be employed.

19. **Severability.** If any provision of this contract is held invalid, the other provisions of this contract shall not be affected thereby. If the application of the contract or any of its provision of the contract and its provisions to other persons or circumstances shall not be affected thereby.

20. **Conflict.** In the event of any conflict between this contract and the incorporated documents, the terms of this contract shall prevail.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed on the date first above written.
Consultant:
WARREN S. UNEMORI ENGINEERING, INC.

By ____________
Warren S. Unemori
Its President

BOARD OF WATER SUPPLY
COUNTY OF MAUI

Marie Kimmey
Its Chairperson

APPROVED AS TO FORM
AND LEGALITY:

Brian T. Moto
Deputy Corporation Counsel
County of Maui

STATE OF HAWAII
Maui ) SS.
CITY AND COUNTY OF HONOLULU )

On this 29th day of February, 1996, before me appeared WARREN S. UNEMORI, to me personally known, who, being by me duly sworn, did say he is the President, of WARREN S. UNEMORI ENGINEERING, INC., a Hawaii corporation authorized to do business in Hawaii; that the seal affixed to the foregoing instrument is the corporate seal of said corporation; and that said instrument was signed and sealed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public, State of Hawaii

My commission expires: 6-14-96
On this 29th day of February, 1996, before me appeared MARIE KIMMEY, to me personally known, who, being by me duly sworn, did say that he is the Chairperson of the BOARD OF WATER SUPPLY of the County of Maui and that the seal affixed to the foregoing instrument is the lawful seal of the BOARD OF WATER SUPPLY, and that said instrument was signed and sealed on behalf of the BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged said instrument to be the free act and deed of said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]

Notary Public, State of Hawaii

My commission expires: 4/19/98
WARREN S. UNEMORI ENGINEERING, INC. will proceed through a series of tasks comprising of the design of the development of the North Waihee Wells. The scope of the work is described in the attached letters.
Mr. David Craddick, Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waihee Wells Development

In response to your request of December 4, 1995 we are pleased to submit this proposal to complete the work necessary to finalize plans and specifications for the following:

PHASE I. INSTALLATION OF 24 INCH TRANSMISSION LINE ON KAHEKILI HIGHWAY BETWEEN KUHINIA STREET AND WELL SITE ACCESS ROAD. ALSO 16 INCH TANK FEEDER LINE BETWEEN WELL SITES 1 AND 2 AND KAHEKILI HIGHWAY

Scope of Services in Proposal to C. Brewer Homes, Inc.:


  - Work Completed to Date:

  1.1 Conducted topographic survey of Kahekili Highway between project limits. Located existing water meters, water lines, fire hydrants, valves, culvert crossings, stormwells, sidewalks, power poles, etc.

  1.2 Developed topographic map therefrom plotting adjoining property boundaries, driveways, etc.

  1.3 Developed approximate right-of-way line for Kahekili Highway based on adjoining property descriptions and right-of-way maps available.

  1.4 Conducted topographic survey of access road between Well Site 1 and 2 and Kahekili Highway.
Task 2. Engineering Design Services.

Work Completed to Date:

2.1 Met with client, SDOT, and DWS to discuss objectives and scheduling of project.

2.2 Developed plan and profile for waterline along Kahekili Highway and Waihee Stream crossing.

2.3 Determined size of waterline needed to deliver minimum of 8 MGD, allowing for reasonable head losses.

2.4 Developed details for stream crossing and typical trench and pavement sections.

2.5 Developed construction traffic control plan per State DOT standards.

2.6 Submitted construction plans to State DOT and Department of Water Supply for approval. (First Submittal)

Work Remaining:

2.7 Incorporate agency comments after first review and resubmit for final.

2.8 Prepare NPDES permit application and Best Management Practice (BMP) plan for trench dewatering and submit to DOH for approval.

2.9 Develop technical specs.

2.10 Develop cost estimate.

2.11 Develop contract bid documents.

2.12 Assist client with the bidding and bid review process.
- Task 3. **Installation of 16 Inch Tank Feeder Line Between Well Sites 1 and 2 and 24-inch Line on Kahekili Highway.**

- **Additional Work:**
  
  3.1 Develop plan and profile for 16-inch tank feeder line along existing access road.
  
  3.2 Develop plans for temporary connection between 16-inch tank feeder line and 24-inch transmission line on Kahekili Highway.

- Task 4. **Temporary Connection Between 24-inch Transmission line on Kuhinia Street and existing Distribution System on Kahekili Highway.**

- **Additional Work:**
  
  4.1 Prepare plans to connect new 24-inch transmission line to the existing 8-inch line on Kahekili Highway south of Kuhinia Street intersection.
  
  4.2 Prepare plans to install pressure regulator assembly between the 24-inch transmission line and Waihee Village distribution system north of Kuhinia Street.

**COMPENSATION**

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>Engineering Design Services</td>
<td>$ 21,000</td>
</tr>
<tr>
<td>3.0</td>
<td>16-inch Feeder Line along Access Road</td>
<td>$ 10,000</td>
</tr>
<tr>
<td>4.0</td>
<td>Temporary Connection on Kahekili Highway in Vicinity of Kuhinia Street</td>
<td>$ 2,000</td>
</tr>
</tbody>
</table>

**SUBTOTAL - PHASE I:** $ 33,000
PHASE II. DEVELOPMENT OF NORTH WAIHEE WELLS 1 AND 2

Scope of Services in proposal to C. Brewer Homes Inc.

- Task 1. Civil Engineering.

  - Work Completed to Date:

    1.1 Prepared well site grading plan.

    1.2 Prepared site plan showing layout of equipment building, generator, electrical transformer pad and driveway.

    1.3 Prepared site drainage plan.

    1.4 Prepared plans to pave well site and access driveway.

    1.5 Prepared fencing plan to secure well site.

    1.6 Designed equipment building to house chlorinator, MCC, diesel generator and SCADA system.

    1.7 Coordinated work with electrical and mechanical subconsultant and submitted plans and specs for agency review. (First Submittal)

  - Work Remaining:

    1.8 Incorporate agency review comments and resubmit plans and specs for final approval of DPW, TWC, DOH, and DLNR.

    1.9 Prepare engineering report for approval by DOH Clean Water Branch.

    1.10 Prepare technical specs, proposal, and contract bid documents.

    1.11 Assist client solicit and review bids.
• **Task 2. Mechanical and Electrical Engineering.**

  • **Work Completed to Date:**

    2.1 Prepared plans for deepwell pumps to be installed in existing wells.

    2.2 Prepared plans for two sets of discharge piping, control valves, flow switches, solenoid valves, and well level recording devices.

    2.3 Designed chlorination system, exhaust air system, compressor, and flow meter assembly.

    2.4 Prepared plans for Motor Control Center (MCC), electrical conduits and wiring, incoming power ducts and transformer pad, and meter system.

    2.5 Prepared plans for emergency generator, automatic transfer switch and concrete mounting pad for same.

    2.6 Prepared plans for SCADA and telemetry system.

• **Task 3. Geologist (John Mink)**

  • **Work Remaining:**

    3.1 Provide general advice on setting for installation of pumps in North Waihee Wells 1 and 2.

    3.2 Write protocol for engineering report to be submitted to DOH.

    3.3 Oversee pumping tests on these wells.

• **Task 4. Temporary Pump Control for Wells 1 and 2 and Connection to Existing Distribution System.**

  • **Additional Work:**

    4.1 Run pipe analysis to determine capacity of existing system.
4.2 Evaluate pump curve to determine whether deep-well pump needs to be modified for temporary hookup to existing low level water system.

4.3 Prepare plans and specifications for temporary pump control between Wells 1 and 2 and Waiehu Heights Tank.

FEES

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Task</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Civil Engineering</td>
<td>$ 6,500</td>
</tr>
<tr>
<td>2.</td>
<td>Mechanical and Electrical Engineering</td>
<td>$ 7,000</td>
</tr>
<tr>
<td>3.</td>
<td>Geologist</td>
<td>$ 10,000</td>
</tr>
<tr>
<td>4.</td>
<td>Temporary Pump Control Between Wells 1 and 2 &amp; Waiehu Heights Tank</td>
<td>$ 4,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE II: $ 27,500

TOTAL FEE PROPOSED - PHASES I AND II: $ 60,500

The State GET (4.167%) will be added to all fees.

DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $ 4,000
SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases I and II within sixty (60) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project.

2. Environmental Assessment.
5. Soil Engineering, if required.

Thank you for giving us the opportunity to submit this proposal. If you have any questions, please call us. We look forward to receiving authorization to complete the design of Phases I and II of the project.

Sincerely,

Warren S. Unemori
Mr. David Craddick, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waihee Wells Development

This proposal is being submitted to complete the unfinished scope of services for Phases III, IV, and V of subject project as requested in your letter of November 23, 1995. The proposal for Phases I and II, which had a higher urgency, was submitted yesterday.

The scope of services for Phases III, IV, and V are as follows:

PHASE III. INSTALLATION OF 24 INCH TRANSMISSION LINE BETWEEN KUHINIA STREET AND THE CMJV 1.0 MG RESERVOIR IN UPPER WAIEHU

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:
  1.1 Established horizontal and vertical survey controls along transmission line route between Kuhinia Street and CMJV well source.
  1.2 Conducted topographic survey of transmission line route including gulch crossings, and developed topographic map therefrom.

- Work Remaining:
  1.3 Develop metes and bounds descriptions and maps for transmission line easement between Kuhinia Street and CMJV well source.
Mr. David Craddick  
North Waihee Wells Development  
Phases III, IV, and V  
December 8, 1995  
Page 2

Task 2. Engineering Design Services

- Work Completed to Date:

  2.1 Set up preliminary plan and profile work sheets for transmission line.

  2.2 Prepared exhibits for stream alteration permit at four (4) drainage crossings.

- Work Remaining:

  2.3 Finalize plan and profile of water system.

  2.4 Design drainage structure at Waiehu Stream and Hope Gulch crossings.

  2.5 Develop typical details of pavement section and construction traffic control plan for Malaihi Road in Upper Waiehu.

  2.6 Prepare plan of water system details.

  2.7 Prepare plans for connection to existing 1.0 MG Upper Waiehu Reservoir.

  2.8 Develop technical specs, cost estimate and contract bid document.

  2.9 Submit plans and specs for agency review.

  2.10 Address review agency comments and resubmit plans for final approval.

  2.11 Prepare NPDES permit application and Best Management Practice (BMP) plan for stream crossing and disposal of water from hydrotesting and dewatering.

  2.12 Assist client with the bidding and bid review process.
COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$ 9,000</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$128,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE III: $137,000

PHASE IV. CONSTRUCTION OF 0.5 MG CONTROL TANK AND SITE IMPROVEMENTS, INCLUDING GRADING AND PAVING OF TANK SITE AND ACCESS ROAD, INSTALLATION OF 24 INCH INFLOW AND OUTFLOW LINES AND DRAINAGE SYSTEM

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:
  1.1 Established horizontal and vertical survey controls along tank access road and at tank site.
  1.2 Conducted topographic survey of 0.5 MG tank site.
  1.3 Conducted topographic survey of access road to tank site.
  1.4 Developed topographic map therefrom.

- Work Remaining:
  1.5 Develop subdivision map to cut out tank site from TMK 3-2-01:03 following establishment of the tank site limits.
  1.6 Prepare easement for tank access road.
Mr. David Craddick
North Waihee Wells Development
Phases III, IV, and V
December 8, 1995
Page 4

1.7 Prepare metes and bounds description for tank site and tank access road easement.

1.8 Prepare subdivision application and transmit to DW3 for submittal to LUCA for processing.

Task 2. Design Engineering Services

- Work Remaining:

  2.1 Prepare mass grading plans for tank site and access road.

  2.2 Prepare plans for tank access road.

  2.3 Prepare drainage and soil erosion control report.

  2.4 Prepare drainage plans for tank site and access road.

  2.5 Prepare fencing plans to secure tank site.

  2.6 Coordinate plans with MECO to extend overhead power to tank site for booster pumps.

  2.7 Prepare Best Management Practice (BMP) Plan and NPDES permit application.

  2.8 Prepare plans to construct 0.5 MG reinforced concrete control tank with required piping, valves, and appurtenances.

  2.9 Prepare plans to install concrete diversion ditch, concrete gutter, drainage system and pavement around reservoir site.

  2.10 Prepare plans to construct equipment building to house MCC, SCADA, and telemetry systems.

  2.11 Prepare plan and profile for separate 24-inch inflow and outflow lines between Kahekili Highway and 0.5 MG control tank.
2.12 Prepare specs, cost estimate, and contract bid documents.

2.13 Submit plans and specs for agency review.

2.14 Address review agency comments and resubmit for final approval.

2.15 Assist client with the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$13,500</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$99,600</td>
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</table>

SUBTOTAL - PHASE IV: $113,100

PHASE V. BOOSTER PUMP STATION AT CONTROL TANK SITE AND SCADA TIE-IN AT DWS BASEYARD IN KAHULUI.

- Task 1:

  1.1 Prepare plans for two (2) short-coupled vertical booster pumping units.

  1.2 Prepare plans for two sets discharge piping, including control valves, flow switches, and solenoid valves.

  1.3 Prepare plans for Motor Control Center, electrical conduits and wiring, incoming power ducts and transformer pad, and metering system.

  1.4 Prepare plans for emergency generator, automatic transfer switch and concrete pad.
1.5 Design new instrument house to be located at Upper Waiehu Reservoir to house all SCADA and telemetry equipment, electrical and mechanical work.

1.6 Prepare plans to integrate SCADA system with Department of Water Supply's existing SCADA system.

1.7 Prepare cost estimate, specs and contract bid documents.

1.8 Submit plans and specs for agency review.

1.9 Address review agency comments and resubmit for final approval.

1.10 Assist client in the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fee:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design Engineering Services</td>
<td>$ 38,600</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE V: $ 38,600

TOTAL FEE PROPOSED - PHASES III, IV, AND V: $ 298,700

The State GET (4.167%) will be added to all fees.
DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $6,000

SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases III, IV, and V within one hundred fifty (150) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project.

1. Environmental Assessment.
2. Stream Alteration Permit.

We hope the foregoing reflects your understanding of the remaining work required to fully integrate Wells 1 and 2 with the CMJV transmission system. If not, please call us. We will be glad to meet with you to discuss any additional scope of services required.

Sincerely,

[Signature]

Warren S. Okamoto
EXHIBIT B

TIME SCHEDULE

PHASE I AND PHASE II shall be completed within 60 days of the issuance on Notice to Proceed, exclusive of review time by governmental agencies.

PHASE III, PHASE IV, AND PHASE V shall be completed within 150 days of Notice to Proceed, exclusive of review time by governmental agencies.
GENERAL TERMS AND CONDITIONS OF CONTRACTS
OF THE DEPARTMENT OF WATER SUPPLY
FOR SERVICES OF CONSULTANTS

Section 1 - Definitions

1.01 Board
1.02 County
1.03 Consultant
1.04 Contract
1.05 Department
1.06 Director
1.07 HRS
1.08 Project

Section 2 - Award and execution of contract

2.01 Selection of consultant
2.02 Contract not binding unless properly executed
2.03 Agreements outside of the contract
2.04 Notice to proceed

Section 3 - Legal Relations and Responsibility

3.01 Independent contractor
3.02 Contracts by the consultant
3.03 Findings confidential
3.04 Ownership vested in department
3.05 Indemnity
3.06 Campaign contributions prohibited
3.07 Absence of interest
3.08 Laws, ordinances and codes, and rules
3.09 Arbitration
3.10 Professional liability insurance

Section 4 - Performance of contract

4.01 Time of performance
4.02 Delay
4.03 Liquidated damages
4.04 Prosecution of the work
4.05 Modification of contract
4.06 Authority of the director
4.07 Subcontracting or assignment of contract
4.08 Cooperation by the department
4.09 Use of department’s standards
4.10 Review by the department
Section 5 - Compensation

5.01 Compensation
5.02 Reduction or increase in compensation
5.03 Payments
5.04 Assignment of money due or payable

Section 6 - Remedies

6.01 Right of the board to suspend the performance of services
6.02 Right of the board to terminate the contract
6.03 Authority to withhold money due or payable
6.04 Remedies not exclusive

SECTION 1 - DEFINITIONS

1.01 "Board" means the Board of Water Supply, County of Maui.
1.02 "County" means the County of Maui, State of Hawaii.
1.03 "Consultant" means the individual, partnership, corporation, or joint venture engaged by the board to perform the services under the contract.
1.04 "Contract" means the written agreement covering the performance of certain professional services by the consultant. It shall include all referenced material, and all exhibits attached thereto and included therein. It shall also include all modifications of the contract by supplemental agreements thereto in writing and written orders of the director.
1.05 "Department" means the Department of Water Supply, County of Maui, including the Board of Water Supply.
1.06 "Director" means the director of the Department of Water Supply, County of Maui, or the director’s representative.
1.07 "HRS" means Hawaii Revised Statutes.
1.08 "Project" means the undertaking under the contract.

SECTION 2 - SELECTION OF CONSULTANT AND EXECUTION OF CONTRACT

2.01 Selection of consultant. The consultant, upon being selected to render certain professional services for the project, will be notified of the consultant’s selection by the director. The notice shall not be construed to be authorization to proceed with the performance of services.
2.02 Contract not binding unless properly executed. The contract shall not be binding or have any force until it has been fully and properly executed by all of the parties thereto, and the insurance policy required under subsection 3.10 is accepted by the director.

2.03 Agreements outside of the contract. The contract and this General Terms And Conditions Of Contracts Of The Department Of Water Supply For Services Of Consultants contain the complete understandings regarding the responsibilities of the department and the consultant, and as of the effective date of the contract, supersede all other understandings between the consultant and the department.

2.04 Notice to proceed. (a) The director shall issue a written notice to proceed, establishing the date on which the time of performance shall commence and authorizing the consultant to proceed with the performance of the consultant’s services.

(b) Services performed by the consultant prior to the date indicated in the notice to proceed shall be at the consultant’s own risk.

SECTION 3 - LEGAL RELATIONS AND RESPONSIBILITY

3.01 Independent contractor. The consultant shall perform the contract as an independent contractor. The consultant, the consultant’s subcontractors, agents, and employees shall not be entitled to the benefits and privileges of an employee of the county under the civil service system.

3.02 Contracts by the consultant. The consultant does not have the right to enter into any contract on behalf of or make any commitment on behalf of the department.

3.03 Findings confidential. Any report, information, or data prepared or assembled by the consultant under the contract shall not be made available to any individual or organization by the consultant without the prior written approval of the director.

3.04 Ownership vested in department. (a) Any and all data, information, field notes, designs, drawings, tracings, results, and any other thing derived or obtained directly or indirectly as a result of the contract shall be the sole and exclusive property of the department and the consultant shall not have any interest, right, or title in or to any of the foregoing.

(b) Prior to the release of retainage under subsection 5.03, or termination of the contract under subsection 6.02, the
consultant shall submit the items prepared pursuant to subsection (a) herein to the department.

3.05 Indemnity. The consultant shall defend, indemnify, and hold harmless the board, its officers, employees, and assigns, from and against any and all claims, suits, actions, injuries to persons, damages to property, and wrongful death, that may arise out of or in connection with any errors, omissions, or negligent acts by the consultant, the consultant’s subcontractors, agents, and employees, in their performance of the contract until such time as any action against the consultant is barred by Chapter 657 HRS, as amended, and shall reimburse the board, its officers, employees, and assigns, for any judgments, costs, and expenses, including attorney’s fees, incurred in connection with the defense of any such claim, or incurred by the board in enforcing this provision.

3.06 Campaign contributions prohibited. No portion of the consultant’s compensation under the contract shall be used for campaign contributions.

3.07 Absence of interest. The consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. The consultant further covenants that in the performance of this contract, no person having any such interest shall be employed.

3.08 Laws, ordinances and codes, and rules and regulations. (a) The consultant shall be fully informed of all applicable federal and state laws, county ordinances and codes, and federal, state, and county rules and regulations, which in any manner affect the contract and the performance thereof, including but not limited to:

1. Article 1 of Title 10, Maui County Code, as amended, relating to the traffic code,

2. Title 12, Maui County Code, as amended, relating to streets, sidewalks, and public places,

3. Article 3 of Title 14, Maui County Code, as amended, relating to improvement districts,

4. Chapter 16.04, Maui County Code, as amended, relating to the Model Fire Code,

5. Chapter 16.08, Maui County Code, as amended, relating to the Housing Code,

6. Title 19, Maui County Code, as amended, relating to zoning,
(7) Chapter 16.24, Maui County Code, as amended, relating to the Building Code,

(8) Chapter 16.16, Maui County Code, as amended, relating to the Electrical Code,

(9) Chapter 16.20, Maui County Code, as amended, relating to the Plumbing Code,

(10) Chapter 103, HRS, as amended, relating to expenditure of public money,

(11) Chapter 104, HRS, as amended, relating to wages and hours of employees on public works,

(12) Chapter 22 of Title 12, Hawaii Administrative Rules, relating to wage determinations

(13) Chapter 132, HRS, as amended, relating to the fire marshal,

(14) Chapter 321, HRS, as amended, relating to the Health Department,

(15) Chapter 343, HRS, as amended, relating to environmental impact statements.

(16) Chapter 378, HRS, as amended, relating to fair employment practices,

(17) Chapter 376, HRS, as amended, relating to industrial safety,

(18) Chapter 386, HRS, as amended, relating to workers' compensation,

(19) Chapter 396, HRS, as amended, relating to occupational safety and health.

(20) Section 507-17, HRS, as amended, relating to recovery on bond for materials and labor used on public works.

(21) Chapter 200 of Title 11 of the department of health, relating to environmental impact statements.

(22) Part 3 of Subtitle 8 of Title 12, Hawaii Administrative Rules, relating to construction standards.

(23) Article II, Special Management Area Rules and Regulations of the County of Maui.

(24) Title 19 of the Maui County Code, relating to zoning.
(b) If any discrepancy or inconsistency is discovered between the contract and any such law, ordinance, code, or rule, the consultant shall forthwith advise the director, in writing, of such discrepancy or inconsistency.

(c) The consultant shall comply with all such current laws, ordinances and codes, and rules.

(d) If, in part, the consultant's work includes the preparation of construction bid documents, the department's furnishing of the general conditions, and forms of the proposal, bid bond, contract, and performance and payment bond under subsection 4.09, does not waive the consultant's responsibility under this subsection and consultant shall be fully responsible for the design of the project.

3.09 Arbitration. (a) Any controversy arising out of the contract, the refusal to perform the contract or any portion thereof, or the breach thereof shall be settled by arbitration in accordance with the rules of the American Arbitration Association and judgment rendered by such arbitration shall be binding upon the board and the consultant. Each party shall bear its own costs and shall equally pay for any and all fees, costs, and expenses of the arbitrator.

(b) The consultant shall not delay the work because arbitration proceedings are pending or in progress, unless approved, in writing, by the board.

3.10 Professional liability insurance. The insurance to be procured and maintained under the contract shall not be less than one million dollars.

SECTION 4 - PERFORMANCE OF CONTRACT

4.01 Time of performance. Time is of the essence of the contract. Performance of the services shall be commenced on the commencement date designated in the notice to proceed, and shall be completed within the contract time specified in the contract.

4.02 Delay. (a) If any delay in the performance of the consultant's services occur as a result of unforeseeable causes beyond the control and without the fault or negligence of the consultant, including but not limited to acts of God, acts of the public enemy, acts of the department with respect to the contract, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe unforeseeable causes beyond the control and without the fault or negligence of the consultant and the consultant's subconsultants, the consultant shall be granted an
extension of the time of performance, corresponding to the length of the delay.

(b) If, as a result of the delay, completion of performance within the extended time causes undue hardship to the consultant, the director may, in the director's discretion, grant a further extension of the time of performance.

(c) No extension of time shall be granted unless a written application, stating in detail the cause or causes for such delays, is filed by the consultant with the director within ten calendar days after the commencement of the delay. The period of time of each extension of time shall be determined by the director. No such extension shall be deemed a waiver of the right of the board to terminate the contract for any other or additional delay not covered by the specific terms of such an extension or extensions.

4.03 Liquidated damages. Due to the speculative character and difficulty of ascertaining damages to the department resulting from any delay beyond the contract time, the consultant, for the purpose of putting the question of damages beyond controversy and dispute, shall pay the board an amount equal to the daily rate set forth in the contract multiplied by the number of days beyond the contract time as liquidated damages and not as a penalty for work which remains incomplete beyond the contract time or as extended by the director; provided that the remedy of liquidated damages shall be in addition to any other rights and remedies otherwise available to the board and not expressly waived herein.

4.04 Prosecution of the work. (a) The consultant shall be available upon reasonable demand to discuss the progress of the services being performed. All questions arising during the performance of the contract which must be resolved by the director shall be brought to the director's immediate attention.

(b) The consultant shall perform the consultant's work in accordance with established practices for good exterior appearance, and the natural and man-made environment; provided that if the project is for an economic feasibility study or other study, the consultant shall direct the consultant's work to relate appropriately to and in accordance with established principles, practices, and standards for such study.

(c) The consultant shall furnish sufficient technical supervision and administrative personnel to insure the proper performance of the services under the contract.

(d) The consultant shall be responsible for the accuracy of all computations, completeness, and integrity of all designs and plans or studies.
(e) The director shall have access at all reasonable times to all notes, designs, drawings, tracings, or other technical data pertaining to the services being performed under the contract for the purpose of inspection or making copies thereof.

4.05 Modifications of contract. (a) The department may at any time revise the scope of the project or the consultant’s scope of work; provided that such revisions shall be made by an amendment to the contract.

(b) No waiver or modification of the contract, or any provision therein shall be valid unless such waiver or modification is in a form of an amendment to the contract and executed by the consultant and the board.

(c) No document, other than an amendment to the contract and executed by the consultant and the board, purported to be a waiver or modification of the contract, or any provision therein shall be offered or received in evidence of any proceeding, arbitration, or litigation arising out of or affecting the contract, or the rights or obligations of the consultant or the board.

4.06 Authority of the director. Any question or dispute concerning any provision of the contract which may arise during its performance shall be decided by the director. The decisions of the director shall be final and binding upon all parties unless such decisions is fraudulent, capricious, arbitrary, or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. Any appeal under this subsection shall be submitted to the board. Nothing herein shall be construed as making final and binding any decision of the director or the board, or both, on a question of law. Pending final decision of any dispute or question, the consultant shall proceed diligently with the consultant’s performance of services in accordance with the decision of the director or the board.

4.07 Subcontracting or assignment of contract. The consultant shall not subcontract or assign all or any part of the performance of the consultant’s services without the prior written consent of the director. Any consent by the director to subcontract any portion of the contract shall not be construed to relieve the consultant of any responsibility for the performance of the contract.

4.08 Cooperation by the department. The department, without cost to the consultant, shall cooperate fully with the consultant and will promptly place at the consultant’s disposal all available pertinent information which the department may have in its possession.

4.09 Use of department’s standards. (a) The consultant shall refer to the department’s standard details and shall not
duplicate such standard details in the consultant’s work, unless the consultant makes modifications thereto.

(b) The department will provide the consultant with the general conditions, and formats of the proposal, bid bond, contract, performance and payment bond.

4.10 Review by the department. (a) The department will review the consultant’s work, and may ask that certain modifications be made thereof. If, in the consultant’s judgment, such modifications by the department affect the consultant’s responsibilities under the contract, the consultant shall advise the director in writing.

(b) The inclusion of the department’s comments does not waive the consultant’s responsibilities under subsection 4.04.

SECTION 5 - COMPENSATION

5.01 Compensation. The consultant shall be paid the amount stated in the contract, reduced or increased pursuant to subsection 5.02, as full compensation for his services under the contract.

5.02 Reduction or increase in compensation. (a) The compensation of the consultant shall be reduced or increased in accordance with the modifications to the consultant’s scope of work as the contract is amended under subsection 4.05.

(b) The compensation of the consultant shall be increased to reimburse the consultant for increased costs to perform the services if performance of the services is delayed by more than six months by an act or omission of the department; provided that the consultant submits within thirty days following the termination of the delay, in writing, a request for reimbursement containing:

(1) the reimbursement requested;

(2) the act or omission of the department causing the request for reimbursement;

(3) the services of the consultant affected by the department’s act or omission;

(4) a breakdown of the requested reimbursement; and

(5) other information which the consultant and the director deem relevant to the request.
5.03 Payments. (a) As long as the services of the consultant are performed in accordance with the contract, the department may pay the consultant monthly progress payments based upon the value of the services performed by the consultant, as estimated by the consultant and the director.

(b) The department may retain up to five percent from each monthly progress payment, and after fifty percent of the compensation under the contract is paid, and the consultant's performance is satisfactory, no additional amount will be retained; provided that if the consultant's performance is not satisfactory, the director may retain up to five percent of all amounts due the consultant.

(c) Final payment, inclusive of amounts retained by the department, shall be made (1) upon determination by the director that the consultant has satisfactorily fulfilled his obligations under the contract, and (2) in accordance with chapters 103-53 and 237-45, HRS, upon receipt of a tax clearance from the department of taxation, certifying that the consultant has paid all delinquent taxes levied or accrued.

5.04 Assignment of money due or payable. Assignments of money due or to become payable to the consultant shall not be valid without the prior written consent of the director. The rights of the assignee to moneys due or to become due to the consultant shall be subject to subsection 6.03.

SECTION 6 - REMEDIES

6.01 Right of the board to suspend the performance of services. (a) The board has the right to order the suspension of the performance of the services or portions thereof at any time. The order shall:

(1) Be in writing;

(2) State the reason or reasons for the suspension;

(3) Specify the portions of the contract being suspended; and

(4) Specify the estimated period of suspension.

(b) If the board orders the suspension of the entire performance of services and the estimated period of suspension is more than six months, the consultant has the right to terminate the contract: provided that he submits a request for termination within six months following receipt of the order for suspension.
(c) If the contract is not terminated within six months, the consultant may request reimbursement for additional costs incurred due to the suspension of work.

6.02 Right of the board to terminate the contract. (a) The board has the right to order the termination of the contract at any time. The order shall be in writing and shall be forwarded to the address of the consultant stated in the contract.

(b) The board may terminate the contract if the consultant:

(1) fails to begin work under the contract at the time required;

(2) is unnecessarily delaying the performance of the contract or any part thereof;

(3) is failing to perform the contract with sufficient or adequate personnel, equipment, or materials, or is not making sufficient progress to ensure the completion of the contract within the time specified;

(4) fails to perform the contract in accordance with directions of the director;

(5) discontinues performance of the contract;

(6) fails to recommence performance of the contract within a reasonable time after service of a written order to do so is the performance had been suspended;

(7) becomes insolvent or is declared bankrupt;

(8) commits any act of bankruptcy or insolvency;

(9) allows any final judgment to stand against the consultant unsatisfied for a period of ten calendar days;

(10) makes an assignment for the benefit of creditors;

(11) fails to pay for all labor, tools, materials, and equipment;

(12) has abandoned the contract; or

(13) violates or fails to comply with any of the provisions of the contract or this General Terms and Conditions of Contracts of the Department of Water Supply for Services of Consultants.
(c) The board may also terminate the contract for reasons, which may include but are not be limited to, the abandonment, deferral, restudy, or revision of the project by the department.

(d) If the board terminates the contract due to the consultant's default, the board may contract with another consultant to complete the remainder of the contract.

(e) In any termination, the consultant shall be compensated for all work performed until the termination order, upon the consultant's compliance with subsections 3.04 and 5.03.

(f) Such compensation due the consultant shall take into account liquidated damages, and the value of materials, data, maps, plans, or other documents or information gathered, complied, produced, or obtained, which the consultant fails to deliver.

6.03 Authority to withhold money due or payable. The board may withhold such amounts from the money due or to become payable under the contract to the consultant, or any assignee under subsection 5.04, as may be necessary to protect the board against liability or to satisfy the obligations of the consultant to the board and to employees, subcontractors and material men who have performed labor or furnished material and equipment under the contract and may make such payments from such amounts as may be necessary to discharge such obligations and protect the board.

6.04 Remedies not exclusive. The express provision herein of certain measures which may be exercised by the board for its protection shall not be construed to preclude the board from exercising any other or further legal or equitable right to protect its interests.
I, Kim Nuyen, Fiscal Officer of the Department of Water Supply, County of Maui, State of Hawaii, do certify that there is available appropriation or balance of an appropriation over and above all outstanding contracts, sufficient to cover the amount required by the foregoing contract, i.e.

<table>
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<th>Appropriation Symbol</th>
<th>Source of Funds</th>
<th>Amount Required</th>
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<td>WARREN S. INEMORI ENGINEERING, INC.</td>
<td></td>
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Contract No. W0853

Dated this 29th day of FEBRUARY, 1996.

JN 92-5

Holly Perdido Ady

Kim Nuyen
Fiscal Officer
February 29, 1996

Mr. Warren Unemori
Warren S. Unemori Engineering, Inc.
2145 Wells Street, Suite 403
Wailuku, Maui, Hawaii 96793

Dear Mr. Unemori:

Subject: Independent Professional Services for the Development of North Waihee Wells

This letter constitutes NOTICE TO PROCEED for all work under the subject project.

You are hereby notified that the official commencement date of this project shall be February 29, 1996. The time allowed to complete the required services is specified in the contract, exclusive of time required for governmental review.

Please acknowledge receipt of this notice in the space provided below on the original and two copies and return them to the Department of Water Supply. Please keep the third copy of this letter for your files.

A copy of the fully executed contract will be forwarded for your files.

Sincerely,

David R. Craddick
Director

cc: DWS Fiscal
    DWS Contractor
    DWS Engineer
    Director

NOTICE TO PROCEED RECEIVED
THIS 29TH DAY OF FEBRUARY
1996.

Warren S. Unemori

"By Water All Things Find Life"
Tuesday, February 13, 1996

Paul Seitz
BWS County of Maui
614 PalaPala Drive
Kahului, Maui, Hawaii 96732

Dear Mr. Seitz,

Memtec America Corporation (Memcor Division), has pleasure in submitting this budgetary quotation for the supply of Microfiltration technology for the Olinda WTF. The Memcor® Continuous Microfiltration (CMF) technology will provide the Island of Maui with a very high quality water for its potable water applications.

In this quotation, Memcor has detailed a CMF system to handle the requirements of 2 mgd by utilizing modular microfiltration units 3 x 90M10C for a total price of $1,659,340. Also, the price to supply a 2 x 90M10C system would be $1,295,650.

As we previously discussed, this project is quoted as a bare minimum. This does not include freight, except the microfiltration skids themselves, which are FOB Port of Honolulu, all other equipment is FOB supplier. Additionally, there are no submittal drawings, spare parts, any additional training, control programming, any state, federal or local taxes, and the Terms and Conditions and payment terms are as previously negotiated for Lahaina and Kamole WTF's. Memcor have attempted to cut everything that is not absolutely necessary in order to give the County of Maui the absolute lowest price.

What it does include is, three microfiltration skids, one control system using a Pentium based processor (Wonderware or equal), two air compressors w/ air dryers, one air receiver, one CIP tank w/ no immersion heater, one CIP recirculation pump, essential actuated valves on CIP line, concentrate solution feed system, 55 gallons of Memclean® concentrate, 15 man days of startup, and six standard O&M manuals. Our standard scope of supply as we have quoted in the past.

Memcor will supply our generic drawings for process layout, but will not provide any site specific detailed drawings, telemetry is also excluded.
Memcor has allowed for microfiltration equipment inspection at our factory, if this is necessary.

Delivery is 10 to 14 weeks after acceptance of purchase order. This delivery is based on present inventory and may change at any time.

This offer is valid for 45 days.

We look forward to working with you on this project to satisfy your filtration requirements.

Sincerely,

Paul Johnson
Regional Manager

cc: Claude Jordan - Memtec America
    John Crapper - Memtec Limited
GRANT OF EASEMENT
(Well Field 1)

This Indenture is made this 21st day of FEBRUARY, 1996 by and between WAILUKU AGribUSINESS CO., INC., a Hawaii corporation, whose business and post office address is 90 Waiko Road, P. O. Box 520, Wailuku Maui, Hawaii 96793 ("Grantor") and THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI, a political subdivision of the State of Hawaii whose principal office and post office address is 200 South High Street, Wailuku, Maui, Hawaii 96793 ("Grantee").

BACKGROUND STATEMENT:

1. Grantor owns that certain parcel of land situated at Waihee, Maui, Hawaii, described on Exhibit "A" attached hereto and made a part hereof (the "Grantor's Land").
2. The purpose of this indenture is to establish an easement in accordance with that certain Right-of-Entry Agreement to Grant Easements between Grantor and Grantee, dated Feb 21, 1996.

EASEMENT: For valuable consideration, Grantor hereby grants and conveys to the Grantee an "Easement" (defined below) over the "Easement Area" (defined below and located on the Grantor's Land described in Exhibit A), upon and in accordance with all of the following terms and conditions:

1. Easement Defined. This easement shall include the following rights:

(a) To construct, maintain, operate, repair and replace the following facilities:

- two existing water wells together with appurtenant pipelines, valves, fences, security devices, electrical power lines, communication lines and other facilities associated with the use and operation of said wells;

(b) The right of pedestrian and vehicular ingress and egress and the right to construct, operate, repair, maintain and replace a road or driveway, as needed for the purpose of constructing, maintaining and operating the facilities described in subparagraph (a) above; and

(c) The right to drain overflows and discharges of water from said wells and appurtenant pumps, provided that all such overflows and discharges shall be managed within the Easement Area, so that the volume or flow of drainage from the Easement Area to adjoining lands shall not be increased or altered from its presently existing natural flow.

2. Easement Area Defined. The Easement Area is the area described and located as set forth in Exhibit B attached hereto and made a part hereof.

3. Grantor's Limited Warranty. Grantor for itself and its successors and assigns does hereby covenant with Grantee that Grantor is seised in fee simple of the Easement Area; the Grantor's Land is free and clear of all liens and encumbrances made by Grantor or by persons claiming by, through or under the Grantor except for those encumbrances and other matters set forth on Exhibit A; and Grantor will, and its successors and assigns shall, warrant and defend the interest unto Grantee, its successors and assigns against the lawful claims and demands of all persons claiming by, through or under Grantor, except as aforesaid.
4. **Responsibility.** Grantee will at all times in connection with all uses or actions within the Easement Area by Grantee or its agents and licensees, (a) observe and perform all laws, ordinances, rules and regulations now or hereafter imposed by any governmental authority which are applicable to the Easement Area; (b) not at any time make or suffer any strip or waste or unlawful, improper or offensive use of the Easement Area; (c) keep the Easement Area reasonably clear of litter and refuse; (d) keep and maintain the Easement Area in reasonably safe condition and in good repair; (e) not permit the Easement Area to be used for any purpose other than the purposes expressly permitted under paragraph 1 above; and (f) complete the construction of all improvements, once begun, promptly and with due care and diligence and free and clear of all liens.

5. **Use of Easement Area by Grantor.** This Easement shall be exclusive as to those areas containing the facilities described in Section 1(a) above, but shall be nonexclusive as to those areas designated for roadway or access purposes. Grantee understands that the existing driveway is used for access to abutting properties other than Grantor’s land, and that third parties may have rights to use said access.

6. **Relocation of Easement Area by Grantor.** At any time and from time to time the Grantor may relocate the Easement Area in order to facilitate the Grantor’s use and development of the Grantor’s land, provided that:

   (a) Said relocation right shall apply only to roadways, pipelines, buildings and moveable equipment, and shall not apply to permanent fixtures which cannot physically be moved such as developed wells.

   (b) All expenses in connection with governmental approvals for the relocation of the easement area and the establishment of record of the relocated easement shall be borne by the Grantor at no cost to the Grantee;

   (c) Said relocated Easement shall provide for Grantee’s rights and obligations on all of the same terms and conditions as set forth in this Easement; and

   (d) As a condition of said relocation becoming effective, Grantor will pay all costs to relocate all of the Grantee’s improvements and facilities to the relocated easement area in at least as good condition and remaining useful life as existed prior to the relocation.

Simultaneously with Grantor’s conveyance and grant to the Grantee of a new Easement over the relocated easement area, meeting all the terms and conditions
hereof, (i) Grantee will release and transfer to Grantor all of its rights and interest in the Easement Area as it existed prior to the relocation becoming effective, free and clear of all liens, claims, and encumbrances made or suffered by Grantee, and (ii) Grantor and Grantee will execute and record an appropriate amendment to this easement under which all of the terms and conditions of this easement will remain applicable to the relocated easement.

Grantee intends to install overhead utility lines as part of Grantee’s improvements, within the Easement Area. Grantee agrees to convert such overhead utility lines to underground utility lines when requested, in writing, by Grantor, provided however that Grantee’s obligation to so convert to underground utilities is on the condition that Grantor has first created an underground conduit in order for Grantee to install the power lines underground. It is agreed and understood that the cost to construct the underground conduit will be borne totally by Grantor and the cost to convert the overhead utility line to underground, that is, the cost to remove the overhead power lines, poles and facilities and to install the power lines in Grantor’s conduit shall be borne totally by Grantee.

7. Maintenance of Easement Area by Grantor. Grantor shall have the right to improve or maintain the Easement Area in its sole discretion. However, Grantor will not be obligated in any way to maintain or improve the Easement Area or to maintain, safeguard or repair Grantee’s facilities within the Easement Area.

8. Construction. Bonding and Insurance. All of Grantee’s construction work shall be performed in accordance with all applicable governmental law, rules and regulations of the State of Hawaii and Grantee. This includes the performance of all construction work by appropriately qualified contractors, the provision of performance and payment bond(s), and the maintenance of all insurance coverage for the duration of the construction period. Grantor shall be named as an additional insured under all insurance policies, including comprehensive general liability insurance and such coverage shall be required in the bid specifications for the construction work.

9. Taxes. Grantee shall pay as and when due all real estate taxes and assessments which shall become due with respect to and are properly allocable to Grantee’s facilities and those areas of Grantor’s land encumbered by the Grantee’s facilities.

10. Grantor’s Agricultural Activities and Right to Farm. Grantor and the Grantee agree that lands located adjacent to or in the vicinity to the Easement Area which are now owned, used or hereafter acquired by Grantor are or will be in agricultural operation and Grantor will have the unrestricted right to engage in any type of farming operation, including, but not limited to, open burning, percolating, evaporating, fertilizing, milling, generating power, water diversion, plowing grading, storing, hauling, spraying pesticides, irrigating, crop dusting, and all other activities
incidental to the planning farming, harvesting and processing of agricultural products and that smoke, dust, light, heat, vapor, odor, chemicals, vibration, and other nuisances may be discharged or emitted over and upon the Easement Area. Grantor, its successors and assigns, shall not be responsible or liable to the Grantee, its successors and assigns, for the consequences from the creation and discharge of such noxious emissions.

11. Property "As Is". This Easement is granted subject to the encumbrances affecting Grantors’ land as set forth in Exhibit A hereto. Grantee accepts the physical condition of the land and all Easement Areas in "as is" condition. Grantor makes no representations or warranties whatsoever, as to the physical condition of the Easement Area, the suitability of the land for the Grantee’s intended purposes, the availability, quantity or quality of any developed or undeveloped water resources, or the applicability of any laws, rules or regulations.

12. Mediation. If any claim or dispute shall arise in connection with the interpretation of this agreement or the performance or breach by any party, both parties agree in good faith to attempt to settle such dispute by non-binding mediation in Wailuku, Hawaii conducted under the Commercial Mediation Rules of the American Arbitration Association.

13. Attorney’s Fees. If any legal action or arbitration shall be brought by a party to enforce or interpret any provision of this agreement or to redress any breach by the other party, the prevailing party shall be entitled to recover its reasonable attorney’s fees and costs.

14. Appurtenance and Successors. This Agreement shall inure to the benefit of and shall be binding upon the parties hereto and their respective successors and assigns. The terms "Grantor" and "Grantee" herein shall include their respective successors.

15. Governing Law. This Agreement shall be governed by the laws of the State of Hawaii.

16. No Waiver. No failure by any party to insist upon strict performance by the other party of any of the terms and provisions of this agreement shall be deemed to be a waiver of any such terms or provisions or of the other party’s obligation to comply with such terms or provisions; and notwithstanding such failure, each party shall have the right thereafter to insist upon the other party’s strict performance of such terms and provisions. Any waiver of the terms of this agreement shall not be effective unless given in writing.

17. Amendments. This agreement may not be amended unless mutually agreed to in writing and signed by the parties hereto.
18. **Notices.** All notices or other communications given by either party hereto shall be deemed to be duly given and received by the other party upon the earlier to occur of (a) actual receipt by a duly elected or appointed officer, director or authorized employee of said other party, either by mail, courier, hand delivery or facsimile transmission, or (b) three business days after having been deposited in the United States Mail, postage prepaid, sent by registered or certified mail (whether or not actually received by the other party), addressed to the other party at the address set forth at the top of this agreement, or to such other address as such other party may have given notice of to the sending party in accordance with the foregoing provision.

19. **Counterparts.** This Easement may be executed in counterparts, and said execution shall have the same effect as if all parties executed the same original copy hereof. Either party shall be authorized to combine all signed original pages and notary acknowledgments within a single copy of this document for purposes of recording in the State of Hawaii Bureau of Conveyances and submission to any tribunal in any proceeding.

Executed as of the day and year first above written.

Grantor:

WAILUKU AGribusiness Co., Inc.

By [Signature]

Its: Chairman of the Board

By [Signature]

Its: Secretary

Grantee:

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By [Signature]

Its: Authorized Signatory
Approved as to Form and Legality

Gary W. Zakian
Deputy Corporation Counsel
County of Maui
On this 21st day of February, 1996, before me personally appeared J. ALAN KUGLE and KATHLEEN F. OSHIRO, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board and Secretary, respectively, of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.
STATE OF HAWAII )
COUNTY OF MAUI ) SS.

On this 20th day of February, 1996, before me appeared BYRON WALTERS, to me personally known, who, being by me duly sworn, did say that he is a Member of the Board of Water Supply of the County of Maui, and was authorized by the BOARD OF WATER SUPPLY on February 15, 1996 to execute any and all documents as set forth in the COUNTY OF MAUI BOARD OF WATER SUPPLY RESOLUTION RELATING TO THE PURCHASE OF THE WAIHEE VALLEY PROPERTY, and that the said instrument was signed on behalf of the said Board of Water Supply, and the said BYRON WALTERS acknowledged the said instrument to be the free act and deed of the said Board of Water Supply.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii
My commission expires: 11/25/96
EXHIBIT A

All of that certain parcel of land (being portion of the land(s) described in and covered by Royal Patent Number 4475, Land Commission Award Number 7713, Apana 24 to V. Kamamalu and Royal Patent Number 6207, Land Commission Award Number 4405-EE, Apana 1 to Kaokaa) situate, lying and being at Waihee, District of Wailuku, Island and County of Maui, State of Hawaii, bearing Tax Key designation 3-2-001-004 (2) and containing an area of 12.122 acres, more or less.

Subject, to the following:

1. Reservation in favor of the State of Hawaii of all mineral and metallic mines.

2. Water rights, easements and other rights as set forth in Deed of Exchange dated June 23, 1924, by and between HAWAIIAN COMMERCIAL SUGAR COMPANY, now known as Alexander and Baldwin, Inc., and WAILUKU SUGAR COMPANY, recorded in Liber 740 at Page 134, as amended by Agreement dated March 24, 1937, recorded in Liber 1371 at Page 227.

3. Water rights in favor of HAWAIIAN COMMERCIAL AND SUGAR COMPANY, LIMITED, now known as ALEXANDER AND BALDWIN, INC., and WAILUKU SUGAR COMPANY, as set forth in instrument dated July 15, 1927, recorded in Liber 893 at Page 316.


5. That certain unrecorded Agreement dated January 6, 1949, by and between the COUNTY OF MAUI and WAILUKU SUGAR COMPANY; re: water distribution system.

6. Non-exclusive easements over, under and across a portion of Easement "A" for road and utility purposes in favor of George Ezaki, et al., as set forth and described in Deed dated June 25, 1979, recorded in Liber 13830 at Page 232.
7. RIGHT OF ENTRY AGREEMENT dated May 17, 1983, recorded in Liber 17090 at Page 20, in favor of County of Maui for the purposes of performing surveys and design engineering for a new water tank, inlet and outlet waterlines, and appurtenances.

8. Grant dated January 5, 1987, recorded in Liber 20331 at Page 23, in favor of MAUI ELECTRIC COMPANY, LIMITED and HAWAIIAN TELEPHONE COMPANY, now known as GTE HAWAIIAN TELEPHONE COMPANY INCORPORATED, granting nonexclusive right and easement to build, construct, reconstruct, repair, maintain, operate and remove pole and wire lines and underground lines, etc. for the transmission of electricity.

9. SUBDIVISION AGREEMENT (THREE LOTS OR LESS) dated July 27, 1987, recorded in Liber 20986 at Page 529, by and between WAILUKU AGRIBUSINESS CO., INC., "Owner" and THE COUNTY OF MAUI, "County".

10. SUBDIVISION AGREEMENT (LARGE LOTS) dated July 27, 1987, recorded in Liber 20986 at Page 535, by and between WAILUKU AGRIBUSINESS CO., INC., "Owner" and THE COUNTY OF MAUI, "County".

11. FARM DWELLING AGREEMENT dated July 27, 1987, recorded in Liber 20986 at Page 544, by and between WAILUKU AGRIBUSINESS CO., INC., "Owner" and THE COUNTY OF MAUI, "County".

12. GRANT OF EASEMENT dated April 25, 1991, recorded as Document No. 91-063482, by and between WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, "Grantor" and WILLIAM B. FREITAS, JR., a married person, "Grantee", granting a perpetual non-exclusive road easement for pedestrian and vehicular ingress and egress to and from a public road over and across:
**EASEMENT "A"**

over and across portion of R. P. 4475, L. C. Aw. 7713, Ap. 24 to V. Kamamalu situated on the westerly side of Kahekili Highway at Waihe'e, Maui, Hawaii, being more particularly described as follows:

Beginning at a point at the most northerly corner of this easement, the coordinates of said point of beginning referred to Government Survey Triangulation Station "HAY" being 9,347.68 feet North and 7,323.39 feet West and running by azimuths measured clockwise from True South:

<table>
<thead>
<tr>
<th>Step</th>
<th>Azimuth</th>
<th>Distance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>319° 00'</td>
<td>197.53</td>
<td>feet along the westerly side of Kahekili Highway;</td>
</tr>
<tr>
<td>2.</td>
<td>Thence over and across a portion of R. P. 4475, L. C. Aw. 7713, Ap. 24 to V. Kamamalu on a curve to the right having a radius of 197.07 feet, the chord azimuth and distance being:</td>
<td>332° 00'</td>
<td>88.66 feet;</td>
</tr>
<tr>
<td>3.</td>
<td>345° 00'</td>
<td>90.00</td>
<td>feet over and across same;</td>
</tr>
<tr>
<td>4.</td>
<td>Thence over and across same on a curve to the right having a radius of 122.00 feet, the chord azimuth and distance being:</td>
<td>7° 30'</td>
<td>93.37 feet;</td>
</tr>
<tr>
<td>5.</td>
<td>30° 00'</td>
<td>21.00</td>
<td>feet over and across same;</td>
</tr>
<tr>
<td>6.</td>
<td>Thence over and across same on a curve to the right having a radius of 222.00 feet, the chord azimuth and distance being:</td>
<td>50° 00'</td>
<td>151.86 feet;</td>
</tr>
<tr>
<td>7.</td>
<td>70° 00'</td>
<td>71.00</td>
<td>feet over and across same;</td>
</tr>
<tr>
<td>8.</td>
<td>Thence over and across same on a curve to the left having a radius of 178.00 feet, the chord azimuth and distance being:</td>
<td>62° 30'</td>
<td>46.47 feet;</td>
</tr>
</tbody>
</table>
9. 55° 00' 504.75 feet over and across same;

10. Thence over and across same on a curve to the right having a radius of 272.00 feet, the chord azimuth and distance being:

   66° 15' 106.13 feet;

11. 77° 30' 115.84 feet over and across same along R. P. 5331, L. C. Aw. 4405-Q:1 to Kaalepo;

12. 68° 00' 65.99 feet along R. P. 5331, L. C. Aw. 4405-Q:1 to Kaalepo;

13. 54° 30' 134.00 feet along same and along R. P. 4120, L. C. Aw. 4405-P:2 & 4 to Moo;


15. 110° 00' 78.70 feet over and across same;

16. Thence over and across same on a curve to the left having a radius of 50.00 feet, the chord azimuth and distance being:

   92° 30' 30.07 feet;

17. 75° 00' 162.00 feet over and across same;

18. Thence over and across same on a curve to the left having a radius of 680.00 feet, the chord azimuth and distance being:

   70° 45' 100.79 feet;

19. 66° 30' 40.00 feet over and across same;
20. Thence over and across same on a curve to the right having a radius of 370.00 feet, the chord azimuth and distance being:

- 72° 45' 80.56 feet;
- 79° 00' 138.00 feet over and across same;
- 86° 38' 20" 75.50 feet over and across same;
- 103° 45' 38.08 feet over and across same;
- 66° 35' 40.00 feet over and across same;
- 77° 50' 32.00 feet over and across same;
- 9° 55' 48.00 feet over and across same;
- 52° 40' 94.00 feet over and across same;
- 63° 00' 37.96 feet over and across same;
- 94° 00' 34.89 feet over and across same;

21. Thence over and across same:

- 104° 45' 36.32 feet;

30. Thence over and across same on a curve to the right having a radius of 97.36 feet, the chord azimuth and distance being:

- 101° 45' 71.31 feet;

31. Thence over and across same:

- 115° 30' 53.00 feet over and across same;

32. Thence over and across same on a curve to the left having a radius of 150.00 feet, the chord azimuth and distance being:

- 101° 45' 71.31 feet;

33. Thence over and across same:

- 88° 00' 126.80 feet over and across same;

34. Thence over and across same on a curve to the left having a radius of 500.00 feet, the chord azimuth and distance being:
35. 79° 00' 00 81.00 feet over and across same;

36. Thence over and across same on a curve to the left having a radius of 200.00 feet, the chord azimuth and distance being:

65° 15' 95.07 feet;

37. 51° 30' 00 251.00 feet over and across same;

38. Thence over and across same on a curve to the right having a radius of 160.00 feet, the chord azimuth and distance being:

65° 37' 30" 78.09 feet;

39. 79° 45' 00 307.38 feet over and across same;

40. Thence over and across same on a curve to the left having a radius of 53.95 feet, the chord azimuth and distance being:

54° 52' 30" 45.39 feet;

41. 97° 40' 00 21.62 feet over and across same;

42. 210° 00' 00 8.22 feet over and across same;

43. Thence over and across same on a curve to the right having a radius of 73.95 feet, the chord azimuth and distance being:

234° 52' 30" 62.21 feet;

44. 259° 45' 00 307.38 feet over and across same;

45. Thence over and across same on a curve to the left having a radius of 140.00 feet, the chord azimuth and distance being:
245° 37' 30'' 68.33 feet; 
46. 231° 30' 251.00 feet over and across same;
47. Thence over and across same on a curve to the right having a radius of 220.00 feet, the chord azimuth and distance being:
245° 15' 104.58 feet;
48. 259° 00' 81.00 feet over and across same;
49. Thence over and across same on a curve to the right having a radius of 520.00 feet, the chord azimuth and distance being:
263° 30' 81.60 feet;
50. 268° 00' 175.01 feet over and across same;
51. Thence over and across same on a curve to the right having a radius of 150.00 feet, the chord azimuth and distance being:
281° 45' 71.31 feet;
52. 295° 30' 19.47 feet over and across same;
53. Thence over and across same on a curve to the left having a radius of 157.36 feet, the chord azimuth and distance being:
276° 15' 37.82 feet;
54. Thence over and across same on a curve to the left having a radius of 120.00 feet, the chord azimuth and distance being:
244° 50' 50.58 feet;
55. 232° 40' 158.00 feet over and across same;
56. Thence over and across same on a curve to the right having a radius of 93.26 feet, the chord azimuth and distance being:
256' 35'  75.62 feet;
57. Thence over and across same on a curve to the left having a radius of 160.00 feet, the chord azimuth and distance being:
269'  45'  59.69 feet;
58. 259' 00'  138.00 feet over and across same;
59. Thence over and across same on a curve to the left having a radius of 330.00 feet, the chord azimuth and distance being:
252'  45'  71.35 feet;
60. 246' 30'  40.00 feet over and across same;
61. Thence over and across same on a curve to the right having a radius of 720.00 feet, the chord azimuth and distance being:
250'  45'  106.72 feet;
62. 255' 00'  162.00 feet over and across same;
63. Thence over and across same on a curve to the right having a radius of 90.00 feet, the chord azimuth and distance being:
272'  30'  54.13 feet;
64. 290' 00'  23.79 feet over and across same;
65. Thence over and across same on a curve to the left having a radius of 100.00 feet, the chord azimuth and distance being:
268'  35'  73.03 feet;
66. 247' 10'  30.36 feet over and across same;
67. Thence over and across same on a curve to the left having a radius of 180.00 feet, the chord azimuth and distance being:
240' 50'  83.84 feet;  
68. 234' 30'  79.05 feet over and across same;  
69. Thence over and across same on a curve to the right  
having a radius of 218.00 feet, the chord azimuth  
and distance being:  
246' 00'  86.92 feet;  
70. 257' 30'  119.05 feet over and across same;  
71. Thence over and across same on a curve to the left  
having a radius of 232.00 feet, the chord azimuth  
and distance being:  
246' 15'  90.52 feet;  
72. 235' 00'  504.75 feet over and across same;  
73. Thence over and across same on a curve to the right  
having a radius of 218.00 feet, the chord azimuth  
and distance being:  
242' 30'  56.91 feet;  
74. 250' 00'  71.00 feet over and across same;  
75. Thence over and across same on a curve to the left  
having a radius of 182.00 feet, the chord azimuth  
and distance being:  
230' 00'  124.50 feet;  
76. 210' 00'  21.00 feet over and across same;  
77. Thence over and across same on a curve to the left  
having a radius of 82.00 feet, the chord azimuth  
and distance being:  
187' 30'  62.76 feet;  
78. 165' 00'  90.00 feet over and across same;
79. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:

\[142' \ 30' \quad 62.76 \text{ feet;}\]

80. 120' 00' 99.00 feet over and across same;

81. Thence over and across same on a curve to the right having a radius of 68.00 feet, the chord azimuth and distance being:

\[174' \ 30' \quad 110.72 \text{ feet;}\]

82. Thence over and across same on a curve to the left having a radius of 20.00 feet, the chord azimuth and distance being:

\[184' \ 00' \quad 28.28 \text{ feet to the point of beginning, containing an area of 3.269 acres, more or less.}\]

13. UTILITY EASEMENT dated November 19, 1991, recorded as Document No. 91-179022 in favor of MAUI ELECTRIC COMPANY LIMITED and GTE HAWAIIAN TELEPHONE COMPANY INCORPORATED, re: perpetual right and easement to build, construct, reconstruct, rebuild, repair, maintain and operate pole and wire lines and underground power lines for the transmission of electricity.

14. ACCESS EASEMENT dated May 26, 1995, recorded as Document No. 95-083357, in favor of MILES H. KAWASAKI, husband of Cheryl N. Kawasaki, DOMINICK A. MARINO and PATRICIA A. MARINO, husband and wife, re: perpetual access easements over and across the following described easements:

EASEMENT "A-1"
Situated at Waihee, Wailuku, Maui, Hawaii
Being a portion of Royal Patent 4475, Land Commission Award Number 7713, Apana 24 to V. Kamamalu

An easement (20.00 feet wide) for access and utility purposes affecting Lot 3, Waihee Valley Large-Lot Subdivision, in favor of Parcels 19, 20 and 21 of Tax Map
Key (2) 3-2-03 and described as follows:

Beginning at the Southwest corner of this Easement, on the South boundary of Lot 3, Waihee Valley Large-Lot Subdivision, the coordinates of said point of beginning referred to Government Survey Triangulation Station "HAY" being 8,420.41 feet North and 7,912.27 feet West and running by azimuths measured clockwise from True South:

1. 181' 00' 1.93 feet along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision;

2. Thence, along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being:

   129' 15 23.56 feet;

3. 257' 30' 45.11 feet along existing Roadway and Utility Easement "A";

4. Thence, along existing Roadway and Utility Easement "A" on a curve to the left with a radius of 272.00 feet, the chord azimuth and distance being:

   256' 52' 05" 6.00 feet;

5. Thence, along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being:

   38' 37' 05" 18.31 feet;

6. 1' 00' 14.00 feet along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision;

7. 91' 00' 20.00 feet along Parcel 20 of Tax Map Key (2) 3-2-03 to the point of beginning and containing an area of 576 square feet.
EASEMENT "A-2"
Situated at Waihee, Wailuku, Maui, Hawaii
Being a portion of Royal Patent 4475,
Land Commission Award 7713, Apana 24 to V. Kamamalu

An Easement (40.00 feet wide) for access and utility purposes affecting Lot 3, Waihee Valley Large-Lot Subdivision, in favor of Parcels 19, 20 and 21 of Tax Map Key (2) J-2-03 and described as follows:

Beginning at the South corner of this Easement, on the South boundary of Lot 3, Waihee Valley Large-Lot Subdivision, the coordinates of said point of beginning referred to Government Survey Triangulation Station "HAY" being 8,454.13 feet North and 7,802.76 feet West and running by azimuths measured clockwise from True South:

1. 149° 50' 8.88 feet along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision;

2. Thence along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being:

   106° 59' 35.4" 20.40 feet;

3. Thence along existing Roadway and Utility Easement "A" on a curve to the left with a radius of 272.00 feet, the chord azimuth and distance being:

   239° 34' 35.4" 43.41 feet;

4. 235° 00' 24.29 feet along existing Roadway and Utility Easement "A";

5. Thence along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being:

   12° 25' 20.30 feet;
6. 329' 50' 11.13 feet along the remainder of Lot 3, Waihe'e Valley Large-Lot Subdivision;

7. 59' 50' 40.00 feet along Parcel 20 of Tax Map Key (2) 3-2-03 to the point of beginning and containing an area of 1,026 square feet.

15. Any unrecorded leases and tenancy agreements and matters arising from or affecting the same.

16. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct boundary and improvement survey or archaeological study would disclose, including, without limitation, trails, rights of way, historic property and burial sites.

-Note:- A current survey, with metes and bounds description, should be made of said premises so that the boundaries can be determined.

17. Claims arising out of right customarily and traditionally exercised for subsistence, cultural, religious, access or gathering purposes as provided for in Hawaii Revised Statutes or the Hawaii Constitution.
Exhibit B

Well Field 1 and Area for Access, Pipeline and Utility Lines

Easement “A-1” over and across portion of R.P. 4475, L.C. Aw. 7713 Ap. 24 to V. Kamamalu, also being portion of Lot 3 of Waihee Valley Large-Lot Subdivision (TMK: 3-2-01:4) situated on the westerly side of Kahekili Highway at Waihee, Maui, Hawaii, being more particularly described as follows:

Beginning at a point at the most northerly corner of this easement, the coordinates of said point of beginning referred to Government Survey Triangulation Station “HAY” being 9,347.68 feet North and 7,323.39 feet West and running by azimuths measured clockwise from True South:

1. 319° 00’ 197.53 feet along the westerly side of Kahekili Highway;

2. Thence over and across a portion of R.P. 4475, L.C. Aw. 7713 Ap. 24 to V. Kamamalu on a curve to the right having a radius of 197.07 feet, the chord azimuth and distance being: 332° 00’ 88.66 feet;

3. 345° 00’ 90.00 feet over and across same;

4. Thence over and across same on a curve to the right having a radius of 122.00 feet, the chord azimuth and distance being: 7° 30’ 93.37 feet;

5. 30° 00’ 21.00 feet over and across same;

6. Thence over and across same on a curve to the right having a radius of 222.00 feet, the chord azimuth and distance being: 50° 00’ 151.86 feet;

7. 70° 00’ 71.00 feet over and across same;
8. Thence over and across same on a curve to the left having a radius of 178.00 feet, the chord azimuth and distance being:
   62° 30' 46.47 feet;

9. 55° 00' 504.75 feet over and across same;

10. Thence over and across same on a curve to the right having a radius of 272.00 feet, the chord azimuth and distance being:
   66° 15' 106.13 feet;

11. 77° 30' 115.84 feet over and across same;

12. 68° 00' 65.99 feet along R.P. 5331, L.C. Aw. 4405 Q:1 to Kaalepo;

13. 54° 30' 134.00 feet along R.P. 5331, L.C. Aw. 4405 Q:1 to Kaalepo and along R.P. 4120, L.C. Aw. 4405 P:2 and 4 to Moo;

14. 67° 10' 131.89 feet over and across a portion of R.P. 4475, L.C. Aw. 7713 Ap. 24 to Kamamalu;

15. 110° 00' 78.70 feet over and across same;

16. Thence over and across same on a curve to the left having a radius of 50.00 feet, the chord azimuth and distance being:
   92° 30' 30.07 feet;

17. 75° 00' 162.00 feet over and across same;

18. Thence over and across same on a curve to the left having a radius of 680.00 feet, the chord azimuth and distance being:
   70° 45' 100.79 feet;

19. 66° 30' 40.00 feet over and across same;

20. Thence over and across same on a curve to the right having a radius of 370.00 feet, the chord azimuth and distance being:
   72° 45' 80.56 feet;
21. 79° 00' 17.22 feet over and across same;
22. 113° 40' 66.30 feet over and across same;
23. 82° 30' 6.73 feet over and across same;
24. 90° 00' 228.40 feet over and across same;
25. 180° 00' 33.00 feet over and across same;
26. 249° 30' 15.00 feet over and across same;
27. 262° 30' 49.50 feet over and across same;
28. 257° 30' 120.00 feet over and across same;
29. 264° 15' 17.00 feet over and across same;
30. 274° 00' 13.50 feet over and across same;
31. 308° 00' 16.50 feet over and across same;
32. 349° 20' 44.48 feet over and across same;
33. 293° 40' 25.87 feet over and across same;
34. 259° 00' 50.40 feet over and across same;
35. Thence over and across same on a curve to the left having a radius of 330.00 feet, the chord azimuth and distance being: 252° 45' 71.85 feet;
36. 246° 30' 40.00 feet over and across same;
37. Thence over and across same on a curve to the right having a radius of 720.00 feet, the chord azimuth and distance being: 250° 45' 106.72 feet;
38. 255° 00' 162.00 feet over and across same;
39. Thence over and across same on a curve to the right having a radius of 90.00 feet, the chord azimuth and distance being: 272° 30' 54.13 feet;
40. 290° 00' 23.79 feet over and across same;

41. Thence over and across same on a curve to the left having a radius of 100.00 feet, the chord azimuth and distance being:
   268° 35' 73.03 feet;

42. 247° 10' 30.36 feet over and across same;

43. Thence over and across same on a curve to the left having a radius of 380.00 feet, the chord azimuth and distance being:
   240° 50' 83.84 feet;

44. 234° 30' 79.05 feet over and across same;

45. Thence over and across same on a curve to the right having a radius of 218.00 feet, the chord azimuth and distance being:
   246° 00' 86.92 feet;

46. 257° 30' 119.05 feet over and across same;

47. Thence over and across same on a curve to the left having a radius of 232.00 feet, the chord azimuth and distance being:
   246° 15' 90.52 feet;

48. 235° 00' 504.75 feet over and across same;

49. Thence over and across same on a curve to the right having a radius of 218.00 feet, the chord azimuth and distance being:
   242° 30' 56.91 feet;

50. 250° 00' 71.00 feet over and across same;

51. Thence over and across same on a curve to the left having a radius of 182.00 feet, the chord azimuth and distance being:
   230° 00' 124.50 feet;
52. **210° 00'**  
21.00 feet over and across same;

53. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:  
187° 30' 62.76 feet;

54. **165° 00'**  
90.00 feet over and across same;

55. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:  
142° 30' 62.76 feet;

56. **120° 00'**  
99.00 feet over and across same;

57. Thence over and across same on a curve to the right with the point of curvature azimuth from the radial point being:  
30° 00', and the point of tangency azimuth from the radial point being:  
139° 00', having a radius of 68.00 feet, the chord azimuth and distance being:  
174° 30' 110.72 feet;

58. Thence over and across same on a curve to the left with the point of curvature azimuth from the radial point being:  
319° 00', and the point of tangency azimuth from the radial point being:  
229° 00', having a radius of 20.00 feet, the chord azimuth and distance being:  
184° 00' 28.28 feet to the point of beginning and containing an Area of  
2.562 acres.
SUBJECT, HOWEVER, to the following:

1. An existing Roadway and Utility Easement "A".
Ms. Marie Kimmey, Chairperson
Maui Board of Water Supply
P.O. Box 1109
Wailuku, Hawaii  96793-7109

Dear Ms. Kimmey:

Pump Installation Permit Transfer
North Waihee Wells 1 & 2
(Well Nos. 5631-02 & 03)

By your February 20, 1996 letter, the Commission on Water Resource Management acknowledges the transfer of the captioned permit from C. Brewer Properties, Inc. to the Maui Board of Water Supply.

Enclosed are copies of the permit and its extensions. Please be advised that the permit requires that work be started by May 14, 1996, and be completed by March 1, 1997. Should you be unable to meet those deadlines, please submit a request to extend them, showing cause why the permit should not be revoked.

Aloha,

Michael D. Wilson
Chairperson

Enclosures

C. Brewer Homes, Inc.
March 5, 1996

HAND DELIVERY

Ms. Rae M. Loui  
Deputy Director  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
1151 Punchbowl Street  
Honolulu, Hawaii  96813

Re: North Waihee Wells

Dear Ms. Loui:

As indicated by separate correspondence to you from Mr. David Craddock of the Maui Department of Water Supply, we have been asked to transmit to you a fully executed copy of the Grant of Easement (Well Field 1) dated February 21, 1996 executed by Wailuku Agribusiness Co., Inc., as Grantor, and The Board of Water Supply of the County of Maui, as Grantee. The Grant was recorded in the Bureau of Conveyances as Document No. 96-023917.

Yours truly,

ASHFORD & WRISTON

By: Douglas W. MacDougal

DWM:met

Enclosure

cc: Mr. David Craddock
DATA SET: WAIHEE2.DAT
11/07/95

AQUIFER MODEL: Confined

SOLUTION METHOD: Theis

PROJECT DATA:
  test date: May 15-19, 1989
  test well: North Waihee Well #2
  obs. well: North Waihee Well #1

TEST DATA:
  Q = 4.717E+05 ft³/day
  r = 176. ft
  r_c = 0.67 ft
  r_w = 0.62 ft
  b = 448. ft
  Pumping Well Screen Depth:
    top = 19. ft
    bot. = 106. ft
  Obs. Well Screen Depth:
    top = 6. ft
    bot. = 106. ft

PARAMETER ESTIMATES:
  T = 289. ft²/min
  S = 0.4826
DATA SET:
WAIHEE2.DAT
11/07/95

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Theis

PROJECT DATA:
test date: May 15-19, 1989
test well: North Waihee Well #2
obs. well: North Waihee Well #1

TEST DATA:
Q = 4.717E+05 ft³/day
r = 176. ft
r_c = 0.67 ft
r_w = 0.62 ft
b = 448. ft

PARAMETER ESTIMATES:
T = 221.6 ft²/min
S = 0.3432
DATA SET: WAIHEE2.DAT
11/07/95
AQUIFER MODEL: Unconfined
SOLUTION METHOD: Theis
PROJECT DATA:
- test date: May 15-19, 1989
- test well: North Waihee Well #2
- obs. well: North Waihee Well #1
TEST DATA:
- Q = 4.717E+05 ft³/day
- r = 176. ft
- r_c = 0.67 ft
- r_w = 0.62 ft
- b = 448. ft
PARAMETER ESTIMATES:
- T = 224.4 ft²/min
- S = 0.3188

Corrected Drawdown (ft)

Time (min)
DATA SET:
WAIHEE2.DAT
11/07/95

AQUIFER MODEL:
Confined

SOLUTION METHOD:
Theis

PROJECT DATA:
test date: May 15-19, 1989
test well: North Waihee Well #2
obs. well: North Waihee Well #1

TEST DATA:
Q = 4.717E+05 ft³/day
r = 176. ft
r_c = 0.67 ft
r_w = 0.62 ft
b = 448. ft
Pumping Well Screen Depth:
top = 19. ft
bot. = 106. ft
Obs. Well Screen Depth:
top = 6. ft
bot. = 106. ft

PARAMETER ESTIMATES:
T = 301.6 ft²/min
S = 0.5205
THEIS DRAWDOWN CALCULATION by Glenn Bauer & Roy Hardy with numerical approximations by Huntoon (1980)

INPUT PARAMETERS BOLD GREEN VALUES

Transmissivity
Storage Coeff.
Time
Pumping Rate
Radial distance from well r ft.

For Well No.: 5631-02 obs well, N. Waihee

Aquifer thickness
Hydraulic Conductivity
Pumping rate

OBSERVATION WELL
Radial distance r from pumping well

Time, t (days, year)

Drawdown s

Drawdown s

For both wells (2) pumping Q = 2 mgd each
drawdown will double in each, in Tables.

Example: if both pump = 2 mgd, drawdown @ 50 yrs.

1.7 + 1.7 = 3.4 ft
THEIS DRAWDOWN CALCULATION by Glenn Bauer & Roy Hardy with numerical approximations by Huntoon (1983)

INPUT PARAMETERS GREEN VALUES

Transmissivity $T = \frac{318,512.00}{\text{ft./day}}$
Storage Coeff. $S = 0.270$ dimensionless
Time $t = 20000 \text{ days}$
Pumping Rate $Q = 269,518.72 \text{ cubic ft./day}$

Radial distance from well $r \text{ ft.}$ $u$ Drawdown $s \text{ ft.}$

<table>
<thead>
<tr>
<th>$r$</th>
<th>$u$</th>
<th>$s$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.000000</td>
<td>24.688</td>
</tr>
<tr>
<td>10</td>
<td>0.000000</td>
<td>20.083</td>
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<tr>
<td>50</td>
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<td>16.864</td>
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<tr>
<td>100</td>
<td>0.000000</td>
<td>15.478</td>
</tr>
<tr>
<td>250</td>
<td>0.000001</td>
<td>13.845</td>
</tr>
<tr>
<td>500</td>
<td>0.000003</td>
<td>12.259</td>
</tr>
<tr>
<td>1000</td>
<td>0.000011</td>
<td>10.873</td>
</tr>
<tr>
<td>1500</td>
<td>0.000024</td>
<td>10.062</td>
</tr>
<tr>
<td>2000</td>
<td>0.000043</td>
<td>9.486</td>
</tr>
<tr>
<td>2500</td>
<td>0.000067</td>
<td>9.040</td>
</tr>
<tr>
<td>3000</td>
<td>0.000095</td>
<td>8.675</td>
</tr>
<tr>
<td>5000</td>
<td>0.000268</td>
<td>7.654</td>
</tr>
<tr>
<td>10000</td>
<td>0.001065</td>
<td>6.269</td>
</tr>
</tbody>
</table>

Aquifer thickness $b = 448 \text{ ft.}$
Hydraulic Conductivity $K = 706.5 \text{ ft./day}$
Pumping rate $Q = \frac{2.016}{3.119} \text{ mgd}$

OBSERVATION WELL
Radial distance $r$ from pumping well $1000 \text{ ft.}$

Time, $t$ (days, year) $u$ Drawdown $s \text{ ft.}$

<table>
<thead>
<tr>
<th>$t$</th>
<th>$u$</th>
<th>$s$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
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<td>2.130251</td>
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<td>1</td>
<td>0.00</td>
<td>0.213025</td>
</tr>
<tr>
<td>2</td>
<td>0.01</td>
<td>0.106513</td>
</tr>
<tr>
<td>3</td>
<td>0.01</td>
<td>0.071008</td>
</tr>
<tr>
<td>4</td>
<td>0.01</td>
<td>0.053256</td>
</tr>
<tr>
<td>5</td>
<td>0.01</td>
<td>0.042605</td>
</tr>
<tr>
<td>6</td>
<td>0.02</td>
<td>0.035504</td>
</tr>
<tr>
<td>7</td>
<td>0.02</td>
<td>0.030432</td>
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<tr>
<td>8</td>
<td>0.02</td>
<td>0.026628</td>
</tr>
<tr>
<td>10</td>
<td>0.03</td>
<td>0.021303</td>
</tr>
<tr>
<td>100</td>
<td>0.27</td>
<td>0.002130</td>
</tr>
<tr>
<td>200</td>
<td>0.55</td>
<td>0.001065</td>
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<tr>
<td>500</td>
<td>1.37</td>
<td>0.000042</td>
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<tr>
<td>1,000</td>
<td>2.74</td>
<td>0.000013</td>
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<tr>
<td>2,000</td>
<td>5.48</td>
<td>0.000010</td>
</tr>
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<td>5,000</td>
<td>13.70</td>
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<tr>
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<tr>
<td>100,000</td>
<td>273.97</td>
<td>0.000002</td>
</tr>
</tbody>
</table>

Theis Curve $s$ vs. $r$ @ time $t$

Theis Curve $s$ vs. $t$ @ observation $r$
DATA SET:
WAIHEE2.DAT
12/04/95

AQUIFER MODEL:
Confined

SOLUTION METHOD:
Cooper-Jacob

PROJECT DATA:
test date: May 15-19, 1989
test well: North Waihee Well #2
obs. well: North Waihee Well #1

TEST DATA:
\( Q = 4.717 \times 10^5 \text{ ft}^3/\text{day} \)
\( r = 176. \text{ ft} \)
\( r_c = 0.67 \text{ ft} \)
\( r_w = 0.62 \text{ ft} \)
\( b = 448. \text{ ft} \)

PARAMETER ESTIMATES:
\( T = 219.8 \text{ ft}^2/\text{min} = 3/16.512 \text{ ft}^{1/2} \)
\( S = 0.2697 \)
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

March 3, 1993

Gentlemen:

C. Brewer Properties, Inc.
Application for Pump Installation Permits
North Waihee Wells 1 & 2, Waihee, Maui

Applicant: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to install 1400 gallons per minute (gpm) pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for private/municipal use. The proposed total amount of use from both wells is 2,000,000 gallons per day (2 mgd).

Well Location/Tax Map Key: The wells are located at Tax Map Key: 3-2-01:4 (see attached map).

Well Description (typical):

Ground elevation: 283 ft.
Casing diameter: 16 inches
Solid casing depth: 289 ft.
Screen casing depth: 309 ft.
Open hole: 79 ft.
Total depth: 388 ft.
Proposed pump capacity: 1400 gpm per well

Agency Review: The application has been sent to the Maui Department of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and to the State Departments of Health and Hawaiian Home Lands for review. There have been no objections to the project.

Analysis: The well will develop fresh, basal water, for private/municipal use. The wells tap a basal aquifer with a static head standing about 10 ft. above mean sea level. John Mink, in a letter to C. Brewer Properties, Inc. states, "The water table in the North Waihee wells lies 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level. A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table". The wells were drilled and tested in 1981 and tested again in 1989. A pumping test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride. No adverse impacts are expected.
Water Availability: The wells are located in the Wailuku Sector, Waihee System of Maui. Sustainable yield of the Waihee System is estimated at 8 mgd. There is no pumpage from the aquifer. Ground water use from the aquifer system is expected to be about 4.2 mgd by the year 2010. The wells are listed for potential development in the Maui County Water Use and Development Plan.

RECOMMENDATION:

That the Commission approve the issuance of pump installation permits for North Waihee Wells 1 & 2, subject to the following conditions:

1. The Commission on Water Resource Management (Commission) shall be notified before work commences.

2. The permits shall be for installation of 1400 gpm capacity pumps in the wells. The total pumpage from both wells shall average 2 mgd.

3. The proposed uses shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. These permits or the authorization to pump water from the wells 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 each well could be reduced by the Commission in the future. These permits are not a commitment that the pump capacities permitted here or even some lesser amount are guaranteed in the future.

4. 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.

5. The following shall be submitted to the Commission within 30 days after completion of the work:
   a. Well Completion Reports.
   b. As-built sectional drawings of the pump installations.

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

7. These permits may be revoked if work is not started within six months of the dates of issuance or if work is suspended or abandoned for six months. The work proposed in these permit applications shall be completed within two years from the dates of permit issuance.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attach.

APPROVED FOR SUBMITTAL:

JOHN P. KEPPELER II, Acting Chairperson
**TEST WELL DATA**  
**NORTH WAIHEE WELL #2**

<table>
<thead>
<tr>
<th>Description</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test well elevation at top of casing</td>
<td>281.98</td>
</tr>
<tr>
<td>Measure point at base of gearing</td>
<td>282.73</td>
</tr>
<tr>
<td>Pump location (-300 feet from M.P.)</td>
<td>-17.27</td>
</tr>
<tr>
<td>Air line location (top of bowl assembly)</td>
<td>-6.27</td>
</tr>
<tr>
<td>Pressure gauge reading at beginning of test (to 1/10)</td>
<td>17.5</td>
</tr>
</tbody>
</table>

**Distance from North Waihee Well #1**  
  **to North Waihee Well #2**  
  176 feet

Chloride readings were taken twice daily. All were between 37.5 mg/l and 50 mg/l. NaCl measured with the HACH chloride test kit, Model 7-P, using low range measure 0-250 mg/l.
The pump test at North Waihee Well #2 began on Monday, May 15, 1989, at noon.

Pumping was to be at a constant rate of 2,400-2,500 gpm for 5 days.

Between 6:00 p.m. on Wednesday, May 17 and 9:00 a.m. on Thursday, May 18 the in-line flow meter malfunctioned. Not knowing this, we increased the pump's rpm to keep up the 2,450 gpm rate.

The pumping was at this increased rate (1,900 rpm) from 9:00 a.m. on Thursday, May 17 to 6:00 p.m. on Thursday, May 17. At that time the pumping was reduced to approximately 2,450 gpm by reducing the pump rotation to the original 1,700 rpm. The remainder of the test was run at this rate.

Pumping at the test well was stopped at 12:00 p.m. (noon) on Friday, May 18, 1989.

Recovery was almost immediate and by 2:00 p.m. the pressure gauge at the test well read 17.2 feet. By 5:00 p.m., Friday it was back to the original 17.5 feet on the gauge.

On Saturday at 8:00 a.m. the water level at the test well was measured by tape to be 11.25 feet above sea level. At this time the gauge was at 17.5 feet.

With the air line at -6.27 feet and water level at 11.25 feet, the gauge reading should be at 17.52 feet. The gauge reading correlates well with these results.
WAILENA WELL
ELEVATION = 608.23
(AT TOP OF PIPE)

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOP WATER ELEVATION</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/17/89</td>
<td>x</td>
<td>Poor reading - chloride content 87.5 mg/l</td>
</tr>
<tr>
<td>03/01/89</td>
<td>6.63</td>
<td>Good results; 3:00 p.m. - NaCl 87.5 mg/l</td>
</tr>
<tr>
<td>03/08/89</td>
<td>6.67</td>
<td>4:30 p.m.; river nearby flowing</td>
</tr>
<tr>
<td>03/15/89</td>
<td>6.44</td>
<td>4:00 p.m.; river not flowing</td>
</tr>
<tr>
<td>03/22/89</td>
<td>6.16</td>
<td>4:00 p.m.; river not flowing</td>
</tr>
<tr>
<td>04/03/89</td>
<td>6.61</td>
<td>10:15 a.m.; no water in river</td>
</tr>
<tr>
<td>04/11/89</td>
<td>6.54</td>
<td>1:30 a.m.; 150 mg/l - river running strong</td>
</tr>
<tr>
<td>04/17/89</td>
<td>6.20</td>
<td>9:00 a.m.; from chart</td>
</tr>
</tbody>
</table>
### KANOA WELL

**WELL ELEVATION**
305.94 ft. AT
2 1/2 IN. CASING

<table>
<thead>
<tr>
<th>DATE</th>
<th>ELEVATION</th>
<th>TIME</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/09/89</td>
<td>11.74</td>
<td>2:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>12/20/89</td>
<td>10.54</td>
<td>11:00 a.m.</td>
<td></td>
</tr>
<tr>
<td>12/29/89</td>
<td>11.90</td>
<td>9:00 a.m.</td>
<td></td>
</tr>
<tr>
<td>01/05/89</td>
<td>11.96</td>
<td>11:00 a.m.</td>
<td></td>
</tr>
<tr>
<td>01/13/89</td>
<td>11.09</td>
<td>10:00 a.m.</td>
<td></td>
</tr>
<tr>
<td>01/20/89</td>
<td>11.59</td>
<td>4:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>01/27/89</td>
<td>11.55</td>
<td>5:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>02/03/89</td>
<td>11.59</td>
<td>2:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>02/10/89</td>
<td>11.59</td>
<td>4:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>02/17/89</td>
<td>11.57</td>
<td>3:00 p.m.</td>
<td>NaCl content 50 mg/l</td>
</tr>
<tr>
<td>02/24/89</td>
<td>11.50</td>
<td>4:00 p.m.</td>
<td>NaCl content 38 mg/l</td>
</tr>
<tr>
<td>03/01/89</td>
<td>11.52</td>
<td>4:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>03/08/89</td>
<td>11.66</td>
<td>3:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>03/15/89</td>
<td>11.60</td>
<td>5:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>03/22/89</td>
<td>11.60</td>
<td>4:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>04/07/89</td>
<td>11.48</td>
<td>2:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>04/10/89</td>
<td>11.54</td>
<td>1:30 p.m.</td>
<td></td>
</tr>
<tr>
<td>05/13/89</td>
<td>12.34</td>
<td>11:30 a.m.</td>
<td>Pump Test Today - Noon</td>
</tr>
<tr>
<td>05/15/89</td>
<td>12.42</td>
<td>9:30 a.m.</td>
<td>(chart reading)</td>
</tr>
<tr>
<td>05/15/89</td>
<td>12.31</td>
<td>8:30 p.m.</td>
<td>(tape)</td>
</tr>
<tr>
<td>05/16/89</td>
<td>12.14</td>
<td>9:00 a.m.</td>
<td>(tape)</td>
</tr>
<tr>
<td>05/17/89</td>
<td>12.05</td>
<td>9:00 a.m.</td>
<td>(tape)</td>
</tr>
<tr>
<td>05/19/89</td>
<td>11.98</td>
<td>11:15 a.m.</td>
<td></td>
</tr>
<tr>
<td>05/19/89</td>
<td>12.14</td>
<td>2:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>05/19/89</td>
<td>12.20</td>
<td>5:30 p.m.</td>
<td></td>
</tr>
<tr>
<td>05/20/89</td>
<td>12.</td>
<td>8:20 a.m.</td>
<td></td>
</tr>
<tr>
<td>05/22/89</td>
<td>12.</td>
<td>8:20 a.m.</td>
<td></td>
</tr>
</tbody>
</table>
**KANOA WELL**

Elevation: 305.94 feet  
(Bubbler System)

<table>
<thead>
<tr>
<th>5/15/89</th>
<th>5/16/89</th>
<th>5/17/89</th>
<th>5/18/89</th>
<th>5/19/89</th>
<th>5/20/89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>Tuesday</td>
<td>Wednesday</td>
<td>Thursday</td>
<td>Friday</td>
<td>Saturday</td>
</tr>
<tr>
<td>3:00 am</td>
<td>5:00 am</td>
<td>8:20 am</td>
<td>12.10</td>
<td>12.10</td>
<td>12.24*</td>
</tr>
<tr>
<td>9:30 am</td>
<td>9:00 am</td>
<td>9:00 am</td>
<td>9:00 am</td>
<td>9:00 am</td>
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<tr>
<td>12.42</td>
<td>12.14</td>
<td>12.05</td>
<td>12.05</td>
<td>12.05</td>
<td>11.98*</td>
</tr>
<tr>
<td>(noon-</td>
<td>(noon-</td>
<td>(noon-</td>
<td>(noon-</td>
<td>(noon-</td>
<td>test)</td>
</tr>
<tr>
<td>begin</td>
<td>stop</td>
<td>test)</td>
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<td>test)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2:00 pm</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.14*</td>
</tr>
<tr>
<td>3:00 pm</td>
<td>5:00 pm</td>
<td></td>
<td></td>
<td></td>
<td>12.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 pm</td>
<td>6:00 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.10</td>
<td>12.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 pm</td>
<td>12:00 am</td>
<td>12:00 am</td>
<td>12:00 am</td>
<td>12:00 am</td>
<td></td>
</tr>
<tr>
<td>12.31</td>
<td>12.10</td>
<td>12.10</td>
<td>12.10</td>
<td>12.10</td>
<td></td>
</tr>
</tbody>
</table>

*Measured by steel tape.

On Monday, May 22, 1989, at 8:30 a.m. a final measure was taken by tape to read 12.35 feet.
PUMP TEST AT
NORTH WAIHEE WELL NO. 2

WP Elevation = 282.73 (Bottom of Housing)

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>RATES X 100</th>
<th>RATE (GPM)</th>
<th>WATER LEVEL (FT.) (AT GAUGE)</th>
<th>WATER LEVEL (FT.) ELEVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon. 5/15</td>
<td>Noon</td>
<td>Begin Pump Test</td>
<td>Begin Level</td>
<td>17.10</td>
<td>11.2</td>
</tr>
<tr>
<td>Mon. 5/15</td>
<td>2:15 p.m.</td>
<td>409651</td>
<td>&gt; 2527</td>
<td>14.00</td>
<td>7.7</td>
</tr>
<tr>
<td>Tues. 5/16</td>
<td>8:25 a.m.</td>
<td>436445</td>
<td>&gt; 2488</td>
<td>13.50</td>
<td>7.2</td>
</tr>
<tr>
<td>Tues. 5/16</td>
<td>2:05 p.m.</td>
<td>444888</td>
<td>&gt; 2475</td>
<td>12.60</td>
<td>6.3</td>
</tr>
<tr>
<td>Tues. 5/16</td>
<td>5:20 p.m.</td>
<td>449715</td>
<td>&gt; 2451</td>
<td>12.50</td>
<td>6.2</td>
</tr>
<tr>
<td>Wed. 5/17</td>
<td>6:30 a.m.</td>
<td>472020</td>
<td>&gt; 2506</td>
<td>12.20</td>
<td>5.9</td>
</tr>
<tr>
<td>Wed. 5/17</td>
<td>12:00 noon</td>
<td>477283</td>
<td>&gt; 2430</td>
<td>12.50</td>
<td>6.2</td>
</tr>
<tr>
<td>Wed. 5/17</td>
<td>3:00 p.m.</td>
<td>481693</td>
<td>&gt; 2471</td>
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**NORTH WAIMEE WELL NO. 2**

**PUMP TEST FIELD DATA**

5/15/89 to 5/19/89

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5/15/89 TO 5/19/89

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</table>
**Pump Test at North Waihee Well No. 2**

MP Elevation = 282.73 (Bottom of Housing)

<table>
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<tr>
<th>Date</th>
<th>Pumping Time</th>
<th>Rates x 100</th>
<th>Rate (gpm)</th>
<th>Water Level (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon. 5/15</td>
<td>2:15 p.m.</td>
<td>409651</td>
<td>&gt; 2527</td>
<td>14.00</td>
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<tr>
<td>Tues. 5/16</td>
<td>8:25 a.m.</td>
<td>436445</td>
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<td>13.50</td>
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<td>2:05 p.m.</td>
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<td>5:20 p.m.</td>
<td>449715</td>
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<td>-</td>
<td>1840</td>
<td>10.60</td>
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</table>

*(Increased Pump Rotation 1700 rpm - 1900 rpm)*

---

If flow meter malfunction

At 6 rpm 5/14 reduced rpm's to 1700. Water level went up to 12.0

---

JFM Field Notes

5/15/84 Dialed to Henry = 0.4 mile (\(\Delta(\text{MM}^1) = \text{MM}^2) = 176\) ft delta setting

MP (top cut exactly 9.1 feet) 231.48; + 7.5 9.1 \(\text{water} = 282.73\) ft.

Start water: 466419
Pump setting 2800 (17.27) dtw 272 (lw 10.73)

Start test @ 1200 5/14/84 @ little 2400 rpm

Waxed @ 17.16 ft (above film). \(\Delta(12.40) = 2.4\)  
Pump rate 5/14/84 1200 A = 5.2

\[A' = 0.2 (\text{mm} = 5.2 \text{in}) \]

...
**KANOA WELL**

Elevation = 305.94  
(Bubbler System)

<table>
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<tr>
<th>TIME</th>
<th>5/15/89 Monday</th>
<th>5/16/89 Tuesday</th>
<th>5/17/89 Wednesday</th>
<th>5/18/89 Thursday</th>
<th>5/19/89 Friday</th>
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<td>9:00 a.m.</td>
<td>12.42 (tape)</td>
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<td>8:00 p.m.</td>
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**Notes:**

- **5/15/89**
  - \( h_0 = 12.42 \)  
  - **0930**  
  - **14:30** when you left

- **5/19/89**
  - \( h_0 = 11.98 \) (r tape)  
  - \( \Delta = 12.12 - 11.98 = .14 \)  
  - **12.10** (chart)  
  - **12:10**

**Additional Notes:**

- **1345**  
  - **A' 32**  
  - **12:14**

---
North Waihee Wells
Pump Test Protocol

John F. Mink
April 4, 1989

The pump rate will be held constant at 2000 gpm over a continuous period of 96 hours. The continuous rate may be prolonged another 24 hours at the discretion of the test supervisor.

In the Waihee-Kahakuloa sector water level measurements will be taken in the pumping well, the other North Waihee well, the Kanoa boring and the Wailena well. In the Waihee-Waiehu sector, measurements will be taken in Test Hole A-1. The unpumped North Waihee well is outfitted with a continuous water level recorder and in the Kanoa boring a bubbler will be installed. The Wailena well and A-1 are open. Manual measurements will be made with an insulated copper wire equipped with an electrode, or a steel tape.

Static water level measurements by steel tape or wire will be taken as follows.

1. Both North Waihee wells and the Kanoa boring.
   a. Three days before the start of the test in the A.M.
   b. One day before the start, also A.M.
   c. 30 minutes before the start.

2. Wailena well.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

3. Test Hole A-1.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

   After the test is started, water level measurements will be taken as follows.

1. Pumping North Waihee well (manual measurements preferred; airline if manual not possible).
   a. 1 reading per minute for 5 minutes.
   b. 1 reading per 5 minutes for 25 minutes.
   c. 1 reading per 10 minutes for 60 minutes.
   d. 1 reading every hour thereafter.
2. Unpumped North Waihee well. Drawdowns will be traced on the continuous recorder, but manual measurements should be made as follows to check the reliability of the recorder.
   a. At 10 minutes
   b. At 30 minutes.
   c. Every hour thereafter.

3. Kanoa boring. Drawdowns will be determined by the bubbler arrangement but need to be checked manually. Recognizable drawdown of about 0.1 feet will not occur until 48 hours after the start of the test if the aquifer is unconfined and not narrowly bounded. If the aquifer is confined, drawdown will be measureable sooner. The sequence of readings should be:
   a. At 10 minutes.
   b. At 30 minutes.
   c. Every hour thereafter.

4. Wailena well. The Wailena well is so distant from North Waihee that drawdown of 0.1 feet and more isn’t likely to occur unless the aquifer is confined. Nevertheless, manual measurements should be made as follows.
   a. At 6 hours.
   b. At 24 hours.
   c. At 30 hours.
   d. At 48 hours.
   e. At 54 hours.
   f. At 72 hours.
   g. At 78 hours.
   h. At 96 hours.

   If a response is noted, the frequency of measurements will be increased as practicable.

5. Test Hole A-1. Same schedule as the Wailena well.

Recoveries will be measured after the pump is turned off. Recovery measurements at the pumped well, the unpumped North Waihee well and the Kanoa boring will follow the same schedule as the drawdown measurements over a period of 12 hours. Thereafter single measurements will be made in the A.M. for the following 5 days. Recovery measurements will be made at Wailena and A-1 only if these wells experienced measureable drawdown. The schedule for such measurements will be drawn up before the end of the test.
### PUMP TEST AT WELL A-1

**ELEVATION = 248.11**  
(Water Level In Feet)

<table>
<thead>
<tr>
<th>TIME</th>
<th>5/15/89</th>
<th>5/16/89</th>
<th>5/17/89</th>
<th>5/18/89</th>
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### WELL A-1

**Elevation: 248.11 feet**  
*(Water Level in Feet)*

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<th>5/16/89</th>
<th>5/17/89</th>
<th>5/18/89</th>
<th>5/19/89</th>
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<td>8:00 am</td>
<td>8:00 am</td>
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<td></td>
<td>18.17</td>
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*(noon-begin test)*

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<th>5/20/89</th>
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*(noon-stop test)*

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All measurements taken by steel tape.

The A-1 well is located far enough away from the test well, North Waihee #2, that any effect on A-1 would be doubtful.

A final reading of Well A-1 was taken on Monday, May 22, 1989 at 8:00 a.m. with a water level elevation of 18.08 feet above sea level.
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**North Weichsel** 1963-02

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- Pump OFF
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<td>11.26</td>
<td></td>
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</tr>
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</tr>
<tr>
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<td>5:00 p.m.</td>
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<td>6:00 p.m.</td>
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<td>7:00 p.m.</td>
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<tr>
<td>8:00 p.m.</td>
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<td>9:00 p.m.</td>
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<tr>
<td>10:00 p.m.</td>
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<td>11:00 p.m.</td>
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<tr>
<td>12:00 a.m.</td>
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</tr>
</tbody>
</table>

* Rate of Pump increased from 1000 rpm to 1900 rpm

All measurements are based on a 1200 rpm speed.
<table>
<thead>
<tr>
<th>Date</th>
<th>Elevation</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
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<td>11.74</td>
<td>2 pm</td>
</tr>
<tr>
<td>12/10/89</td>
<td>10.54</td>
<td>11 am</td>
</tr>
<tr>
<td>12/19/89</td>
<td>11.90</td>
<td>9 am</td>
</tr>
<tr>
<td>11/30/89</td>
<td>11.96</td>
<td>11 am</td>
</tr>
<tr>
<td>11/20/89</td>
<td>11.09</td>
<td>10 am</td>
</tr>
<tr>
<td>11/30/89</td>
<td>11.59</td>
<td>4 pm</td>
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<tr>
<td>11/21/89</td>
<td>11.55</td>
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<td>12/3/89</td>
<td>11.59</td>
<td>2 pm</td>
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<tr>
<td>12/10/89</td>
<td>11.59</td>
<td>4 pm</td>
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<tr>
<td>12/17/89</td>
<td>11.57</td>
<td>3 pm</td>
</tr>
<tr>
<td>12/24/89</td>
<td>11.50</td>
<td>4 pm</td>
</tr>
<tr>
<td>3/11/89</td>
<td>11.52</td>
<td>4 pm</td>
</tr>
<tr>
<td>3/15/89</td>
<td>11.66</td>
<td>3 pm</td>
</tr>
<tr>
<td>3/20/89</td>
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<td>3/20/89</td>
<td>11.60</td>
<td>4 pm</td>
</tr>
<tr>
<td>3/27/89</td>
<td>11.48</td>
<td>2 pm</td>
</tr>
<tr>
<td>4/1/89</td>
<td>11.54</td>
<td>1:30 pm</td>
</tr>
<tr>
<td>4/10/89</td>
<td>11.54</td>
<td>1:30 pm</td>
</tr>
<tr>
<td>5/13/89</td>
<td>12.34</td>
<td>11:30 am</td>
</tr>
<tr>
<td>5/15</td>
<td>12:42</td>
<td>9:30 am</td>
</tr>
<tr>
<td>5/15</td>
<td>12:31</td>
<td>8:30 pm</td>
</tr>
<tr>
<td>5/16</td>
<td>12:14</td>
<td>9:16 am</td>
</tr>
<tr>
<td>5/17</td>
<td>12:05</td>
<td>9 am (chart reading)</td>
</tr>
</tbody>
</table>
NORTH WAIHEE WELLS

Site Description
Pump Test Results

JOHN F. MINK

Submitted to:
Hawaiiana Investment Co., Inc.
October 20, 1981
NORTH WAIHEE WELLS

Summary

The basal aquifer extending southward from Waihee Stream to Waikapu Stream, which is now referred to as the Waiehu aquifer, is being exploited nearly to the limit of its sustainable yield, and an additional significant contribution from it to Central Maui's water supply is not reasonable to expect. To develop more water different sources must be explored, and to this purpose an exploration-production well field was proposed in the region north of Waihee Stream where the aquifer was thought to be either separate or only poorly connected to the aquifer south of the valley. A separate aquifer would provide a new exploitable source of water supply, while proof of connection with the Waiehu aquifer would extend the limits of that aquifer and increase the overall allowable sustainable yield.

Two wells have now been drilled on the north side of Waihee Valley by Roscoe Moss Co. for Hawaiiana Investment Co., Inc. (See Figure 1 for location). Both have been successfully tested and have proved that a substantial, highly transmissive aquifer extends toward Kohakuloa from Waihee. A sustained rate of about 1,700 gpm over 48 hours was pumped from each well with very small drawdown and with no change in
the low initial salinity (15 mg/l chloride). Interpretation of the initial conditions and the pump test results indicate that the aquifer, to be referred to as the North Waihee aquifer, is essentially independent of the Waiehu basal aquifer. If a hydraulic connection exists, it is very weak.

The two wells can be safely fitted with 1,750 gpm pumps. The North Waihee aquifer is large enough to support more production than can be provided by the completed well field. The site of the next well is proposed in the small valley about 1,600 feet northward at a ground elevation of 400 to 500 feet.

North Waihee Aquifer

The region north of Waihee Stream toward Kohakuloa over a width of about two miles is probably underlain by a basal aquifer, perhaps modified by stray dikes, in the Wailuku volcanic series, a highly permeable basaltic formation. Dense trachytic flows of the Honolua series overlie the Wailuku series except in the deeper valleys where erosion has exposed the basaltic rocks. The trachytes do not constitute a principal aquifer and should be avoided if possible because they are difficult to drill through.

The North Waihee wells were located to avoid the trachyte but as a result had to penetrate about 100 feet of
talus and alluvium before striking the basalt. Drilling logs indicate that bedrocks of the Wailuku series was encountered 70 to 100 feet below ground surface. The deep alluvial fill of Waihee Valley was successfully avoided. Dikes were not observed in the vicinity of the well field but are known to occur about 3,500 feet upstream, approximately coincident with the forest reserve line. The rift zone is close enough to the wells that local geohydrologic conditions may be dike-basal rather than strictly basal.

The Wells

The North Waihee wells lie 2,150 feet inland of Kahekili Highway about 250 feet from the stream channel. Ground elevation is 280 to 283 feet. The wells are fitted with 16 inch casing and were drilled to a depth of 105 feet below sea level. The casing is perforated from five to 25 feet below sea level, and the remainder of the bore is open (uncased). The wells are on a line parallel to the stream, 1787/8 feet apart. The most inland well is called North Waihee 1, the other is called North Waihee 2. They are identical in design and nearly so in performance. The first well was completed in March of 1981 and tested in April and June. The second well was completed in July and tested in August.
Step Drawdown

Step drawdown tests were conducted on North Waihee 1 on April 15 and June 3 and on North Waihee 2 on August 3. Initial head was nine to ten feet at each well and initial chloride about 15 mg/l. Behavior of the wells was similar during pumping; in each drawdown was small even at high rates of draft and recovery was instantaneous. The specific capacity of Well 1 was 450 gpm/ft. drawdown at 1,765 gpm, and of Well 2 550 gpm/ft. drawdown at 1,715 gpm. Tables 1 and 2 list the step drawdown results and Figure 2 shows a plot of $s = f(Q)$ for each.
TABLE 1

NORTH WAIHEE WELL 1
Step Drawdown Pump Test

April 15, 1981

Ground elev. 283 ft.; Bowls set 309.5 ft.; Airline at 310 ft.; uncased.

<table>
<thead>
<tr>
<th>Time</th>
<th>Min.</th>
<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:14</td>
<td>0</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
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<tr>
<td>08:16</td>
<td>2</td>
<td>17.1</td>
<td>.92</td>
<td>577</td>
</tr>
<tr>
<td>08:19</td>
<td>5</td>
<td>17.0</td>
<td>1.16</td>
<td>588</td>
</tr>
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<td>08:26</td>
<td>12</td>
<td>17.0</td>
<td>1.16</td>
<td>732</td>
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<td>08:38</td>
<td>24</td>
<td>17.0</td>
<td>1.16</td>
<td>750</td>
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<td>08:43</td>
<td>29</td>
<td>17.0</td>
<td>1.16</td>
<td>769</td>
</tr>
<tr>
<td>08:48</td>
<td>34</td>
<td>17.0</td>
<td>1.16</td>
<td>769</td>
</tr>
<tr>
<td>08:50</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08:52</td>
<td>38</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:00</td>
<td>46</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:43</td>
<td>89</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
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</tr>
<tr>
<td>09:48</td>
<td>94</td>
<td>16.5</td>
<td>2.31</td>
<td>1333</td>
</tr>
<tr>
<td>10:13</td>
<td>119</td>
<td>16.4</td>
<td>2.54</td>
<td>1333</td>
</tr>
<tr>
<td>10:38</td>
<td>144</td>
<td>16.5</td>
<td>2.31</td>
<td>1333</td>
</tr>
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<td>10:39</td>
<td>145</td>
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</tr>
<tr>
<td>10:43</td>
<td>149</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
<tr>
<td>10:51</td>
<td>157</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
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<td>11:12</td>
<td>178</td>
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<td>11:17</td>
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<tr>
<td>11:18</td>
<td>184</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Start pump

Increase Rate

Increase Rate

Increase Rate

Shut Down

Instant Recovery
TABLE 2
NORTH WAIHEE WELL 2
Step Drawdown Test
August 3, 1981

Ground elevation 282.21 feet; airline set 304 feet; cased.

<table>
<thead>
<tr>
<th>Time (Min.)</th>
<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
<th>Remarks</th>
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</thead>
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<td>08:15</td>
<td>0</td>
<td>13.75</td>
<td>0</td>
<td>0 Start pump</td>
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<tr>
<td>08:20</td>
<td>5</td>
<td>13.25</td>
<td>1.16</td>
<td>375</td>
</tr>
<tr>
<td>08:23</td>
<td>8</td>
<td>13.25</td>
<td>1.16</td>
<td>360</td>
</tr>
<tr>
<td>08:35</td>
<td>20</td>
<td>13.50</td>
<td>0.58</td>
<td>346</td>
</tr>
<tr>
<td>08:38</td>
<td>23</td>
<td></td>
<td></td>
<td>Increase rate</td>
</tr>
<tr>
<td>08:39</td>
<td>24</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
</tr>
<tr>
<td>08:41</td>
<td>26</td>
<td></td>
<td></td>
<td>1,071</td>
</tr>
<tr>
<td>08:47</td>
<td>32</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
</tr>
<tr>
<td>09:00</td>
<td>45</td>
<td>13.0</td>
<td>1.73</td>
<td>1,071</td>
</tr>
<tr>
<td>09:13</td>
<td>58</td>
<td>13.0</td>
<td>1.73</td>
<td>1,132</td>
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<tr>
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<tr>
<td>09:40</td>
<td>85</td>
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<td></td>
<td>Increase rate</td>
</tr>
<tr>
<td>09:48</td>
<td>93</td>
<td></td>
<td></td>
<td>1,500</td>
</tr>
<tr>
<td>09:57</td>
<td>102</td>
<td>12.6</td>
<td>2.66</td>
<td>1,539</td>
</tr>
<tr>
<td>10:10</td>
<td>115</td>
<td>12.6</td>
<td>2.66</td>
<td>1,500</td>
</tr>
<tr>
<td>10:15</td>
<td>120</td>
<td>12.5</td>
<td>2.89</td>
<td>1,715</td>
</tr>
<tr>
<td>10:38</td>
<td>143</td>
<td>12.4</td>
<td>3.12</td>
<td>1,715</td>
</tr>
<tr>
<td>10:43</td>
<td>148</td>
<td></td>
<td></td>
<td>Stop. Instant recovery.</td>
</tr>
</tbody>
</table>
Sustained Pump Test

Both wells were subjected to 48 hours of continuous pumping at a constant rate. The first well was tested before the second was drilled so that drawdown measurements were restricted to the pumping well. While Well 2 was being pumped, Well 1 was available for use as an observation well. Sustained pumping at Well 1 at 1,715 gpm for 48 hours was successful on the first try and the results indicated the aquifer to be highly transmissive. At Well 2, two attempts to sustain a constant rate for 48 hours failed, the first after 30 hours and the other after 26 hours, but the third attempt succeeded at a rate of 1,680 gpm. During all three attempts, drawdown measurements were taken at Well 1, a distance of 178½ feet away. With these drawdown observation it was possible to compute the transmissivity and specific yield of the aquifer. Drawdown at Well 1 caused by draft at Well 2 and a summary of aquifer characteristics is given in Figure 3. The aquifer was proved to be extensive and highly transmissive, conditions needed for successful exploitation.

Drawdown at pumping wells during sustained tests give well efficiency but generally are not adaptable for calculating aquifer characteristics. The North Waihee wells are very efficient, having specific capacities in excess of
500 gpm/ft. drawdown. During the sustained test at Well 1 drawdown stabilized at 2.54 feet at 1,715 gpm and at Well 2 it stabilized at 3.0 feet at 1,680 gpm.

The drawdowns induced at Well 1 by constant pumping at Well 2 were carefully analyzed to determine, in addition to the aquifer constants, the following:

1. whether the aquifer is effectively closed by impermeable boundaries at short to moderate distances from the well field
2. whether the aquifer has unimpeded hydraulic connection with the Waiehu aquifer
3. whether the aquifer is extensive and effectively unconnected, or poorly connected, with the Waiehu aquifer.

The values for transmissivity and specific yield (effective porosity) were computed by employing the short form (Jacob's method) of the non-equilibrium well hydraulic formula. The short form is permissible because the drawdown data at Well 1 for sustained Test 1 at Well 2 includes early and late measurements that fall on a continuous curve expressed by:

\[ s = \frac{Q \cdot W(u)}{4\pi T} \]

in which \( s \) is drawdown, \( Q \) is constant pumping rate, \( T \) is transmissivity, and \( W(u) \) is the solution for the series
that expands the variable, \( u = \frac{r^2 S}{4Tt} \), in which

\( r \) is distance between the pumping and observation wells, \( S \) is specific yield, and \( t \) is time. Units are in feet and days. Proof that the \( s = f(u) \) curve is continuous was demonstrated by assuming that the straight line portion of the plot (after about three hours) fit the Jacob criteria, then employing the computed \( S \) and \( T \) values in calculating the ratio, \( s/W(u) \), for the early part of the curve to check its values against the fixed value of \( Q/4\pi T \). The accord is good and thus it is permissible to conclude that all of the drawdowns fall along a continuous curve. Table 3 below summarizes the computations.

**TABLE 3**

Aquifer Characteristics by Jacob Method
Continuity of \( s = f(u) \)

\( (T = 320,000 \text{ ft}^2/\text{d}; S = .284; r = 178 \text{ ft.}; Q/4\pi T = .0737) \)

<table>
<thead>
<tr>
<th>Time Days</th>
<th>( u )</th>
<th>( W(u) )</th>
<th>( s(\text{ft.}) )</th>
<th>( s/W(u) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0417</td>
<td>.1686</td>
<td>1.3648</td>
<td>.11</td>
<td>.0805</td>
</tr>
<tr>
<td>.0625</td>
<td>.1125</td>
<td>1.7172</td>
<td>.12</td>
<td>.0699</td>
</tr>
<tr>
<td>.0833</td>
<td>.0844</td>
<td>1.9777</td>
<td>.14</td>
<td>.0698</td>
</tr>
<tr>
<td>.1042</td>
<td>.0675</td>
<td>2.1853</td>
<td>.16</td>
<td>.0709</td>
</tr>
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<td>.1250</td>
<td>.0562</td>
<td>2.3564</td>
<td>.17</td>
<td>.0717</td>
</tr>
<tr>
<td>.50</td>
<td>.0141</td>
<td>3.7012</td>
<td>.26</td>
<td>.0702</td>
</tr>
<tr>
<td>1.0</td>
<td>.0070</td>
<td>4.3874</td>
<td>.32</td>
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</tr>
<tr>
<td>2.0</td>
<td>.0035</td>
<td>5.0770</td>
<td>.38</td>
<td>.0739</td>
</tr>
</tbody>
</table>
The aquifer parameters are comparable to those of the best aquifers in Hawaii. The transmissivity is about 320,000 ft$^2$/day, which implies a hydraulic conductivity of 2,000 to 3,000 ft./day, based on partial penetration of 100 feet in the saturated aquifer, and an average specific yield of at least .20.

Continuity of the early and later drawdown data implies that the aquifer is extensive. On the other hand, hydraulic connection between it and the Waiehu aquifer is, at best, very weak. The nearest test hole in the Waiehu aquifer is A-1, which lies 5,100 feet south of the North Waihee wells. Head in this test hole quickly responds to pumping by the Mokuhau and Waiehu wells in the Waiehu aquifer, and the speed of the response indicates that head changes are transmitted under confined aquifer conditions. No such response showed up on the recorder chart at A-1 as a result of the pumping at North Waihee. If continuous confined conditions existed between North Waihee and A-1, a drawdown of 0.1 feet would have been recorded at A-1 within 70 minutes of the start of each pump test.

For unconfined conditions between the two sites almost ten days would be required for transmittal of 0.1 feet of drawdown. The record at A-1 is too responsive to pumping starts and stops at the Mokuhau and Waiehu wells to unambiguously display any long term effects from North Waihee.
if they occurred. Following is a summary of behavior at A-1 during the North Waihee tests.

**TEST 4**

**Head Changes at A-1**

**Pump Tests at North Waihee**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time of Test</th>
<th>Type of Test</th>
<th>Rate (GPM)</th>
<th>Head-changes at A-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/15/81</td>
<td>08:14 - 11:18</td>
<td>Step</td>
<td>1765</td>
<td>No change.</td>
</tr>
<tr>
<td>6/3 - 5/81</td>
<td>07:30 - 07:30</td>
<td>Sustained</td>
<td>1715</td>
<td>No significant change during test; slight gain in head 6/3-6/10; abrupt drawdown of 0.1 ft. on 6/12, probably caused by Mokuhau-Waiehu pump start up. Gradual increase of .15 ft. by 6/18. Head at A-1 20.5 to 21.0 ft.</td>
</tr>
<tr>
<td>8/3/81</td>
<td>08:15 - 10:43</td>
<td>Step</td>
<td>1715</td>
<td>No change.</td>
</tr>
<tr>
<td>8/3 - 4/81</td>
<td>13:00 - 19:00</td>
<td>Step</td>
<td>1540</td>
<td>Head at A-1 about 15.5 ft. Variable</td>
</tr>
<tr>
<td>8/10 - 11/81</td>
<td>09:00 - 11:00</td>
<td>Sustained</td>
<td>1580</td>
<td>Small head changes, up and down. Same head at end of period as at start.</td>
</tr>
<tr>
<td>8/12 - 14/81</td>
<td>15:00 - 15:00</td>
<td>Sustained</td>
<td>1680</td>
<td></td>
</tr>
</tbody>
</table>

A more telling argument against free hydraulic connection between North Waihee and Waiehu is the large difference in head between A-1 and the new wells. At A-1 the head is about 20 feet when Mokuhau and Waiehu are not pumping,
or 15 to 16 feet when they are, while at North Waihee the head is nine to ten feet. The hydraulic gradient in the Waiehu aquifer is 1 ft./mile, but between A-1 and North Waihee it is five to ten feet per mile, an impossible gradient if free connection prevailed. Whatever connection exists is highly damped by the alluvial fill and weathered rock in Waihee Valley. For planning purposes it is reasonable to consider the North Waihee aquifer to be effectively separate from the Waiehu aquifer.

**Water Quality**

Analyses by Brewer Analytical Laboratories of water collected in April during the pump test at Well 1 and in August at Well 2 showed no change in chloride from 15 mg/l. A more complete analysis for Well 1 is given below.

**TABLE 5**

North Waihee Water Quality

- pH 7.58
- Conductance 272 micromhos
- Alkalinity as CaCO₃ 108 mg/l
- Sodium 9.43 mg/l
- Chloride 14.0 mg/l
- Nitrate-Nitrogen 2.03 mg/l
- Calcium 10.7 mg/l
- Magnesium 8.94 mg/l
The quality of the water is excellent for any purpose. Chloride content did not increase during the tests.

**Conclusions and Recommendations**

The North Waihee aquifer is extensive and potentially very productive. The aquifer consists of Wailuku basalt with hydraulic conductivity of 2,000 to 3,000 ft./day and specific yield of .20. The aquifer is basal, possibly affected by widespread dikes, with a static head of about ten feet. The two wells drilled to date are very efficient, displaying specific capacities in excess of 500 gpm/ft. drawdown at high pumping rates. Water quality is excellent.

The two wells at North Waihee could safely be outfitted with 1,750 gpm pumps to provide a potential field output of five mgd. Northward toward Kohakuloa more water could be developed from the aquifer. When an additional water supply is planned, a well field could be located in the next valley about 0.3 miles north of Waihee Stream at an elevation of 400 to 500 feet (See Figure 1).

JOHN F. MINK
NW = NORTH WAHNEE WELLS
A-1 = TEST HOLE
D = TEST HOLE
O = PROPOSED WELL

FIGURE 1
FIGURE 2

NORTH WAIHEE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST

APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)
Figure 3

Test 1, 2

Test 3

Sustained Pump Test
North Waihee Well Field, Maui
Well 2 Pumping: Well 1 Observation
NORTH WAHHE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST
APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)
### CHECKLIST

**WELL CONSTRUCTION PERMIT**

**PUMP INSTALLATION PERMIT**

**WELL NAME or LOCATION:** North Valley Wells, 1st Island:

**WELL NUMBER:** 5651-20803 **Tax Map Key:** 3-2-01:4

**OWNER/OPERATOR:**
- Firm Name____________________
- Contact Person________________
- Address______________________
- Phone_______________________

**LANDOWNER:**
- Firm Name____________________
- Contact Person________________
- Address______________________
- Phone_______________________

- Date application received: 9-21-92
- Date acknowledged receipt/request more info: 
- Date application accepted: 
- Suspension date (90 days): 
- Date filing fee deposited: 

**Application sent to following:**

<table>
<thead>
<tr>
<th>Dept. of Hawn Home Lands</th>
<th>Date sent</th>
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<td>Eric Hirano/Lynn</td>
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</table>

**Date agenda due:** 2 Dec 92

**Date submittal due:** 2 Dec 92

**Date submittal sent to applicant:**

**Date application approved or disapproved:** 16 Dec 92

**Date applicant notified of decision:**

**REMARKS:**

- *also report: title belief filing fee (per fee per well)*

4 highvolume (2 each = 100fps) per North Water, 1-22-93
Waihee 1&2
(Well No. 5631-02,03)
CLOSING AGREEMENT

By and Between
BOARD OF WATER SUPPLY and
WAILUKU AGRIBUSINESS CO., INC.
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TO: Commissioners
FROM: Rae M. Loui
SUBJECT: Inclusion of the North Waihee Wells in the Designated Area

At the meeting on Maui on January 24, 1996, you asked the staff to look into the best way to include the North Waihee wells in the proposed Iao Aquifer ground water designation. The two options are described below along with time estimates:

1. DESIGNATE THE WAIHEE AQUIFER SYSTEM

Process:
- Recommendation to initiate designation by the chairperson at a regular meeting.
- Chair consults with Mayor and Board of Water Supply.
- Decision to proceed within 60 days.
- CWRM holds public hearing on Maui.
- Staff prepares Findings of Fact Report.
- Chair consults with Council and BWS.
- CWRM designates.

Time: 7 months plus

Analysis:

The criteria for ground water designation are listed in HRS §174C-44. The criterion that may be met is HRS §174C-44(1):

Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach ninety percent of the sustainable yield of the proposed water management area.

In the Windward Oahu designation, all areas of Oahu connected by water transmission infrastructure were included in the calculation of authorized planned use and sustainable yield. Similarly, the sustainable yields of both Iao and Waihee Aquifers should be included. The sustainable yield of Iao Aquifer is 20 mgd and for Waihee Aquifer it is 8 mgd, totalling 28 mgd.
Authorized planned use means the use or projected use of water by a development that has received the proper state land use designation and county development plan/community plan approvals. There are two possible ways to calculate the authorized planned use for the Maui situation: 1) the Board’s water commitments, and 2) projected water use from land use plans.

The Board has notified the Commission that they have about 8.4 mgd in water commitments, which would put the authorized planned use at 101% of the combined sustainable yields for Iao and Waihee Aquifers (28 mgd). The Maui Water Use and Development Plan projects a demand of 25 to 30 mgd by the year 2010 for the Wailuku System. This would calculate to 89% to 107% of the combined sustainable yields of the Iao and Waihee Aquifers (28 mgd).

2. **AMEND THE BOUNDARY OF THE IAO AQUIFER TO INCLUDE THE NORTH WAIHEE WELLS**

**Process:**

- Hold a noticed public hearing to amend the Hawaii Water Plan (90 days notice required).
- Hold a decision-making meeting immediately after the hearing.

**Time:** 4 months

**Analysis:**

The reason to amend the boundary would have to be given. There appears to be no hydrologic reason why there should be separate Iao and Waihee aquifers. Although this method appears shorter, the CWRM may need to go through the entire Iao Aquifer designation process again because the boundaries are different.

2 I will appreciate your comments and thoughts on these options.
Ms. Marie Kimmey, Chairperson  
Maui Board of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793-7109

Dear Ms. Kimmey:

Pump Installation Permit Transfer  
North Waihee Wells 1 & 2  
(Well Nos. 5631-02 & 03)

By your February 20, 1996 letter, the Commission on Water Resource Management acknowledges the transfer of the captioned permit from C. Brewer Properties, Inc. to the Maui Board of Water Supply.

Enclosed are copies of the permit and its extensions. Please be advised that the permit requires that work be started by May 14, 1996, and be completed by March 1, 1997. Should you be unable to meet those deadlines, please submit a request to extend them, showing cause why the permit should not be revoked.

Aloha,

MICHAEL D. WILSON  
Chairperson

Enclosures

c: C. Brewer Homes, Inc.
CLOSING AGREEMENT

By and Between
BOARD OF WATER SUPPLY and
WAILUKU AGribusiness CO., INC.
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CLOSING AGREEMENT

This Agreement is made this 21st day of December, 1995, by and between the BOARD OF WATER SUPPLY of the County of Maui, 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "BOARD") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, 90 Waiko Road, P.O. Box 520, Wailuku, Maui, Hawaii 96793 ("WAILUKU").

RECITALS: WAILUKU owns certain land in North Waihee Maui described in Exhibits "1" through "7" attached hereto and made a part hereof containing 2 improved wells and several well sites and easement areas, together with certain agreements, plans and specifications, and permits as further described in Exhibit "5" attached hereto. The purpose of this Agreement is to set forth the terms and conditions under which the parties shall close the transfer of certain real property title and other interests described in Section 5 below (collectively, the "Property") from WAILUKU to the BOARD for the consideration related below.

AGREEMENT: For valuable consideration WAILUKU and the BOARD mutually agree as follows:

1. Definitions. The following terms shall have the following means:

   a. "Sector A Property" shall mean that real property comprising approximately 5,306 acres, identified as TMK 3-2-14:01, more particularly reflected on Exhibit "1" and shown in yellow and purple on Exhibit "2".

   b. "Sector A-1 Property" shall mean that portion of Sector A Property comprising approximately 2,000 + acres, being sometimes referred to as the North Waihee Aquifer Recharge Area and shown in yellow on Exhibit "2".

   c. "Sector A-2 Property" shall mean that portion of Sector A Property comprising approximately 3,000 + acres, sometimes referred to as the Conservation Easement area and shown in purple on Exhibit "2".

   d. "Sector B Property" shall mean that real property comprising of approximately 380.318 acres, being that property sometimes referred to the Well Field/Easement area, more particularly described in Exhibit "3" and shown in pink on Exhibit "2".

   e. "Sector C Property" shall mean that real property referred to as the Pipeline Easement area, more particularly reflected in Exhibit "4" and shown in green on Exhibit "2".
f. "Personal Property" shall mean the two improved well sites on Sector B, the engineering studies, plans and specifications, permits, reports and other matters, all more particularly described and delineated on Exhibit "5".

g. "The Aquifer" or "The North Waiheh Aquifer" shall mean the ground water resource(s) north of Waiheh stream, including the recharge area of the North Waiheh Aquifer as shown in yellow on Exhibit "2".

2. **Sale of Property.** WAILUKU agrees to sell and the BOARD agrees to purchase the Property on the terms and conditions set forth herein.

3. **Purchase Price.** The purchase price for the Property shall be approximately $3,820,000 (U.S. dollars)\(^1\), which shall be paid by the BOARD to WAILUKU in cash at closing. The price will be adjusted at closing to reflect the agreed upon reimbursement costs (currently estimated at $270,000).

4. **Closing Date.** For the purpose of this Agreement, closing shall be the date when all appropriate conveyance documents are recorded. WAILUKU and the BOARD agree to promptly execute appropriate and customary documents when requested by escrow to do so. The "scheduled closing date" shall be on or before February 15, 1996. There is no automatic right to extend. Time is of the essence and the "scheduled closing date" may not be extended unless both the BOARD and WAILUKU so agree in writing. This transaction shall be escrowed by Title Guaranty Escrow Services of Hawaii (Wailuku branch).

5. **Conveyances at Closing.** At closing, WAILUKU will convey the Property and the BOARD will pay to WAILUKU the total purchase price in cash, all as follows:

a. **Sector A.** WAILUKU shall convey to the BOARD an undivided approximate 40% interest in Sector A, such that WAILUKU and the BOARD shall hold Sector A as tenants in common subject to all encumbrances and covenants

---

The price has been allocated as follows: $2,500,000 for Sector A Property; $700,000 for the existing improvements, including the two existing wells; $350,000 for the easements on Sectors B and C to be conveyed at closing; $270,000 representing the estimate of expenses expended by WAILUKU (or affiliates) to be reimbursed by the BOARD for all engineering and entitlement costs (plans, studies, governmental processing costs) the final expense to be determined during the due diligence period.
concerning the same and further subject to the tenancy in common agreement, further described below.

1. **Covenants Concerning Sector A.** The deed to Sector A Property to be executed by the parties will be subject to existing encumbrances including, but not limited to, the Deed of Exchange between Hawaiian Commercial and Sugar Company and Wailuku Sugar Company dated June 23, 1924, as amended by Agreement dated March 24, 1937 and will have the following covenants (and other covenants which may be agreed to by the parties prior to closing).

a. Within Sector A, there will be a covenant that neither party will take any action including the creation of improvements, which would result in any significant negative impact to the surface or ground water resources within or emanating from the area. The parties would agree that there would be no further surface or ground water development by either party within Sector A without the mutual consent of both parties. The consent of either party shall not be unreasonably withheld, provided, it is agreed that consent is not unreasonably withheld, if the reason for the withholding is that the proposed activity will either have a significant negative impact on (1) the aquifer, or (2) the rights emanating from the aquifer, or (3) the ground or surface water sources and rights related to the aquifer, or (4) that the requesting party is in breach of its covenants relating to Sectors A, B or C. ("Significant negative impacts" shall be defined in the closing documents).

b. For water source development within Sector A, WAILUKU will be granted a right of first refusal to participate in the source development on a pro rata (cost of development) basis up to 50 percent (50%) of the resource. Any joint development would be implemented consistent with the Board of Water Supply rules concerning source development and source credits.

c. WAILUKU will have the right and ability to satisfy any rights and obligations to maintain the stream and the existing surface water system improvements within the area, at its discretion and consistent with past practices. WAILUKU would provide to the Board of Water Supply a periodic plan of surface water system maintenance within the area.
d. The parties would provide notice to each other if they wish to undertake any type of activity within the area other than WAILUKU's on-going maintenance of the surface water systems within the area.

b. **Sector B.** WAILUKU shall grant easements to the BOARD encumbering Sector B Property with the well site easements, access easements, tank site easements and pipeline easements, as more particularly defined in Exhibits "6" and "7".

At closing, WAILUKU and the BOARD will execute a declaration on Sector B Property reflecting that the BOARD, with the consent of WAILUKU, would have the ability to modify the location of the well site areas. WAILUKU’s consent would not unreasonably be withheld, and the obligation of the BOARD and WAILUKU would be to identify a needed relocated site which would have the least amount of impact on the utility of Sector B property. Within Sector B, WAILUKU would reserve and be granted the right of first refusal to participate in any ground water source development by the BOARD in excess of five million gallons per day from Sector B. The right of first refusal would be on a pro rata basis (cost of development) up to 50% of the resource, consistent with the BOARD’s rules and water source development and credits.

(The specifics of the right of first refusal for Sectors A and B, including the election period procedures, shall be provided in the closing documents).

c. **Sector C.** WAILUKU shall grant a pipeline easement to the BOARD encumbering Sector C Property with said pipeline easement as more particularly described in Exhibits "6" and "7".

At closing WAILUKU would create a declaration on Sector C Property covenanting that it would not create new improvements or other activity within Sector C which would have a negative impact on the volume of ground water developed by the BOARD within Sector B.

d. **Personal Property.** WAILUKU shall convey and assign to the BOARD all of that personal property identified in Exhibit "5".

e. **Tenancy in Common Agreement.** WAILUKU and the BOARD shall enter into a tenancy in common agreement concerning their joint interests in Sector A. The tenancy in common agreement will identify the rights and obligations of the parties concerning Sector A-1 and A-2, as well as providing for the subdivision of Sector A into Sectors A-1 and A-2 and the conveyance of A-1 Property from WAILUKU to the BOARD after the subdivision of Sector A-1 from
Sector A and the release by the BOARD to WAILUKU of its remaining undivided interest in Sector A-2. The tenancy in common agreement will provide for the grant of a conservation easement from WAILUKU to the BOARD concerning Sector A-2 Property after Sector A-2 is subdivided from Sector A. The agreement shall also authorize the BOARD to subdivide Sector A Property and will provide that the BOARD will perform all services and all acts and pay all costs necessary to create the referenced subdivision. The agreement will provide that the Property will remain in a tenancy in common status with the BOARD and WAILUKU maintaining their tenancy in common interests should the Property not be subdivided. The tenancy in common agreement will contain other covenants, as agreed upon between the BOARD and WAILUKU, concerning the respective rights, obligations and material declarations and covenants concerning Sector A.

6. **Due Diligence.** The BOARD shall have a "due diligence period" from the date of this Agreement to January 31, 1996, during which the BOARD may review all aspects of the Property, perform studies, tests, and generally to satisfy itself that the Property is acceptable to the BOARD in the BOARD's discretion. During this period, the following will also occur:

   a. Within five (5) days after the execution of this Agreement by both parties, WAILUKU will provide to the BOARD a copy of all WAILUKU’s studies, plans, surveys, environmental assessments, permits, approvals, and other reports relevant to the Property for the BOARD’s review.

   b. The BOARD and its agents may enter the Property for the purpose of conducting surveys, tests and other work as the BOARD may deem appropriate, provided that if the ground is disturbed, the BOARD, at its expense, shall return the surface to the grade as existed prior to it being disturbed.

   c. WAILUKU shall obtain and deliver to the BOARD a title report on the Property from Title Guaranty of Hawaii, Inc. (together with copies of all encumbrance documents).

   d. Counsel for WAILUKU and the BOARD will prepare closing documents in the form satisfactory to each counsel, including the deed of the BOARD’s interest in Sector A from WAILUKU to BOARD; the deed shall convey title and warrant the same during the period WAILUKU has had title, subject to all encumbrances identified therein or shown on said title report or visible upon physical inspection of the Property. The closing documents shall also include the easements and the transfer of personal property as provided herein.

   e. The BOARD and WAILUKU shall petition the Commission on Water Resource Management to transfer the pump installation permit from
WAILUKU to the BOARD such that, at closing, the BOARD shall obtain and hold said permit under terms satisfactory to the BOARD.

If the BOARD is not satisfied as to any matter referred to above or any other matter, whether related to the Property or not related to the Property, the BOARD may cancel this Agreement by written notice to WAILUKU no later than January 31, 1996, in which event this Agreement will terminate. If counsel for the BOARD and WAILUKU shall be unable to agree on the form and content of all closing documents, WAILUKU may cancel this Agreement by written notice to the BOARD no later than January 31, 1996. In each such instance, prior to February 1, 1996, the BOARD will return to WAILUKU all of WAILUKU’s studies, plans and other material in the BOARD’s possession and the parties shall be relieved from any liability hereunder.

7. Closing Costs.

a. WAILUKU will pay for the preliminary title report, cost of preparing the deed, Hawaii conveyance tax, one-half of the escrow fee and WAILUKU’s legal fees. BOARD will pay the cost of BOARD’s title insurance, recording fees for the deed, one-half of the escrow fee and BOARD’s legal fees.

b. Although BOARD agrees to pay the purchase price in cash at closing, WAILUKU may request that BOARD participate in a Section 1031 tax deferred exchange for the benefit of WAILUKU. In that event, WAILUKU may assign its interest in this Agreement to a "qualified intermediary" (as defined in the Internal Revenue Code or IRS regulations) as part of an exchange agreement and BOARD agrees to cooperate in said transaction and participate with WAILUKU in accepting the tax-deferred exchange, provided, however, that: (a) BOARD shall not be required to pay any additional costs or assume any exposure of liability with respect to the exchange; and (b) BOARD shall have no liability concerning the legal or tax effects of the exchange.

8. Default/Remedies.

a. In the event BOARD fails to perform BOARD’s obligations under this Agreement, (WAILUKU not being in default), WAILUKU may (a) bring an action for damages for breach of contract, and (b) BOARD shall be responsible for any costs incurred in accordance with this Agreement.

b. In the event WAILUKU fails to perform WAILUKU’s obligations under this Agreement (BOARD not being in default), BOARD may (a) bring an action for damages for breach of contract, (b) seek specific performance of this
Agreement, and (c) WAILUKU shall be responsible for any costs incurred in accordance with this Agreement.

c. The foregoing shall not exclude any other remedies available under this Agreement to either WAILUKU or BOARD on account of the other party’s default.

d. In the event of default by a party and/or a legal action, the prevailing party shall be entitled to recover all costs incurred, including reasonable attorney’s fees. All expenses incurred by escrow shall be deducted from any deposited funds prior to any disbursement to the prevailing party.

9. Acceptance of Property As-Is. BOARD accepts the Property in completely “as-is” condition without any representations or warranties whatsoever by WAILUKU, express or implied, except as otherwise expressly provided in this Agreement.

10. Facsimiles. Fax (facsimile) copies of the executed Agreement shall be fully binding and effective for all purposes whether or not originally executed documents are transmitted to escrow. Fax signatures on documents will be treated the same as original signatures. However, each party agrees that it will promptly forward originally executed documents to each other. The parties understand that they must physically execute and deliver original conveyance and other recordable documents prior to closing.

11. Counterparts. This Agreement may be executed in counterparts and all counterparts together shall constitute the agreement among all of the parties hereto, in the same way as if the parties physically signed the same document.

12. Notices. Any notice by one party to the other shall be deemed effective: (a) personally delivered); (b) 36 hours after mailing by first-class U.S. mail, postage prepaid, to the other party at its address stated at the beginning of this Agreement; (c) or at such other address as said other party shall have notified the party giving the notice as the address for receiving notices hereunder. Notices sent by telecopier (fax) shall be effective when transmitted to the current fax number of the receiving party at the said address provided that the sending party shall receive the electronic confirmation that the fax transmission was received at the said number, and the sending party mails a confirming copy on the same date to the receiving party at said address.

13. Consent/Approval of Agreement. Whenever a party is requested herein, to consent to, to agree to, or to provide any approval of the actions, plans, or requirements of the other party, the party being requested to “consent/approve,
agree to" shall consider the same in good faith and shall not unreasonably withhold or delay such consent, approval or agreement.

14. **Survival of Warranties, Covenants and Representations.** The warranties, covenants and representations of WAILUKU and the BOARD shall survive the closing of the transaction and shall not be binding to any person or entity not a party to this Agreement other than the successors and assigns of the parties.

15. **Miscellaneous.** Time is of the essence of this Agreement. WAILUKU and the BOARD will comply with all requirements of HRPTA and FRPTA (if applicable) and the other applicable laws.

16. **Governing Law.** This Agreement shall be governed by the laws of Hawaii.

17. **Agreement Under Threat of Condemnation.** The parties hereto agree that this Agreement is being executed by the parties under its right of condemnation by the BOARD and the Agreement is entered into by WAILUKU in lieu of, and as a compromise alternative to, the condemnation proceedings threatened by the BOARD.

IN WITNESS WHEREOF, the parties have signed this Agreement on the date indicated above.

WAILUKU AGRIBUSINESS CO., INC.
a Hawaii corporation

By [Signature]
Its: Chairperson - Vice president

By [Signature]
Its: Vice president

[KAHULU/11999/1119325.1/PRM]
BOARD OF WATER SUPPLY

By ____________________________
Marie Kimmey
Its: Chairperson

By ____________________________

Its: ____________________________

APPROVED AS TO FORM
AND LEGALITY:

__________________________
Gary F. Zanetti
DIRECTOR OF WATER REUSE
STATE OF HAWAII
COUNTY OF MAUI

On this 21st day of December, 1995, before me personally appeared Kent T. Luven and W.K. Tallent, to me personally known, who, being by me duly sworn, did say that they are the Vice president and Vice President respectively, of Wailuku Agribusiness Co., Inc., a Hawaii corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii.

My commission expires: 02/10/96
On this 26th day of December, 1995, before me appeared MARIE KIMMEY, to me personally known, being by me duly sworn, did say that she is the Chairperson of the BOARD OF WATER SUPPLY of the County of Maui, and that the seal affixed to the foregoing instrument is the lawful seal of the said BOARD OF WATER SUPPLY, and that the said instrument was signed and sealed on behalf of the said BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged the said instrument to be the free act and deed of the said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]

Notary Public, State of Hawaii

My commission expires: 4/19/98
STATE OF HAWAII  
COUNTY OF MAUI  

On this ___ day of __________, 1995, before me personally appeared __________________________, to me personally known, who being by me duly sworn, did say that he is the Chairman of the Board of Water Supply of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument is the lawful seal of the said County of Maui, and that the said instrument was signed and sealed on behalf of said County of Maui, and the said officer acknowledged the said instrument to be the free act and deed of the said County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

______________________________________________
Notary Public, State of Hawaii.

My commission expires: ______________
STATE OF HAWAII

COUNTY OF MAUI

On this ___ day of ___, 1995, before me personally appeared
_________________________________ and _________________________, to me
personally known, who being by me duly sworn, did say that they are the Chairman
and ______________, respectively, of the Board of Water Supply of the County of
Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the
foregoing instrument is the lawful seal of the said County of Maui, and that the said
instrument was signed and sealed on behalf of said County of Maui, and the said
officers acknowledged the said instrument to be the free act and deed of the said
County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

_________________________________

Notary Public, State of Hawaii.

My commission expires: ____________
TO: Commissioners  
FROM: Rae M. Loui  
SUBJECT: Inclusion of the North Waihee Wells in the Designated Area

At the meeting on Maui on January 24, 1996, you asked the staff to look into the best way to include the North Waihee wells in the proposed Iao Aquifer ground water designation. The two options are described below along with time estimates:

1. DESIGNATE THE WAIHEE AQUIFER SYSTEM

Process:
- Recommendation to initiate designation by the chairperson at a regular meeting.
- Chair consults with Mayor and Board of Water Supply.
- Decision to proceed within 60 days.
- CWRM holds public hearing on Maui.
- Staff prepares Findings of Fact Report.
- Chair consults with Council and BWS.
- CWRM designates.

Time: 7 months plus

Analysis:

The criteria for ground water designation are listed in HRS §174C-44. The criterion that may be met is HRS §174C-44(1):

Whether an increase in water use or authorized planned use may cause the maximum rate of withdrawal from the ground water source to reach ninety percent of the sustainable yield of the proposed water management area.

In the Windward Oahu designation, all areas of Oahu connected by water transmission infrastructure were included in the calculation of authorized planned use and sustainable yield. Similarly, the sustainable yields of both Iao and Waihee Aquifers should be included. The sustainable yield of Iao Aquifer is 20 mgd and for Waihee Aquifer it is 8 mgd, totalling 28 mgd.
Authorized planned use means the use or projected use of water by a development that has received the proper state land use designation and county development plan/community plan approvals. There are two possible ways to calculate the authorized planned use for the Maui situation: 1) the Board’s water commitments, and 2) projected water use from land use plans.

The Board has notified the Commission that they have about 8.4 mgd in water commitments, which would put the authorized planned use at 101% of the combined sustainable yields for Iao and Waihee Aquifers (28 mgd). The Maui Water Use and Development Plan projects a demand of 25 to 30 mgd by the year 2010 for the Wailuku System. This would calculate to 89% to 107% of the combined sustainable yields of the Iao and Waihee Aquifers (28 mgd).

2. **AMEND THE BOUNDARY OF THE IAO AQUIFER TO INCLUDE THE NORTH WAHEE WELLS**

**Process:**

- Hold a noticed public hearing to amend the Hawaii Water Plan (90 days notice required).
- Hold a decision-making meeting immediately after the hearing.

**Time:** 4 months

**Analysis:**

The reason to amend the boundary would have to be given. There appears to be no hydrologic reason why there should be separate Iao and Waihee aquifers. Although this method appears shorter, the CWRM may need to go through the entire Iao Aquifer designation process again because the boundaries are different.

I will appreciate your comments and thoughts on these options.
Ms. Marie Kimmey, Chairperson  
Maui Board of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793-7109  

Dear Ms. Kimmey:  

Pump Installation Permit Transfer  
North Waihee Wells 1 & 2  
(Well Nos. 5631-02 & 03)  

By your February 20, 1996 letter, the Commission on Water Resource Management acknowledges the transfer of the captioned permit from C. Brewer Properties, Inc. to the Maui Board of Water Supply.

Enclosed are copies of the permit and its extensions. Please be advised that the permit requires that work be started by May 14, 1996, and be completed by March 1, 1997. Should you be unable to meet those deadlines, please submit a request to extend them, showing cause why the permit should not be revoked.

Aloha,

Michael D. Wilson  
Chairperson

Enclosures

C. Brewer Homes, Inc.
DATE: 7/29/96

TO: Rae Loui

Fax No. 808. 587.0719

Subject: NTP N. Waiehu Wells

No. of Pages (including this transmittal): 2

REMARKS:

Transmitter: D. Craddick

NOTE: If you have not received all of the pages, please call

Jerry @ (808) 243-7816
February 29, 1996

Mr. Warren Unemori
Warren S. Unemori Engineering, Inc.
2145 Wells Street, Suite 403
Wailuku, Maui, Hawaii 96793

Dear Mr. Unemori:

Subject: Independent Professional Services for the Development of North Waihee Wells

This letter constitutes NOTICE TO PROCEED for all work under the subject project.

You are hereby notified that the official commencement date of this project shall be February 29, 1996. The time allowed to complete the required services is specified in the contract, exclusive of time required for governmental review.

Please acknowledge receipt of this notice in the space provided below on the original and two copies and return them to the Department of Water Supply. Please keep the third copy of this letter for your files.

A copy of the fully executed contract will be forwarded for your files.

Sincerely,

David R. Craddick
Director

NOTICE TO PROCEED RECEIVED
THIS 29TH DAY OF February 1996.

Warren S. Unemori

cc: DWS Fiscal
DWS Contractor
DWS Engineer
Director

"By Water All Things Find Life"
Selected critical path items for the four source alternatives are listed below:

**Waihee/Iao Ditch**
- Obtain membranes by March 1, 1996
- Reach land use agreement by April 1, 1996
- Complete design, EA and permits by Aug 1, 1996
- Bid line construction by Aug. 1, 1996
- Award line construction bid by Nov. 1, 1996
- Install membranes by Nov 1, 1996

**North Waihee**
- Execute purchase agreement by February 15, 1996
- Issue bid specs by July 1, 1996
- Award Bid by Sept 1, 1996
- Start pump installation by Nov. 1, 1996
- Complete pump installation by March 1, 1997
- Complete construction by Aug 1, 1997

**Wailuku Shaft**
- Extend use agreement by Aug 1, 1996
- Complete design by Feb 1, 1997
- Obtain pipe easements by May 1, 1997

**Waikapu Tank Well**
- Obtain well site agreement by June 1, 1996
- Complete design by June 1, 1996
- Complete EA by June 1, 1996
- Issue bids by Sept 1, 1996
- Award Bids by Nov 1, 1996
- Complete construction by May 1, 1997

**Status of C. Brewer agreement:** (1/31/96 telecon with Dave Craddick)

- Purchase includes 3000 acres of a conservation easement, 2000 acres in fee simple. C. Brewer would retain about 400 acres at the mauka end.

- Due diligence extended to Feb. 7 from Jan. 31.

- C. Brewer asking for things that MBWS cannot agree to:
  1) MBWS can’t transfer land interest after acquisition
  2) MBWS must underground electric lines
  3) C. Brewer wants to be the arbitrator if existing uses (C. Brewer’s ditches and tunnels) are impacted

- Dave says it doesn’t look good, expects to negotiate over the weekend for a special Board meeting on **Tuesday, Feb. 6**.
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<th>SUSPENSE DATE:</th>
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01/96
February 20, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 & 03)

Dear Ms. Loui:

Pursuant to your letter dated February 1, 1996 relative to the subject permits, we are writing to inform you that the transaction between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply, has closed as of this date. This transaction, pursuant to the parties' earlier agreement, will enable the installation of the pumps, and construction of other improvements, by the Board of Water Supply, to augment the water resources of Central Maui.

As a result, we hereby respectfully request that you, as previously authorized by the Commission, transfer the subject permits to the Board of Water Supply, according to the terms of the agreement.

Thank you for your assistance in this matter.

Sincerely,

C. BREWER HOMES, INC.

By

Senior Vice President

By

Its Vice-President
Facsimile Transmittal

To Facsimile Number: [redacted]
Pages including this cover: 7
Please deliver directly to:
Ms. Rae M. Loui
Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Date of Transmission: February 23, 1996
Regarding: North Waiehe Wells 1 & 2
Client Matter Number:
From: Douglas W. MacDougal, Esq.
Ashford & Wriston
Telephone Direct Line [redacted]
Facsimile Direct Line [redacted]

Comments:

See attached letter.

The information contained in this facsimile message is attorney privileged and confidential information intended only for use by the individual or entity named above. If the reader of this message is not the intended recipient, or employee or agent responsible to deliver it to the intended recipient, you are hereby notified that dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone, and return the original message to us at the above address via the U.S. Postal Service. Thank you.
February 23, 1996

VIA FACSIMILE

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

Re: Pump Installation Permits for North Waihee Wells 1 and 2  
(Well Nos. 5631-02 & 03)

Dear Ms. Loui:

Attached is a copy of the formal notification letter dated February 20, 1996 to the Commission on Water Resource Management confirming the closing of the County of Maui BWS/Wailuku Agribusiness North Waihee transaction. The letter is signed by C. Brewer Homes, Inc., Wailuku Agribusiness Company and the Maui Board of Water Supply.

The original of this letter will be forwarded to you for your files as soon as we receive it from escrow.

Yours truly,

Douglas W. MacDougal

DWM:met
Enclosure

cc: Mr. David Craddick (via facsimile)  
Gary Zakian, Esq. (via facsimile)
C. Brewer Homes, Inc.

February 20, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 & 03)

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As a result, we hereby respectfully request that you, as previously authorized by the Commission, transfer the subject permits to the Board of Water Supply, according to the terms of the agreement.

Thank you for your assistance in this matter.

Sincerely,

C. BREWER HOMES, INC.

By

[Signature]
Senior Vice President

By

[Signature]
Vice-President

24 N. Church Street. Suite 205
P.O. Box 1437 / Wailuku. Maui, Hawaii 96793
FAX (808)
Ms. Rae M. Loui  
February 20, 1996  
Page 2

WAILUKU AGRIBUSINESS COMPANY

By Kathleen J. McAninley  
Secretary

By 
Its CHAIRMAN OF THE BOARD

BOARD OF WATER SUPPLY,  
COUNTY OF MAUI

By 
Its Authorized Signatory
STATE OF HAWAII

CITY & COUNTY OF HONOLULU

On this 21st day of FEBRUARY, 1996, before me personally appeared CRAIG CHAMPION and G. C. WENTWORTH, to me personally known, who, being by me duly sworn, did say that they are the Senior Vice President and Vice President, respectively, of C. BREWER HOMES, INC., a Delaware corporation, that the foregoing Instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII
CITY & COUNTY OF HONOLULU

On this 21st day of FEBRUARY, 1996, before me personally appeared J. ALAN KUGLE and KATHLEEN F. OSHIRO, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board and Secretary, respectively, of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII
)  SS.
COUNTY OF MAUI
)

On this 20th day of February, 1996, before me appeared BYRON WALTERS, to me personally known, who, being by me duly sworn, did say that he is a Member of the Board of Water Supply of the County of Maui, and was authorized by the BOARD OF WATER SUPPLY on February 15, 1996 to execute any and all documents as set forth in the COUNTY OF MAUI BOARD OF WATER SUPPLY RESOLUTION RELATING TO THE PURCHASE OF THE WAIHEE VALLEY PROPERTY, and that the said instrument was signed on behalf of the said Board of Water Supply, and the said BYRON WALTERS acknowledged the said instrument to be the true act and deed of the said Board of Water Supply.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 11/25/96
DATE: February 22, 1996

TO: Charley Ice, Water Commission
    C. Brewer Homes: ATT: Val
    Milton Arakawa

FROM: Paul R. Mancini

SUBJECT: North Waihee Wells

This communication contains confidential and privileged information. It is exempt from disclosure under applicable law. If you received it in error, please notify the sender immediately by telephone or fax and return the original by mail.

TRANSMITTING THE FOLLOWING:

Copy of letter dated February 20, 1996 to Department of Land and Natural Resources, Commission on Water Resource Management from C. Brewer Homes, Inc.

() FOR YOUR REVIEW AND COMMENT
( ) FOR APPROVAL AND RETURN
(x) FOR YOUR INFORMATION AND FILES
( ) AS WE DISCUSSED

() PLEASE CALL AFTER REVIEW
( ) PER YOUR REQUEST
( ) SEE REMARKS BELOW

REMARKS:

KAHULUI, WAILUKU, MAUI, HAWAII 96732
C. Brewer Homes, Inc.

February 20, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 & 03)

Dear Ms. Loui:

Pursuant to your letter dated February 1, 1996 relative to the subject permits, we are writing to inform you that the transaction between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply, has closed as of this date. This transaction, pursuant to the parties' earlier agreement, will enable the installation of the pumps, and construction of other improvements, by the Board of Water Supply, to augment the water resources of Central Maui.

As a result, we hereby respectfully request that you, as previously authorized by the Commission, transfer the subject permits to the Board of Water Supply, according to the terms of the agreement.

Thank you for your assistance in this matter.

Sincerely,

C. BREWER HOMES, INC.

By ____________________________
Senior Vice President

By ____________________________
Vice-President
Ms. Rae M. Loui  
February 20, 1996  
Page 2

WAILUKU AGRIBUSINESS COMPANY

By [Signature]
Its CHAIRMAN OF THE BOARD

BOARD OF WATER SUPPLY,  
COUNTY OF MAUI

By [Signature]
Its Authorized Signatory
On this 21st day of February, 1996, before me personally appeared CRAIG CHAMPION and G. C. WENTWORTH, to me personally known, who, being by me duly sworn, did say that they are the Senior Vice President and Vice President, respectively, of C. BREWER HOMES, INC., a Delaware corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

[Signature]
Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII

CITY & COUNTY OF HONOLULU

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Notary Public, State of Hawaii

My Commission Expires: 1/2/97
STATE OF HAWAII  
COUNTY OF MAUI  

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IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 11/25/96
WAILUKU AGRIBUSINESS COMPANY

By

Its CHAIRMAN OF THE BOARD

BOARD OF WATER SUPPLY, COUNTY OF MAUI

By

Its Authorized Signatory
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[Signature]

Notary Public, State of Hawaii

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Notary Public, State of Hawaii

My Commission Expires: 11/2/97
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IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public, State of Hawaii

My commission expires: 11/25/96
NEWS RELEASE
February 15, 1996

Media Contact: David Craddick
Phone No. [redacted]

Waihee Watershed Purchase

Wailuku, Maui - on Thursday, February 15, 1996, the Maui Board of Water Supply approved the purchase of watershed land from Wailuku Agribusiness for 2000 acres north of Waihee Stream, and a conservation easement of 3000 acres south of the Waihee Stream in the Waihee watershed area.

In addition to the watershed purchase, the Board acquired two existing wells and easements for eight additional well sites, a reservoir site, and the transmission pipeline to develop water from the North Waihee Aquifer. The sustainable yield for North Waihee Aquifer is approximately 8 million gallons per day. The purchase price is $3.84 million.

The purchase represents long hours of work by Gary W. Zakian, Deputy Corporation Counsel, with the assistance of Douglas W. MacDougall and Jill M. Teutsch with the law firm of Ashford and Wriston, working for the Board, and local attorney Paul R. Mancini, representing Wailuku Agribusiness. The Board of Water Supply has held meetings over the past four years to conclude this agreement.

- end -

"By Water All Things Find Life"
Mr. James M. Murray  
C. Brewer Homes, Inc.  
24 North Church Street, Suite 205  
Wailuku, Hawaii 96793

Dear Mr. Murray:

Extension of Start Date for Pump Installation Permits  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

At its January 24, 1996 regular meeting, the Commission granted relief from its revocation of the captioned permits and approved a four-month extension of the start date to May 14, 1996, contingent upon receipt of written confirmation by February 25, 1996 that the Agreement between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply has been closed.

If confirmation is not received by that date, the permit shall be immediately revoked.

The Chairperson is authorized to transfer the pump installation permits to the agreed party, according to the terms of the Agreement, upon receipt of a petition properly signed by the Board, Wailuku Agribusiness, and the permittee's successor in interest C. Brewer Homes, Inc.

If you have any questions, please contact Charley Ice at

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

Class
STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
January 24, 1996
Wailuku, Maui

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use
TMK 3-2-1:4 Waihee, Wailuku, Maui

APPLICANT:
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

LANDOWNER:
Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

ACTION REQUESTED:
Permission to extend start date four months, from January 14, 1996 to May 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

WELL LOCATION/TAX MAP KEY:
The wells are located at Waihee Valley, Maui, at Tax Map Key: 3-2-1:4 (Exhibit 1).

BACKGROUND:
March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995
Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in two months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
The start date for work under the Pump Installation Permits was extended two months on three separate occasions. In September, Commissioners expressed the inclination to deny further extensions if the matters under consideration were not resolved. In November, the Commission denied further extension of the start date, allowing for revocation of the permit as of January 13, 1996, unless, by January 8, 1996:

1. C. Brewer Properties, Inc. and the Maui Department of Water Supply could document an agreement causing the initiation of the pump installation work; and

2. A schedule of actual installation work were provided by the permittee to the Commission.

The applicant filed a copy of a "Closing Agreement" between Wailuku Agribusiness Co., Inc. and the Maui Board of Water Supply, transferring real property title at Waihee, including the well properties, easements, and appurtenances. A Gantt chart schedule for 1996-97 was attached, indicating contract bids & awards in March and April 1996 and the pump installation beginning by May 1996 (Exhibit 3).

The Agreement includes a "due diligence" clause, extending through January 31, 1996, during which time the Board may review all aspects of the transfer, and by which deadline either party may cancel the Agreement. The agreed "closing date" is February 15, 1996. The document copy has notarized signatures of both parties.

During the "due diligence" period, the two parties are to submit to the Commission a petition to transfer the pump installation permit to the Board, such that, at closing, the Board will hold the permit under satisfactory terms.

WELL DESCRIPTION: (See Exhibit 2):

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<td>Casing diameter:</td>
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<td>Solid casing depth:</td>
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<td>Screen casing depth:</td>
<td>309 ft.</td>
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<td>Open hole:</td>
<td>79 ft.</td>
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<td>Total depth:</td>
<td>363 ft.</td>
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<td>Grouted annulus:</td>
<td>0 to 200 ft.</td>
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<td>Proposed pump capacity:</td>
<td>1400 gpm (each)</td>
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WATER AVAILABILITY:

The wells are located in the Waihee System near the Waihee-Lao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Lao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Total proposed use is 4 mgd; 2 mgd from
each well. Potential water use from the Waihee System by the year 2010 is estimated to be
up to 8 mgd by the Maui Water Use and Development Plan, although the Plan
acknowledges that withdrawals above 4 mgd would require justification through field
demonstration.

ANALYSIS:

The well will develop fresh, basal water for municipal use; the applicant is negotiating
dedication of the wells to the County. The wells tap an aquifer with a static head standing
about 10 feet above sea level. John Mink has observed that, because the stream channel in
this vicinity is 200 feet above sea level, the wells should have no effect upon it. Further,
John Mink's assessment of the Pump tests is that the drawdown from heavy pumping is
relatively minor, with full recovery nearly instantaneous. Salinity is very low.

RECOMMENDATION:

A. That the Commission grant relief from its revocation of the pump installation permits
for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) and approve a four-month
extension of the start date of the pump installation permits for North Waihee Wells
to May 14, 1996, contingent upon receipt of confirmation, by February 25, 1996,
that the Agreement between the parties has closed. If confirmation is not received
by that date, the permit shall be immediately revoked.

B. That the Commission authorize the Chairperson to transfer the pump installation
permits to the agreed party upon receipt of a petition properly signed by the Board,
Wailuku Agribusiness, and the permittee's successor in interest, C. Brewer Homes,
Inc.

Respectfully submitted,

Michael D. Wilson, Chairperson

RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Mr. James M. Murray  
C. Brewer Homes, Inc.  
24 North Church St., Suite 205  
Wailuku, Hawaii 96793

Dear Mr. Murray:

Transfer of Pump Installation Permits

We received your letter of January 9, 1996, requesting confirmation of the process for transferring the pump installation permits for North Waihee Wells 1 & 2 (Well Nos. 5631-01 & 02) from C. Brewer Properties, Inc. to the Maui Board of Water Supply (Board).

You have indicated by phone that an escrow company will be handling the technical details of the "Closing Agreement" between the Board and Wailuku Agribusiness Co., Inc. upon conclusion of the due diligence period January 31, 1996, and wish to have confirmation from our office that the Commission on Water Resource Management (Commission) will officially transfer the pump installation permits to the Board upon fulfillment of procedural requirements.

The "Closing Agreement" states (item 6e, page 5) that, during the due diligence period, the Board and Wailuku Agribusiness Co., Inc. shall petition the Commission to transfer the pump installation permit from Wailuku (sic) to the Board such that, at closing, the Board shall hold the permit under terms satisfactory to the Board. The petition can be in letter form addressed to the Chairperson, in simple language, and should be signed by both parties to the Agreement, as well as by the permittee's successor in interest, C. Brewer Homes, Inc. Staff is recommending that the Chairperson be authorized to respond by letter upon receipt of such petition.

If you have any questions, please call Charley Ice at [redacted]

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: J. UWAIN
TO: INIT: R. LOUI
J. UWAIN
F. CHING
S. SUBIA
K. YODA
R. LOUI
J. UWAIN
F. CHING
S. SUBIA
K. YODA
TO: INIT: R. LOUI
J. UWAIN
F. CHING
S. SUBIA
K. YODA
REGULATION BRANCH
E. SAKODA
D. HIGA
L. NAKAMA
C. ICE
R. JINNAI
S. SWANSON
SURVEY BRANCH
E. HIRANO
G. BAUER
R. HARDY
N. FUJII
M. OHYE
I. KUNIMURA
PLANING BRANCH
S. EDMUNDS
L. MIZUNO

DATE: ______
APPROVAL
SIGNATURE
INFORMATION
PLEASE:
See Me
Review & Comment
Take Action
Type Draft
Type Final
File
Xerox ______ copies

IMMEDIATE ATTENTION

response in process from faxed copy


there's no permit until your report? correct
January 9, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 and 5631-03) Waihee, Maui, Hawaii

Dear Ms. Loui:

We have submitted to you a letter dated January 2, 1996 requesting that the subject pump installation permits be extended. As noted in the letter, the County of Maui Board of Water Supply and Wailuku Agribusiness Co. Inc. have executed a "Closing Agreement" which would allow the Board of Water Supply to be the responsible implementing entity for the project which includes the installation of pumps at North Waihee Wells 1 and 2. The "Closing Agreement" requires, in part, that the pump installation permits be transferred to the Board of Water Supply.

The applicant for the original pump installation permits was C. Brewer Properties, Inc. As discussed with the CWRM staff, we would like to confirm that, in order to transfer the permits, C. Brewer Homes, Inc. (the successor company to C. Brewer Properties, Inc.) and the County of Maui Board of Water Supply must write a letter requesting that the permits be transferred; and that, upon receiving the letter, CWRM staff will transfer the permits to the Board of Water Supply.
Please confirm your understanding of this process, and inform us in writing as soon as possible. The due diligence period for the "Closing Agreement" ends January 31, 1996. If you or your staff have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

C. BREWER HOMES, INC.

[Signature]

James M. Murray
Project Manager

JMM:vp
cc: David Craddick, Director, Department of Water Supply
    Paul Mancini, Mancini, Rowland & Welch
    Milton Arakawa, Munekiyo & Arakawa, Inc.
Charley Ice
Commission on Water Resource Management

Milton Arakawa

Pump Installation Permit for North Waihee Wells 1 and 2

1 1/9/96 Letter to Rae Loul, Deputy Director from James Murray, C. Brewer Homes

Comments: Charley, attached is a copy of the letter from C. Brewer Homes requesting a response from the CWRM staff regarding the transfer of the subject permits. An expedited response would be appreciated. If you have any questions, please feel free to call me. Thank you.

(Initials) [signature]

If you have any problems or do not receive the entire fax, kindly call me at 244-2015.

CONFIDENTIAL COMMUNICATION: This message is intended for the use of the designated recipient(s) named above. If you have received this message in error, kindly notify us immediately by telephone. Thank you.
January 9, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
(Well Nos. 5631-02 and 5631-03) Waihee, Maui, Hawaii

Dear Ms. Loui:

We have submitted to you a letter dated January 2, 1996 requesting that the subject pump installation permits be extended. As noted in the letter, the County of Maui Board of Water Supply and Wailuku Agribusiness Co. Inc. have executed a "Closing Agreement" which would allow the Board of Water Supply to be the responsible implementing entity for the project which includes the installation of pumps at North Waihee Wells 1 and 2. The "Closing Agreement" requires, in part, that the pump installation permits be transferred to the Board of Water Supply.

The applicant for the original pump installation permits was C. Brewer Properties, Inc. As discussed with the CWRM staff, we would like to confirm that, in order to transfer the permits, C. Brewer Homes, Inc. (the successor company to C. Brewer Properties, Inc.) and the County of Maui Board of Water Supply must write a letter requesting that the permits be transferred; and that, upon receiving the letter, CWRM staff will transfer the permits to the Board of Water Supply.
Please confirm your understanding of this process, and inform us in writing as soon as possible. The due diligence period for the “Closing Agreement” ends January 31, 1996. If you or your staff have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

C. BREWER HOMES, INC.

James M. Murray
Project Manager

JMM:vp
cc: David Craddick, Director, Department of Water Supply
    Paul Mancini, Mancini, Rowland & Welch
    Milton Arakawa, Munekiyo & Arakawa, Inc.
January 2, 1996

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

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2 (Well Nos. 5631-02 and 5631-03) Waihee, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of November 8, 1995, the Commission on Water Resource Management (CWRM) considered the extension of the construction start date for the subject project. The CWRM determined that if two (2) conditions were met within 60 days, or by January 8, 1996, relief from revocation of the permit would be possible. The two (2) conditions imposed by the CWRM are:

1. C. Brewer Properties, Inc. and the Maui Department of Water Supply can document an agreement causing the initiation of the pump installation work and submit it to the CWRM; and

2. A schedule of actual installation work is provided by the permittee to the CWRM.

With regard to Condition No. 1, we have enclosed a copy of the "Closing Agreement" between the Board of Water Supply and Wailuku Agribusiness, Co. Inc. which sets forth the transfer of certain real property title and other interests from Wailuku Agribusiness to the Board of Water Supply. (For clarification purposes, Wailuku Agribusiness Co., Inc. is the landowner of the property and is a subsidiary of C. Brewer & Co., Ltd. At the time of application for the pump installation permit, C. Brewer Properties, Inc. was also a subsidiary of C. Brewer & Co., Ltd. Since then, C. Brewer Homes, Inc. was formed through a stock offering and is the successor company of C. Brewer Properties, Inc. However, C. Brewer Homes Inc. is not a subsidiary of C. Brewer and Company, Limited.)
The purpose of the transfer of property is to allow the Board of Water Supply to be the responsible implementing entity for the project which includes the use of Waihee Well Nos. 1 and 2, installation of production pumps (pursuant to the referenced permits), and appurtenant facilities, construction of a new 500,000 gallon water tank, and approximately 4.26 miles of underground waterline.

It should be noted that the "Closing Agreement" provides for a due diligence period which extends to January 31, 1996. Upon the subsequent closing of the transaction, the Agreement calls for the transfer of the pump installation permit to the Board of Water Supply. Refer to Item 6.e. of the Agreement.

With regard to Condition No. 2, we have attached a schedule of proposed construction for the project which includes the installation work for the pumps. The schedule has been developed by the Department of Water Supply. The schedule anticipates that pump installation for testing will be initiated by May 1, 1996. Thus, we request that construction start for the pump installation permits be extended to this date.

We respectfully request that the issue of extension of the permit be placed on the Commission's January 24, 1996 agenda. If you or your staff have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray
Project Manager

cc: David Craddick, Director, Department of Water Supply (with enclosures)
    cbhnww.ext.le42
Mr. James Herberk  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, Hawaii 96793  

Dear Mr. Herberk:  

Revocation of Pump Installation Permits  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)  

At its regular meeting of November 8, 1995, at which a representative from C. Brewer Properties, Inc. was present, the Commission on Water Resource Management (CWRM) directed staff to notify the permittee that the permit shall be revoked on January 13, 1996. However, if two conditions were met within sixty (60) days, or by January 8, 1996, relief from revocation would be possible. The two conditions imposed by the CWRM are:  

1. C. Brewer Properties, Inc. and the Maui Department of Water Supply can document an agreement causing the initiation of the pump installation work and submit it to the CWRM.  

2. A schedule of actual installation work is provided by the permittee to the CWRM.  

The next regularly scheduled CWRM meeting is January 24, 1996. The CWRM will reconsider this revocation matter on that date if conditions 1 and 2 are met by January 8, 1996.

Very truly yours,  

MICHAEL D. WILSON  
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- First 1 MGD On-Line
- Pump Installed with 1 MGD Phase
- WQ Data with 1 MGD Phase
- Preliminary Engineering Report submitted with 1 MGD Phase
- All 3 MGD On-Line
C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

Applicant:
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner:
Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend start date two months, from November 14, 1995 to January 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995
Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in 2 months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.

May 5, 1995
The start date for work under the Pump Installation Permits was extended two months, from May 14, 1995 to July 14, 1995, following the applicant's request for a four-month extension.

July 19, 1995
The start date for work under the Pump Installation Permits was extended two months, from July 14, 1995 to September 14, 1995, following the applicant's request for a six-month extension.
September 13, 1995 The start date for work under the Pump Installation Permits was extended two months, from September 14, 1995 to November 14, 1995, following the applicant's request for a six-month extension. The applicant and the Maui Department of Water Supply believed that the two parties were close to an agreement. The Commissioners expressed the inclination to deny further extensions if the matters under consideration were not resolved.

October 26, 1995 The applicant requested a two-month extension of the start date, from November 14, 1995 to January 14, 1995, stating that the parties had agreed "in principle" to purchase of land in fee, requisite easements, and reimbursements for certain development costs (See Attachment C). It was anticipated that a letter of intent by the Maui Board of Water Supply would be ready for action at a November 7, 1995 Board Meeting.

**Well Description** (See Attachment B):

- **Ground elevation:** 283 ft.
- **Casing diameter:** 16 inches
- **Solid casing depth:** 289 ft.
- **Screen casing depth:** 309 ft.
- **Open hole:** 79 ft.
- **Total depth:** 363 ft.
- **Grouted annulus:** 0 to 200 ft.
- **Proposed pump capacity:** 1400 gpm (each)

**Water Availability:** The wells are located in the Waihee System near the Waihee-laò Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of laò is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Total proposed use is 4 mgd; 2 mgd from each well. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan, although the Plan acknowledges that withdrawals above 4 mgd would require justification through field demonstration.

**Analysis:** The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has opined that pump tests from May 14 to 19, 1989 have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous, while salinity is very low during these tests. However, staff has only received pump test data from 1982.

According to §13-168-12(j), HAR:

> Every Well construction and pump installation permit issued or caused to be issued by the commission shall be for a specified period not to exceed two years, unless otherwise specified in the permit and shall contain the commencement and completion dates for the permitted activity. In determining the commencement and completion dates of the activity, the commission shall take into consideration the:

1. Cost and magnitude of the project;
2. Engineering and physical features involved;
(3) Existing conditions; and
(4) Public interest affected.

The commission may extend the completion dates of the activity prescribed in any permit upon a showing of good cause and good-faith performance. If the commencement or completion date is not complied with, the commission shall cause the permittee to be notified by certified mail that the permit shall be revoked within sixty days unless the permittee can show good cause that it should not be revoked.

Staff believes this rule implies that the well construction and pump installation permits and timelines are specifically aimed at the actual well construction and pump installation activities rather than the planning or negotiation stages of a ground water development project. Since the history of this permit has been more in the arena of planning and negotiations, staff believes that the permittee should reapply when they are ready to actually install their pump. However, staff has, again, been informed by the permittee that the actual installation date is near.

RECOMMENDATION:

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to March 14, 1996 if:

1. By November 8, 1995, both C. Brewer Properties, Inc. and the Maui Department of Water Supply can show that an agreement which will cause initiation of the pump installation work has been reached;
2. A schedule of actual installation work is provided by the permittee to the Commission.
3. All past pump test data for both wells is provided by the permittee to the Commission.

If items 1, 2, and 3 are not met by the permittee by November 8, 1995, then staff recommends that the Commission direct staff to notify the permittee that the permit shall be revoked on January 13, 1996, in accordance with §13-168-12(j), HAR.

Respectfully submitted,

W. Byr
RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTL:

MICHAEL D. WILSON, Chairperson
Waihee 1&2
(Well No. 5631–02,03)

PROJECT LOCATION

Attachment A
PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Ground Elevation: 283 ft., msl*

Cement Grout: 200 ft.

Solid Casing: ASTM Designation A-242
USS Cor-ten, Kaiser
Material Steel Kaiserloy
Length 289 ft.
Diameter 16 in.
Wall thickness 0.3125 in.

Hole Diameter: 20 in.

Casing: ☑ Perforated ☐ Screen
USS Cor-ten, Kaiser
Material Steel Kaiserloy
Length 20 ft.
Diameter 16 in.
Wall thickness 0.25 in.
Openings 100 sq. in./L.F.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Open Hole:
Length 79
Diameter 15 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.

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

SUBJECT: Pump Installation Permits for North Waihe`e Wells 1 and 2 (Well Nos. 5631-02 and 5631-03)  
Waihe`e, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of September 13, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to November 14, 1995. We would like to respectfully request an extension of the start date to January 14, 1996.

We are pleased to note that after a number of discussions with the County of Maui Board and Department of Water Supply, we have reached an agreement “in principle” with the Board on October 24, 1995. After a Board of Water Supply proposal and C. Brewer Homes, Inc. counter proposal were discussed in September and October, the agreement “in principle” involves Board of Water Supply purchase of land in fee simple, a perpetual conservation easement and other necessary easements, and reimbursement for engineering and other development costs expended thus far by C. Brewer Homes, Inc.

At this point, we are anticipating that a letter of intent will be drafted by the Department of Water Supply for review by C. Brewer Homes, Inc. It is hoped that the letter of intent can be accepted by C. Brewer Homes, Inc. and the acceptance confirmed by the Board of Water Supply at its November 7, 1995 meeting.

For your information, we have attached an updated chronology of the major project tasks which have taken place since the project’s inception, and a status report on the various permits required for development.
Ms. Rae M. Loui, Deputy Director  
October 26, 1995  
Page 2

We ask that our pump installation permit extension request be placed on the Commission’s November 8, 1995 agenda. If you have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray, Jr.
Project Manager

Attachments
cc: Milton Arakawa, Munekiyo and Arakawa, Inc.
NWW2
To: Charley Ice  
Commission of Water Resource Management

From: Milton Arakawa

Subject: North Waihee Wells 1 and 2

Attached Is/are:

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<td>1</td>
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<td>Appendix C - Excerpts from Central Maui Water Source Development</td>
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Comments: Charley, attached for your information is a copy of Appendix C which was included in the Final Environmental Assessment for the project.

If you have any problems or do not receive the entire fax, kindly call me at [redacted].

CONFIDENTIAL COMMUNICATION: This message is intended for the use of the designated recipient(s) named above. If you have received this message in error, kindly notify us immediately by telephone. Thank you.
Appendix C

Excerpts from Central Maui Water Source Development, Norman Saito Engineering Consultants, Inc. and John F. Mink
Source Area 1: Waihee Aquifer System (Waihee to Kahakuloa)

The region between Waihee Valley and Kahakuloa Valley embraces about 12 square miles of humid, mountainous terrain where rainfall varies from an annual average of 40 inches at the coast to more than 300 inches at the headwaters of Waihee Stream. The combination of moderate to very high rainfall with geology featuring both poorly permeable and highly permeable rocks has created a complex suite of water resources. The major streams of Waihee, Makamakaole and Kahakuloa are perennial while lesser ones are not. Marshes form the headwaters of streams, and groundwater occurs in high level as well as basal aquifers.

Waihee Stream is one of the largest water courses in the State, discharging an average of 55 mgd and never experiencing a low of less than 14 mgd. The minimum flow of record (approximately 7 years) was 14.2 mgd in early 1985 following the most severe drought of the century. Below the USGS gaging station the river is diverted into the Waihee Ditch, and still further downstream into the Spreckels Ditch. The average combined flow of these ditches is 37 mgd on a 24 hour basis, placing Waihee among the most prolific sources of ditch water in the State.

The large base flow of Waihee is sustained principally by seepage from high level dike water and secondarily by headwater marshes. The low flow of Makamakaole, on the other hand, originates entirely in marshes and the perched aquifers that sustain them. Kahakuloa receives about equal volumes of low flow from perched water marshes and dike aquifers. Wailena is perennial at its origin where it is fed by perched water, but low flows are quickly lost by infiltration in the mid and lower reaches of the stream.

In contrast to the extraordinary discharges of Waihee Stream, those in Kahakuloa and Makamakaole are modest. The average flow at 330 feet elevation in Kahakuloa as measured at the USGS gage
station is 10 mgd, and the base flow, which is exceeded more than 90 percent of the time, is 3.5 mgd. For the Left Branch of Makamakaoole at elevation 1500 feet the average is 1.9 mgd and the base flow is about 0.6 mgd. The large base flow of Waihee, about 20 to 25 mgd, and the smaller yet significant base flow of Kahakuloa are manifestation of the presence of voluminous dike impounded groundwater resources in the region. Nearer the coast basal aquifers occur.

Hydrogeology and Groundwater Occurrence

The primary geological formation underlying the entire region is basaltic lava of the Wailuku volcanic series. All major aquifers, both high level dike and basal, occur in this formation. The Wailuku series is analogous to the Honomanu series in East Maui and the Koolau series in Oahu, and like these formations it is extremely permeable. To the south the productive Iao aquifer consists of Wailuku basalt.

Over much of the region the Wailuku series is covered by the much paler Honolua formation. Composed of andesite and trachyte, the Honolua is normally dense, massive and light gray in contrast to the dark, more broken lavas of the Wailuku formation. Its permeability is significantly lower than that of the older basalt. It does not constitute major aquifers but carries the perched water that sustains marshes.

The Honolua formation forms a blanket, hundreds of feet thick at times, reaching from Eke to the coast. Its characteristics are most strikingly illustrated in the resistant trachyte dome of Puu Olai on the coast between Wailena and Waiolai Gulches. Other prominent trachyte domes are Eke, Puu Koae and Puu Olelo.

In the reach between Waihee and Makamakaole the Honolua may behave as a caprock on the Wailuku basalt aquifer, creating high heads a short distance inland. The head no more than 2000 feet
from the coast is 10 feet, which would be impossible in an unconfined basal aquifer. An alternative explanation for the high head is that groundwater flow is controlled by dikes.

Striking northerly from the original volcanic caldera in upper Iao Valley is a rift zone which passes through the Waihee Aquifer System, especially its northern part. The dikes trend from NNW to N to NNE but appear to favor the NNE strike. The rift formed during extrusion of the Wailuku formation, but dikes of the later Honolua series also follow the trend. The Wailuku dikes are normally one to two feet thick and black in fresh exposures. The Honolua dikes, which occur much less frequently, tend to be thicker and lighter in color.

The trachyte domes at Puu Koae and Puu Olai are contemporaneous with Puu Eke, which suggests that Honolua dikes cut through the region and may control groundwater movement even toward the coast. A large trachyte dike is exposed at the ditch intake on Waihee Stream, and its projected trace lies between Makamakaole and Waihee. Whether or not it affects groundwater behavior will be determined when a Makamakaole exploratory well is finally drilled.

As far as is known from experience elsewhere in West Maui, high level dike water is restricted to basalts of the Wailuku volcanic series and is far more voluminous than perched water in Honolua andesites. The seaward boundary of the high level aquifers by coincidence is about along the Forest Reserve line. In Kahakuloa a major spring (Kapuna Spring) overflows from a dike compartment where the stream leaves the Forest Reserve, and in Waihee the first visible dike spring cascades from the valley wall about two miles inland of the line. High level groundwater, however, seeps into the stream channel for a considerable distance downstream of this first dramatic canyon wall spring.
One or more basal aquifers exist seaward of the rift zone but are not hydraulically connected all the way from Waihee to Kahakuloa. These aquifers between Waihee and Makamakaole are probably confined at the coast, but beyond Makamakaole toward Wailena they are likely to be unconfined because the Honolua formation pinches out.

Groundwater Development

Aside from diversions to Waihee and Spreckels Ditches, only a small quantity of groundwater is being developed at this time, but not by wells, galleries or other common extraction techniques. Groundwater that collects as seepage in streams is withdrawn either at the source or, more often, downstream by users. The total volume taken is negligible, no more than thousands of gallons per day on the average.

Two successful wells were drilled on the north bank of Waihee in 1981 by C. Brewer Co. but have not yet been connected to a distribution system. These wells penetrated an aquifer of Wailuku basalt and produced low salinity (less than 50 mg/l chlorides) water at rates to 1700 gpm during the initial testing. In May of this year a more comprehensive test was conducted using one well for pumping while the other served as an observation well. Also used as an observation well was the monitor boring drilled at Kanoa during the field phase of the investigation. The recent test confirmed the earlier indications of the presence of a sizeable aquifer capable of being developed with high capacity pumps.

Pump Test Results

The test was conducted uninterruptedly between 12 noon May 15 and 12 noon May 19, a total of 96 hours. North Waihee Well 2 (makai well) was pumped at an average rate of 2450 gpm (3.5 mgd). North Waihee Well 1 (mauka well) and Kanoa served as principal observation wells. Each was equipped with a continuous water level recorder. A recorder was also placed on an unused well in Wailena
Gulch, and tape measurements of water levels were made in boring A-1 in the Iao basal aquifer. Neither the Wailena well nor A-1 exhibited fluctuations induced by pumping. Both are too far away from the North Waihee wells, and in the case of A-1 an effective barrier consisting of the Waihee Valley fill and possibly dikes separate the Iao aquifer from North Waihee.

Maximum drawdown at the pumping well was 6.85 feet when the rate was temporarily at 2900 gpm; at the steady rate of 2450 gpm it was stable at 5.1 feet. These were expected values on the basis of the original step drawdown test in 1981. When the pump was turned off, recovery to within a few tenths of a foot of the original static level was instantaneous.

The curve of drawdown at observation wells as a function of time at constant pumping rate yields fundamental information about aquifer characteristics. Data from observation wells are uncluttered by perturbations except for the harmonic tidal swing. Analyses of drawdown at both observation wells give an aquifer transmissivity of 320,000 sq.ft./day and storativity in the range of .05 to .30. Transmissivity is the measure of how easily water moves through an aquifer; the results indicate a highly permeable aquifer comparable in properties to the Iao and Lahaina aquifers. A further calculation gives hydraulic conductivity of approximately 2000 ft./day, which is capable of handling high capacity pumps. Storativity is equivalent to effective porosity, or the pore volume which gives up water to pumping. The high value is typical of unconfined conditions. The aquifer sector between the North Waihee wells and the Kanoa boring is not confined, but near the coast the cap of Honolua trachyte covering the Wailuku formation may be a confining stratum.

If aquifer barriers are encountered during a pump test, the drawdown curve will deflect so that the rate of drawdown will increase. No such deflections occur in the data from either North
Waihee 1 or Kanoa. Evidently potential impediments to groundwater flow, such as dikes, do not behave as barriers but are subsumed in the aquifer's global characteristics. This means that groundwater moves freely in the reach between North Waihee and Kanoa and for a considerable distance beyond. Application of groundwater hydraulics equations to the data suggest that the minimum distance to an effective barrier is more than a mile away.

Salinity of the pumped water was very low, less than 30 mg/l chloride, and did not vary over the period of the test. The low and invariant salinity in view of the high pump rate suggests that the fresh water portion of the aquifer is poorly connected to sea water.

The test was highly successful in providing fundamental information about aquifer characteristics as well as extent and exploitability.

Potential Development and Sustainable Yield

The North Waihee aquifer is highly permeable, enjoys a high static water level, and is extensive. It has never been forcibly drafted for municipal or irrigation needs. It presents an opportunity to add a significant increment of new water to the Central Maui Water System.

The recommended first phase in development of the aquifer is to drill two new wells to add to the already existing two North Waihee wells. The new wells will be in the reach between North Waihee and Kupaa Gulch. Access is easy and pipeline layout and construction should not pose unusual problems. Each well can be equipped with a 2 mgd (1400 gpm) pump, providing a total installed capacity of 8 mgd. However, average output of the aquifer on an annual basis must not exceed 4 mgd. The full capacity of the wells could be used temporarily during high demand periods as long as the annual average is held.
Another increment of several mgd is likely to be developable between Kupaa and Makamakaole, and several more beyond. Beyond Kupaa the cost of development and transmission construction will increase sharply because of the inhospitable terrain. The expectable sustainable yield in the 3.5 mile distance from Waihee to Kahakuloa is at least 10 mgd and may be 12 to 15 mgd. Not all of it may be feasibly developable, but in the next few years it should not be difficult to add an average of 4 mgd to the Central Maui network.
FACSIMILE COVER SHEET

November 2, 1995

To: Charley Ice
Commission on Water Resource Management

Fax No.: (808) [Redacted]

From: Milton Arakawa

No. of Pages Including Cover Letter: 6

Subject: North Waihee Wells 1 and 2

Attached is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
</table>

Comments: Charley, attached is a copy of the summary report of the North Waihee Wells Pump Test, as you requested.

cc: Jim Murray (Fax no. [Redacted])

If you have any problems or do not receive the entire fax, kindly call me at [Redacted]

CONFIDENTIAL COMMUNICATION: This message is intended for the use of the designated recipient(s) named above. If you have received this message in error, kindly notify us immediately by telephone. Thank you.

Planning • Environmental Studies • Project Management
1823 Wells Street, Suite 3 • Wailuku, Hawaii 96793 • Phone: (808) [Redacted] • Fax: (808) 244-8729
In 1961 two deep wells were drilled for C. Brewer on the north bank of Waihee Stream from an elevation of 282 feet, about 2300 feet upstream of Kahekili Highway. They were tested and proved capable of yielding more than 2 mgd per well but were never fitted with pumps and have remained idle since then. The aquifer which they penetrate appears to be so poorly connected to the main Iao-Waiehu aquifer as to be virtually independent of it. The northward extent toward Kahakuloa is uncertain but likely reaches to beyond Makamakaole. One of the objectives of the recent pump test was to determine whether low permeability boundaries constrain the size of the aquifer; no boundaries could be detected by analysis of the test results.

In 1987 a reconnaissance hydrological survey of the region from Waihee to Kahakuloa was made as part of an effort to identify additional water sources for Central Maui. A test boring was drilled at the nose of Kanoa Ridge about 2000 feet north of the North Waihee wells to measure fresh water head, and another was planned for a site where Makamakaole Stream crosses the highway. The Makamakaole boring has not been drilled because the State Department of Water Resources Management plans eventually to drill an exploratory well.
there, one large enough to be pumped. The water table in the Kanoa boring is about the same as at North Waihee, suggesting aquifer continuity between the two sites. The Kanoa boring was carefully monitored during the recent test and clearly established that continuity does indeed exist in the region.

The delay by the State in drilling the Makamakaole exploratory well denied the opportunity to ascertain whether the aquifer continued to and beyond Makamakaole Valley. Drilling a small diameter boring, which was originally planned by the Joint Venture, was raised again, but the cost seemed excessive for the type of data obtainable (water level and salinity). The alternative of a long term pump test, the results of which could be analyzed to give aquifer parameters and an estimate of extent, was selected instead.

**Pump Test and Results**

The test was conducted uninterruptedly between 12 noon May 15 and 12 noon May 19, a total of 96 hours. North Waihee Well 2 (makai well) was pumped at a rate of 2400 gpm (3.43 mgd) except for a period of 9 to 10 hours on May 18 when the rate was raised to 2900 gpm (4.1 mgd) in response to an incorrect belief that the steady rate had decreased. The average rate for the 96 hour period was 2450 gpm (3.5 mgd).

North Waihee Well 1 (mauka well) and Kanoa served as principal observation wells. Each was equipped with a continuous water level recorder. A recorder was also placed on the Wailena well, and tape measurements of water levels
were made in boring A-1 in the Waiehu-Iao aquifer. Neither the Wailena well nor A-1 exhibited fluctuations induced by pumping. Both are too far away, and in the case of A-1 an effective barrier consisting of Waihee Valley fill and perhaps dikes separates Waiehu-Iao from North Waihee.

Maximum drawdown at the pumping well was 6.85 feet when the rate was 2900 gpm; at the steady rate of 2400 gpm drawdown was stable at 5.1 feet. These were expected values on the basis of the original step drawdown tests in 1981. When the pump was turned off, recovery to within a few tenths of a foot of the original static level was instantaneous.

At North Waihee 1 the static head before the start of pumping was 11.45 feet. At the end of the test maximum drawdown was 0.70 feet. North Waihee 1 is just 178 feet from North Waihee 2. Water levels respond to sea tides, displaying a tidal efficiency of about 4 percent (range of 0.07 feet). Distance from the sea is 4000 feet.

The pre-test static water level at Kanoa was 12.42 feet. Maximum drawdown at the end of the test was 0.44 feet (tape measurement). The distance between North Waihee 2 and Kanoa is 2000 feet. Tidal efficiency is about 6 percent (range 0.11 feet), which is greater than at North Waihee 1 because Kanoa is only 2000 feet from the coast. Tidal efficiencies are interesting because they suggest the ease with which water moves through an aquifer. Manifestly the North Waihee aquifer is very permeable.
The curve of drawdown as a function of time at constant pumping rate yields fundamental information about aquifer characteristics. Data from observation wells are uncluttered by perturbations except for the harmonic tidal swing. Preliminary analyses of drawdown at both observation wells give an aquifer transmissivity of 320,000 sq.ft./day and storativity in the range .05 to .30. Transmissivity is the measure of how easily water moves through an aquifer; the results indicate a highly permeable aquifer comparable in properties to the Waiehu-Iao and Lahaina aquifers. A further calculation gives hydraulic conductivity of about 2000 ft./day, which is capable of handling high-capacity pumps. Storativity is equivalent to effective porosity, or the pore volume which gives up water to pumping. The high value is typical of unconfined conditions. The aquifer sector between North Waihee 1 and Kanoa is not confined, but near the coast the cap of Honolua trachyte covering the Wailuku formation may be a confining stratum.

If aquifer barriers are encountered during a pump test, the drawdown curve will deflect so that the rate of drawdown will increase. No such deflections occur in the data from either North Waihee 1 or Kanoa. Evidently potential impediments to groundwater flow, such as dikes, do not behave as barriers but are subsumed in the aquifer's global characteristics. This means that groundwater moves freely in the reach between North Waihee and Kanoa and for a considerable distance beyond. Application of groundwater
hydraulics equations to the data suggest that the minimum distance to an effective barrier is more than a mile away.

The salinity of the pumped water was very low, less than 30 mg/l chloride as determined from Hach kit analyses, and did not vary over the period of the test. The low and invariant salinity in view of the high pump rate suggests that the fresh water portion of the aquifer is poorly connected with sea water.

In summary, the test was very successful in providing fundamental information about aquifer characteristics as well as extent and exploitability. The final report will include technical appendices dealing with the test protocol, data, analysis of results, and determination of aquifer properties and groundwater flow behavior.

Preliminary Conclusions and Recommendations

The North Waihee aquifer is highly permeable, enjoys a high static water level, and is extensive. This combination of features will allow it to be developed with moderately large wells yielding a total average of 4 mgd in the region between Waihee Valley and the land boundary just north of Kupaa Gulch. Four wells can be located in this region, two of which (North Waihee) already exist. Each well can be equipped with a 2 mgd (1400 gpm) pump. Average output of the aquifer on an annual basis must not exceed 4 mgd. The full capacity of the wells (8 mgd) can be used temporarily in high demand periods, however, so long as the annual average is held.
Ms. Rae M. Loui, Deputy Director  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P. O. Box 621  
Honolulu, Hawaii 96809

SUBJECT: Pump Installation Permits for North Waihe`e  
Wells 1 and 2 (Well Nos. 5631-02 and 5631-03)  
Waihe`e, Maui, Hawaii

Dear Ms. Loui:

At its regular meeting of September 13, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to November 14, 1995. We would like to respectfully request an extension of the start date to January 14, 1996.

We are pleased to note that after a number of discussions with the County of Maui Board and Department of Water Supply, we have reached an agreement “in principle” with the Board on October 24, 1995. After a Board of Water Supply proposal and C. Brewer Homes, Inc. counter proposal were discussed in September and October, the agreement “in principle” involves Board of Water Supply purchase of land in fee simple, a perpetual conservation easement and other necessary easements, and reimbursement for engineering and other development costs expended thus far by C. Brewer Homes, Inc.

At this point, we are anticipating that a letter of intent will be drafted by the Department of Water Supply for review by C. Brewer Homes, Inc. It is hoped that the letter of intent can be accepted by C. Brewer Homes, Inc. and the acceptance confirmed by the Board of Water Supply at its November 7, 1995 meeting.

For your information, we have attached an updated chronology of the major project tasks which have taken place since the project’s inception, and a status report on the various permits required for development.
We ask that our pump installation permit extension request be placed on the Commission's November 8, 1995 agenda. If you have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray, Jr.
Project Manager

Attachments
cc: Milton Arakawa, Munekiya and Arakawa, Inc.
NWW2
## NORTH WAIHEE SOURCE/TRANSMISSION PROJECT

**Chronology of Source Development Program**

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March 1995      CWRM extends pump installation permit (3/1)
March 1995      Stream Channel Alteration Permit approved (3/1)
March 1995      BWS special meeting (3/7) declines to pursue agreement
March 1995      BWS forms two committees to assess alternatives
March 1995      Well development plans submitted to DWS for review and approval (3/10)
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### North Waihee Wells, Storage & Transmission System

#### Permit Status

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Department of Land and Natural Resources  
Commission on Water Resource Management  
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October 26, 1995
Page 2

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Very truly yours,

[Signature]
James M. Murray, Jr.
Project Manager

Attachments
cc: Milton Arakawa, Munekiyo and Arakawa, Inc.

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BOARD OF WATER SUPPLY, COUNTY OF MAUI
SPECIAL MEETING

DATE: Tuesday, October 17, 1995
TIME: 9:00 a.m.
PLACE: Board of Water Supply Conference Room
County Building, Fifth Floor
200 South High Street
Wailuku, Maui, Hawaii

AGENDA

I. CALL TO ORDER

II. ATTENDANCE

III. DISCUSSION AND POSSIBLE ACTION ON C. BREWER'S RESPONSE TO THE OFFER MADE BY THE BOARD REGARDING THE NORTH WAIHEE AQUIFER.

For this matter, the board may convene in executive session pursuant to HRS 92-5(3) in order to deliberate concerning the authority of persons designated by the board to conduct labor negotiations or to negotiate the acquisition of public property, or during the conduct of such negotiations; and pursuant to HRS 92-5(4) in order to consult with its attorney on questions and issues pertaining to the board's powers, duties, privileges, immunities, and liabilities.

IV. ADJOURNMENT

If you have special needs or require an accommodation that will assist in your successful participation in the meeting (i.e. large print, taped materials, Sign Language interpreter, accessible parking, etc.), please call Jerry Wells at on or before October 12, 1995.
Staff Submittal

for the meeting of the
Commission on Water Resource Management

September 13, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.
March 1, 1995

Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in two (2) months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.

May 5, 1995

The start date for work under the Pump Installation Permits was extended two (2) months, from May 14, 1995 to July 14, 1995, following the applicant's request for a four-month extension.

July 19, 1995

The start date for work under the Pump Installation Permits was extended two months, from July 14, 1995, to September 14, 1995, following the applicant's request for a six-month extension.

August 24, 1995

The applicant requested a six-month extension of the start date, to March 14, 1996, due to continuing discussions with the Maui Department of Water Supply. In response to Commission comments at the July 19, 1995 meeting, the applicant attached a chronology of the source development program and a table showing the status of various relevant permits (see Attachments C & D). Under separate cover, the applicant also sent construction drawings for the pump assembly (Attachment E). The chronology indicates that the parties have agreed, before Judge Fong in August 1995, to continue discussions, and that the BWS was meeting August 24, 1995 to discuss settlement options. The letter also emphasizes that plans and specifications for well improvements and related facilities were transmitted to the Department of Water Supply on March 10, 1995.

Well Description: (See Attachment B)

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<tr>
<td>Ground elevation</td>
<td>283 ft.</td>
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<tr>
<td>Casing diameter</td>
<td>16 inches</td>
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<tr>
<td>Solid casing depth</td>
<td>289 ft.</td>
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<tr>
<td>Screen casing depth</td>
<td>309 ft.</td>
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<tr>
<td>Open hole</td>
<td>79 ft.</td>
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<tr>
<td>Total depth</td>
<td>363 ft.</td>
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<td>Grouted annulus</td>
<td>0 to 200 ft.</td>
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<td>Proposed pump capacity</td>
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**Water Availability:** The wells are located in the Waihee Aquifer System near the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Total proposed use is 4 mgd; 2 mgd from each well. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan, although the Plan acknowledges that withdrawals above 4 mgd would require justification through field demonstration.

**Hydrologic Analysis:** The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it. Pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low.

**RECOMMENDATION:**

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to March 14, 1996. The conditions of the permit issued March 14, 1995 remain in effect except for the start date. Discussions and reviews described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

Respectfully submitted,

RAE M. LOUI
Deputy Director

MICHAEL D. WILSON, Chairperson
Briefly describe the proposed work:
Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Cement Grout: 200 ft.

Hole Diameter: 20 in.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Ground Elevation: 283 ft., msl

Solid Casing: ASTM Designation A-242
USS Cor-ten, Kaiser
Material: Steel Kaiserloy
Length: 289 ft.
Diameter: 16 in.
Wall thickness: 0.1125 in.

Casing: Perforated Screen
USS Cor-ten, Kaiser
Material: Steel Kaiserloy
Length: 20 ft.
Diameter: 16 in.
Wall thickness: 0.25 in.
Openings: 100 sq. in./L.F.

Open Hole:
Length: 79 in.
Diameter: 15 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.
NORTH WAIHEE SOURCE/TRANSMISSION PROJECT
Chronology of Source Development Program

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1985-1990  Various discussions with DWS Directors regarding the development attractiveness of the Waihee source

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## North Waihee Wells, Storage & Transmission System

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OCT 10 1995

Mr. James Herberg, Manager
Maui Operations
C. Brewer Properties
P.O. Box 1437
Wailuku, Hawaii 96793

Dear Mr. Herberg:

Request for Extension of Start Date of Pump Installation
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

At its regular meeting of September 13, 1995, the Commission on Water Resource Management (Commission) approved the extension of the start date for work on the pump installation permit issued March 14, 1995.

By this letter, the start date is extended two months, from September 14, 1995 to November 14, 1995. The completion date remains March 14, 1997.

Any requests for additional extensions must be submitted for consideration by the Commission prior to November 14, 1995.

Aloha,

Michael D. Wilson

MICHAEL D. WILSON
CHAIRPERSON

ROBERT G. GIRALD
DAVID A. NOBREDA
LAWRENCE H. MIKE
RICHARD H. COX
HERBERT M. RICHARDS, JR.
RAE M. LOUI, P.E.
DEPUTY
BOARD OF WATER SUPPLY, COUNTY OF MAUI
RULES COMMITTEE MEETING

DATE: Thursday, September 14, 1995
TIME: 11:00 a.m.
PLACE: Board of Water Supply Conference Room
County Building, Fifth Floor
200 South High Street
Wailuku, Maui, Hawaii

AGENDA

I. CALL TO ORDER

II. ATTENDANCE

III. APPROVAL OF MINUTES

IV. COMMITTEE DISCUSSION/ACTION

A. Com. 95-22. Request from Wayne Arakaki for a waiver of the subdivision requirements for water, Paehau Subdivision, TMK 2-1-08:3, SD 91-54.

B. Com. 95-28. Request from Greg Davidge for a waiver to install a domestic water storage tank and buy water to fill the tank, TMK 2-2-06:109, SD 95-21.

C. Com. 95-29. Request from Wayne Arakaki for a 50% reimbursement after the installation of the waterline for the Garrison Subdivision, TMK 2-4-5:73.

D. Com. 95-30. Request from Cindy Moelter for approval of a non-conforming private water system to satisfy the subdivision requirements for domestic use and fire protection, Pali Uli Subdivision, TMK 2-2-004:088, SD 95-2.

E. Com. 95-31. Request from Valerie Harte for a waiver of the shortage declaration, Virginia Caires Subdivision, TMK 2-7-014:062.

V. ADJOURNMENT

If you have special needs or require an accommodation that will assist in your successful participation in the meeting (i.e. large print, taped materials, Sign Language interpreter, accessible parking, etc.), please call Jerry Wells at [redacted] on or before September 12, 1995.
BOARD OF WATER SUPPLY, COUNTY OF MAUI
FINANCE COMMITTEE MEETING

DATE: Thursday, September 14, 1995
TIME: 1:00 p.m.
PLACE: Board of Water Supply Conference Room
County Building, Fifth Floor
200 South High Street
Wailuku, Maui, Hawaii

A G E N D A

I. CALL TO ORDER
II. ATTENDANCE
III. APPROVAL OF MINUTES
IV. COMMITTEE DISCUSSION/ACTION
   A. Discussion/possible action on proposed new rates.
   B. Discussion/possible action on C. Brewer’s response to the offer made by the Board regarding the North Waihee Aquifer.

For this matter, the board may convene in executive session pursuant to HRS 92-5(3) in order to deliberate concerning the authority of persons designated by the board to conduct labor negotiations or to negotiate the acquisition of public property, or during the conduct of such negotiations; and HRS 92-5(4) in order to consult with its attorney on questions and issues pertaining to the board’s powers, duties, privileges, immunities, and liabilities.

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At its regular meeting of July 19, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to September 14, 1995. We would like to respectfully request a six (6) month extension of the start date to March 14, 1996.

There has been a significant amount of work done on the project to date in securing permits and in engineering. For your consideration and review, we have included a chronology of the major project tasks which have taken place since the project’s inception, and a status report on the various permits required for development. We should also emphasize that the plans and specifications for the well improvements and related facilities were transmitted to the Department of Water Supply on March 10 of this year. These were prepared by Warren S. Unemori Engineering, Inc.

We are continuing to discuss our involvement in this project with the Department of Water Supply, and progress is being made in these discussions. Our intent is to continue working with the Department of Water Supply to bring this project to fruition. We ask that we be allowed to continue pursuing the implementation of this project through a further extension of the pump installation permits.
If you have any questions, please feel free to call me. Thank you for your consideration.

Sincerely,

James M. Murray, Jr.
Project Manager

Attachments
cc: Milton Arakawa, Munekiyo & Arakawa, Inc.
Attached is material I sent to Rae Loui yesterday on this subject; this fax copy is provided for your immediate use as required. Milton Arakawa had indicated that today is the deadline for submittals for the September 13 meeting.

If you have any questions, don’t hesitate to call me. Thanks for your help.
C. Brewer Homes, Inc.

August 24, 1995

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

SUBJECT: Pump Installation Permits for North Waihe`e Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihe`e, Maui, Hawaii

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<td>Easement over State Property</td>
<td></td>
<td>none</td>
<td>n/a</td>
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</tr>
<tr>
<td>(old road ROW at Waihee Stream)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 19, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995
Pump Installation Permits were extended, with a new completion date of March 1, 1997. The start date was set to expire in 2 months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
The start date for work under the Pump Installation Permits was extended two months, from May 14, 1995 to July 14, 1995, following the applicant’s request for a four-month extension.

The applicant requested a six-month extension of the start date, to January 14, 1995, due to other ongoing, related regulation requirements. Preparation of a response to the Department of Health comments concerning a Section 401 Water Quality Certification and a still-pending application for a Coastal Zone Management Program Consistency Assessment are required before work can begin. A Department of the Army Permit and a Stream Channel Alteration Permit have been conditionally approved. Work on pump improvement design is nearing completion.

**Well Description:**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Ground elevation</td>
<td>283 ft.</td>
</tr>
<tr>
<td>Casing diameter</td>
<td>16 inches</td>
</tr>
<tr>
<td>Solid casing depth</td>
<td>289 ft.</td>
</tr>
<tr>
<td>Screen casing depth</td>
<td>309 ft.</td>
</tr>
<tr>
<td>Open hole</td>
<td>79 ft.</td>
</tr>
<tr>
<td>Total depth</td>
<td>363 ft.</td>
</tr>
<tr>
<td>Grouted annulus</td>
<td>0 to 200 ft.</td>
</tr>
<tr>
<td>Proposed pump capacity</td>
<td>1400 gpm (each)</td>
</tr>
</tbody>
</table>

**Water Availability:** The wells are located on the Waihee side of the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Proposed use is 2 mgd from both wells together. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan.

**Hydrologic Analysis:** The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it.
RECOMMENDATION:

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to January 14, 1996. The conditions of the permit issued March 14, 1995 remain in effect except for the start date. Pending work described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

Respectfully submitted,

[Signature]

RAE M. LOUI
Deputy Director

Attachment

APPROVED FOR SUBMITTAL:

[Signature]

MICHAEL D. WILSON, Chairperson
TO: Charley Ice  
Commission on Water Resource Management  
1151 Punchbowl, Room 227  
Honolulu, Hawaii 96813

DATE: September 5, 1995

SUBJECT: Pump Installation Permit  
Extension for North Waihee Wells 1 & 2

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>Pump Unit and Piping Plan</td>
</tr>
</tbody>
</table>

( ) For approval  
( ) For your use  
(x) As requested  
( ) Returned for corrections  
( ) For your files  
( ) For necessary action  
( ) For review and comment  
( ) For your signature  
( ) Returning

REMARKS: Attached is the Pump Unit and Piping Plan, as you requested. Please call me if you have any questions.

Signed: Milton Arakawa
**SECTION A**

**SECTION B**

**SECTION C**

---

**MATERIALS LIST**

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<td>12&quot; X 8&quot; FLANGE REDUCER</td>
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<td>2</td>
<td>8&quot; METAL SEATED BUTTERFLY VALVE W/DIAPHRAGM OPERATOR</td>
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<td>18</td>
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<tr>
<td>25</td>
<td>2</td>
<td>6&quot; F.E. PUMP VACUUM RELEASE CHECK VALVE</td>
</tr>
</tbody>
</table>

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**NOTES:**

1. ALL PIPES, FITTINGS, VALVES AND STRAINERS SHALL BE BRASS UNLESS OTHERWISE NOTED.
2. FITTINGS AND VALVES SHALL BE CRANE OR APPROVED EQUAL.
3. STRAINERS SHALL BE ASCO OR APPROVED EQUAL.
4. PRESSURE REDUCING VALVES SHALL BE MASONEILAN OR APPROVED EQUAL.
5. FLOW CONTROL VALVES SHALL BE ASCO OR APPROVED EQUAL.
6. PRESSURE SHOCKER VALVES SHALL BE RAY OR APPROVED EQUAL.
7. PRESSURE GAUGES SHALL BE ASHCROFT OR APPROVED EQUAL.
8. COPPER PIPE SHALL BE TYPE K.
9. SOLDER JOINT FITTINGS SHALL BE MUeller OR APPROVED EQUAL.
10. MINIMUM GROUND COVER FOR ALL COPPER & PVC PIPING SHALL BE 12 INCHES.
TO: Mr. Charley Ice  
Commission on Water Resource Management  
P. O. Box 621  
Honolulu, Hawaii 96809

DATE: August 28, 1995

SUBJECT: Waihee Wells Pump Installation Permit Extension

Enclosed is/are:

<table>
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<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>Site Plan for Wells 1 and 2</td>
</tr>
</tbody>
</table>

( ) For approval  
( ) For necessary action  
(x) For your use  
( ) For review and comment  
(x) As requested  
( ) For your files  
( ) Returned for corrections  
( ) For your signature  
( ) Returning

REMARKS: The attached site plan is submitted pursuant to your request.

Signed: Milton Arakawa

Copy to: Jim Murray (w/ enclosure)
Rae M. Loui, Deputy Director  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P. O. Box 621  
Honolulu, Hawaii 96809

SUBJECT: Pump Installation Permits for North Waiheʻe Wells 1 and 2  
Wells Nos. 5631-02 and 5631-03  
Waiheʻe, Maui Hawaii

Dear Ms. Loui:

At its regular meeting of May 5, 1995, the Commission on Water Resource Management approved the extension of the start date for work on the pump installation permits for the subject wells to July 14, 1995. We would like to respectfully request an extension of the start date to January 14, 1996.

We are continuing to discuss our involvement in this project with the Department of Water Supply, but have not reached agreement regarding implementation of the project.

We have recently received comments from the State Department of Health regarding the Section 401 Water Quality Certification application on the project and will provide a response in order to seek final approval. The Coastal Zone Management Program Consistency Assessment application is still pending. Other permits, such as the Department of the Army Permit and the Stream Channel Alteration Permit have been conditionally approved.

We continue to pursue the engineering of the project, which has been contracted to Warren S. Unemori Engineering, Inc. Design of the pump improvements, and related facilities, is nearing completion.
We feel that implementation of this project is important to provide supplies of water needed to meet the near-term needs of Central and South Maui. We ask that we be allowed to continue pursuing the implementation of this project.

If you have any questions, please feel free to call me. Thank you for your kind consideration.

Very truly yours,

James M. Murray, Jr.
Project Manager

JMM:jh
cc: Milton Arakawa, Munekiyo & Arakawa, Inc.

M-Water
Request for Extension of Start Date of Pump Installation
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

At its regular meeting of July 19, 1995, the Commission on Water Resource Management approved the extension of the start date for work on pump installation for the permit issued March 14, 1995.

By this letter, the start date is extended two months, from July 14, 1995, to September 14, 1995. The completion date remains March 14, 1997.

Should delays prevent work from starting by September 14, 1995, additional extension must be approved by the Commission prior to that date. The Commission requires that such a request be accompanied by a written report of the status of the pump installation project, including a sketch of the pump improvement design.

Aloha,

MICHAEL D. WILSON
ITEM 1  MINUTES OF THE JULY 5, 1995 MEETING

UNANIMOUSLY APPROVED. (NOBRIGA/GIRALD)

ITEM 2  OLD BUSINESS/ANNOUNCEMENTS

NONE.

ITEM 3  C. BREWER PROPERTIES, INC. REQUEST FOR EXTENSION OF START DATE, NORTH WAIHEE WELLS 1 & 2, (WELL NOS. 5631-02 & 03), REQUEST TO INSTALL 1400 GPM PUMPS FOR DOMESTIC USE, WAIHEE, WAILUKU, MAUI (TMK 3-2-1:4)

STAFF PRESENTATION:  Mr. Charley Ice

STAFF RECOMMENDATION:

Staff recommended that the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to January 14, 1996. The conditions of the permit extensions issued March 14, 1995 remain in effect except for the start date. Pending work described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

TESTIMONIES:

Mr. David Craddick of the Maui Department of Water Supply stated that he would prefer a two month extension. Future requests for extension should include a status report, including construction drawings for the well and pump assembly.

AMENDMENT:  Commissioner Nobriga moved to amend the staff's recommendation for an extension of the start date from six months to two months, and to require a status report, including construction plans.
UNANIMOUSLY APPROVED AS AMENDED. (NOBRIGA/GIRALD)

ITEM 4

WAIALUA SUGAR COMPANY VOLUNTARY REDUCTION OF PERMITTED WATER USE, PUMPS 25 & 26 (WELL NOS. 3203-01 & 02), WAHIAWA GROUNDWATER MANAGEMENT AREA, OAHU (TMK 6-4-03:1)

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

STAFF RECOMMENDATION:

Staff recommended that the Commission:

1. Revoke the water use permit, permanently and in whole, for Pump 25 (Well No. 3203-01).

2. Require the owner or former operator of Pump 25 (Well No. 3203-01) to properly secure the well, in accordance with the requirements of Chapter 13-168, Water Use, Wells and Stream Diversion Works, Hawaii Administrative Rules, to prevent contamination of the groundwater aquifer.

3. Accept Waialua Sugar Company's voluntary permanent reduction in the allocation to Pump 26 (Well No. 3203-02) from 2.76 mgd to 1.72 mgd.

AMENDMENT: Staff requested to amend the staff recommendation by removing the word "permanently" and "permanent" in #1 and #3 to read as follows:

1. Revoke the water use permit, in whole, for Pump 25 (Well No. 3203-01).

2. Require the owner or former operator of Pump 25 (Well No. 3203-01) to properly secure the well, in accordance with the requirements of Chapter 13-168, Water Use, Wells and Stream Diversion Works, Hawaii Administrative Rules, to prevent contamination of the groundwater aquifer.

3. Accept Waialua Sugar Company's voluntary reduction in the allocation to Pump 26 (Well No. 3203-02) from 2.76 mgd to 1.72 mgd.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 19, 1995
Honolulu, Hawaii

C. Brewer Properties, Inc.
Request for Extension of Start Date
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1400 gpm Pumps for Domestic Use

TMK 3-2-1:4 Waihee, Wailuku, Maui

Applicant: C. Brewer Properties, Inc.
Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 1437
Wailuku, HI 96793
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend start date six months, from July 14, 1995 to January 14, 1996, for installing a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (Attachment A).

Background:

March 25, 1993
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995
Pump Installation Permits were extended, with a new completion date of March 1, 1997. The start date was set to expire in 2 months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
May 5, 1995  The start date for work under the Pump Installation Permits was extended two months, from May 14, 1995 to July 14, 1995, following the applicant's request for a four-month extension.

June 30, 1995  The applicant requested a six-month extension of the start date, to January 14, 1995, due to other ongoing, related regulation requirements. Preparation of a response to the Department of Health comments concerning a Section 401 Water Quality Certification and a still-pending application for a Coastal Zone Management Program Consistency Assessment are required before work can begin. A Department of the Army Permit and a Stream Channel Alteration Permit have been conditionally approved. Work on pump improvement design is nearing completion.

Well Description:

- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 363 ft.
- Grouted annulus: 0 to 200 ft.
- Proposed pump capacity: 1400 gpm (each)

Water Availability: The wells are located on the Waihee side of the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Proposed use is 2 mgd from both wells together. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd by the Maui Water Use and Development Plan.

Hydrologic Analysis: The well will develop fresh, basal water for municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it.
RECOMMENDATION:

That the Commission approve the extension of the start date of the pump installation permits for North Waihee Wells to January 14, 1996. The conditions of the permit issued March 14, 1995 remain in effect except for the start date. Pending work described by the applicant may be reasonably expected to require six months for completion, prior to pump installation.

Respectfully submitted,

[Signature]

RAE M. LOUI
Deputy Director

Attachment

APPROVED FOR SUBMITTAL:

[Signature]

MICHAEL D. WILSON, Chairperson
Waihee 1&2
(Well No. 5631-02.03)
Mr. David W. Blane  
C. Brewer Properties  
P.O. Box 1437  
Wailuku, Hawaii 96793

Dear Mr. Blane:

Request for Extension of  
Start Date of Pump Installation  
North Waihee Wells 1 & 2  
(Well Nos. 5631-02 & 03)

At its regular meeting of May 5, 1995, the Commission on Water Resource Management approved the extension of the start date for work on pump installation for the permit issued March 14, 1995.

By this letter, the start date is extended two months, from May 14, 1995 to July 14, 1995. The completion date remains March 14, 1997.

Should delays prevent work from starting by July 14, 1995, additional extension must be approved by the Commission prior to that date.

Sincerely,

RAE M. LOUI  
Deputy Director
COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: [Signature]

DATE: 4/19

TO: [Initials]

TO: [Initials]

FOR: [Initials]

PLEASE: [Signatures]

REGULATION BRANCH

E. SAKODA

D. HIGA

L. NAKAMA

C. ICE

R. JINNAI

S. SWANSON

PLANING BRANCH

S. EDMUNDS

L. MIZUNO

SURVEY BRANCH

E. HIRANO

G. BAUER

R. HARDY

N. FUJII

M. OHYE

I. KUNIMURA

1) Expand 2 mo. in keeping w/ our Kobrug's amendment?

2) Comment on "resource valuation"?

[We see two options (1) or (2) for submitter]

Start date to Expt. 14, 1996.  [1] Approval (2) denial w/o prejudice
SUBJECT: Pump Installation Permits for North Waihe'e Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihe'e, Maui, Hawaii

Dear Ms. Loui:

Pump installation permits for the subject wells were extended by the Commission on Water Resource Management on March 1, 1995. We have enclosed a signed copy of the extension for your files.

Condition No. 6 of the extension notes in part that the "permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified."

Since the Commission action on March 1, 1995, we have met a number of times with the Board of Water Supply (BWS) regarding the implementation of this project. As you know, the project involves Waihe'e Well Nos. 1 and 2 as well as construction of a new 500,000 gallon water tank and approximately 4.26 miles of transmission lines to link with the existing County water system.

Although a joint venture with the BWS has been discussed over the past several years, an agreement has not been reached. The current approach favored by the BWS involves purchase of the wells and implementation of the entire project by the BWS. We are currently working with the BWS on the valuation of the well resource as well as the value of work done on the project thus far by C. Brewer Homes, Inc. and our consultants.
In the interim, construction plans for installation of the pumps have been submitted to the Department of Water Supply for approval.

We would like to request that the construction start date for Waihe`e Well Nos. 1 and 2 be extended to September 14, 1995 which is six (6) months after the issuance for the extension. We believe that progress is being made toward the implementation of this important project and we will continue to work with the BWS in coming up with a mutually agreeable solution.

If you have any questions, please feel free to call me. Thank you for your consideration of our request.

Very truly yours,

[Signature]

David W. Blane
Senior Vice President

Attachment - Pump Installation Permit Extension

cc: David Craddick, Department of Water Supply (w/attachment)
    Milton Arakawa, Munekiyo & Arakawa, Inc. (w/attachment)
EXTENSION
PUMP INSTALLATION PERMIT
for
North Waihee Wells 1 & 2
Well Nos. 5631-02 & 03
Waiehu, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request to extend the permit to install pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03), is approved subject to the following conditions:

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

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

2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission's September 16, 1992 direction on reporting requirements.
6. The permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date of permit expiration. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

---

Michael D. Wilson, Chairperson
Commission on Water Resource Management
MAR 14 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant's Signature: [Signature] Date: APR 15/95
Printed Name: C. David W. Blake
Firm or Title: S. R. V. P. C. Brewer Homes, Inc.

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

---

cc: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Wastewater Branch
Maui Department of Water Supply
TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request to extend the permit to install pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03), is approved subject to the following conditions:

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2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission's September 16, 1992 direction on reporting requirements.
Chairperson and Members
Commission on Water Resource Management
State of Hawaii

Gentlemen:

Request for Extension
C. Brewer Properties, Inc.
Request to Install 1400 gpm Pumps in
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)

Applicant:
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner:
Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to extend permit to install a 1400 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

Well Location/Tax Map Key: The wells are located at Waihee Valley, Maui at Tax Map Key: 3-2-1:4 (see attached map).

Well Description:

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation</td>
<td>283 ft.</td>
</tr>
<tr>
<td>Casing diameter</td>
<td>16 inches</td>
</tr>
<tr>
<td>Solid casing depth</td>
<td>289 ft.</td>
</tr>
<tr>
<td>Screen casing depth</td>
<td>309 ft.</td>
</tr>
<tr>
<td>Open hole</td>
<td>79 ft.</td>
</tr>
<tr>
<td>Total depth</td>
<td>363 ft.</td>
</tr>
<tr>
<td>Grouted annulus</td>
<td>0 to 200 ft.</td>
</tr>
<tr>
<td>Proposed pump capacity</td>
<td>1400 gpm (each)</td>
</tr>
</tbody>
</table>

Background: Pump Installation Permits for North Waihee Wells 1 & 2 were issued on March 25, 1993. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved. In December, the applicant inquired as to a preferred approach to the coming March permit expiration date, and consequently submitted this request to extend the permit.

Water Availability: The wells are located on the Waihee side of the Waihee-Iao Aquifer System boundary of the Wailuku Sector of Maui. Sustainable yield for the Waihee Aquifer System is estimated at 8 mgd, while that of Iao is 20 mgd. There are no existing ground water uses from the Waihee Aquifer System at present. Proposed use is 2 mgd from both wells together. Potential water use from the Waihee System by the year 2010 is estimated to be up to 8 mgd.

Analysis: The well will develop fresh, basal water for private municipal use; the applicant is negotiating dedication of the wells to the County. The wells tap an aquifer with a static head standing about 10 feet above sea level. John Mink has observed that, because the stream channel in this vicinity is 200 feet above sea level, the wells should have no effect upon it. Further, Mr. Mink states that pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous; salinity is very low.
RECOMMENDATION:

That the Commission approve the extension of the pump installation permits for North Waihee Wells, subject to the same following original conditions:

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

1. The Commission shall be notified before work commences.

2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission’s September 16, 1992 direction on reporting requirements.

6. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittal approved by the Commission at its March 3, 1993 and March 1, 1995 meetings are incorporated into the permit by reference.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachment

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
ITEM 14

REQUEST FOR EXTENSION, C. BREWER PROPERTIES, INC., REQUEST TO INSTALL 1400 GPM PUMPS IN NORTH WAIHEE WELLS 1 & 2 (WELL NOS. 5631-02 & 03), TMK 3-2-1-4, WAIHEE, MAUI

PRESENTATION OF SUBMITTAL: Edwin Sakoda

AMENDMENT: Staff recommended approval with an amendment to delete the word "original" from the Recommendation, so as to read:

"That the Commission approve the extension of the pump installation permits for North Waihee Wells, subject to the same following conditions."

PRESENTATION BY APPLICANT: None; however, Mr. Jim Murray of C. Brewer Homes was present and available for questioning.

TESTIMONIES:

Mr. David Craddick of the Maui Board of Water Supply asked to have an amendment to the staff recommendation (#6) so that the applicant must face the Commission again for review if work is not started within six months.

QUESTIONS/CLARIFICATIONS:

Commissioner Nobriga wondered whether six months was too long.

Mr. Murray responded that, in regards to time table, they are in the "engineering" process for this project. They are also in the final stages of discussing, with the Board of Water Supply, the manner in which this will be developed. Also, C. Brewer anticipates that this will become the Board of Water Supply's project. He is very confident that the project will be started within the six months; less than that will be too "tight".

Commissioner Nobriga asked if the Board of Water Supply is ready to take over the project, once it's developed. He also asked why C. Brewer is taking so long to complete the project and turn it over to the Board of Water Supply.

Mr. Craddick replied that is what they are negotiating for. The Board meeting will be held on March 7, 1995 and the terms of the agreement will be discussed at that time. After the meeting, they will know whether they will be able to start the project within six months.

AMENDMENT: Page Two, Condition # 6 was amended from six (6) months to two (2) months.

UNANIMOUSLY APPROVED AS AMENDED. (NOBRIGA/NAKATA)

ITEM #4

ACCEPTANCE OF THE PRE-FINAL DRAFT NONPOTABLE WATER MASTER PLAN AND APPROVAL OF A PUBLIC REVIEW PROCESS

PRESENTATION OF SUBMITTAL: Rae Loui

UNANIMOUSLY APPROVED. (NOBRIGA/MIIKE)
6. The permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

Michael D. Wilson, Chairperson
Commission on Water Resource Management
Mar 1-4 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant’s Signature: __________________________ Date: ______________

Printed Name: ______________________________________________________

Firm or Title: _______________________________________________________

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

cc: USGS
Department of Health
Safe Drinking Water Branch
Ground Water Protection Program
Wastewater Branch
Maui Department of Water Supply.
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

**PROPOSED SECTION OF WELL**

- **Elevation at top of casing:** 284 ft., msl.
- **Cement Grout:** 200 ft.
- **Hole Diameter:** 20 in.
- **Total Depth:** 363 ft.
- **Rock Packing:** 108 ft.
- **Ground Elevation:** 283 ft., msl*

**Solid Casing:**
- Material: ASTM Designation A-242
  - USS Cor-ten, Kaiser
- Length: 289 ft.
- Diameter: 16 in.
- Wall thickness: 0.3125 in.

**Casing:**
- Perforated Screen
  - Material: Steel Kaisaloy
  - Length: 20 ft.
  - Diameter: 16 in.
  - Wall thickness: 0.25 in.
  - Openings: 100 sq. in./F.

**Open Hole:**
- Length: 79
- Diameter: 15 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.
Waihee 1 & 2
(Well No. 5631-02,03)
Mr. David W. Blane  
C. Brewer Homes  
24 N. Church Street, #205  
Wailuku, HI 96793-1437

Dear Mr. Blane:

We have received your request for an eighteen (18) month extension of the pump installation permit approved by the Commission on Water Resource Management on March 25, 1993.

Please be advised that we intend to submit this request to the Commission at its regular meeting on March 1, 1995, in Honolulu. Please call Ed Sakoda at [Redacted] if you have any questions.

Sincerely,

RAE M. LOUI  
Deputy Director

cc: Mr. Milton Arakawa, Munekiyo & Arakawa
TO: Rae M. Loui  
Deputy Director  
Commission of Water Resource Management  
Department of Land & Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809

DATE: December 21, 1994

SUBJECT: Waihe'e Wells and Transmission System

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orig.</td>
<td>12/20/94</td>
<td>Letter from David W. Blane to Commission of Water Resource Management</td>
</tr>
</tbody>
</table>

() For approval  
() For your use  
() As requested  
() Returned  
() For your files  
(X) For necessary action  
() For review and comment  
() For your signature  
() Returning

REMARKS: Please refer to the attached letter.

Signed: Milton Arakawa

Copy to: David W. Blane, C. Brewer Homes, Inc. (w/enclosure, via fax)  
Warren Unemori, Warren S. Unemori Engineering, Inc. (w/enclosures, via fax)  
David Craddick, Department of Water Supply (w/enclosure, via fax)
Rae M. Loui, Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809

SUBJECT: Pump Installation Permits for North Waihe‘e Wells 1 and 2  
Well Nos. 5631-02 and 5631-03  
Waihe‘e, Maui, Hawaii

Dear Ms. Loui:

Pump installation permits for the subject wells were issued with conditions by the Commission on Water Resource Management on March 25, 1993. Condition No. 8 of both permits note in part that the work must be started within six (6) months of the date of permit issuance. Moreover, construction must be completed within two (2) years of the date of permit issuance, or by March 25, 1995.

Extensions on the construction start date have been granted administratively, to January 25, 1995.

We would like to request a six (6) month extension of the construction start date to July 25, 1995 and an eighteen (18) month extension of the construction completion date to September 25, 1996.

As you recall, we are working with the County of Maui, Department of Water Supply (DWS), on improvements to the water system including two (2) additional wells to be drilled and equipped by the DWS, a water storage tank, and approximately 4.26 miles of waterline. Before we proceed with installation of the pumps, we would like to be reasonably certain that a connection to the County water system can be made and that applicable governmental approvals can be obtained in a timely manner. We have been working on securing the necessary permits to implement the entire project.

The Final Environmental Assessment for the project was filed in April 1994 and this process is completed.
Since the proposed waterline crosses five (5) streams or gulches, other permit requirements apply to the subject project. These include the U.S. Department of the Army permit, Section 401 Water Quality Certification, Coastal Zone Management (CZM) Consistency, and Stream Alteration Permit. The Army, Section 401, CZM and Stream Alteration Permit applications were submitted to the appropriate agencies in July 1994. A Department of the Army Provisional Nationwide Permit was issued on November 30, 1994. Action on the Section 401, CZM and Stream Alteration Permit applications are still pending.

In this regard, our requests for time extensions will allow us to continue working with the State Department of Health, the Office of State Planning and the Commission on Water Resource Management to secure the respective permit approvals for project implementation. If you or your staff have any questions, please feel free to call me. Thank you for your consideration.

Very truly yours,

C. BREWER HOMES, INC.

David W. Blane
Senior Vice-President

cc: David Craddick, Department of Water Supply
Milton Arakawa, Munekiyo & Arakawa, Inc.
researched and addressed. The negative declaration was published in the Office of Environmental Quality Control Bulletin of April 8, 1994.

Work is also ongoing for several permits required for waterline crossings of five streams and gulches. These include the Corps of Engineers Permit, Section 401 Water Quality Certification, Coastal Zone Management Consistency, and Stream Channel Alteration Permit. Filing of these permits is anticipated in mid-1994.

If you or your staff have any questions, please feel free to call me.

Very truly yours,

David W. Blane
Senior Vice-President
C. Brewer Homes, Inc.

DWB:lit
cc:  Pete C. Moynahan, C. Brewer Properties, Inc.
     David Craddick, Department of Water Supply
     Milton Arakawa, Munekiyo & Arakawa, Inc.
Mr. David W. Blane, Senior Vice-President  
C. Brewer Homes, Inc.  
P.O. Box 1437  
Wailuku, HI 96793-1437

Dear Mr. Blane:

Request for Second Extension of Start of Construction Date for  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

We acknowledge receipt of your letter requesting a ten-month extension of the start of construction date. By this letter we are extending your start date an additional ten months to January 25, 1995. Please note that the well should be completed by March 25, 1995, two years from the date the permit was issued.

Please notify the Commission on Water Resource Management, in writing, before any work covered by the permit begins, or if work cannot begin by January 25, 1995.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

cc: Pete C. Moynahan, C. Brewer Properties, Inc.  
David Craddick, Maui Department of Water Supply  
Milton Arakawa, Munekiyo & Arakawa, Inc.
Rae M. Loui, Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809  

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2  
Well Nos. 5631-02 and 5631-03  
Waihee, Maui, Hawaii

Dear Ms. Loui:  

We would like to request a ten (10) month extension (to January 25, 1995) on the start date for the above pump installation permits.

Permits for the subject wells were issued with conditions by the Commission on Water Resource Management on March 25, 1993. Condition No. 8 of both permits state in part that 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." Accordingly, a six month extension on the start date was granted to March 25, 1994.

Our intent is to install the pumps in accordance with the other conditions of the permits, including the condition that construction be completed by March 25, 1995. Should difficulties arise regarding construction start and completion dates, we will notify the Commission in January 1995.

Before we proceed with installing the pumps, we would like some assurance that a connection to the existing County water system can be made and that applicable governmental approvals can be obtained in a timely manner. The pump installation permits are envisioned to be part of a larger project jointly undertaken by C. Brewer Homes, Inc. and the County of Maui, Department of Water Supply (DWS). This includes two additional wells to be drilled and equipped by the DWS, a water storage tank, and approximately 4.26 miles of waterline.

We have been working on filing the Final Environmental Assessment (EA) for the project. Public comments raised during the 30-day comment period of the Draft EA were...
Mr. David W. Blane  
Senior Vice President  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, HI 96793-1437

Dear Mr. Blane,

Request for Extension of Start of Construction Date  
for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

We acknowledge receipt of your letter requesting a six-month extension of the start of construction date. By this letter we are extending your start date an additional six months to March 25, 1994. Please note that the well should be completed by March 25, 1995, two years from the date the permit was issued.

Please notify the Commission on Water Resource Management, in writing, before any work covered by the permit begins, or if work cannot begin by March 25, 1994.

Sincerely,

RAE M. LOUI  
Deputy Director

ES:fc

c. Michael T. Munekiyo Consulting, Inc.  
David Craddick, Maui Department of Water Supply
September 8, 1993

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

Dear Ms. Loui:

SUBJECT: Pump Installation Permits for North Waihee Wells 1 and 2
Well Nos. 5631-02 and 5631-03
Waihee, Maui, Hawaii

Pump installation permits for the subject wells were issued with conditions by the Commission on Water Resource Management on March 25, 1993. Condition No. 8 of both permits state in part that the "permit may be revoked if work is not started within six (6) months of the date of issuance or if work is suspended or abandoned for six months."

We would like to request a six (6) month extension to the start date for the work on the subject wells. Our request would extend the start date for work on the wells to March 25, 1994. Our intent is to install the pumps in accordance with the other conditions of the permits. However, before we proceed with installing the pumps, we would like some assurance that a connection to the existing County water system can be made. The County is also interested in drilling additional wells in the area to the north of Well Nos. 5631-02 and 5631-03.

We are working with the County of Maui, Department of Water Supply (DWS), on improvements to the water system including two additional wells to be drilled and equipped by the DWS, a water storage tank, and approximately 4.36 miles of waterline. A Draft Environmental Assessment has been filed with the Office of Environmental Quality Control. The 30-day review period for the Draft EA started on August 23, 1993. Should there be no significant environmental impacts as a result of the project, then the EA process should be completed prior to March 1994. Our intent is to start work covered by the subject pump installation permits upon completion of the environmental review process.
If you or your staff have any questions, please feel free to call me. Thank you for your consideration.

Very truly yours,

David W. Blane
Senior Vice President
C. Brewer Properties, Inc.

cc: Pete Moynahan, C. Brewer Properties, Inc.
    Michael T. Munekiyo, Michael T. Munekiyo Consulting, Inc.
    David Craddick, Department of Water Supply
5. The permit application and staff submittal approved by the Commission at its meeting on March 3, 1993 shall be incorporated herein by reference.

6. The following shall be submitted to the Commission staff within 30 days after completion of the work:
   a. Well Completion Report.
   b. As-built sectional drawing of the installed pump.

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 two years from the date of permit issuance.

KEITH W. AHUE, Chairperson
Commission on Water Resource Management

MAR 25 1993

Date of Issuance
I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant's Signature: [Signature] Date: 3/29/93
Printed Name: [Printed Name]
Firm or Title: [Firm or Title]

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Enc. (Well Completion Report form)
c: USGS
  Department of Health
    Safe Drinking Water Branch
    Ground Water Protection Program
  Maui Department of Water Supply
  Michael T. Munekiyo Consulting, Inc.
  Mink & Yuen, Inc.
PUMP INSTALLATION PERMIT

for

North Waihee Well 2
Well No. 5631-03
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

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 install a pump in Waihee Well 2 for private/municipal use is approved, subject to the following conditions:

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

2. The permit shall be for installation of up to a 1400 gpm capacity pump in the well. The total pumpage from North Waihee Wells 1 & 2 shall average 2 mgd or less.

3. The proposed use 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 pump water from the 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 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.
PUMP INSTALLATION PERMIT

for

North Waihee Well 1
Well No. 5631-02
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

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 install a pump in Waihee Well 1 for private/municipal use is approved, subject to the following conditions:

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

2. The permit shall be for installation of up to a 1400 gpm capacity pump in the well. The total pumpage from North Waihee Wells 1 & 2 shall average 2 mgd or less.

3. The proposed use 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 pump water from the 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 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.
5. The permit application and staff submittal approved by the Commission at its meeting on March 3, 1993 shall be incorporated herein by reference.

6. The following shall be submitted to the Commission staff within 30 days after completion of the work:
   a. Well Completion Report.
   b. As-built sectional drawing of the installed pump.

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 two years from the date of permit issuance.

KEITH W. AHUE, Chairperson
Commission on Water Resource Management

MAR 25 1993
Date of Issuance
I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant's Signature: [Signature]
Date: 3/29/93

Printed Name: DAVID W. BLAKE

Firm or Title: SR. V. P. F. BREWER PROPERTIES

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

Enc. (Well Completion Report form)
c: USGS
   Department of Health
   Safe Drinking Water Branch
   Ground Water Protection Program
   Maui Department of Water Supply
   Michael T. Munekiyo Consulting, Inc.
   Mink & Yuen, Inc.
Water Availability: The wells are located in the Wailuku Sector, Waihee System of Maui. Sustainable yield of the Waihee System is estimated at 8 mgd. There is no pumpage from the aquifer. Ground water use from the aquifer system is expected to be about 4.2 mgd by the year 2010. The wells are listed for potential development in the Maui County Water Use and Development Plan.

RECOMMENDATION:

That the Commission approve the issuance of pump installation permits for North Waihee Wells 1 & 2, subject to the following conditions:

1. The Commission on Water Resource Management (Commission) shall be notified before work commences.

2. The permits shall be for installation of 1400 gpm capacity pumps in the wells. The total pumpage from both wells shall average 2 mgd.

3. The proposed uses shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. These permits or the authorization to pump water from the wells 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 each well could be reduced by the Commission in the future. These permits are not a commitment that the pump capacities permitted here or even some lesser amount are guaranteed in the future.

4. 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.

5. The following shall be submitted to the Commission within 30 days after completion of the work:
   a. Well Completion Reports.
   b. As-built sectional drawings of the pump installations.

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

7. These permits may be revoked if work is not started within six months of the dates of issuance or if work is suspended or abandoned for six months. The work proposed in these permit applications shall be completed within two years from the dates of permit issuance.

Respectfully submitted,

[Signature]
Deputy Director

APPROVED FOR SUBMITTAL:

[Signature]
JOHN P. KEPPeler II, Acting Chairperson
Chairperson and Members  
Commission on Water Resource Management  
State of Hawaii  
Honolulu, Hawaii  

Gentlemen:

C. Brewer Properties, Inc.  
Application for Pump Installation Permits  
North Waihee Wells 1 & 2, Waihee, Maui

Applicant:  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, HI 96793

Landowner:  
Wailuku Agribusiness Company, Inc.  
P.O. Box 520  
Wailuku, HI 96793

Action Requested:  Permission to install 1400 gallons per minute (gpm) pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for private/municipal use. The proposed total amount of use from both wells is 2,000,000 gallons per day (2 mgd).

Well Location/Tax Map Key:  The wells are located at Tax Map Key: 3-2-01:4 (see attached map).

Well Description (typical):  
- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 388 ft.
- Proposed pump capacity: 1400 gpm per well

Agency Review:  The application has been sent to the Maui Department of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and to the State Departments of Health and Hawaiian Home Lands for review. There have been no objections to the project.

Analysis:  The well will develop fresh, basal water, for private/municipal use. The wells tap a basal aquifer with a static head standing about 10 ft. above mean sea level. John Mink, in a letter to C. Brewer Properties, Inc. states, "The water table in the North Waihee wells lies 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level. A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table". The wells were drilled and tested in 1981 and tested again in 1989. A pumping test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride. No adverse impacts are expected.
Mr. Nakata asked for the location of the wells in relation to the stream. Mr. Sakoda said the wells were about 400-500 feet from the stream but were on a slope. Discussion followed regarding the any relationship between the stream and the surrounding wetlands. Mr. Nakata was concerned about where the water for the wetlands was coming from and whether or not there was a relationship between the basal and the wetland. Mr. Sakoda explained that the water would come from the overflow of the dikes plus whatever recharge. In regards to the relationship, Mr. Sakoda said there must be a relationship but was not sure what it was. Mr. Bauer pointed out that the heads on the south side of the stream (the basal portion) was higher than the north side. Therefore, there are wetlands on the south side but not on the north.

Mr. Jim Murray of C. Brewer summarized the project and answered questions of the Commission. He stated that the water distribution system would be dedicated to the County Department of Water Supply and the final terms of the joint development agreement are being worked out. A meeting was scheduled for Friday, March 5th. Mr. Murray said the DWS had encouraged them to submit this application.

Mr. Ing asked Mr. Murray if he had seen Mr. Craddick's letter of March 3 indicating that negotiations have not yet resulted in an agreement with C. Brewer and also commented that he would not want to see any action taken by the Commission that would infringe on the need to supply water to the area. Mr. Ing asked for the status of the negotiations. Mr. Murray had not seen the letter, but explained that a meeting was held last week and that there was a conceptual agreement on how to proceed on the development of the source. This conceptual agreement would be presented to the DWS Technical Committee.

Mr. Craddick explained that he was not asking that the application be deferred but that it be approved. Negotiations have been ongoing since 1986, although it has not resulted in any agreements. He hoped the agreement would be resolved this month then DWS may not need to drill their well and could look at other areas where a well would be more beneficial.

Discussion followed regarding locations of proposed DWS wells in the area, spacing, which aquifer systems they would impact. The applicant's well would be located in Waihee aquifer while the proposed DWS well would be in the lao aquifer with the Waihee Stream as the dividing point between the two aquifers (if streams can be that definitive). Mr. Craddick said it is known that the head on one side of the stream is 10 feet while the other side has a 14 foot head.

Ms. Loui added that the USGS model for Pearl Harbor showed that cones of depression can cross non-conformities so even if there is a difference in heads there could still be some effects. Mr. Craddick said that was the reason for his letter but he did not intend to stop the permit. He felt staff's recommendations were sufficient to handle the situation mentioned by Ms. Loui.

Mr. Nakata asked if there would be any impact on the stream or wetlands from the proposed DWS well and if USGS had been asked to look at it. Mr. Sakoda did not think it would affect the stream but effects on the wetlands needs to be looked at more closely. The USGS were given copies of John Mink's letter and they have not stated any objections. Ms. Loui added that not enough is known on whether or not the stream is gaining and where it's gaining, therefore Mr. Meyer from USGS could not make any recommendations and deferred to Mr. Mink's statement.

Mr. Martin provided testimony expressing concern about the reservation of water for Hawaiian Home Lands. Since the well is being dedicated to DWS, Ms. Brown asked if under the terms of agreement exclusive rights are being reserved for C. Brewer and how extensive they would be. Mr. Murray said the agreement is not in place but they would be developing the water source and investing a
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significant amount with the intent of having some reserved right to use the water. The nature of that right has not been determined but it would be a sharing of the source.

Mr. Craddick added that when an agreement is reached, DHHL would have water made available to them.

Staff recommendation unanimously approved (Fujimura/Lewin).

**ITEM 5**

EXTENSION: HUEHU RANCH ASSOCIATES, L.P., PUMP INSTALLATION PERMITS, KUKIO IRRIGATION (KD) WELLS 1 TO 3, KUKIO, NORTH KONA, HAWAII

Mr. Dustin Crimmins, representing the applicant, stated approval had been received for the Water Quality Monitoring and Management Plan from the Department of Health. A copy of the approved permit would be sent to the Commission's staff.

Staff recommendation unanimously approved (Fujimura/Ing).

**ITEM 6**

JOHN D. MOOD JR., APPLICATION FOR A STREAM CHANNEL ALTERATION PERMIT, A STREAM DIVERSION WORKS PERMIT, AND AN AMENDMENT TO THE INTERIM INSTREAM FLOW STANDARD FOR HUALOLO STREAM, NINOLE, HAWAII

Mr. Martin questioned whether or not the approval of all landowners adjacent to the streams was needed before the stream was restored. Ms. Loui said several letters were received from landowners who were in favor of restoring the stream. The first step would be to determine who built the diversion, then work with the landowners.

Staff recommendation unanimously approved (Nakata/Lewin).

**ITEM 7**

BOUNDARY RECLASSIFICATIONS WITHIN THE HONOLULU, PEARL HARBOR, AND WAIALUA GROUND WATER MANAGEMENT AREAS INCLUDING THE PEARL HARBOR CAPROCK AREA, OAHU

Mr. Hardy explained the boundaries and sectors being presented to the Commission.

Mr. Martin stated (testimony in Commission file) that in future refinement of the aquifer system and sector boundaries, the Commission should "utilize readily available additional output from USGS modelling that was not mentioned nor presented at the public information meeting".

Mr. Bowles cautioned that if boundaries and definition of rules and regulations become too rigid, the real purpose will be lost. Ground water modeling is helpful as a tool but field knowledge is equally, if not more important and that if modeling is not working it should be modified.

Since at the informational meeting the Windward area was numbers were left blank, Mr. Gary Lee asked if the information included on the map presented by Mr. Hardy was for information only or would the Commission be acting on that also. Mr. Hardy said it was just general information which was attached at the request of the Commission. The Windward area numbers were approved at an earlier meeting.

Mr. Charley Ice of Hawaiian Home Lands asked if the Central Sector is a high level aquifer does it suggest that there is an overlap of the North and Pearl Harbor Aquifer. Mr. Hardy said that it is recognized and that was the reason staff is proposing to set the sustainable yield at a status quo.
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Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

C. Brewer Properties, Inc.
Application for Pump Installation Permits
North Waihee Wells 1 & 2, Waihee, Maui

Applicant: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

Landowner: Wailuku Agribusiness Company, Inc.
P.O. Box 520
Wailuku, HI 96793

Action Requested: Permission to install 1400 gallons per minute (gpm) pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for private/municipal use. The proposed total amount of use from both wells is 2,000,000 gallons per day (2 mgd).

Well Location/Tax Map Key: The wells are located at Tax Map Key: 3-2-01:4 (see attached map).

Well Description (typical):

| Ground elevation | 283 ft. |
| Casing diameter | 16 inches |
| Solid casing depth | 289 ft. |
| Screen casing depth | 309 ft. |
| Open hole | 79 ft. |
| Total depth | 388 ft. |
| Proposed pump capacity | 1400 gpm per well |

Agency Review: The application has been sent to the Maui Department of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and to the State Departments of Health and Hawaiian Home Lands for review. There have been no objections to the project.

Analysis: The well will develop fresh, basal water, for private/municipal use. The wells tap a basal aquifer with a static head standing about 10 ft. above mean sea level. John Mink, in a letter to C. Brewer Properties, Inc. states, "The water table in the North Waihee wells lies 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level. A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table". The wells were drilled and tested in 1981 and tested again in 1989. A pumping test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride. No adverse impacts are expected.
Water Availability: The wells are located in the Wailuku Sector, Waihee System of Maui. Sustainable yield of the Waihee System is estimated at 8 mgd. There is no pumpage from the aquifer. Ground water use from the aquifer system is expected to be about 4.2 mgd by the year 2010. The wells are listed for potential development in the Maui County Water Use and Development Plan.

RECOMMENDATION:

That the Commission approve the issuance of pump installation permits for North Waihee Wells 1 & 2, subject to the following conditions:

1. The Commission on Water Resource Management (Commission) shall be notified before work commences.

2. The permits shall be for installation of 1400 gpm capacity pumps in the wells. The total pumpage from both wells shall average 2 mgd.

3. The proposed uses shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. These permits or the authorization to pump water from the wells 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 each well could be reduced by the Commission in the future. These permits are not a commitment that the pump capacities permitted here or even some lesser amount are guaranteed in the future.

4. 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.

5. The following shall be submitted to the Commission within 30 days after completion of the work:
   a. Well Completion Reports.
   b. As-built sectional drawings of the pump installations.

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

7. These permits may be revoked if work is not started within six months of the dates of issuance or if work is suspended or abandoned for six months. The work proposed in these permit applications shall be completed within two years from the dates of permit issuance.

Respectfully submitted,

[Signature]
RAE M. LODI
Deputy Director

Attach.

APPROVED FOR SUBMITTAL:

[Signature]
JOHN P. KEPPELER II, Acting Chairperson
average will be 2 mgd. Eventually additional wells may be
drilled in the aquifer about half a mile north of the
existing wells to allow total average pumpage of 4 mgd.

Sincerely,

John F. Mink
March 3, 1993

Mr. John Keppeler, II  
Acting Director  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, HI 96809

Dear Mr. Keppeler:

We are planning on constructing a well along the south side of N. Waihee stream at about the 200 foot elevation. The purpose of the well is to spread the pumping of Iao aquifer and to supply the new Department of Hawaiian Homes subdivision of Waiehu Kou and other Hawaiian Homes areas in Waiehu. Withdrawal would be in the amount of 1 MGD.

The County of Maui Board of Water Supply has been negotiating with Brewer on joint development of water in this area. These negotiations have not resulted in agreement at this time. We would not want any action taken here to infringe on our need to supply water to the areas listed above.

Thank you for your consideration in this matter.

Sincerely,

David Craddick, Director  
DRC/ao/N Waihee wells  
cc: Charles Ice, Dept of Hawaiian Home Lands  
David Blane, C. Brewer Properties

"By Water All Things Find Life"
Waihee 1&2
(Well No. 5631-02,03)
February 12, 1993

David Blane
C. Brewer Properties, Inc.
PO Box 1437
Wailuku, HI 96793

Dear David:

Subject: Effect of North Waihee Wells 1 and 2 pumpage on Waihee Stream flow.

I understand that C. Brewer Properties, Inc. application for pump installation permits to install a 1400 gpm pump in each of the North Waihee wells (nos. 1 and 2) was delayed because a point was raised concerning the possible effect pumping the wells might have on Waihee stream flow. This is an exaggerated concern in view of the position of the water level in the aquifer with respect to the channel invert of Waihee Stream.

The water table in the North Waihee wells lies at 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level (see attached location map). A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table.

A pump test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa (see map) as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride.

Although each well will be fitted with a 1400 gpm pump (2 mgd) to give a total capacity of 4 mgd, during normal operations only 2 mgd will be pumped, and annually the
Date: February 16, 1993

To: Ed Sakoda
Dept. of Land and Natural Resources

From: Michael T. Munekiyo
Fax No.: 587-0219

Subject: C. Brewer Properties, Inc., North Waihe'e Wells No. 1 and 2

Comments: Ed, per our telephone conversation this morning, attached is John Mink's letter response regarding the effects of the North Waihe'e Wells on Waihe'e Stream flows. Please call me after you have had a chance to review to discuss placing this matter back on the Commission's agenda. Thank you.

cc: David W. Blane (242-7068)

(Initials)  

If you have any problems or do not receive the entire fax, kindly call me at 244-2015.
FACSIMILE TRANSMITTAL PAGE

Please deliver the following pages to:

Name: Bill Meyer
Company: USGS
From: Ed Sakoda
Date: 2/22/93 Time: 12:13pm

Total number of pages (including Transmittal Page): 4

If you do not receive all of the pages legibly, please call back: (808) 587-0225
Sending Facsimile Number: (808) 541-3611
Receiving Facsimile Number: ( ) 541-3611

TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE) WAS SENT

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*** SEND ***

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XEROX TELECOPIER 7020
TO: Mr. Ed Sakoda  
Department of Land and Natural Resources  
Water Resources Management  
P. O. Box 621  
Honolulu, HI 96809

DATE: February 4, 1993

SUBJECT: C. Brewer Properties, Inc., Application for Pump Installation Permit, North Waihee Wells 1 & 2, Waihee, Maui

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>2/4/93</td>
<td>Check #2221 in the amount of $25.00 for permit fee</td>
</tr>
</tbody>
</table>

( ) For approval  
( ) For your use  
( ) As requested  
( ) Returned for corrections  
( ) For your files  
(x) For necessary action  
( ) For review and comment  
( ) For your signature  
( ) Returning

REMARKS: Ed, as we discussed we are enclosing the permit fee to cover the second well.

Signed: 
Michael T. Munekiyo, A.I.C.P.

Copy to:
PAY TO THE ORDER OF: Department of Land and Natural Resources

$25.00

***Twenty five and no/100***

DOLLARS

First Hawaiian Bank
Well No. 5631-02, 03
CBP-N.Waihee Wells
Filing fee-Pump Inst. Permit

Lori T. Munekey
TO: Ed

DATE: 2/5
TIME: 10:08 a.m.

WHILE YOU WERE OUT

Of:

Phone: 244-2015

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<td>WANTS TO SEE YOU</td>
<td>URGENT</td>
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<td>RETURNED YOUR CALL</td>
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</tbody>
</table>

Message: Spoke w/MM on 2/4/83. He will check on status & get back to me.

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

Dear Ms. Loui:

SUBJECT: PUMP INSTALLATION PERMIT APPLICATION
WAIHEE WELLS 1 AND 2
STATE WELL NOS. 5631-02 AND -03
WAIHEE, MAUI

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

1. The application indicates that the subject wells will be for domestic use. If the wells will 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 Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.

2. 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.

3. 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 the wells 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.

4. If the wells are also used for irrigation purposes, adequate measures must be taken to eliminate cross-connections and backflow conditions. The potable and irrigation water systems should be clearly labeled and
physically separated by an air gap or an approved backflow preventer to avoid contaminating the potable water supply.

If you should have any questions, please contact Stuart Yamada of the Safe Drinking Water Branch at □□□□□□

Sincerely,

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

SY:la

c: David Blane
C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, Maui, HI 96793
Mr. David Blane  
C. Brewer Properties, Inc.  
P.O. Box 1437  
Wailuku, HI 96793  

Dear Mr. Blane:  

We have received your application and filing fee for a permit to install pumps in two wells (Well Nos. 5631-02,03) at Waihee, Maui, (TMK: 3-2-01:4). We are reviewing the application for completeness.

Should you have questions, please call the Commission on Water Resource Management staff at  

Sincerely,  

[Signature]  

RAE M. LOUI  
Deputy Director  

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

Dear Ms. Drake:

Well Construction and Pump Installation Permit Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
<thead>
<tr>
<th>Island</th>
<th>Well Name</th>
<th>Well No.</th>
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<tr>
<td>Maui</td>
<td>Wahikuli-MAU</td>
<td>5441-01</td>
<td>Well and Pump</td>
</tr>
<tr>
<td>Maui</td>
<td>Waihee 1&amp;2</td>
<td>5631-02,03</td>
<td>Pump Installation</td>
</tr>
</tbody>
</table>

Please review the applications 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 Rae M. Loui, Deputy Director, at 587-0214.

Very truly yours,

[Signature]

WILLIAM W. PATY

JZ:ky
Enc.
Mr. Clayton H.W. Hee  
Chairman & Trustee At Large  
Office of Hawaiian Affairs  
711 Kapiolani Blvd., Suite 500  
Honolulu, Hawaii 96813-5249

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

Dear Mr. Hee:

Well Construction and Pump Installation Permit Applications

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Should you have any questions, please contact Rae M. Loui, Deputy Director, at [phone number]

Very truly yours,

[Signature]

WILLIAM W. PATY

JZ:ky
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 Applications  

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<table>
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<td>5441-01</td>
<td>Well and Pump</td>
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<td>Waihee 1&amp;2</td>
<td>5631-02,03</td>
<td>Pump Installation</td>
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Please review the applications 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 the Commission on Water Resource Management staff at [contact information].  

Sincerely,  

RAE M. LOUI  
Deputy Director  

JZ:ky  
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 Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
<thead>
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Please review the applications 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 the Commission on Water Resource Management staff at [Redacted]

Sincerely,

RAE M. LOUI
Deputy Director
MEMORANDUM

TO:     Don Hibbard, Director
        Historic Preservation Program

FROM:   Rae M. Loui, Deputy Director, Commission on Water Resource Management

SUBJECT: Well Construction and Pump Installation Permit Applications

Transmitted for your review and comment are copies of the following permit applications:

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Please review the applications 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 the Commission on Water Resource Management staff at [insert contact information].

JZ:ky
Enc.
Mr. Dave Craddick, Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Craddick:

Well Construction and Pump Installation Permit Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
<thead>
<tr>
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Please review the applications 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 the Commission on Water Resource Management staff at [contact information]

Sincerely,

RAE M. LOUI  
Deputy Director

JZ:ky  
Enc.
Mr. Kazu Hayashida  
Manager and Chief Engineer  
Board of Water Supply  
630 South Beretania Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Well Construction and Pump Installation Permit Applications

Transmitted for your review and comment are copies of the following permit applications:

<table>
<thead>
<tr>
<th>Island</th>
<th>Well Name</th>
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Please review the applications 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 the Commission on Water Resource Management staff at [redacted]

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

JZ:ky
Enc.
MEMORANDUM

TO: Rae M. Loui, Deputy Director
Commission on Water Resource Management

FROM: Don Hibbard, Administrator

SUBJECT: Historic Preservation Review of Well Construction and Pump Installation Permit Applications
Waihee, Wailuku & Wahikuli, Lahaina, Maui
TMK 3-2-1: 4 & 4-5-14: 14

We believe that both applications will have "no effect" on significant historic sites. The wells in Waihee already exist in farmed land and the proposed well in Wahikuli will be located along the highway, an area that has been previously disturbed. Both areas are not likely to contain historic sites.

Please call Annie Griffin at extension 7-0013 if you have any questions.

AG:aal
Waihee 1&2
(Well No. 5631-02,03)
TO: Ed Sakoda  
DLNR  
Div. of Water Resources Management  
P. O. Box 621  
Honolulu, HI 96809

DATE: September 17, 1992

SUBJECT: Pump Installation Permit for North Waihee Wells

Enclosed is/are:

<table>
<thead>
<tr>
<th>Copies</th>
<th>Date</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>---</td>
<td>Application for Pump Installation Permit with attachments</td>
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<tr>
<td>1</td>
<td>---</td>
<td>$25.00 Filing Fee</td>
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</tbody>
</table>

() For approval  
() For your use  
() As requested  
() Returned for corrections  
() For your files  
(x) For necessary action  
() For review and comment  
() For your signature

REMARKS: The attached materials are submitted for processing. If there are any questions or if additional information is needed, please call me at [mask]. Thank you.

Signed: [Signature]  
Michael T. Munekiyo, A.I.C.P.

Copy to:
PAY TO THE ORDER OF

Department of Land and Natural Resources

DOLLARS

***Twenty five and no/100***

Michael T. Munekiyo Consulting, Inc.

2035 Main St.
Wailuku, HI 96793

September 17, 92

$25.00

First Hawaiian Bank

Wailuku Branch

P.O. Box 310
Wailuku, Hawaii 96793

CBP-N. Waihee Wells

27"0465"25"
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 Hydrology/Geology Section for assistance.

1. WELL LOCATION/NAME: State Well Nos. 5631-02 and 5631-03 Island Maui

   Address Waihee, Maui, Hawaii

   (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 C. Brewer Properties, Inc.
   Contact Person David Blane
   Address P. O. Box 1437
   Wailuku, HI 96793 Ph.

(b) LANDOWNER:

   Firm Name Wailuku Agribusiness Company, Inc.
   Contact Person Stephen W. Knox
   Address P. O. Box 520
   Wailuku, HI 96793 Ph.

3. PROPOSED CONTRACTOR:

   Name Not available. Project to be bid following receipt of permit.
   Contractor's License No.
   Address

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)

6. PROPOSED AMOUNT OF WITHDRAWAL: 4.0 Million gallons per day Total (2.0 MGD per well)

7. PROPOSED PUMP INFORMATION:

   Pump Type: □ Vertical Turbine □ Submersible □ Centrifugal
   Motor: □ Diesel □ Gas □ Electric, at a rated horsepower of 150
   Rated Pump Capacity: Gallons per minute 1400

Well Owner (print) C. Brewer Properties, Inc. Landowner (print) Wailuku Agribusiness Co., Inc.

Signature David W. Blane Signature Stephen W. Knox
Date September 16, 1992 Date September 16, 1992

For Official Use Only:
Field Checked By ____________________________ Latitude ______________
Date ____________________________ Longitude ______________
Hydrologic Unit ____________________________ State Well No. ______________
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

---

### PROPOSED SECTION OF WELL

**Elevation at top of casing:** 284 ft., msl.

**Ground Elevation:** 283 ft., msl*

**Cement Grout:** 200 ft.

**Hole Diameter:** 20 in.

**Total Depth:** 363 ft.

**Rock Packing:** 108 ft.

---

**Solid Casing:**
- ASTM Designation A-242
- **Material:** Steel Kalsaloy
- **Length:** 289 ft.
- **Diameter:** 16 in.
- **Wall thickness:** 0.3125 in.

**Casing:**
- **Material:** Steel Kalsaloy
- **Length:** 20 ft.
- **Diameter:** 16 in.
- **Wall thickness:** 0.25 in.
- **Openings:** 100 sq. in./L.F.

**Open Hole:**
- **Length:** 79
- **Diameter:** 15 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.
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 Hydrology/Geology Section for assistance.

1. WELL LOCATION/NAME: North Waihee Wells 1 and 2
   State Well Nos. 5631-02 and 5631-03
   Island Maui
   Address Waihee, Maui, Hawaii
   Tax Map Key 3-2-01:4
   (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 C. Brewer Properties, Inc.
   Contact Person David Blane
   Address P. O. Box 1437
   Wailuku, HI 96793
   Ph: __________________

(b) LANDOWNER:
   Firm Name Wailuku Agribusiness Co., Inc.
   Contact Person Stephen W. Knox
   Address P. O. Box 520
   Wailuku, HI 96793
   Ph: __________________

3. PROPOSED CONTRACTOR:
   Name bid following receipt of permit.
   Contractor’s License No.
   Address ____________________________ 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)

6. PROPOSED AMOUNT OF WITHDRAWAL: 4.0 Million gallons per day
   Total (2.0 MGD per well)

7. PROPOSED PUMP INFORMATION:
   Pump Type:
   □ Vertical Turbine □ Motor:
   □ Submersible □ Diesel
   □ Centrifugal □ Gas
   □ Electric, at a rated horsepower of __________
   Rated Pump Capacity:
   Gallons per minute __________

Well Owner (print) C. Brewer Properties, Inc., Signature ___________________________ Date September 10, 1992
Landowner (print) Wailuku Agribusiness Co., Inc., Signature ___________________________ Date September 12, 1992

For Official Use Only:
Field Checked By ___________________________ Latitude ____________ Hydrologic Unit ____________
Date ___________________________ Longitude ____________ State Well No. ____________
Briefly describe the proposed work:
Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.
Cement Grout: 200 ft.
Hole Diameter: 20 in.
Total Depth: 363 ft.
Rock Packing: 108 ft.

Ground Elevation: 283 ft., msl*

Solid Casing: ASTM Designation A-242
USS Cor-ten, Kaiser
Material: Steel Kaisaloy
Length: 289 ft.
Diameter: 16 in.
Wall thickness: 0.3125 in.

Casing: ☐ Perforated ☐ Screen
USS Cor-ten, Kaiser
Material: Steel Kaisaloy
Length: 20 ft.
Diameter: 16 in.
Wall thickness: 0.25 in.
Openings: 100 sq. in./L.F.

Open Hole:
Length: 79
Diameter: 15 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.
Dr. David Henderson Brown, M.D.  
RR#1 Box 138  
Wailuku, HI 96793

Dear Dr. Brown:

Waihee Valley Wells 1 & 2 (Well Nos. 5631-02 & 03)

Your letter indicates that you are looking for a way to require Wailuku Agribusiness to do an environmental assessment and an environmental impact statement before they draw any water from the Waihee Valley Wells.

The administrative rules of the State Water Code require only that a water user obtain a pump installation permit from the Commission on Water Resource Management prior to installing a pump in a well. In designated water management areas, an additional water use permit is required. Presently, there are no water management areas on Maui.

The State Water Code also provides for dispute resolution and citizen complaints for water-related matters whether or not they are in a water management area.

An environmental assessment and environmental impact statement are not required by the Commission on Water Resource Management prior to the owner or applicant using water from the Waihee Valley Wells. However, they must obtain a pump installation permit from the Commission. If there are any disputes or complaints about the issuance of such a permit, the Commission will hear them and act accordingly.

Call Ed Sakoda at [redacted] if you have any questions.

Sincerely,

MANABU TAGOMORI  
Deputy Director
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

- Elevation at top of casing: 284 ft., msl.
- Ground Elevation: 283 ft., msl
- Cement Grout: 200 ft.
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  - Length: 20 ft.
  - Diameter: 16 in.
  - Wall thickness: 0.25 in.
  - Openings: 100 sq. in./L.F.
- Open Hole:
  - Length: 79
  - Diameter: 15 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.
June 13, 1990

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

Gentlemen:

Re: PUMP INSTALLATION PERMITS

Pursuant to your letter of May 30, 1990, we are submitting applications for pump installation permits for the following projects:

1. Honokahua Well "A", Repair of Controls. Permit not necessary
2. Honokahua Well B, Pump Installation
3. Waiehu Heights Pump #2, Pump Replacement. #5430-02
4. Hamoa Well, Pump Installation. #3300-02
5. Kepahue Well, Pump Installation. #0001-03

Additional information requested are as follows:

1. Waiiku Wells "A" and "B" both have 40 horsepower motors and have capacities of 350 gpm.

2. Waihee Wells #1, #2, and #3 all flow through the same meter.

If any additional information is required, please contact us.

Sincerely,

Vince G. Bagoyo, Jr.
Director

Enclosures

"By Water All Things Find Life"
North Waihee Wells
Pump Test Protocol

John F. Mink
April 4, 1989

The pump rate will be held constant at 2000 gpm over a continuous period of 96 hours. The continuous rate may be prolonged another 24 hours at the discretion of the test supervisor.

In the Waihee-Kahakuloa sector water level measurements will be taken in the pumping well, the other North Waihee well, the Kanoa boring and the Wailena well. In the Waihee-Waiehu sector, measurements will be taken in Test Hole A-1. The unpumped North Waihee well is outfitted with a continuous water level recorder and in the Kanoa boring a bubbler will be installed. The Wailena well and A-1 are open. Manual measurements will be made with an insulated copper wire equipped with an electrode, or a steel tape.

Static water level measurements by steel tape or wire will be taken as follows.

1. Both North Waihee wells and the Kanoa boring.
   a. Three days before the start of the test in the A.M.
   b. One day before the start, also A.M.
   c. 30 minutes before the start.

2. Wailena well.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

3. Test Hole A-1.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

After the test is started, water level measurements will be taken as follows.

1. Pumping North Waihee well (manual measurements preferred; airline if manual not possible).
   a. 1 reading per minute for 5 minutes.
   b. 1 reading per 5 minutes for 25 minutes.
   c. 1 reading per 10 minutes for 60 minutes.
   d. 1 reading every hour thereafter.
2. Unpumped North Waihee well. Drawdowns will be traced on the continuous recorder, but manual measurements should be made as follows to check the reliability of the recorder.
   a. At 10 minutes
   b. At 30 minutes.
   c. Every hour thereafter.

3. Kanoa boring. Drawdowns will be determined by the bubbler arrangement but need to be checked manually. Recognizable drawdown of about 0.1 feet will not occur until 48 hours after the start of the test if the aquifer is unconfined and not narrowly bounded. If the aquifer is confined, drawdown will be measurable sooner. The sequence of readings should be:
   a. At 10 minutes.
   b. At 30 minutes.
   c. Every hour thereafter.

4. Wailena well. The Wailena well is so distant from North Waihee that drawdown of 0.1 feet and more isn't likely to occur unless the aquifer is confined. Nevertheless, manual measurements should be made as follows.
   a. At 6 hours.
   b. At 24 hours.
   c. at 30 hours.
   d. At 48 hours.
   e. At 54 hours.
   f. At 72 hours.
   g. At 78 hours.
   h. At 96 hours.

   If a response is noted, the frequency of measurements will be increased as practicable.

5. Test Hole A-1. Same schedule as the Wailena well.

   Recoveries will be measured after the pump is turned off. Recovery measurements at the pumped well, the unpumped North Waihee well and the Kanoa boring will follow the same schedule as the drawdown measurements over a period of 12 hours. Thereafter single measurements will be made in the A.M. for the following 5 days. Recovery measurements will be made at Wailena and A-1 only if these wells experienced measurable drawdown. The schedule for such measurements will be drawn up before the end of the test.
Memo To: Joint Venture  
From: John F. Mink and Norman Saito Engineering  
Re: Location of new well sites in aquifer north of Waihee Valley  
Date: July 17, 1989

The aquifer starting at Waihee Valley and extending northward toward Makamakaole is capable of providing approximately 4 mgd on a sustained basis. To meet maximum demands pumpage can be greater temporarily, but over the long term the average draft should be restricted to 4 mgd. This is the sustainable yield that has been estimated from analysis of the successful pumping test conducted recently on one of the North Waihee wells.

The high groundwater head in the aquifer will allow withdrawal of potable water employing relatively high capacity pumps. Drawdowns during the test were modest and recovery was rapid. Pumps having a capacity of 2 mgd (1400 gpm) each are recommended for the existing two North Waihee wells and the proposed two new wells between Waihee and Kupaa Gulch.

Sites for the new wells are plotted on the accompanying map. Three sites have been selected, but only two new wells are recommended at this time. The remaining site should be reserved for a future well in the event the sustainable yield of the aquifer proves to be greater than the estimate of 4 mgd. The first new well should be drilled at Site 2, and the next at Site 3. Site 1 is the reserve location.
Site 2 is close by the Kanoa test boring where an unnamed gulch becomes too narrow to allow uncomplicated land development. The new well can be drilled within 150 feet of the test boring at an elevation of about 300 feet. The boring will be an important monitor to track behavior of the aquifer. The site is 2000 feet north of the North Waihee wells. An access road already exists.

Site 3, where the second new well should be drilled, is on the south bank of Kupaa Gulch where it is crossed by Kahekili Highway. The usable space is small but adequate for drilling operations and construction of a pumping station. Clearing and leveling will be required. Otherwise, north of Site 2 the terrain is difficult and elevation quickly rises above 400 feet. Elevation at the site is about 350 feet; distance north of Site 2 is 1000 feet.

The reserve location, Site 1, is 500 feet south of Site 2 and 1500 feet northeast of the North Waihee wells at elevation 300 to 350 feet. The site is on the slope forming the head of an attractive small valley.

Although four wells, each fitted with a 2 mgd pump, are proposed for the reach between Waihee valley and Kupaa Gulch, on the average only 4 mgd will be pumped. The total capacity of 8 mgd can be exercised during periods of unusual demand, but on an annual basis pumpage should be equivalent to 4 mgd.

The average of 4 mgd should not be taken from the two North Waihee wells alone. One of these wells should act as a standby except during the highest demand periods.
### WAIlena Well

**Elevation = 608.23**

*(at top of pipe)*

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<th>Date</th>
<th>Top Water Elevation</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>02/17/89</td>
<td>x</td>
<td>Poor reading - chloride content 87.5 mg/l</td>
</tr>
<tr>
<td>03/01/89</td>
<td>6.63</td>
<td>Good results; 3:00 p.m. - NaCl 87.5 mg/l</td>
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<tr>
<td>03/08/89</td>
<td>6.67</td>
<td>4:30 p.m.; river nearby flowing</td>
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<tr>
<td>03/15/89</td>
<td>6.44</td>
<td>4:00 p.m.; river not flowing</td>
</tr>
<tr>
<td>03/22/89</td>
<td>6.16</td>
<td>4:00 p.m.; river not flowing</td>
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<tr>
<td>04/03/89</td>
<td>6.61</td>
<td>10:15 a.m.; no water in river</td>
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<tr>
<td>04/11/89</td>
<td>6.54</td>
<td>1:30 a.m.; 150 mg/l - river running strong</td>
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<tr>
<td>04/17/89</td>
<td>6.20</td>
<td>9:00 a.m.; from chart</td>
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## Pump Test at Well A-1

Elevation = 248.11
(Water Level in Feet)

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<th>TIME</th>
<th>5/15/89</th>
<th>5/16/89</th>
<th>5/17/89</th>
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**WELL A-1**

Elevation: 248.11 feet  
(Water Level in Feet)

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<th>Date</th>
<th>Time</th>
<th>Elevation (ft)</th>
<th>Date</th>
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<td>8:00 am</td>
<td>18.17</td>
<td>5/16/89</td>
<td>8:00 am</td>
<td>18.01</td>
<td>5/17/89</td>
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All measurements taken by steel tape.

The A-1 well is located far enough away from the test well, North Waihee #2, that any effect on A-1 would be doubtful.

A final reading of Well A-1 was taken on Monday, May 22, 1989 at 8:00 a.m. with a water level elevation of 18.08 feet above sea level.
TEST WELL DATA
NORTH WAIHEE WELL #2

Test well elevation at top of casing 281.98
Measure point at base of gearing 282.73
Pump location (~300 feet from M.P.) -17.27
Air line location (top of bowl assembly) -6.27
Pressure gauge reading at beginning of test (to 1/10) 17.5

Distance from North Waihee Well #1 to North Waihee Well #2 176 feet

Chloride readings were taken twice daily. All were between 37.5 mg/l and 50 mg/l. NaCl measured with the HACH chloride test kit, Model 7-P, using low range measure 0-250 mg/l.
PUMP TEST AT
NORTH WAIHEE WELL NO. 2

MP Elevation = 282.73 (Bottom of Housing)

<table>
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<tr>
<th>DATE</th>
<th>TIME</th>
<th>PUMPING TIMES</th>
<th>RATES X 100</th>
<th>RATE (GPM)</th>
<th>WATER LEVEL (FT.)</th>
<th>WATER LEVEL (FT.)</th>
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<tr>
<td>Mon. 5/15</td>
<td>Noon</td>
<td>Begin Pump Test</td>
<td>409651</td>
<td>&gt; 2527</td>
<td>14.00</td>
<td>7.7</td>
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<td>436445</td>
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<td>444088</td>
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<td>449715</td>
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<td>472020</td>
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<td>477283</td>
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<td>481693</td>
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<td>Increased Pump Rotation 1700 rpm - 1900 rpm</td>
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<td>Reduced Pump Rotation 1900 rpm - 1700 rpm</td>
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<td>WATER TOTALIZER</td>
<td>PUMP RECORDER LEVEL (H'/l)</td>
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PUMP TEST AT
NORTH WAIHEE WELL NO. 2

MP Elevation = 282.73 (Bottom of Housing)

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<th>DATE</th>
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<th>RATES X 100</th>
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<th>WATER LEVEL (FT.)</th>
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(Increased Pump Rotation 1700 rpm - 1900 rpm)

Flow meter malfunction.

At 6 p.m. 5/13 reduced rpm's to 1700. Water level went up to 12.0

JFR Field notes:

5/15/64 Due to pressure = 0.4 miles. ( $A(W^4_1 → W^4_2) = 176 ft. Downstream$)

MP (hp and coming from well) 281.98; +7.5 b. mean = 282.73 ft.

Start with: 46419
Pump setting: Q = 300 (17.27) DTR = 272 (150 + 12)
Start-Test Q = 1200 m = 1.68  Δ# = 14888

Air line Seal @ 17.10 ft (below WT). Δ(A12.20) = 2.8  Δ(12.40) = 3.0  Δ(A) = 3.1

Pump flow 5/15/64 1200  A = 5.2  G = 3.30  A2 = 0.2  B = 0.0  C = 1.0  D = 0.0
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<th>PUMP RATE (ft³/min)</th>
<th>RECORDER LEVEL (ft)</th>
<th>WATER LEVEL (ft)</th>
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NORTH WAIHEE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST
APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)

DRAWDOWN IN FEET

DRAWDOWN IN FEET

PUMPING RATE IN GPM
5/18/84 17:10
Call from El Rumel -

Per Moa, meter not reading correctly,
C 1700 RPM, Q = 2400 gpm
C 1900 RPM (to which change was made 5/18/84) Q = 2400 gpm

Advised to return to 1700 RPM. Will calibrate from
by other means.

5/19/84 07:30 Call from El Rumel.

Bill Moore calculated rate at 2900 gpm when RPM = 2000
i.e. from 5/18 & 5/16. 1800 (? ) at this rate. Cut back to
2400 gpm (1700 RPM). New pump sounds. Pump should be
operating properly. Confusion caused by malfunction of motor relay.
The pump test at North Waihee Well #2 began on Monday, May 1, at noon.

Pumping was to be at a constant rate of 2,400-2,500 gpm for 5 days.

Between 6:00 p.m. on Wednesday, May 17 and 9:00 a.m. on Thursday, May 18 the in-line flow meter malfunctioned. Not knowing this, we increased the pump's rpm to keep up the 2,450 gpm rate.

The pumping was at this increased rate (1,900 rpm) from 9:00 a.m. on Thursday, May 17 to 6:00 p.m. on Thursday, May 17. At that time the pumping was reduced to approximately 2,450 gpm by reducing the pump rotation to the original 1,700 rpm. The remainder of the test was run at this rate.

Pumping at the test well was stopped at 12:00 p.m. (noon) on Friday, May 18, 1989.

Recovery was almost immediate and by 2:00 p.m. the pressure gauge at the test well read 17.2 feet. By 5:00 p.m., Friday it was back to the original 17.5 feet on the gauge.

On Saturday at 8:00 a.m. the water level at the test well was measured by tape to be 11.25 feet above sea level. At this time the gauge was at 17.5 feet.

With the air line at -6.27 feet and water level at 11.25 feet, the gauge reading should be at 17.52 feet. The gauge reading correlates well with these results.
## KANOA WELL
### WELL ELEVATION
305.94 ft. AT 2 1/2 IN. CASING

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## KANOA WELL

**Elevation:** 305.94 feet  
**(Bubbler System)**

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<th>5/17/89</th>
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<td>12:31</td>
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</tr>
</tbody>
</table>

*Measured by steel tape.

On Monday, May 22, 1989, at 8:30 a.m. a final measure was taken by tape to read 12.35 feet.
**KANOA WELL**

**Elevation = 305.94 (Bubbler System)**

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<th>5/17/89 Wednesday</th>
<th>5/18/89 Thursday</th>
<th>5/19/89 Friday</th>
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<td>Before Test</td>
<td>Before Test</td>
<td>Before Test</td>
<td>Before Test</td>
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**Footnotes:**

5/15/89 \( h_0 + t_0 + t_{30} ~\text{hours} \) 14:30 \( \text{hours} \) \( \text{local} \)

5/19/89 \( h = 11.98 \) \( \text{top} \) \( \text{chart} \)

5/19/89 \( \Delta = 12.42 - 11.98 = 0.44 \)

11:10 \( \Delta = 0.2 \) \( \text{reading} \)

1345 \( \Delta = 0.2 \) \( \text{reading} \)

\( \Delta = 12.14 \)
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<td>10.84</td>
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</tr>
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<td>12/29/89</td>
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<td>11/18/89</td>
<td>11.96</td>
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<td>11.09</td>
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<td>5/14/89</td>
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<td>5/25</td>
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</tr>
<tr>
<td>5/26</td>
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<tr>
<td>5/17</td>
<td>12.05</td>
<td>9 am (Chart reading)</td>
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</tbody>
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NORTH WAIHEE WELLS
Site Description
Pump Test Results

JOHN F. MINK

Submitted to:
Hawaiiana Investment Co., Inc.
October 20, 1981
NORTH WAIHEE WELLS

Summary

The basal aquifer extending southward from Waihee Stream to Waikapu Stream, which is now referred to as the Waiehu aquifer, is being exploited nearly to the limit of its sustainable yield, and an additional significant contribution from it to Central Maui's water supply is not reasonable to expect. To develop more water different sources must be explored, and to this purpose an exploration-production well field was proposed in the region north of Waihee Stream where the aquifer was thought to be either separate or only poorly connected to the aquifer south of the valley. A separate aquifer would provide a new exploitable source of water supply, while proof of connection with the Waiehu aquifer would extend the limits of that aquifer and increase the overall allowable sustainable yield.

Two wells have now been drilled on the north side of Waihee Valley by Roscoe Moss Co. for Hawaiiana Investment Co., Inc. (See Figure 1 for location). Both have been successfully tested and have proved that a substantial, highly transmissive aquifer extends toward Kohakuloa from Waihee. A sustained rate of about 1,700 gpm over 48 hours was pumped from each well with very small drawdown and with no change in
the low initial salinity (15 mg/l chloride). Interpretation of the initial conditions and the pump test results indicate that the aquifer, to be referred to as the North Waihee aquifer, is essentially independent of the Waiehu basal aquifer. If a hydraulic connection exists, it is very weak.

The two wells can be safely fitted with 1,750 gpm pumps. The North Waihee aquifer is large enough to support more production than can be provided by the completed well field. The site of the next well is proposed in the small valley about 1,600 feet northward at a ground elevation of 400 to 500 feet.

North Waihee Aquifer

The region north of Waihee Stream toward Kohakula over a width of about two miles is probably underlain by a basal aquifer, perhaps modified by stray dikes, in the Wailuku volcanic series, a highly permeable basaltic formation. Dense trachytic flows of the Honolua series overlie the Wailuku series except in the deeper valleys where erosion has exposed the basaltic rocks. The trachytes do not constitute a principal aquifer and should be avoided if possible because they are difficult to drill through.

The North Waihee wells were located to avoid the trachyte but as a result had to penetrate about 100 feet of
talus and alluvium before striking the basalt. Drilling logs indicate that bedrocks of the Wailuku series was encountered 70 to 100 feet below ground surface. The deep alluvial fill of Waihee Valley was successfully avoided. Dikes were not observed in the vicinity of the well field but are known to occur about 3,500 feet upstream, approximately coincident with the forest reserve line. The rift zone is close enough to the wells that local geohydrologic conditions may be dike-basal rather than strictly basal.

The Wells

The North Waihee wells lie 2,150 feet inland of Kahekili Highway about 250 feet from the stream channel. Ground elevation is 280 to 283 feet. The wells are fitted with 16 inch casing and were drilled to a depth of 105 feet below sea level. The casing is perforated from five to 25 feet below sea level, and the remainder of the bore is open (uncased). The wells are on a line parallel to the stream, 178½ feet apart. The most inland well is called North Waihee 1, the other is called North Waihee 2. They are identical in design and nearly so in performance. The first well was completed in March of 1981 and tested in April and June. The second well was completed in July and tested in August.
Pump Tests

Step Drawdown

Step drawdown tests were conducted on North Waihee 1 on April 15 and June 3 and on North Waihee 2 on August 3. Initial head was nine to ten feet at each well and initial chloride about 15 mg/l. Behavior of the wells was similar during pumping; in each drawdown was small even at high rates of draft and recovery was instantaneous. The specific capacity of Well 1 was 450 gpm/ft. drawdown at 1,765 gpm, and of Well 2 550 gpm/ft. drawdown at 1,715 gpm. Tables 1 and 2 list the step drawdown results and Figure 2 shows a plot of $s = f(Q)$ for each.
TABLE 1
NORTH WAIHEE WELL 1
Step Drawdown Pump Test
April 15, 1981

Ground elev. 283 ft.; Bowls set 309.5 ft.; Airline at 310 ft.; uncased.

<table>
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<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
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**TABLE 2**

**NORTH WAIHEE WELL 2**
Step Drawdown Test
August 3, 1981

Ground elevation 282.21 feet; airline set 304 feet; cased.

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<th>Remarks</th>
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<td>1.16</td>
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<td>Increase rate</td>
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<td>1,500</td>
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<td>2.66</td>
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<td>2.66</td>
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<td>148</td>
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<td>Stop. Instant recovery.</td>
</tr>
</tbody>
</table>
Sustained Pump Test

Both wells were subjected to 48 hours of continuous pumping at a constant rate. The first well was tested before the second was drilled so that drawdown measurements were restricted to the pumping well. While Well 2 was being pumped, Well 1 was available for use as an observation well. Sustained pumping at Well 1 at 1,715 gpm for 48 hours was successful on the first try and the results indicated the aquifer to be highly transmissive. At Well 2, two attempts to sustain a constant rate for 48 hours failed, the first after 30 hours and the other after 26 hours, but the third attempt succeeded at a rate of 1,680 gpm. During all three attempts, drawdown measurements were taken at Well 1, a distance of 178 feet away. With these drawdown observation it was possible to compute the transmissivity and specific yield of the aquifer. Drawdown at Well 1 caused by draft at Well 2 and a summary of aquifer characteristics is given in Figure 3. The aquifer was proved to be extensive and highly transmissive, conditions needed for successful exploitation.

Drawdown at pumping wells during sustained tests give well efficiency but generally are not adaptable for calculating aquifer characteristics. The North Waihee wells are very efficient, having specific capacities in excess of
500 gpm/ft. drawdown. During the sustained test at Well 1 drawdown stabilized at 2.54 feet at 1,715 gpm and at Well 2 it stabilized at 3.0 feet at 1,680 gpm.

The drawdowns induced at Well 1 by constant pumping at Well 2 were carefully analyzed to determine, in addition to the aquifer constants, the following:

1. whether the aquifer is effectively closed by impermeable boundaries at short to moderate distances from the well field
2. whether the aquifer has unimpeded hydraulic connection with the Waiehu aquifer
3. whether the aquifer is extensive and effectively unconnected, or poorly connected, with the Waiehu aquifer.

The values for transmissivity and specific yield (effective porosity) were computed by employing the short form (Jacob's method) of the non-equilibrium well hydraulic formula. The short form is permissible because the drawdown data at Well 1 for sustained Test 1 at Well 2 includes early and late measurements that fall on a continuous curve expressed by:

\[ s = \frac{Q W(u)}{4\pi T} \]

in which \( s \) is drawdown, \( Q \) is constant pumping rate, \( T \) is transmissivity, and \( W(u) \) is the solution for the series.
that expands the variable, \( u = \frac{r^2S}{4\pi t} \), in which 

\( r \) is distance between the pumping and observation wells, \( S \) is specific yield, and \( t \) is time. Units are in feet and days. Proof that the \( s = f(u) \) curve is continuous was demonstrated by assuming that the straight line portion of the plot (after about three hours) fit the Jacob criteria, then employing the computed \( S \) and \( T \) values in calculating the ratio, \( s/W(u) \), for the early part of the curve to check its values against the fixed value of \( Q/4\pi T \). The accord is good and thus it is permissible to conclude that all of the drawdowns fall along a continuous curve. Table 3 below summarizes the computations.

**TABLE 3**

Aquifer Characteristics by Jacob Method
Continuity of \( s = f(u) \)

\((T = 320,000 \text{ ft}^2/\text{d}; S = .284; r = 178 \text{ ft.}; Q/4\pi T = .0737)\)

<table>
<thead>
<tr>
<th>Time Days</th>
<th>( u )</th>
<th>( W(u) )</th>
<th>( s(\text{ft.}) )</th>
<th>( s/W(u) )</th>
</tr>
</thead>
<tbody>
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<td>.0417</td>
<td>.1686</td>
<td>1.3648</td>
<td>.11</td>
<td>.0805</td>
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<td>.0625</td>
<td>.1125</td>
<td>1.7172</td>
<td>.12</td>
<td>.0699</td>
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<td>.0833</td>
<td>.0844</td>
<td>1.9777</td>
<td>.14</td>
<td>.0698</td>
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<td>.1042</td>
<td>.0675</td>
<td>2.1853</td>
<td>.16</td>
<td>.0709</td>
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<td>.1250</td>
<td>.0562</td>
<td>2.3564</td>
<td>.17</td>
<td>.0717</td>
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<td>.50</td>
<td>.0141</td>
<td>3.7012</td>
<td>.26</td>
<td>.0702</td>
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<td>1.0</td>
<td>.0070</td>
<td>4.3874</td>
<td>.32</td>
<td>.0738</td>
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<tr>
<td>2.0</td>
<td>.0035</td>
<td>5.0770</td>
<td>.38</td>
<td>.0739</td>
</tr>
</tbody>
</table>
The aquifer parameters are comparable to those of the best aquifers in Hawaii. The transmissivity is about 320,000 ft$^2$/day, which implies a hydraulic conductivity of 2,000 to 3,000 ft./day, based on partial penetration of 100 feet in the saturated aquifer, and an average specific yield of at least .20.

Continuity of the early and later drawdown data implies that the aquifer is extensive. On the other hand, hydraulic connection between it and the Waiehu aquifer is, at best, very weak. The nearest test hole in the Waiehu aquifer is A-1, which lies 5,100 feet south of the North Waihee wells. Head in this test hole quickly responds to pumping by the Mokuhau and Waiehu wells in the Waiehu aquifer, and the speed of the response indicates that head changes are transmitted under confined aquifer conditions. No such response showed up on the recorder chart at A-1 as a result of the pumping at North Waihee. If continuous confined conditions existed between North Waihee and A-1, a drawdown of 0.1 feet would have been recorded at A-1 within 70 minutes of the start of each pump test.

For unconfined conditions between the two sites almost ten days would be required for transmittal of 0.1 feet of drawdown. The record at A-1 is too responsive to pumping starts and stops at the Mokuhau and Waiehu wells to unambiguously display any long term effects from North Waihee.
if they occurred. Following is a summary of behavior at A-1 during the North Waihee tests.

TEST 4

Head Changes at A-1
Pump Tests at North Waihee

<table>
<thead>
<tr>
<th>Date</th>
<th>Time of Test</th>
<th>Type of Test</th>
<th>Rate (GPM)</th>
<th>Head-changes at A-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/15/81</td>
<td>08:14 - 11:18</td>
<td>Step</td>
<td>1765</td>
<td>No change.</td>
</tr>
<tr>
<td>6/3 - 5/81</td>
<td>07:30 - 07:30</td>
<td>Sustained</td>
<td>1715</td>
<td>No significant change during test; slight gain in head 6/3-6/10; abrupt drawdown of 0.1 ft. on 6/12, probably caused by Mokuhau-Waiehu pump start up. Gradual increase of .15 ft. by 6/18. Head at A-1 20.5 to 21.0 ft.</td>
</tr>
<tr>
<td>8/3/81</td>
<td>08:15 - 10:43</td>
<td>Step</td>
<td>1715</td>
<td>No change.</td>
</tr>
<tr>
<td>8/3 - 4/81</td>
<td>13:00 - 19:00</td>
<td>Sustained</td>
<td>1540</td>
<td>Head at A-1 about 15.5 ft. Variable small head changes, up and down. Same head at end of period as at start.</td>
</tr>
<tr>
<td>8/10 - 11/81</td>
<td>09:00 - 11:00</td>
<td>Sustained</td>
<td>1580</td>
<td></td>
</tr>
<tr>
<td>8/12 - 14/81</td>
<td>15:00 - 15:00</td>
<td>Sustained</td>
<td>1680</td>
<td></td>
</tr>
</tbody>
</table>

A more telling argument against free hydraulic connection between North Waihee and Waiehu is the large difference in head between A-1 and the new wells. At A-1 the head is about 20 feet when Mokuhau and Waiehu are not pumping,
or 15 to 16 feet when they are, while at North Waihee the head is nine to ten feet. The hydraulic gradient in the Waiehu aquifer is 1 ft./mile, but between A-1 and North Waihee it is five to ten feet per mile, an impossible gradient if free connection prevailed. Whatever connection exists is highly damped by the alluvial fill and weathered rock in Waihee Valley. For planning purposes it is reasonable to consider the North Waihee aquifer to be effectively separate from the Waiehu aquifer.

**Water Quality**

Analyses by Brewer Analytical Laboratories of water collected in April during the pump test at Well 1 and in August at Well 2 showed no change in chloride from 15 mg/l. A more complete analysis for Well 1 is given below.

**TABLE 5**

North Waihee Water Quality

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<tr>
<th>Substance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<td>pH</td>
<td>7.58</td>
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<tr>
<td>Conductance</td>
<td>272 micromhos</td>
</tr>
<tr>
<td>Alkalinity as CaCO₃</td>
<td>108 mg/l</td>
</tr>
<tr>
<td>Sodium</td>
<td>9.43 mg/l</td>
</tr>
<tr>
<td>Chloride</td>
<td>14.0 mg/l</td>
</tr>
<tr>
<td>Nitrate-Nitrogen</td>
<td>2.03 mg/l</td>
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<tr>
<td>Calcium</td>
<td>10.7 mg/l</td>
</tr>
<tr>
<td>Magnesium</td>
<td>8.94 mg/l</td>
</tr>
</tbody>
</table>
The quality of the water is excellent for any purpose. Chloride content did not increase during the tests.

Conclusions and Recommendations

The North Waihee aquifer is extensive and potentially very productive. The aquifer consists of Wailuku basalt with hydraulic conductivity of 2,000 to 3,000 ft./day and specific yield of .20. The aquifer is basal, possibly affected by widespread dikes, with a static head of about ten feet. The two wells drilled to date are very efficient, displaying specific capacities in excess of 500 gpm/ft. drawdown at high pumping rates. Water quality is excellent.

The two wells at North Waihee could safely be outfitted with 1,750 gpm pumps to provide a potential field output of five mgd. Northward toward Kohakuloa more water could be developed from the aquifer. When an additional water supply is planned, a well field could be located in the next valley about 0.3 miles north of Waihee Stream at an elevation of 400 to 500 feet (See Figure 1).

JOHN F. MINK
SUSTAINED PUMP TEST

NORTH WAHEE WELL FIELD, MAUI

WELL 2 PUMPING: WELL 1 OBSERVATION

<table>
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<tr>
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<th>RATE GPM</th>
<th>FT/DAY</th>
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TIME, t, IN HOURS
NORTH WAIHEE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST

APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)

DRAWDOWN IN FEET

PUMPING RATE IN GPM
TO

STATE OF HAWAII
DEPT. LAND & NAT'L RESOURCES
Attn: Ed Sakado
DIV OF WATER & LAND DEVELOPMENT

1-18-82
No. Waihee Wells—
Sustained Pump-Test Results.

Attached are copies of the sustained
pump test results, Wells No. 1 & 2,
North Waihee, Maui.

[Signature]

HAWAIIANA INVESTMENT CO., INC.
2123 KAOHU STREET, P. O. BOX 1157
WAILUKU, MAUI, HAWAII 96793

PHONE: [Redacted]
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<tr>
<td>8</td>
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<td>27½ End of Test</td>
<td></td>
</tr>
</tbody>
</table>
November 4, 1981

Mr. Warren A. Suzuki  
Warren S. Unemori Engineering, Inc.  
Wells Street Professional Center  
2145 Wells Street, Suite 403  
Wailuku, Maui, Hawaii 96793

Dear Mr. Suzuki:

Thank you for sending the location maps for Waihee Valley Wells 1 & 2, State Well Numbers 5631-02 and 5631-03.

We appreciate your cooperation very much.

Very truly yours,

ROBERT T. CHUCK  
Manager-Chief Engineer

ES:ko
October 19, 1981

Mr. Robert T. Chuck
Manager - Chief Engineer
State of Hawaii
Dept. of Land and Natural Resources
Division of Water and Land Development
P. O. Box 373
Honolulu, Hawaii 96809

Dear Mr. Chuck,

Subject: Request for Location of Waihee Valley Wells 1 & 2

As per your request, we are transmitting herewith:

1. Two (2) copies of map showing location of subject wells.
2) One (1) print location map.

If you need any additional information, please feel free to call me.

Mahalo,

Warren A. Suzuki

cc: Dave Wissmar
October 2, 1981

Mr. Warren S. Unemori
2145 Wells St., Suite 403
Wailuku, Maui, Hawaii 96793

Dear Mr. Unemori:

Request for Location of Waihee Valley Wells 1 & 2

Enclosed herewith is a map of the two Waihee Valley wells project. Please send us a surveyed plot plan of the wells, if available; or accurately mark the location of the wells on the enclosed map and return to our office. Thank you very much for your cooperation.

Very truly yours,

ROBERT T. CHUCK
Manager-Chief Engineer

RTC:MO:ko
Encl.
**State of Hawaii**

**ENT OF LAND & NATURAL RES**

**EIN OF WATER AND LAND DEVELOPMENT**

**DRILLER’S REPORT**

**DESCRIPTION**

Date of report: Sept. 3, 1981  
Person filing report: Loran H. Runnels

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiihe Valley # 1</td>
<td>ISLAND Maui</td>
</tr>
</tbody>
</table>

**FOR OFFICIAL USE**

| U.2 | ... |
| U.3 | ... |
| 37.2 | ... |
| 380 | ... |

**FOR DRILLER'S USE**

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. INITIAL</td>
</tr>
<tr>
<td>8.30</td>
</tr>
<tr>
<td>E. ELEVATION, msl: Top of drilling platform</td>
</tr>
<tr>
<td>G. ANNULUS: Grouted</td>
</tr>
<tr>
<td>I. PERMANENT PUMP INSTALLATION:</td>
</tr>
<tr>
<td>J. INITIAL WATER LEVEL 271 ft. below drilling platform, Date of measurement.</td>
</tr>
<tr>
<td>K. INITIAL CHLORIDE: 25 ppm, total depth of well 387 ft. below drilling platform 6-3-81</td>
</tr>
<tr>
<td>L. PUMPING TESTS: Reference point (R.P.) used: which elevation is ft.</td>
</tr>
<tr>
<td>M. DRILLER’S LOG:</td>
</tr>
<tr>
<td>N. REMARKS:</td>
</tr>
</tbody>
</table>

**HYDROLOGY**

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Temp. (F)</th>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Temp. (F)</th>
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</thead>
<tbody>
<tr>
<td>7.40 to 8.15</td>
<td>600</td>
<td>0</td>
<td>25</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
<tr>
<td>8.15 to 8.30</td>
<td>1000</td>
<td>2</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
<tr>
<td>8.30 to 9.00</td>
<td>1700</td>
<td>4</td>
<td>25</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
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</tbody>
</table>

**SUBSURFACE FORMATION**

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
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</thead>
<tbody>
<tr>
<td>0 to 4</td>
<td>hard</td>
</tr>
<tr>
<td>4 to 15</td>
<td>loose rock, clay</td>
</tr>
<tr>
<td>15 to 52</td>
<td>Mud rock</td>
</tr>
<tr>
<td>52 to 92</td>
<td>Puka rock</td>
</tr>
<tr>
<td>92 to 112</td>
<td>Puka hard streak</td>
</tr>
<tr>
<td>112 to 116</td>
<td>Blue rock</td>
</tr>
<tr>
<td>116 to 372</td>
<td>Puka hard streak</td>
</tr>
<tr>
<td>372 to 380</td>
<td>Blue rock</td>
</tr>
<tr>
<td>380 to 387</td>
<td>Puka, Red</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

**INSTRUCTIONS:** Send three (3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 323, Honolulu, Hawaii 96809.


**FOR OFFICIAL USE**

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 56.51</td>
<td>3 1 32.31</td>
</tr>
</tbody>
</table>

**Well No.** 5631-02
GENTLEMEN:

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

<table>
<thead>
<tr>
<th>COPIES</th>
<th>DATE</th>
<th>NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drillers Reports for Waihee Valley #1 and 2</td>
</tr>
</tbody>
</table>

THESE ARE TRANSMITTED as checked below:

□ For approval □ Approved as submitted □ Resubmit____ copies for approval
□ For your use □ Approved as noted □ Submit____ copies for distribution
□ As requested □ Returned for corrections □ Return____ corrected prints
□ For review and comment □ __________________________
□ FOR BIDS DUE____________________ 19 □ PRINTS RETURNED AFTER LOAN TO US

REMARKS:__________________________

COPY TO__________________________

SIGNED: __________________________
DIVISION OF WATER AND LAND DEVELOPMENT

From: 
Date: 
File In: 5631-02-03

To: Initial

- Robert T. Chuck
- Takeo Fujii
- James Yoshimoto
- Manabu Tagomori
- George Morimoto
- Hong Fong Chang
- Herbert Morimatsu
- George Miyashiro
- Harold Sakai
- Leslie Asari
- Albert Ching
- George Matsumoto
- Daniel Lum
- Paul Matsuo
- Noboru Kaneshiro
- Edwin Sakoda

See Me
Take action by
Route to your branch
Review & comment
Draft reply by
For information
Xerox distributed
Acknowledge receipt

Jane Sakai
Doris Hamada
Lorraine Nanbu
Jean Starot
Elsie Yonamine

Note: 22/81 reminded on 29/2/82.

1/5/82: Contacted Urban Suzuki - he will contact Hawaii Dept. and send maps for data.
December 15, 1980

Mr. Robert Chuck  
State of Hawaii  
Dept. of Water & Land Development  
P. O. Box 373  
Honolulu, HI  96809

Dear Mr. Chuck,

Subject: Well, Waihee, Maui, within Tax Map Key 3-2-01:1

The Department of Water Supply is requesting a copy of an "as-built" sectional drawing of the well, and a copy of the pumping test records.

Your assistance and response would be appreciated concerning this matter.

Sincerely,

William S. Haines, Director

CK/tm

cc: Engr. File  
    Waihee Well

Enclosure
TO: Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Co., Inc.
2180 Main Street, Suite 417
Wailuku, Maui 96793

Your application, received on October 14, 1980, for a permit to drill two wells within Tax Map Key 3-2-01:1 at Waihee, Maui, is approved subject to the following conditions:

1. That within 30 days after completion of the well, the applicant shall submit a completed Driller's Report, a copy of the Driller's logs, an "as-built" sectional drawing of the well, and a copy of the pumping test records.

2. That the user of the wells shall submit a monthly record of water pumpage and use.

3. That this well drilling permit does not confer or imply any rights regarding the use of water from the wells.

November 26, 1980
Date of issuance

Susumu Ono, Chairman, Board of Land and Natural Resources

cc: Maui Dept of Water Supply
TO: Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Co., Inc.
2180 Main Street, Suite 417
Wailuku, Maui 96793

Your application, received on October 14, 1980, for a permit to drill two wells within Tax Map Key 3-2-01:1 at Waihee, Maui, is approved subject to the following conditions:

1. That within 30 days after completion of the well, the applicant shall submit a completed Driller's Report, a copy of the Driller's logs, an "as-built" sectional drawing of the well, and a copy of the pumping test records.

2. That the user of the wells shall submit a monthly record of water pumpage and use.

3. That this well drilling permit does not confer or imply any rights regarding the use of water from the wells.

Susumu Ono, Chairman, Board of Land and Natural Resources

November 26, 1980
Date of issuance

cc: Maui Dept of Water Supply
November 17, 1980

Mr. Robert T. Chuck  
Manager-Chief Engineer  
Division of Water & Land Development  
Department of Land & Natural Resources  
State of Hawaii  
P. O. Box 373  
Honolulu, Hawaii 96809

Dear Bob:

Subject: Application for Well Drilling Permit by Wailuku Sugar Company, TMK 3-2-01:1

In response to your letter of November 3, 1980, the subject application is being coordinated with our office. We have been informed by Hawaiiana Investment Company that if the tests successfully show that the safe yield of the proposed wells is sufficient, the two completed wells will be dedicated to the Department of Water Supply, County of Maui, via a second Central Maui Joint Venture to which Hawaiiana Investment Company will be a party.

Hawaiiana Investment Company is anxious to proceed with the test drilling at the site as soon as possible in order to verify the quantity of water available prior to formulation of the Joint Venture. We are in agreement with this approach.

Sincerely,

William S. Haines, Director  
Department of Water Supply

"By Water All Things Find Life"
November 3, 1980

Mr. William Haines
Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui 96793

Dear Bill:

For your information, transmitted is a copy of the Application for Well Drilling Permit submitted to us by Warren S. Unemori Engineering, Incorporated on behalf of Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Company.

We intend to issue them a permit under the provisions of Regulation 9. of the Department of Land and Natural Resources. Before we issue this permit will you please let us know if this proposal is being coordinated with your office.

Very truly yours,

ROBERT T. CHUCK
Manager-Chief Engineer

Encl.
ES:ai
State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES

APPLICATION FOR (check one)

☐ WELL DRILLING PERMIT  ☐ WELL MODIFICATION PERMIT

Instructions: Send completed application and attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809.

Reference: Regulation 9, Dept. of Land & Natural Resources.

Is the well located in a Designated Ground Water Control Area?  Yes ☐ No ☐

If "yes", application must be accompanied by a Water Use and/or Water Supply Permit and a non-refundable filing fee of $100 payable to the Department of Land & Natural Resources. However, if application is for minor modification of well, filing fee may be waived. If "no", no filing fee is required. Filing fee is waived for federal, state, and county government agencies.

1. WELL LOCATION: Island Maui  Tax Map Key 3-2-01:1. Attach a plot plan showing well location referenced to established property boundaries.
2. WATER USER: subsidiary, Hawaiian Investment Co., Inc. Telephone ☐
Address Suite 417, 2180 Main Street, Wailuku, Maui, HI Zip Code 96793
3. PROPOSED DRILLING COMPANY: Water Resources International or Roscoe Moss Company ☐
4. PROPOSED WORK: ☐ Drill new well ☐ Deepen ☐ Redrill ☐ Alter ☐ Seal ☐ Abandon ☐ Install new pump ☐ Replace pump ☐ Modify pump

Fill in the diagram and briefly describe the proposed work (use back of form if necessary):

PROPOSED SECTION OF WELL

Elevation at top of casing 321½ ft. msl.

Cement Grout 200 ft.

Hole Dia. 20 in.

Total Depth 420 ft.

Rock Packing 125 ft.

*Approximate elev. at filing. Final elev. (msl) by a surveyor licensed by the State must be submitted at start of construction.

5. PROPOSED USE: ☐ Municipal ☐ Military ☐ Agriculture ☐ Industrial
☐ Domestic ☐ Disposal ☐ Other (specify) ☐

6. PROPOSED AMOUNT OF WITHDRAWAL: Check most appropriate box and fill in amount.
☐ Daily 4 million gallons total ☐ Monthly gallons ☐ Yearly gallons

7. PROPOSED PUMP OR FLOW CAPACITY: 1500 gpm per well for total gallons per minute 3,000

Signature: ___________________________  ___________________________
Water User  Landowner of Well Site
Date: ___________________________  ___________________________

For Official Use:
State Well No.  DLNR Permit No.  DLNR Application No.
October 9, 1980

Department of Land and Natural Resources
P. O. Box 373
Honolulu, Hawaii 96809

Gentlemen:

Re: Regulation 9, Dept. of Land and Natural Resources
Application for Well Drilling Permit

We are submitting herewith a well drilling permit application for our client, Wailuku Sugar Company and its subsidiary, Hawaiiana Investment Co., Inc., in accordance with Regulation 9. Also enclosed for your use are the following:

1. 2000 scale U.S.G.S. map which shows the approximate elevation of the proposed well site.

2. Two copies of tax maps.

3. One print of 100 scale survey map which shows the relative locations of the proposed well site to a known boundary corner.

We believe all the information needed for evaluation have been provided. If not, please call us. We will be working with Hydrologist, John Mink, on this project.

Very truly yours,

Warren S. Unemori

cc: Charles G. Street, Jr.
John Mink
Don Cataluna
APPLICATION FOR (check one)

☐ WELL DRILLING PERMIT ☐ WELL MODIFICATION PERMIT

Instructions: Send completed application and attachments to Department of Land and Natural Resources, P.O. Box 373, Honolulu, Hawaii 96809.

Reference: Regulation 9, Dept. of Land & Natural Resources.

Is the well located in a Designated Ground Water Control Area?  Yes ☐  No ☐

If "yes", application must be accompanied by a Water Use and/or Water Supply Permit and a non-refundable filing fee of $100 payable to the Department of Land & Natural Resources. However, if application is for minor modification of well, filing fee may be waived. If "no", no filing fee is required. Filing fee is waived for federal, state, and county government agencies.

1. WELL LOCATION: Island Maui Tax Map Key 3-2-01:1. Attach a plot plan showing well location referenced to established property boundaries.

2. WATER USER subsidiary, Hawaiian Investment Co., Inc. Telephone [Redacted]
   Address Suite 417, 2180 Main Street, Wailuku, Maui, HI. Zip Code 96793

3. PROPOSED DRILLING COMPANY: Water Resources International or Roscoe Moss Company

4. PROPOSED WORK: ☐ Drill new well ☐ Deepen ☐ Redrill ☐ Alter ☐ Seal
   ☐ Abandon ☐ Install new pump ☐ Replace pump ☐ Modify pump

Fill in the diagram and briefly describe the proposed work (use back of form if necessary):

PROPOSED SECTION OF WELL

<table>
<thead>
<tr>
<th>Elevation at top of casing</th>
<th>321.2 ft, msl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>200 ft.</td>
</tr>
<tr>
<td>Hole</td>
<td>20 in.</td>
</tr>
<tr>
<td>Total Depth</td>
<td>420 ft.</td>
</tr>
<tr>
<td>Rock Packing</td>
<td>125 ft.</td>
</tr>
</tbody>
</table>

*Approximate elev. at filing. Final elev. (msl) by a surveyor licensed by the State must be submitted at start of construction.

5. PROPOSED USE: ☐ Municipal ☐ Military ☐ Agriculture ☐ Industrial ☐ Domestic ☐ Disposal ☐ Other (specify) -

6. PROPOSED AMOUNT OF WITHDRAWAL: Check most appropriate box and fill in amount.
   ☐ Daily 4 million gallons ☐ Monthly gallons ☐ Yearly gallons (2 M.G. or more per well)

7. PROPOSED PUMP OR FLOW CAPACITY: 1500 gpm per well for total of gallons per minute 3,000

Signature: __________________________ Date: 6/7/80

Signature: __________________________ Date: 6/7/80

For Official Use:

State Well No. __________________________
DLNR Permit No. __________________________
DLNR Application No. __________________________
Waihee 1&2
(Well No. 5631–02,03)
December 22, 2008

Mr. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, HI 96793

Dear Mr. Eng:

Certificate of Pump Installation Completion for North Waihee Well 1
Well No. 5631-02 (TMK (2) 3-2-001:004)

We are pleased to inform you that the Pump Installation work permitted for the North Waihee Well 1 Well (Well No. 5631-02) is complete and acceptable. This certificate of pump installation completion allows you to continue pumping your well for reasonable & beneficial water use.

To protect Hawaii’s natural ground water resources for the benefit of all, the following requirements apply to the use of your well:

1. If the well is not in use it must be properly capped.

2. If the well is to be abandoned then the landowner must cause a licensed contractor to apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

3. In the event that the well operator and/or landowner changes, the Commission shall be notified prior to the change.

4. In the event the benchmark in the concrete base of the well is altered in any way, an updated version of the Well Elevation page of the Well Completion Report Part I shall be submitted to the Commission. If a licensed surveyor had estimated the original benchmark elevation then a licensed surveyor must establish the new benchmark elevation. The Well Elevation portion of the Well Completion Report Part I can be obtained by contacting Commission staff or at www.hawaii.gov/dlnr/cwrm/forms.htm.

5. Your approved pump has a capacity of 1050 gpm at a head of 420 ft. In the future, pump replacements of equal or lesser capacity will not require an additional permit from the Commission, but will require the submission of a Well Completion Report Part II by the licensed pump installer. If the pump replacement is greater than the existing pump, you will need to apply for a new pump installation permit.
6. The landowner shall cause the well operator to maintain the installed meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached), in accordance with §13-168-7, HAR. Blank water use report forms are also available at www.hawaii.gov/dlnr/cwrm/resources_permits.htm

7. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. The authorization to drill a well and/or install a pump shall not constitute a determination of correlative water rights. The landowner and well operator are notified that the quantity of water taken from the well and/or the pump capacity could be reduced by the Commission in the future.

Because groundwater in Hawaii is a public trust, and adverse effects at one well may affect other water resources, any violation of the above conditions, or any other provision of the Hawaii Administrative Rules, may be subject to fines of up to $5,000/day. The Commission needs your help and asks that you do your part in utilizing this shared resource. We prefer to work with you in meeting the goal of protecting our ground water resources together.

If you have any questions, please contact Charley Ice of the Commission staff at [number] or toll-free at [number] (Maui), extension 70218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

CI:ss

c: Mel’s Water Works
Edward Lusk
Mr. Mel Lima  
Mel's Water Works  
95-646 Lawena Street  
Mililani, HI  96789

Dear Mr. Lima:

Well Completion Report Part II for Well No. 5631-02

We received your Well Completion Report Part II for the North Waihee Well 1 (Well No. 5631-02) on September 5, 2008 and acknowledge that it is complete.

This completes your obligations under the pump installation permit. A certificate of pump installation completion will be issued to the well operator/landowner and you will receive a copy. The certificate transfers responsibility of all aspects of well usage and maintenance from you to the well operator/landowner.

If you have any questions, please contact Charley Ice of the Commission staff at [redacted].

Sincerely,

[Signature]
KEN C. KAWAHARA, P.E.  
Deputy Director

Ct:ss

c: Edward Lusk  
Maui Department of Water Supply
# Memo and Route Slip

**Pump Replacement for Well No. 5631-02 (regulation/survey route)**

1. **Previous Pump Tests Check**
   - **Current Well Transmissivity in database?**
     - Yes [ ] No [ ]
   - **Current Well Specific Capacity in database?**
     - Yes [ ] No [ ]
   - **320,000 - 329,999 ft³/day**
   - **1000 gpm/ft of drawdown**

For a "No" above, is there any previous Pump Test Data in the file? Yes [ ] No [ ] (circle one)

IF DATA EXISTS, THEN GO TO 2. IF NO DATA EXISTS, THEN GO TO 3.

2. **Pump Tests Analysis**
   - **Diane England** (initial)
   - Take action based on above analysis

   **Step-Drawdown Test:**
   - Followed WCPI Stds
   - Analysis attached
   - If yes, [ ] No [ ]
   - <70 gpm no test required

   **Aquifer Pump Test:**
   - Followed WCPI Stds
   - T & S analysis attached
   - Proposed pump cap o.k.
   - If yes, [ ] No [ ]
   - <51 gpm no test required

   **Potential Well Interference**
   - If yes, [ ] No [ ]

   **Potential Stream Impacts**
   - If yes, [ ] No [ ]

   **Additional Testing or Data Required**
   - If yes, [ ] No [ ]

   **Pump Test Comments Attached**
   - If yes, [ ] No [ ]

3. **Pump Installation Check**
   - **Mitch Ohye** (initial)
   - Take action based on above analysis

   **Data complete?**
   - Yes [ ] No [ ]

   **Elevation benchmark changed?**
   - Yes [ ] No [ ]

   **Well database updated?**
   - Yes [ ] No [ ]

4. **Charley/Denise/Ryan** (initial)
   - Take action based on above analysis

   **Attachments for Acceptance:**
   1. WCR2 Acceptance Letter
   2. Pump Inst. Completion Certificate
   3. Meter Install. Report (if necessary)
   4. WUR Form (if necessary)
   5. USGS Map Updated
   6. Parcel Check
   7. Well Database Input Check
   8. Pump Test Worksheet
   9. Pump As-Built Check Print

5. **Roy** (initial) check (Entered PICC accept date into database)
6. **Susan Hadgkin** (initial) finalize
7. **Ken** (initial) signature
8. **Charley/Denise/Ryan** File

---

ATMACHMENTS FOR ACCEPTANCE:

To be sent to driller
To be sent to landowner/operator
Staff internal checks

---

**Roy**

**Susan**

**Ken**

**Charley/Denise/Ryan**
Assessed Values reflect tax year 2008.

Search criteria: TMK Taxkey 2-3-2-1-4

<table>
<thead>
<tr>
<th>Taxkey</th>
<th>Subdiv/Condo Tnr</th>
<th>Address</th>
<th>Owner/Lessee</th>
<th>Bds</th>
<th>Bths</th>
<th>Land area</th>
<th>Liv area</th>
<th>Last Sale Inst</th>
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<tbody>
<tr>
<td>2-3-2-1-4</td>
<td>Waihee</td>
<td>F</td>
<td>WAIHEE LUSK, EDWARD</td>
<td>0</td>
<td>0</td>
<td>12.12 ac</td>
<td>0</td>
<td>2/26/2003 DEEI</td>
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H & SUPAPORN

This information has been supplied by third parties and has not been independently verified by Hawaii Information Service and is therefore, not guaranteed.

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[Signature]

Fax bill address: 632 Mealoli St, Wailuku 96793
Hi Charley,

See attachment.

Mel wells 010.jpg  Test Curve NORTH WAIHEE WELL #1.pdf  North Waihee Well Completion.pdf  wells 006.jpg  wells 007.jpg

wells 008.jpg  wells 009.jpg
## State of Hawaii
### COMMISSION ON WATER RESOURCE MANAGEMENT
#### Department of Land and Natural Resources

### WELL COMPLETION REPORT - PART II
#### Pump Installation

**Instructions:** Please print in ink or type and send completed report (with attachments, if applicable) to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may not accept incomplete reports. This form shall be submitted within 60 days of the completion of work. For assistance, please consult the Hawaii Water Construction and Pump Installation Standards or call the Regulation Branch at 587-9225. For updates to this form or additional information, please visit our website at [http://www.hawaii.gov/dlnr/cwm](http://www.hawaii.gov/dlnr/cwm).

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State Well No.</td>
<td>5631-02</td>
</tr>
<tr>
<td>2. Address</td>
<td>County of Maui</td>
</tr>
<tr>
<td>4. Date Pump Installed</td>
<td>August 13, 2008</td>
</tr>
<tr>
<td>5. PERMANENT PUMP INFORMATION</td>
<td></td>
</tr>
<tr>
<td>Pump Type, Make, Serial No.</td>
<td>Submersible, Goulds, 12 ccw 7</td>
</tr>
<tr>
<td>Rated Capacity</td>
<td>1450 gpm at head of 420 ft</td>
</tr>
<tr>
<td>Motor Type, H.P., Voltage, rpm</td>
<td>Hitachi, 150 H.P., 460 V, 1800 rpm</td>
</tr>
<tr>
<td>Pump Type (check one)</td>
<td>□ Deep Well Turbine</td>
</tr>
<tr>
<td></td>
<td>□ Submersible</td>
</tr>
<tr>
<td></td>
<td>□ Centrifugal</td>
</tr>
<tr>
<td>6. Method of flow measurement</td>
<td>□ Flowmeter w/ totalizer</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Fill in the as-built section on the other side of this sheet.</td>
<td></td>
</tr>
<tr>
<td>8. Attach the rating curve for the installed pump.</td>
<td></td>
</tr>
<tr>
<td>9. Attach photograph of well clearly showing the benchmark on the concrete pad, the well head, and the method of flow measurement.</td>
<td></td>
</tr>
<tr>
<td>10. Well Owner</td>
<td>Company</td>
</tr>
<tr>
<td></td>
<td>Contact</td>
</tr>
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**Pump Installation Contractor:** Maui's Water Works C-57/C-57a/A Lic No 618284

**Signature:** [Signature]

**Date:** August 13, 2008
Customer: MEL'S WATER WORKS HAWA
Project: NORTH WAIHEE WELL #1
Order #: 69418
Date: 7/17/2008 11:01:19 AM

Pump Model: 12CMC
Pump Type: SUBMERSIBLE
Pump Number: 69418
Stages: 8
Upper Impeller Dia: 8.4375
Upper Impeller Qty: 8
Lower Impeller Dia: 0.0000
Lower Impeller Qty: 0

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* Motor HP from manufacturer's curve minus losses.
** Design Point.

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By: [Signature]
Title: Chief Engineer
Date: 7-17-08
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Revised Measuring-Point Elevations for Selected Wells in the Waihee and Iao Aquifer Areas on the Island of Maui

The USGS has been working with the National Geodetic Survey (NGS) to update benchmark and well measuring-point elevations in central Maui as part of a ground-water availability study with the Maui Department of Water Supply. The purpose of this effort is to ensure that water-level monitoring wells used in this study are tied to a common and accurate vertical datum.

Benchmark and reference-mark elevations were determined by the NGS using differential GPS (Global Positioning System) methods during September 2-4, and November 18-20, 2003.

Well measuring-point elevations were determined by the USGS using vertical leveling surveys from NGS benchmarks and USGS reference marks during September 22-26, and December 15-19, 2003.

Measuring-point elevations for selected wells in the Waihee and Iao aquifer areas are provided below. The difference between the previously reported and the revised measuring-point elevation for each well is also provided. Leveling notes and photographs of the measuring points are available in well folders maintained by the USGS Water Resources office in Honolulu.

It is important to recognize that the revised well measuring-point elevations will result in a modification of the absolute water levels (referenced to mean sea level), but not the relative change in water levels measured over time (trend).

Historical water levels measured in these wells may be revised pending further research into possible causes for the differences between the previously reported and the revised well measuring-point elevations. Future water-level measurements will be based on the revised well measuring-point elevations.

Related links:
Ground-Water Availability in Central Maui - Project description
Recent Hydrologic Conditions, Iao Aquifer area, Maui - Updated every three months

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<th>Well no.</th>
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<th>Previous</th>
<th>Difference²</th>
<th>Notes regarding previous well measuring-point elevations ³</th>
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<td>C. Takumi Engineering report (1/31/00) provides MP elevation of 639.37 ft for top of casing, based on leveling from a benchmark elevation of 631.87 ft located about 200 ft from well (Exhibit A-1, Mink &amp; Yuen, 6/21/99). Driller’s well-completion report provides MP elevation of 638.10 ft for top of casing (5/20/99). No record of MP survey notes and initial benchmark. Wailani Drilling and Ed Valera (surveyor) combined trigonometric leveling (using a total station and vertical angles) from Tanaka’s work and a carpenter’s level to get the initial height of casing.</td>
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USGS reports MP elevation of 305.22 ft for top of casing, based on leveling from nearby RM - 1-inch pipe (1/22/03). RM elevation of 304.50 ft provided by C. Takumi Engineering. No record of RM survey notes and initial benchmark. K. Tanaka set the 1/2-in. pipe using trigonometric leveling (using a total station and vertical angles).

Driller's well-completion report has elevation of 309.15 ft for top of pump base plate (5/29/99). No record of MP survey or initial benchmark.

Driller's well-completion report has MP elevation 281.38 ft for top of sounding tube (6/7/00). C. Takumi Engineering report (Aug. 2000) has 281.38 ft for top of sounding tube (Exhibit A, Mink & Yuen, 7/12/00).

USGS reports MP elevation of 285.23 ft for top of measuring tube, based on leveling from nearby RM - 3/4 inch pipe (8/12/97). RM elevation of 266.63 ft given by W.S. Unemori Engineering. No record of RM survey notes and initial benchmark in well folder, however, Unemori confirms this elevation from their notes. From information provided by Reed Ariyoshi of W.S. Unemori, and Wendy Taomoto, MDWS, the best estimate of the difference between the top of the casing prior to pump installation and the measuring tube after installation is 1.01 ft (old casing higher in elevation). As a result, the old mp for data prior to August 1997, 284.78 ft, is very close to the new measuring tube elevation plus 1.01 ft (284.77 ft).

Height of measuring point modified after pump installation. Measuring tube modified twice since pump installation in 1997 and leveling on 8/12/97. USGS reports MP elevation of 284.39 ft for top of measuring tube on 8/12/97. USGS reports MP elevation of 284.33 ft for top of measuring tube on 3/30/99 after first modification, based on measuring up from base plate elevation of 284.11 ft. Previous leveling on 8/12/97 and 3/30/99 are based on RM (3/4-inch pipe) elevation of 266.63 ft provided by W.S. Unemori Engineering. No record of RM survey notes and initial benchmark in well folder, however, Unemori confirms this elevation.
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USGS reports MP elevation of 380.66 ft for top of 1.75-inch PVC casing, based on leveling from nearby RM - "X" chiseled in concrete at entrance to TH D shelter (8/23/85). RM elevation of 380.01 ft provided by Dan Lum, DOWALD (8/29/83). No record of RM survey notes and initial benchmark.

USGS reports MP elevation of 380.84 ft for top of 10-inch casing, based on leveling from RM - "X" chiseled in concrete at entrance to TH D shelter (8/23/85). RM elevation of 380.01 ft provided by Dan Lum, DOWALD (8/29/83). No record of RM survey notes and initial benchmark.

USGS reports MP elevation of 380.84 ft for top of 1.5-inch PVC casing (9/24/75). However, later field notes show top of casing as 491.79, and top of surrounding wooden box as 492.51. No record of MP survey notes and initial benchmark. Probably surveyed from State of Hawaii benchmark U-6: 250.37 ft (1974). Driller's report provides elevation of 493.97 ft for top of drilling platform. Well has been measured from top of wooden box since USGS started measuring well in July, 1982. Well modified 3/31/04 by USGS, adding 0.74 ft to top of PVC casing. Revised MP (top of PVC casing) combines changes due to recent surveying and modification. Elevation of top of box was lowered by 0.42 ft from results of 2003/2004 surveying.

Notes in well folder show pump refurbishment in 1998. Measurement tube likely installed at that time. No prior leveling notes or references in USGS well folder.

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USGS reports MP elevation of 32.17 ft for top of casing, based on leveling from Wailuku Courthouse NGS benchmark elevation of 331.066 ft (4/17/97).

USGS reports MP elevation of 551.33 ft for top of 6-inch coupling, based on leveling from RM - 0.5 inch pipe located on the east side of the concrete foundation (4/11/75). RM elevation of 550.61 ft provided by Norman Saito Engineering, based on leveling from Wailuku Courthouse NGS benchmark (12/74). Dan Lum (DOWALD) provides elevation of 552.08 ft for top of 8-inch casing, and 551.15 ft for top of conductor pipe (5/14/74).

USGS reports MP elevation of 519.33 ft for top of casing, based on leveling from Waikapu 1 well MP elevation of 551.33 ft (6/21/83). DOWALD as-built drawing provides elevation of 519.47 ft for top of 20-inch casing.

USGS surveying on 12/29/03 to top of 6-inch threaded coupling welded to plate that is welded to the top of the 18-inch casing (highest point after removing plug). CWRM well completion report and Water Resources International as-built drawing provides elevation of 764.7 ft for top plate welded to 18-inch casing.

Revised well measuring-point elevations were determined by the USGS using vertical leveling from National Geodetic Survey benchmarks and reference marks in December 2003. NGS benchmark and reference mark elevations provided by NGS on 1/20/04. Levelling notes and photographs of the measuring points are available in well folders maintained by the USGS Hawaii District Office.

Difference calculated by subtracting the previous from the revised well measuring-point elevation.

All information contained in USGS well folder.

Maui Department of Water Supply refers to this well as Mokuhau Pump 2 (Well 502) whereas Commission on Water Resource Management well index refers to this well as Mokuhau 1.
## 1. **Pump Tests Check**

**Special condition of PIP?** Yes/No  
- **Glenn Bauer** (initial if yes) 

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**Aquifer Pump Test:**
- acceptable ☐ ☐  
- followed WCPI Stds ☐ ☐  
- T & S analysis attached ☐ ☐  

| Well Interference: | ☐ | ☐ |  
|--------------------|---|---|---|
| estimated Steady-State drawdown at 1-mile radius is ______ ft. | ☐ | ☐ | Analysis done by Mind sound years ago and is in the well file |
| analysis attached | ☐ | ☐ | |

| Stream Surface Water Impacted: | ☐ | ☐ |  
|---------------------------------|---|---|---|
| If yes, identify most probable stream | ☐ | ☐ | |

## 2. **Pump Installation Check**

**Mitch Ohye** (initial)

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WCR 2 Check for Well No. 5631-03
(survey to regulation memo)

1. **Pump Tests Check (special condition of PIP? Yes/No)**
   Glenn Bauer (initial if yes)

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<th>No</th>
<th>If no, describe deficiency</th>
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</table>

   *Step-Drawdown Test:*
   - acceptable ☐ ☐
   - followed WCPI Stds ☐ ☐
   - analysis attached ☐ ☐
   - proposed pump cap o.k. ☐ ☐

   *Aquifer Pump Test:*
   - acceptable ☐ ☐
   - followed WCPI Stds ☐ ☐
   - T & S analysis attached ☐ ☐

   *Well Interference:*
   - estimated Steady-State drawdown at 1-mile radius is _______ ft.
   - analysis attached ☐ ☐

   *Stream Surface Water Impacted:*
   ☐ ☐ ← If yes, identify most probable stream

2. **Pump Installation Check**
   Mitch Ohye (initial)

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<tr>
<th>Yes</th>
<th>No</th>
<th>If no, describe deficiency</th>
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</table>

   - data complete ☐ ☐
   - followed WCPI Stds ☐ ☐
   - welphys.dbf updated ☐ ☐
   - welapic.dbf updated ☐ ☐
August 11, 1998

Honorable Timothy E. Johns
Deputy Director
State of Hawaii
Department of Land & Natural Resources
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

Subject: North Waihee Wells 1 and 2
State Well Nos. 5631-02 and 5631-03
North Waihee Water Source Project

Transmitting, for your use, are the completed pump installation reports and as-built drawings.

Should you have any questions, please contact Andy Pascua, Acting Plant Maintenance Superintendent, (808) [redacted]

Sincerely,

David Craddick, Director
DC:AP:jaw
Transmittals
copy: DWS Engineering
Andy Pascua

"By Water All Things Find Life"
WELL COMPLETION REPORT

State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

WELL COMPLETION REPORT

3/20/96 WCR Form

(Check Appropriate Box)  □ Well Construction  □ (Permanent) Pump Installation

Instructions: Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at [70225] or Extension 70225.

1. State Well No.: 5631-02  Well Name: N. Waihee Water Source  Island: Maui
2. Location/Address: North Waihee Well No. 1  Tax Map Key: 3-2-0104

PART I. WELL CONSTRUCTION REPORT

3. Drilling Company: ____________________________
4. Name of driller who performed work: ____________________________
5. Type of rig/construction: ____________________________
6. Date(s) Well Construction and pump tests (if any) completed: ____________________________
7. GROUND ELEVATION (referenced to mean sea level, msl): __________ ft.
   Well Bench Mark (description/location): ____________________________ Elevation(msl): __________ ft.
8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)
   Depths (ft.) Rock Description, Water Level, Dates, etc.  Depths (ft.) Rock Description, Water Level, Dates, etc.
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   ____________________________ to ____________________________
   (If more space is needed, continue on back.)
9. Total depth of well below ground: __________ ft.
10. Hole size: ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
   ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
   ____________________________ inch dia. from ____________________________ ft. to ____________________________ ft. below ground
11. Casing installed: ____________________________ in. I.D. x ____________________________ in. wall solid section to ____________________________ ft. below ground
   ____________________________ in. I.D. x ____________________________ in. wall perforated section to ____________________________ ft. below ground
   Casing Material/Slot Size: ____________________________
12. Annulus: Grouted from ____________________________ ft. below ground to ____________________________ ft. below ground
    Gravel packed from ____________________________ ft. below ground to ____________________________ ft. below ground
13. Initial water level: __________ ft. below ground. Date and time of measurement: ____________________________
14. Initial chloride: ____________________________ ppm Date and time of sampling: ____________________________
15. Initial temperature: ____________________________ °F Date and time of measurement: ____________________________
16. PUMPING TESTS: Reference Point (R.P.) used: ____________________________ which elevation is __________ ft.
   (1) Step-Drawdown Test Date ____________________________
   Start water level: __________ ft. below R.P.
   (2) Long-term Aquifer Test Date ____________________________
   Start water level: __________ ft. below R.P.
   End water level: __________ ft. below R.P.
   End water level: __________ ft. below R.P.
17. Aquifer Pump Test Procedures data & graphs (1/96 LAT Form) attached? __ Yes __ No
18. As-built drawings attached? __ Yes __ No
19. Other remarks/comments: ____________________________

Well Drilling Contractor (print) ____________________________  C-57 Lic. No. ____________________________  Date ____________________________
Surveyor (print) ____________________________  Lic. No. ____________________________  Date ____________________________
Applicant (print) ____________________________  Signature ____________________________  Date ____________________________
SUBMERSIBLE OUTLINE

STANDARD WELL SEAL — JUNCTION BOX CONSTRUCTION

DATE ______________________

NAME OF CUSTOMER  COUNTY OF MAUI

DEPARTMENT OF WATER SUPPLY

PROPOSITION NO. FOR NO. 95-10

ORDER NO. 58-910D

PURCHASE ORDER NO. ______________________

NO. OF UNITS ___ ONE ___

SURFACE PLATE __ 2 7/16 _ O.D. 13/4 TH’K

8-7/8 FOUNDATION HOLES. STR. Ø ON 25’ B.C

8” — 8 T.P.I. — 3/4” TAPER T&C ST’D. COLUMN

10” — 150# F.F. (STEEL) DISCHARGE FLANGE

BOWL ASSEMBLY 12 MQL / 7 STGS.

1/2 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE M

1/2” SIZE 3 PH. 60 CYCLE 460 VOLT

1050 GPM 420 FT TDH

CABLE SIZE 400 MCM VOLTAGE 460 LENGTH 300 FT

REMARKS: WELL PUMP NO. 1

CABLE: 400 MCM

COLUMN PIPE: 8” SCH. 40 GALVANIZED

TRANSFER PIPE: SCH 80 PVC, 1”

“NORTH WAIAKE WATER SOURCE”

PHASE II - DEVELOPMENT OF WELLS 1 & 2

WELL NO. 5031-02

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

JOB NO. ____________ PROP. NO. ____________

CERTIFIED CORRECT ______________________ DATE ______________________
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing: 284 ft., msl.

Ground Elevation: 283 ft., msl

Cement Grout: 200 ft.

Solid Casing: ASTM Designation A-242

Material: Steel Kaisaloy

Length: 289 ft.
Diameter: 16 in.
Wall thickness: 0.3125 in.

Hole Diameter: 20 in.

Casing: Perforated Screen

Material: Steel Kaisaloy

Length: 20 ft.
Diameter: 16 in.
Wall thickness: 0.25 in.
Openings: 100 sq. in./L.F.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Open Hole:

Length: 79 ft.
Diameter: 15 in.

EXHIBIT 2
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FROM: Tim
DATE: 8/13/1
SUSPENSE DATE: ____________

PLEASE: See Me Review & Comment Take Action
Type Draft Type Final File
Xerox ___ copies
WELL COMPLETION REPORT

Instructions: Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 70225.

1. State Well No.: 5631-03 Well Name: N. Waihee Water Source Island: Maui
2. Location/Address: N. Waihee Well No. 2 Tax Map Key: 3-2-0104

PART I. WELL CONSTRUCTION REPORT

3. Drilling Company:
4. Name of driller who performed work:
5. Type of rig/construction:
6. Date(s) Well Construction and pump tests (if any) completed:
7. GROUND ELEVATION (referenced to mean sea level, msl): _______ ft.
   Well Bench Mark (description/location): ______________ Elevation(msl): _______ ft.
8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)
   Depths (ft.) Rock Description, Water Level, Dates, etc. Depths (ft.) Rock Description, Water Level, Dates, etc.
   _______ to _______ _______ to _______ _______ to _______ _______ to _______
   (If more space is needed, continue on back.)
9. Total depth of well below ground: _______ ft.
10. Hole size: _______ inch dia. from _______ ft. to _______ ft. below ground
    _______ inch dia. from _______ ft. to _______ ft. below ground
    _______ inch dia. from _______ ft. to _______ ft. below ground
11. Casing installed: _______ in. I.D. x _______ in. wall solid section to _______ ft. below ground
    _______ in. I.D. x _______ in. wall perforated section to _______ ft. below ground
    Casing Material/Slot Size: ________________________________
12. Annulus: Grouted from _______ ft. below ground to _______ ft. below ground
    Gravel packed from _______ ft. below ground to _______ ft. below ground
13. Initial water level: _______ ft. below ground. Date and time of measurement: _______
14. Initial chloride: _______ ppm Date and time of sampling: _______
15. Initial temperature: _______ °F Date and time of measurement: _______
16. PUMPING TESTS: Reference Point (R.P.) used: ______________, which elevation is _______ ft.
   (1) Step-Drawdown Test Date _______
   Start water level _______ ft. below R.P. Start water level _______ ft. below R.P.
   End water level _______ ft. below R.P. End water level _______ ft. below R.P.
   (2) Long-term Aquifer Test Date _______
17. Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form) attached? Yes No
18. As-built drawings attached? Yes No
19. Other remarks/comments: (On back of this form)

Well Drilling Contractor (print) C-57 Lic. No.
Signature ________________________________ Date __________
Surveyor (print) Lic. No.
Signature ________________________________ Date __________
Applicant (print) 
Signature ________________________________ Date __________
SUBMERSIBLE OUTLINE

STANDARD WELL SEAL — JUNCTION BOX CONSTRUCTION

DATE __________________

NAME OF CUSTOMER

DEPARTMENT OF WATER SUPPLY

PROPOSITION NO. Job No. 95-10

ORDER NO. 58-960

PURCHASE ORDER NO. ____________________

NO. OF UNITS ONE

SURFACE PLATE 27 1/2" O.D. 1 3/4" TH'K

8 - 5/8" FOUNDATION HOLES STR. # ON 25" B.C

8" - 8 T.P.I. - 3/4" TAPER T&C ST'D. COLUMN

10" - 250# F.F. (STEEL) DISCHARGE FLANGE

BOWL ASSEMBLY 12 MQL / 7 STGS.

150 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE M

12" SIZE 3 PH. 60 CYCLE 460 VOLTS

1050 GPM 420 FT. TDH

CABLE SIZE 400 MCM VOLTAGE 460 LENGTH 310 FT.

REMARKS: WELL PUMP NO. 2

CABLE: 400 MCM

COLUMN PIPE: 8" SCH. 40 GALVANIZED

TRANSJUER PIPE: SCH. 80 PVC 1"

"NORTH WHALLEY WATER SOURCE"

PHASE II-DEVELOPMENT OF WELLS 1 & 2

WELL NO. 9671-03

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

JOB NO. _________ PROP. NO. _________

CERTIFIED________________ CORRECT_________ DATE ____________
PUMP INSTALLATION PERMIT

North Waihe'e Wells 1 & 2, Well Nos. 5631-02 & 03

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for North Waihe'e Wells 1 & 2 Well (Well Nos. 5631-02 & 03) at Waihe'e Stream, Maui, TMK: 3-2-1-4, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96808, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 1400 gpm capacity, or less, pump in each well. The total pumpage from both wells shall average 2 mgd.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use 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 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.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within thirty (30) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit issuance, unless otherwise specified.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

Date of Approval: March 14, 1995
Expiration Date: March 14, 1997

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until the pump installer have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee's Signature:  
Date: 8/11/98
Printed Name: David Craddick
Firm or Title: _Director_

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

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

Attachments
C: USGS
   Department of Health/ Safe Drinking Water & Wastewater Branches
   Maui Department of Water Supply
Flash from the past: Dave Craddick requested a faxed copy of the actual permit. I see a letter transferring it from C.Brewer to the MEWS, referencing a permit extension incorporating the conditions. The extension was addressed to C.Brewer. (There's also a submittal with important wording a little different than was actually incorporated into the permit extension.) I thought we might have issued a new version naming MBWS as the permittee, but I see no record of that. Also, neither Brewer nor MBWS ever submitted signed copies! Shall we simply fax the extension naming C.Brewer or cut a new permit? (And we'll note the absence of validation)
Mr. Byron Walters, Chairman  
County of Maui  
Board of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793  

Dear Mr. Walters:

Pump Installation Permit  
North Waihe‘e Wells 1 & 2 (Well Nos. 5631-02 & 03))

It has come to our attention that your copies of the captioned permit may not have been transmitted in the name of the Board. Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) which authorizes permanent pump installation work for your wells.

Please note that the requirement for validating the permit is for the permittee to sign and return one copy. Our records indicate that neither the original permittee, C. Brewer, nor the Board returned signed, validated copies. We appreciate your cooperation in updating the record.

If you have any questions, please call Charley Ice at [redacted] or toll-free at [redacted] (Maui), extension 70251.

Aloha,

[Signature]

MICHAEL D. WILSON  
Chairperson

Enclosures
PUMP INSTALLATION PERMIT

North Waihe'e Wells 1 & 2, Well Nos. 5631-02 & 03

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management’s Administrative Rules, Section 13-168, entitled “Water Use, Wells, and Stream Diversion Works”, this document permits the pump installation for North Waihe'e Wells 1 & 2 Well (Well Nos. 5631-02 & 03) at Waihe'e Stream, Maui, TMK: 3-2-1:4, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The pump installation permit shall be for installation of a 1400 gpm capacity, or less, pump in each well. The total pumpage from both wells shall average 2 mgd.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Chairperson (attached).

4. The proposed use 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 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.

5. The permittee shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Chairperson within thirty (30) days after completion of work.

6. The permittee shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

7. The permit may be revoked if work is not started within six (6) months after the date of issuance or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the pump installation permit application shall be completed within two (2) years from the date of permit issuance, unless otherwise specified.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

Date of Approval: March 14, 1995
Expiration Date: March 14, 1997

Michael D. Wilson, Chairperson
Commission on Water Resource Management

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I do not hold a valid permit until I and the pump installer have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day.

Permittee’s Signature: ___________________________ Date: ____________
Printed Name: ________________________________ Firm or Title: ____________________________

Installer’s Signature: __________________________ Date: ____________
Printed Name: ________________________________ Firm or Title: ____________________________

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

Attachments
Study
Department of Health/ Safe Drinking Water & Wastewater Branches
Maui Department of Water Supply
TO:  David Craddick       Date:  05-Aug-98
FROM:  Charley Ice

Transmitting PIP for N. Waihe's Wells 1 & 2 (5631-02 & 03) and submitted outlining conditions (w/ additional information). To follow: we will send a fresh permit in your (MBWS) name. Please note that we have no signed/returned copy to validate the permit. When you receive the new one (by mail), please follow those instructions in the cover letters. Mahalo!

Note the condition you seek: the battery (2 wells) was limited to 2 mgd. If your pump tests show greater capacity and this checks w/ USGS monitoring elsewhere, we can entertain a permit modification.
## FACSIMILE TRANSMITTAL

**DATE:** 12/3/97  
**NO. OF PAGES (w/cover sheet):** 5

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<tr>
<td>FAX: 587-0219</td>
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<th>FROM: Queensla Kono</th>
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<tr>
<td>OFFICE: SDWB</td>
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<tr>
<td>PHONE: (808) 586-4262</td>
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**MESSAGE:**

0. The request for ___ Bill __

1. The well approval for North water well #2 was approved for temporary usage, not emergency.

2. A North water well #1 approval request was for emergency usage.

Sorry for the misinformation, I have attached the two requests for your information.

Queensla

**NOTE:** If this transmittal was illegible or incomplete, please call the sender.
June 24, 1997

Mr. William Wong, Chief
Safe Drinking Water Branch
Environmental Management Division
Department of Health
919 Ala Moana Blvd., Room 308
Honolulu, Hawaii 96814

Dear Mr. Wong:

Re: PRELIMINARY ENGINEERING REPORT - NORTH WAIHEE WATER SOURCE PROJECT

Transmitted herewith for your review and approval are six copies of the Preliminary Engineering Report for the subject project.

Due to the necessity to alleviate the draw from the Iao Aquifer, we are requesting emergency domestic use of Well No. 1 of the North Waihee Water Source Project.

At present, the 12-month daily average daily water demand on the Iao Aquifer is approximately 20 plus MGD. The Commission on Water Resource Management Division has set a milestone on the Department of July 1, 1997 as the date to start draw of 1.5 MGD from the North Waihee Water Source. Hence, it is imperative that we obtain your approval to use the Well No. 1 as a source for domestic use before July 1, 1997.

The North Waihee Water Source Project will be constructed in five phases:

Phase 1

Construction of a transmission line from North Waihee Wells No. 1 & 2 to an existing 12-inch waterline along Kahekili Highway at Kohomua Street. This phase is under construction and will be completed before July 1, 1997.

"By Water All Things Find Life"
Mr. William Wong, Chief
DOH-SDWB
June 24, 1997
Page 2

Phase 2

Installation of North Waihee Wells No. 1 & 2, emergency generator and sodium hypochlorite solution disinfection system. This phase is under construction and will be completed in August of 1997.

Phase 3

Construction of a transmission line from Kahekili Highway at Kuhinia Street to the existing 1.0 MG Waihee (Central Maui Joint Venture) Tank. Notice to proceed was given to start construction of this phase on June 1997.

Phases 4 & 5

Construction of a 1.0 MG tank and booster pump. The construction of this phase is pending the execution of a contract with Hawaiian Dredging & Construction Co.

Although Phase 2 will not be completed by July 1, 1997, the Department has hooked up a temporary generator to operate the Well No. 1 and chlorination unit with direct feed in the transmission pipeline at the well site. The first water service will be 1.0 miles away in Waihee Town. The chlorine residual is expected to be 0.3 MGL at the service.

Should you have any questions, please contact me at (808) [redacted]

Your immediate attention and approval is very much appreciated.

Sincerely,

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

[Signature]
Director

EK:as
Enclosures
June 25, 1997

Mr. William Wong, Chief  
Safe Drinking Water Branch  
Environmental Management Division  
Department of Health  
919 Ala Moana Blvd., Room 308  
Honolulu, Hawaii 96814

Dear Mr. Wong:

Re: PRELIMINARY ENGINEERING REPORT - NORTH WAIHEE WATER SOURCE PROJECT

Referencing our letter of June 24, 1997, please revise the second sentence of the third paragraph to read:

"The Commission on Water Resource Management Division has set a milestone on the Department of July 1, 1997 as the date to start draw of 1.5 MGD from Iao Ditch. However, the water source from Iao Ditch is presently in question by your office. The North Waihee Well No. 1 has been accelerated to meet the milestone of reducing pumpage from the Iao Aquifer by 1.5 MGD by July 1, 1997."

Should you have any questions, please contact me at [redacted].

Sincerely,

[Signature]

David R. Craddock  
Director

"By Water All Things Find Life"
September 23, 1997

Mr. William Wong
DEPARTMENT OF HEALTH - SDWA
919 Ala Moana Blvd., 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Wong:

Re: NORTH WAIHEE WELLS NOS. 1 & 2
STATE WELL NOS. 6-56311-02 AND -03

North Waihee Well No. 2 is ready to supply water to our Central Maui system. The permanent sodium chloride unit is in operation, and the wells are now powered by Maui Electric Co. As a result, we are requesting your approval to allow us to use Well No. 2 on the same temporary basis the use of Well No. 1 is being allowed under. Enclosed is the test results for Well No. 1.

Should you have any questions, please contact Ed Kagehiro of my staff at [redacted]

Sincerely,

David R. Craddick
Director

Enclosure
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October 28, 1997

Ms. Rae Loui  
Commission on Water Resource Management  
P. O. Box 621  
Honolulu, Hawaii 96809

Dear Ms. Loui:

Subject: NORTH WAIHEE WATER SOURCE PHASE II  
WELL NO. 2

We request your approval to continuously pump water from North Waihee Well No. 2 for a period of 2 to 4 weeks. The purpose of pumping is to flush the well and take samples for water quality analysis. The water will be discharged into Waihee Stream.

If you have any questions, please call our Engineering Division at [blank]

Sincerely,

[Signature]

David R. Craddick  
Director  

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

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 212, DWS WAILUKU
EMERGENCY SOURCE APPROVAL
NORTH WAIHEE WELL NOS. 1 and 2
STATE WELL NOS. 6-5631-02 AND -03

We have completed our current review of the engineering report for the North Waihee Well Nos. 1 and 2. Due to the bacterial problems encountered at the North Waihee Well No. 1, the Department of Health hereby grants temporary conditional approval for the use of the wells as drinking water sources. During this time period the Maui Department of Water Supply will be given the opportunity to demonstrate its ability to properly treat and deliver potable water from the subject sources. This temporary conditional approval shall expire at midnight, April 30, 1998.

In addition, the use of these wells as drinking water sources shall be subject to the following conditions:

1. The North Waihee Well Nos. 1 and 2 shall deliver potable water of the quality in compliance with Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems. The water quality shall be subject to verification by the Department of Health.

2. The Maui Department of Water Supply, in its operation of the North Waihee Well Nos. 1 and 2, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.

3. The Maui Department of Water Supply shall notify the Department of Health of any condition which may arise or be revealed that may contaminate the sources and pose a threat to human health.
4. Due to the high levels of heterotrophic bacteria found in North Waihee Well No. 1, the following **initial conditions** must be met **prior** to placing the North Waihee Well Nos. 1 and 2 in service:

   a) **Sampling Taps:** Before using these wells, the Maui Department of Water Supply must install sampling taps at each well prior to disinfection.

   b) **Well Disinfection:** Each well must be disinfected, flushed, and tested prior to use in accordance with the AWWA Standard for Disinfection of Wells (C654-87). The required bacteriological testing shall show the absence of coliform bacteria and a heterotrophic plate count of less than 500 per ml before the wells can be placed in service. This event shall be documented and subsequently noted in the monthly report described under condition no. 6.

5. Due to the high levels of heterotrophic bacteria at North Waihee Well No. 1, water from North Waihee Well Nos. 1 and 2 must be adequately disinfected. In addition, the following disinfection and monitoring conditions shall apply throughout the temporary conditional approval period:

   a) **Well Disinfection:** Whenever a well has not been in use for more than 24 hours, the subject well must be disinfected, flushed, and tested prior to use in accordance with the AWWA Standard for Disinfection of Wells (C654-87). The required bacteriological testing shall show the absence of coliform bacteria and a heterotrophic plate count (HPC) of less than 500 per ml before the well can be placed in service. These events shall be documented and subsequently noted in the report described under condition no. 6.

   The Department of Health may consider relaxing this additional treatment and testing requirement if subsequent data indicates that the heterotrophic plate counts are consistently below 500 per milliliter (ml). Any such request must be made in writing and accompanied by supporting data. Similarly, the Department of Health may impose more stringent disinfection requirements if the heterotrophic plate counts are consistently above 500 per ml.

   b) **Routine Monitoring:** The Maui Department of Water Supply must sample and analyze the source, prior to treatment, the total and fecal coliform, heterotrophic
bacteria (measured as heterotrophic plate count) and nitrates, each day (Monday through Thursday) that either well is utilized during this period. In addition, total and fecal coliform, heterotrophic bacteria, and if chlorine is used as a disinfectant, free chlorine residual must be sampled and analyzed at one of the routine Waihee Valley Road sample sites, once each week. All of this data shall be documented and subsequently noted in the monthly report described under condition no. 6.

The Department of Health may consider reducing the monitoring frequency if the data indicates that the heterotrophic plate counts are consistently below 500 per ml. Any such request must be made in writing and accompanied by supporting data.

6. The Maui Department of Water Supply must submit a monthly report summarizing the North Waihee Well Nos. 1 and 2 water quality results during the emergency approval period by the 15th day of the following month (e.g., the October results must be submitted to DOH by November 15, etc.). The report must include all of the water quality data (including, but not limited to, total and fecal coliform, HPC, free chlorine residual, nitrates, etc.) at both wells and Waihee Valley Road sample sites, noting when the wells were in operation, when they were disinfected, flushed, and the subsequent bacteriological test results, as well as any other information that may help demonstrate that the source bacteria can be consistently controlled.

7. Anytime after December 31, 1997, the Maui Department of Water Supply may request a longer term approval if it has consistently demonstrated its ability to control the bacteria in these sources. Any such request must be made in writing and accompanied by supporting data.

This emergency conditional approval supersedes the July 1, 1997 emergency conditional approval issued by the Department of Health.

We must emphasize that this emergency conditional approval is strictly limited to the specified time period. The Department of Health will be prepared to issue a longer conditional approval when it is assured that the water quality will meet drinking water standards and public health is protected at all times.
The Department of Health reserves the right to suspend or revoke this conditional approval upon either a finding of violation on any of the above conditions or a determination of a threat to public health from factors which may arise in the future. Thank you for your attention and concern to these matters.

Sincerely,

[Signature]

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

c:  SDWB Monitoring Section
    SDWB Enforcement Section
    Gordon Muraoka, Maui SDWB Sanitarian
    Charles Ice, DLNR
    Cari Cerizo, Maui Dept. of Water Supply
Mr. Thomas E. Arizumi, P.E., Chief  
Department of Health  
Environmental Management Division  
P.O. Box 3378  
Honolulu, HI  96801

Dear Mr. Arizumi:

North Waihee Wells 1 & 2 Engineering Report (Well Nos. 5631-02 & 03)

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

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

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

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

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

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

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

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

[ ] If the proposed project diverts additional water from streams or if new or modified stream diversions are planned, the project may need to obtain a stream diversion works permit and petition to amend the interim instream flow standard for the affected stream(s).
Based on the information provided, it appears that a Stream Channel Alteration Permit pursuant to Section 13-169-50, HAR will be required before the project can be implemented.

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

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

OTHER: Monitoring efforts by the US Geological Survey, Water Resource Division (USGS) indicate that, even without pumping at these wells, the water levels are declining. This is believed due to overpumpage of the adjacent Iao Aquifer System.

This overpumpage has led the Commission to consider designated Iao Aquifer System as a ground water management area. The intended use of these wells is to reduce pumpage in the Iao Aquifer System. Similarly, the Maui Board of Water Supply (MBWS) is planning to drill wells at Waikapu to spread pumpage within the Iao Aquifer.

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

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director
The Honorable Michael D. Wilson  
Chairman of the Board  
ATTN: Rae Loui  
Department of Land and Natural Resources  
1151 Punchbowl Street  
Honolulu, Hawaii 96813  

Dear Mr. Wilson:  

SUBJECT: PROPOSED SOURCE OF POTABLE WATER  

Enclosed for your review and comments is a copy of the engineering report for the following source:  

North Waihee Wells #1 and #2  
State Well No. 6-5631-02 and 6-5631-03  
Waihee, Maui, Hawaii  

This report has been prepared pursuant to Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems, section 11-20-29.  

The Department of Health will use your comments in determining the potential impacts which may result by the proposed project. It is also important for you to verify that the coordinate locations provided in the engineering report match those shown in your Groundwater Index.  

Please submit your comments to the Safe Drinking Water Branch within 30 days from the date of this letter. You may also return the engineering report to this office if you do not need it for future reference.  

If you should have any questions, please call the Safe Drinking Water Branch, Engineering Section, at [redacted]  

Sincerely,  

[Signature]  
THOMAS E. ARIZUMI, P.E., Chief  
Environmental Management Division  

MY:1a  

Enclosure
July 1, 1997

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

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 212, DWS WAILUKU EMERGENCY SOURCE APPROVAL NORTH WAIHEE WELL 1 STATE WELL NO. 6-5631-02

We would like to acknowledge receipt of three (3) copies of the engineering report for the North Waihee Wells 1 and 2 and the June 24 and 25, 1997 transmittal letters requesting an emergency approval to meet the Commission on Water Resource Management Division's July 1, 1997 milestone. After a preliminary review of the water quality data, the Department of Health hereby grants temporary conditional approval for use of the North Waihee Well 1 as a source of drinking water for a six-month period. This temporary approval shall expire at midnight, January 30, 1998. In addition, the use of this well is subject to the following conditions:

1. All water from the North Waihee Well 1 shall be disinfected before entering the distribution system.

2. The North Waihee Well 1 shall deliver potable water of the quality in compliance with Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems. The water quality shall be subject to verification by the Department of Health.

3. The Department of Water Supply, in its operation of the North Waihee Well 1, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.
Mr. David Craddick  
July 1, 1997  
Page 2

4. The Department of Water Supply shall notify the Department of Health of any condition which may arise or be revealed that may contaminate the source and pose a threat to human health.

5. This temporary approval does not imply acceptance of the engineering report for the North Waihee Wells 1 and 2. The Department of Water Supply must submit the required water quality analyses for the North Waihee Well 2 as well as any other relevant information that may be needed by the Department of Health. Final approval of this new source of potable water will be withheld until the report is completed and all of the reviewing agencies have had the opportunity to study the engineering report.

If you have any questions, please contact Stuart Yamada of the Safe Drinking Water Branch at [redacted] or call from Maui the direct toll free number [redacted] ext. 64258.

Sincerely,

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

SY:gm

c: Gordon Muraoka, Maui SDWB Sanitarian  
Wendell Sano, Monitoring Section  
Ann Zane, Enforcement Section

Warren S. Unemori Engineering, Inc.  
2145 Wells Street, Suite 403  
Wailuku, Maui, HI 96793

WELLS(5631-02A.MSY)
Mr. David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793

Dear Mr. Craddick:

SUBJECT: PUBLIC WATER SYSTEM NO. 212, DWS WAILUKU
EMERGENCY SOURCE APPROVAL
NORTH WAIHEE WELL 1
STATE WELL NO. 6-5631-02

We would like to acknowledge receipt of three (3) copies of the engineering report for the North Waihee Wells 1 and 2 and the June 24 and 25, 1997 transmittal letters requesting an emergency approval to meet the Commission on Water Resource Management Division's July 1, 1997 milestone. After a preliminary review of the water quality data, the Department of Health hereby grants temporary conditional approval for use of the North Waihee Well 1 as a source of drinking water for a six-month period. This temporary approval shall expire at midnight, January 30, 1998. In addition, the use of this well is subject to the following conditions:

1. All water from the North Waihee Well 1 shall be disinfected before entering the distribution system.

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3. The Department of Water Supply, in its operation of the North Waihee Well 1, shall comply with all other relevant provisions of Hawaii Administrative Rules, Title 11, Chapter 20, Rules Relating to Potable Water Systems.
4. The Department of Water Supply shall notify the Department of Health of any condition which may arise or be revealed that may contaminate the source and pose a threat to human health.

5. This temporary approval does not imply acceptance of the engineering report for the North Waihee Wells 1 and 2. The Department of Water Supply must submit the required water quality analyses for the North Waihee Well 2 as well as any other relevant information that may be needed by the Department of Health. Final approval of this new source of potable water will be withheld until the report is completed and all of the reviewing agencies have had the opportunity to study the engineering report.

If you have any questions, please contact Stuart Yamada of the Safe Drinking Water Branch at XXXXXX or call from Maui the direct toll free number XXXXXX ext. 64258.

Sincerely,

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

SY:gm

c: Gordon Muraoka, Maui SDWB Sanitarian
Wendell Sano, Monitoring Section
Ann Zane, Enforcement Section

Warren S. Unemori Engineering, Inc.
2145 Wells Street, Suite 403
Wailuku, Maui, HI 96793
May 19, 1997

Ms. Rae Lou!:
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND & NATURAL RESOURCES
STATE OF HAWAII
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Lou:

Re: NORTH WAIHEE WELLS 1 AND 2
STATE WELL NOS. 5631-02 AND 5631-03
NORTH WAIHEE WATER SOURCE PROJECT

Attached, for your use, are the completed pump installation reports and as-built drawings.

Should you have any questions, please contact our Engineering Division at [redacted].

Sincerely,

David R. Craddick
Director

EK:as
Enclosures
PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: Roscoe Moss Hawaii, Inc.
21. Name of person performing work: John Mole
22. Date Pump Installation Completed: April 9, 1997
23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: Sub, Byron Jackson, 96WR007382  
   Capacity: 1050 gpm
   Motor type, H.P., Voltage, rpm: Sub, 150 HP, 460, 1751
   Depth of Pump Intake Setting 317 ft. below Grade, which elevation is 284.08 ft.
   Depth to bottom of airline 304 ft. below Grade, which elevation is 284.08 ft.
   Pumping Head is 420 ft. Type of flow meter: _______ which measures in _______
24. As-built drawings attached: X Yes _ No
25. Other remarks/comments: (See below)

Pump Installation Contractor (print)  Roscoe Moss Hawaii, Inc.  C-57 Lic. No.  C-16437
Signature  _______________________________  Date  4/30/97
Applicant (print)  William C. Moore, Vice President
Signature  _______________________________  Date  

8. (cont'd)  DRILLER'S LOG (cont'd):

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PART I. WELL CONSTRUCTION REPORT

3. Drilling Company: ________________________________

4. Name of driller who performed work: ________________________________

5. Type of rig/construction: ________________________________

6. Date(s) Well Construction and pump tests (if any) completed: ________________________________

7. GROUND ELEVATION (referenced to mean sea level, msl): ________________________________ ft.
   Well Bench Mark (description/location): ________________________________ Elevation(msl): ________________________________ ft.

8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)

   Depths (ft.) Rock Description, Water Level, Dates, etc.
   _____________ to _____________
   _____________ to _____________
   _____________ to _____________

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

9. Total depth of well below ground: ________________________________ ft.

10. Hole size:

    _____________ inch dia. from _____________ ft. to _____________ ft. below ground

    _____________ inch dia. from _____________ ft. to _____________ ft. below ground

    _____________ inch dia. from _____________ ft. to _____________ ft. below ground

11. Casing installed: _____________ in. I.D. x _____________ in. wall solid section to _____________ ft. below ground

    _____________ in. I.D. x _____________ in. wall perforated section to _____________ ft. below ground

    Casing Material/Slot Size: ________________________________

12. Annulus:

    Grouted from _____________ ft. below ground to _____________ ft. below ground

    Gravel packed from _____________ ft. below ground to _____________ ft. below ground

13. Initial water level: _____________ ft. below ground. Date and time of measurement: ________________________________

14. initial chloride: ________________________________ ppm. Date and time of sampling: ________________________________

15. Initial temperature: ________________________________ °F Date and time of measurement: ________________________________

16. PUMPING TESTS: Reference Point (R.P.) used: ________________________________, which elevation is ________________________________ ft.

    (1) Step-Drawdown Test Date ________________________________

    Start water level _____________ ft. below R.P.

    End water level _____________ ft. below R.P.

    (2) Long-term Aquifer Test Date ________________________________

    Start water level _____________ ft. below R.P.

    End water level _____________ ft. below R.P.

17. Aquifer Pump Test Procedures data & graphs (1/19/96 LTAT Form) attached? __ Yes __ No

18. As-built drawings attached? __ Yes __ No

19. Other remarks/comments: (On back of this form)

Well Drilling Contractor (print) ________________________________ C-57 Lic. No. ________________________________

Signature: ________________________________ Date: ________________________________

Surveyor (print) ________________________________ Lic. No. ________________________________

Signature: ________________________________ Date: ________________________________

Applicant (print) ________________________________

Signature: ________________________________ Date: ________________________________
SUBMERSIBLE OUTLINE

STANDARD WELL SEAL—JUNCTION BOX CONSTRUCTION

DATE __________________________

NAME OF CUSTOMER  County of Maui

DEPARTMENT OF WATER SUPPLY

PROPOSITION NO. Job No. 95-10

ORDER NO. 58-960

PURCHASE ORDER NO. __________________________

NO. OF UNITS ONE

SURFACE PLATE  27 1/2" O.D. 13/4" TH’K
8-3/8" FOUNDATION HOLES. STR. & ON 25" B.C
BOWL ASSEMBLY 12 MQL, 7 STGS.
150 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE M
12" SIZE 3 PH. 60 CYCLE 460 VOLT
1050 GPM 420 F.T. TDH

CABLE 400 MCM VOLTAGE 460 LENGTH 310 FT.

REMARKS: WELL PUMP NO. 2
CABLE: 400 MCM
COLUMN PIPE: 8" SCH 40 GALVANIZED
TRANSDUCER PIPE: SCH 80 PVC. 1"
“NORTH WAIAKE WATER SOURCE"
PHASE II—DEVELOPMENT OF WELLS 1 & 2

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

JOB NO. ____________ PROP. NO. ____________
CERTIFIED CORRECT ____________ DATE ____________
PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: Roscoe Moss Hawaii, Inc.
21. Name of person performing work: John Mole
22. Date Pump Installation Completed: April 7, 1997
23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: Sub/Byron Jackson/96WR007381 Capacity: 1050 gpm
   Motor type, H.P., Voltage, rpm: Sub/150/460/1751
   Depth of Pump Intake Setting 307 ft. below Grade, which elevation is 284.08 ft.
   Depth to bottom of airline 294 ft. below Grade, which elevation is 284.08 ft.
   Pumping Head is 420 ft. Type of flow meter: _______ which measures in _______

24. As-built drawings attached? X Yes _ No
25. Other remarks/comments: (See below)

Pump Installation Contractor (print) Roscoe Moss Hawaii, Inc. C-57 Lic. No. C-16437
Signature William C. Moore, Vice President Date 4/30/97

Applicant (print) ___________________________ Date ___________________________
Signature ___________________________ Date ___________________________

8.(cont'd) DRILLER'S LOG (cont'd):

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19 & 25. Remarks: WRL 5631-02 N. WHITE
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

WELL COMPLETION REPORT

(State of Hawaii · COMMISSION ON WATER RESOURCE MANAGEMENT
· Department of Land and Natural Resources · WELL COMPLETION REPORT)

(209/96 WCR Form)

Instructions: Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225, or 1-800-468-4644 Extension 70225.

1. State Well No.: 5631-02 Well Name: N. Waihee Water Source Island: Maui
2. Location/Address: North Waihee Well No. 1 Tax Map Key: 3-2-0104

PART I: WELL CONSTRUCTION REPORT

3. Drilling Company: __________________________
4. Name of driller who performed work: __________________________
5. Type of rig/construction: __________________________
6. Date(s) Well Construction and pump tests (if any) completed: __________________________
7. GROUND ELEVATION (referenced to mean sea level, msl): __________________________ ft.
8. DRILLER'S LOG: Please attach geologic log (if available or if required by permit)

   Depths (ft.) Rock Description, Water Level, Dates, etc. Depths (ft.) Rock Description, Water Level, Dates, etc.
   ___ to ___ ___ to ___ ___ to ___ ___ to ___
   ___ to ___ ___ to ___ ___ to ___ ___ to ___

(If more space is needed, continue on back)

9. Total depth of well below ground: __________ ft.
10. Hole size: __________________________ inch dia. from ___ ft. to ___ ft. below ground
    __________________________ inch dia. from ___ ft. to ___ ft. below ground
    __________________________ inch dia. from ___ ft. to ___ ft. below ground
11. Casing installed: __________________________ in. I.D. x __________________________ in. wall solid section to ___ ft. below ground
    __________________________ in. I.D. x __________________________ in. wall perforated section to ___ ft. below ground

   Casing Material/Slot Size: __________________________

12. Annulus: Grouted from __________________________ ft. below ground to __________________________ ft. below ground
    Gravel packed from __________________________ ft. below ground to __________________________ ft. below ground
13. Initial water level: __________________________ ft. below ground. Date and time of measurement: __________________________
14. Initial chloride: __________________________ ppm Date and time of sampling: __________________________
15. Initial temperature: __________________________ ºF Date and time of measurement: __________________________
16. PUMPING TESTS: Reference Point (R.P.) used: __________________________ ft. elevation is __________________________ ft. (1) Step-Drawdown Test Date __________________________ (2) Long-term Aquifer Test Date __________________________
    Start water level __________________________ ft. below R.P. Start water level __________________________ ft. below R.P.
    End water level __________________________ ft. below R.P. End water level __________________________ ft. below R.P.
17. Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form) attached? __ Yes __ No
18. As-built drawings attached? __ Yes __ No
19. Other remarks/comments: (On back of this form)

Well Drilling Contractor (print) __________________________ C-57 Lic. No. __________________________ Date __________________________
Surveyor (print) __________________________ Lic. No. __________________________ Date __________________________
Applicant (print) __________________________ Date __________________________
SUBMERSIBLE OUTLINE
STANDARD WELL SEAL — JUNCTION BOX CONSTRUCTION

DATE ____________________________

NAME OF CUSTOMER Department of Water Supply

PROPOSITION NO. Job No. 95-10

ORDER NO. 58-9603

PURCHASE ORDER NO. ________________

NO. OF UNITS __________

SURFACE PLATE __________ O.D. _______ TH’K

8-7/8" FOUNDATION HOLES. STR. @ ON 25" B.C

8" - 8 T.P.I. - 3/4" TAPER T&C ST’d COLUMN

10" - 150 # F.F. (STEEL) DISCHARGE FLANGE

BOWL ASSEMBLY ___________ STGS.

160 H.P. 1751 RPM B.J. SUBM. MOTOR TYPE M

12" SIZE __ PH. __ CYCLE __ VOLT __________

1050 GPM _______ 420 FT TDH

CABLE SIZE __ VOLTAGE __ LENGTH __________

REMARKS: WELL PUMP NO. 1

COLUMN PIPE: 8" SCH 40 GALVANIZED

TRANSVERSE PIPE: SCH 80 PVC __

"North Waihee Water Source"

PHASE II - DEVELOPMENT OF WELLS 1 & 2

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

JOB NO. __________ PROP. NO. __________

CERTIFIED CORRECT __________ DATE __________
Mr. David R. Craddick, Director  
Maui Department of Water Supply  
200 S. High Street  
Wailuku, Hawaii 96793  

Dear Mr. Craddick:

North Waihee Wells 1 & 2 Pump Installation

Thank you for our copy of your March 20, 1997 letter to the contractor for the captioned project. This letter anticipates pump delivery date and subcontractor commencement of work the first week of April. Commissioner Nobriga reports that work is indeed underway.

We draw your attention to the permit conditions requiring surveyed elevation for the top of the casing and provision of means to measure water levels. These should be included in the Well Completion Report (Part II). Please advise us how you plan to measure water levels.

If you have any questions, please call Charley Ice at extension 70251.

Sincerely,

RAE M. LOUI  
Deputy Director

Class
April 2, 1997

Rae M. Loui, Deputy Director
State of Hawaii, Dept. Of Land & Natural Resources
Commission on Water Resource Management
Post Office Box 621
Honolulu, Hawaii 96809

Re: North Waihe'e Pump Installation (Well No. 5631-02 & 03)
       After-the-fact Kepaniwai Pump replacement permit
       Well No. 5332-05

Dear Ms. Loui:

At our March 18, 1997 Board of Water Supply meeting, the Board conditionally approved the Water Use Development Plan contract amendment to redo the Water Use Development Plan. The conditions were that it be subject to the Commission's concurrence that it meets the needs of the Kepaniwai pump permit and that $25,500 be applied to the Water Use Development Plan integrated resource planning process in lieu of the $51,000 permit fine.

I realize you can not commit to Commission action. However, we need immediate clarification that we are not subject to a $25,500 fine plus the $25,500 applied to the Water Use Development Plan integrated resource planning process.

Sincerely,

David Craddick, Director

cc: Gary Zakian, Deputy Corporation Counsel

"By Water All Things Find Life"
March 20, 1997

Mr. Eric Pilotin  
Goodfellow Brothers, Inc.  
P.O. Box 220  
Kihei, HI 96753-0220

Dear Mr. Pilotin:

SUBJECT: PUMP INSTALLATION, NORTH WAIHEE #1 AND #2

On March 19, 1997, the State Commission on Water Resource Management (CWRM) approved an extension of the pump installation permits for the North Waihee Wells #1 and #2. As you know, CWRM has focused on this project as a means to reduce pumping from the lao Aquifer. It is important to us that the pumps be installed and the well completion reports be submitted to CWRM by May 1, 1997.

We understand that the pumps will be on site the week of March 24 and that your subcontractor will commence work the first week of April. Should any problems affecting the installation develop, please contact us immediately.

A copy of CWRM's agenda and the approved staff recommendation is enclosed for your information.

Very truly yours,

DAVID CRADDICK  
Director

Enclosure

c: Commission on Water Resource Management  
   Engineering  
   Planning

"By Water All Things Find Life"
Following three separate two-month extensions of the start date, all of which went to the Commission for action, the Commission denied further extension of the start date, allowing for revocation of the permit as of January 13, 1996, unless the site ownership was successfully transferred and a schedule of actual installation work was provided to the Commission.

The Commission rescinded the revocation of the permit, as its conditions for doing so were met. Transfer of the permit was duly recorded. In a separate action concerning designation of Iao Aquifer as a water management area, action milestones were set in place, including a start deadline for pump installation at North Waihee (Phase 1 - first well/1.5 mgd) of November 1, 1996. On March 18, 1996, staff received a written request for a two-month start date extension under the original permit extension, with a work schedule attached; the extension was accepted administratively, from May 14, 1996 to July 14, 1996. Another written request was submitted June 10, for a start date extension to September 14, 1996; no staff action was taken at this point in view of the November 1, 1996 deadline set under the Iao milestones.

Staff received a letter from the applicant 1) indicating that a notice to proceed had been issued October 14, 1996; and 2) requesting an extension of the permit beyond the original March 1, 1997 deadline to June 16, 1997 to be consistent with a new contract schedule of work. BWS staff indicated that the contractor was beginning to marshal materials and grub the site, while a shipping delay meant that the pump would be installed in February 1997.

At a meeting on Maui to discuss designation of the Iao Aquifer, the Commission approved new action milestones, including commencement of work on pump installation by February 1, 1997, with evidence to be provided by February 8, 1997.

The Commission extended the permit to April 1, 1997. If work is not completed by April 1, 1997, the permit will be allowed to expire and the Board would have to reapply.

Maui Board of Water Supply requested being placed on the agenda to extend the permit’s completion date until May 1, 1997 because rains at the construction site have delayed work (Exhibit 3).

**WATER AVAILABILITY:**

Waihee Aquifer System (at Iao System boundary) of Wailuku Sector.
Estimated Sustainable Yield: 8 mgd. Existing Use: none.
Proposed Use: 2-3 mgd.
Anticipated pump capacity: 1050 gpm.
ISSUES/ANALYSIS:

The wells will develop fresh, basal water for municipal use. The wells' static head currently stands about 7-8 feet above sea level. Pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low. Recent work by USGS indicates that these wells interact with the lao Aquifer system and that current water levels and well depths may limit the capacity to produce water from these wells with chlorides below 250 mg/l. The applicant has chosen to reduce the pump size from 1400 to 1050 gpm, with the expectation that the total safe yield from these wells is probably closer to 3 mgd than the original prospective 4 mgd. Phase 1 will install the first pump in one of two wells, with capacity of 1.5 mgd; Phase 2, to install a pump in the other well for a total capacity of 3 mgd, is scheduled about four months behind Phase 1.

John Mink believes that there should be no stream effects because the stream channel in this vicinity is 200 feet above sea level.

While the BWS witnessed the lengthy period of failure to perform on this permit by the previous permittee and the Commission's determination to have the project problems resolved, the BWS has continued to make optimistic estimates of time for completing this project. The Commission has accommodated new work schedules by the applicant, extending the start date for twice the normal period once the permit was transferred.

The pumps are scheduled to arrive on March 25, 1997, as evidenced by the attachment to Exhibit 3. Milestone 3 established in December, 1996 required delivery of materials by February 1, 1997 (Exhibit 4). This milestone was not met. The staff also requested submittal of the well completion report, which has not been submitted.

RECOMMENDATION:

That the Commission:

1. Approve the request to extend the pump installation permit for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) to May 1, 1997, and

2. Require the submittal of the well completion reports Part I (Well Construction) for North Waihee Wells 1 and 2 by May 1, 1997.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Exhibit(s) 1 (Location Map)
2 (Proposed Well Section)
3 (Maui BWS letter)
4 (Milestone letter)
March 12, 1997

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

Dear Ms. Loui:

Subject: North Waihee Pump Installation Permit
Wells No. 5631-2 and 5631-3

Reference your letter of March 7 concerning CWRM’s action on the subject permit. We respectfully request reconsideration of the Commission’s action and extend the permit deadline from April 1, 1997 to May 1, 1997 and allow this request to be put on the March 18, 1997 meeting agenda.

The pumps are scheduled to arrive on Maui on March 25, see attachment. Installation of the pumps to start in mid-April. Barring any unforeseen delays, such as rain delays, the installation of the pumps are anticipated to be completed the latter part of April.

Your favorable consideration is appreciated.

Sincerely,

David Craddick, Director
EK/aw
Attachment
**PRINT/SEND ORIGINATED BY HULC**

**BILL TRACER** 03/12/97 17:00 PS

PRO NUMBER  DATE  DES  ORG
006-525629  2/28/97  HUL  TUL

6 PCS  97010  TOTAL FRT CHG  $1827.45  PPB

THIS DOCUMENT IS NOT INTENDED TO BE USED FOR STATING PURPOSES

**SHIPPER**
BU/IP INTERNATIONAL INC
PO BOX 473250
TULSA, OK 74147

**CONSIGNEE**
ROSCOE MOSS HAWAII INC
91-289A OLAI ST
KAPOLEI, HI 96707

TRLR MATU660103

LAST TRLR ODE6666664
BILL AV 03/06/97 01:59A CB

GUE 08  03/08/97 10:00A PB
HUL 1B  03/10/97 22:00P PB

ISLAND HUL
CUBE 279
VES LURLINE
ETD 3/8/97
ETA 3/12/97

SERVICE DATE  N/A

MR. ERIC PILOTIN

THIS IS TO ADVISE YOU THAT THIS SHIPMENT-REFERNCING NORTH HAVEN- DUE TO ARRIVE INTO HOUOSULME TODAY. WE HAVE MARKED THIS ORDER - RUSH - SO THAT WE CAN GET THIS OUT TO ROSCOE MOSS-ATTN: GLEN DAVIS- AS SOON AS POSSIBLE. WE ARE PRESENTLY SENDING TO GET THIS OUT TO THEM THIS FRIDAY. IF YOU HAVE FURTHER QUESTIONS, PLEASE CALL US AS (800)220-8201

THANK YOU,
ARLAN WIND-YELLOW FRICKY SYSTEM-HUL

**TOTAL PAGE 01**
Mr. David Craddick, Director  
Department of Water Supply  
County of Maui  
200 S. High Street  
Wailuku, Hawaii 96793  

Dear Mr. Craddick:

Iao Aquifer Milestones

We received your letter of February 10, 1997, reporting on the ten milestones set by the Commission for February 1, 1997 in the matter of designating the Iao Aquifer as a ground water management area. This response incorporates our understanding following a meeting with you in our office on Friday, February 21, 1997.

The Commission set ten milestones on December 9, 1996:

1) Water Shortage Plan: this is reported underway, and you are requesting guidance on “response triggers” for the various features mentioned in Milestone #1. In our February 24, 1997 meeting, you expressed concern that the Council would not approve a rule-change for invoking a cutback without these triggers. A water shortage plan is a preparedness measure outlining action to be taken in the event the Commission declares a water shortage or emergency. If the County wishes to exercise its own management in this regard, it is incumbent upon the Board to determine its own triggers and to undertake rule-making as necessary. This is separate from the Commission’s shortage or emergency powers. We again request you provide details on the actions you are willing to take to reduce consumption by 1 mgd, 2 mgd, and 3 mgd.

2) A finalized site agreement for the Waikapū Tank Well (by February 1, 1997): a copy of the agreement, signed by both parties, was received from the attorney for Wailuku Agribusiness Co., Inc., (Mancini, Rowland & Welch) on February 21, 1997.

3) Delivery of materials and commencement of pump installation work at North Waihe’e Wells 1 & 2: photos, with the penned date of February 3, 1997 and showing concrete work at the wellhead, appear to show finish work on the well construction via completion of the pump pad, prior to pump installation work. We request your completion of marked items on enclosed well completion report Part 1 (Well Construction), that are not on file from the previous owner, and documentation of delivery of the pump equipment.

EXHIBIT 4
4) 1.0 mgd brought on-line from North Waihe'e Wells 1 & 2 by August 1997, and the Iao Aquifer pumpage reduced accordingly: Historic Preservation Division reports that work on the pipeline to North Waihe'e had proceeded without an approved survey and mitigation plan, and that in the course of work, human burials had been found. You report that this was not a critical path item and that there should be no delay to the schedule.

5) Submittal of EA for North Waihe'e Wells 3 & 4: the schedule submitted corrects earlier representation that this EA could be scheduled as an alternative to the Hamākuapoko EA, and would be submitted not in February but mid-May. The milestone is therefore adjusted to May 15, 1997.

6) A finalized agreement for extended use of the Wailuku Shaft: the Right of Entry and Operating Agreement has been executed, and the attorney for Wailuku Agribusiness Co., Inc. and C. Brewer Homes has forwarded a copy to us.

7) Submit the EA for Hamākuapoko Wells by April 1, 1997: this is reported on track.

8) Notice To Proceed on the Paia phase of construction for the East Maui Water Development project by May 1, 1997: this milestone was based on Board staff belief that this phase could proceed while the SEIS was being completed. This assumption is incorrect, as this phase is also subject to completion of the SEIS. This milestone will have to be modified or deleted.

9) Iao Ditch facility to provide 2 mgd beginning in July, with evidence of 50% completion by April 1, 1997: you correctly point out that, although the operating capacity of the filters is 2.0 mgd, the average flow is only 1.5 mgd. The milestone amount will be corrected accordingly, while the date remains unchanged.

10) Updated schedules and plans for Waikapū Tank Well and East Maui Water Development (to be submitted by December 23, 1996): these were submitted January 9, 1997.

If you have any questions, please call Charley Ice at [redacted] or toll-free at extension 70251.

Sincerely,

[signature]

RAE M. LOUI
Deputy Director

Cc:
Mayor Linda Crockett Lingle
Pat Kawano, Maui County Council
Norma Pilz, Maui Board of Water Supply
March 12, 1997

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

Dear Ms. Loui:

Subject: North Waihee Pump Installation Permit
Wells No. 5631-2 and 5631-3

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The pumps are scheduled to arrive on Maui on March 25, see attachment. Installation of the pumps to start in mid-April. Barring any unforeseen delays, such as rain delays, the installation of the pumps are anticipated to be completed the latter part of April.

Your favorable consideration is appreciated.

Sincerely,

David Craddick, Director
EK/jaw
Attachment
3-12-1997 4:46PM FROM GOODFELLOW KIP

PRINT/SEND ORIGINATED BY HULC

BILL TRACER 03/12/97 17:00 PS

PRD NUMBER DATE DES ORG
006-525629 2/28/97 HUL TUL

6 PCS 9701# TOTAL FRT CHG $1822.45 PPD

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PO BOX 472250
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**CONSIGNEE**
ROSCE MOSS HAWAII INC
91-259A OLAI ST
KAPOLEI HI 96707

TRLR MATU660103

SDE 06 03/06/97 10:00A PS
HUL IS 03/10/97 22:00P PS

ISLAND HUL
CUBE 279
VES LURLINE
ETD 3/8/97
ETA 3/12/97

SERVICE DATE N/A

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THANK YOU,
ARKLEEN MIHO-YELLOW FREIGHT SYSTEM-HUL

** TOTAL PAGE 01 **
MAR 12 1997

Ms. Norma Piltz, Chairperson
Maui Board of Water Supply
P.O. Box 1109
Wailuku, HI 96793

Dear Ms. Piltz:

North Waihe'e Pump Installation (Well No. 5631-02 & 03)
After-the-fact Kepaniwai Pump Replacement Permit (Well No. 5332-05)

This letter replaces a letter dated March 7, 1997, and corrects the paragraph detailing the Commission’s action of February 18, 1997 on the North Waihe'e Wells 1 & 2 Pump Installation Permit. The Commission’s action was to extend the permit to April 1, 1997, at which time work must be completed.

The Commission on Water Resource Management (Commission) took action on the captioned matters on February 18, 1997 in Honolulu. The Commission noted that these two sources are critical to reducing the overpumping in the Iao Aquifer System, and that the problems encountered in these two instances are not a good sign of progress away from designation. Noting the vote of confidence given the Board of Water Supply (Board) by several interested parties at the hearing concerning designation of the Iao Aquifer, the Commission directed staff to communicate to them the Commission’s concerns for proper management as represented in these two cases.

North Waihe'e Wells 1 & 2

The North Waihe'e Wells 1 & 2 Pump Installation Permit was extended from March 1 (when the permit is scheduled to expire) to April 1, 1997. If work is not completed by April 1, 1997, the permit will be allowed to expire and the Board would have to reapply.

The Commission asked that the Board Chairperson respond to the Commission on the status of pump installation. This permit has a long history of delinquencies that had caused the Commission to adopt the unusual practice of reviewing and conditioning each request for extension. The permit expiration has been extended twice, and there have been five start date extensions with one revocation hearing. Commission action on designating the Iao Aquifer on December 9, 1996 included a February 8, 1997 milestone to provide evidence of the delivery of materials and commencement of this pump installation work. On February 12, 1997, we received photos of concrete work in progress at the well heads, with the date February 3, 1997 penned below. This appears to be well construction finish work, including installation of the pump pad, and might normally be associated with the original construction work. The Commission wants to see evidence of pump delivery to the site.
Additionally, the Commission was concerned that no one from the Maui Board of Water Supply, County Council, or Mayor’s Office was present to testify or answer questions regarding this permit.

Kepaniwai Pump Replacement

The after-the-fact Pump Installation Permit to replace the Kepaniwai Well pump was approved, with a finding that the Board was in violation of the Water Code by knowingly proceeding without a permit. The Board staff member present was unable to explain how the work at Kepaniwai proceeded without a permit, but indicated that the Board now has procedures in place to prevent such an occurrence in the future. The Commission approved a fine of $51,000, or in the alternative to apply $25,500 to a revision of the Water Use and Development Plan using an integrated resource planning process, requiring the Board to enter an agreement with Commission within 100 days to retain a consultant for this purpose.

County Representation

The Commission Chairperson directed staff to request that representatives of the County Council and Mayor attend all Commission meetings involving the Iao Aquifer, and that a letter be sent to the Maui Chamber of Commerce and Maui Hotel Association informing them of the numerous delays at North Waihe’e and that no representative of the Board, Council, or Mayor was present to testify or answer questions on these serious issues.

If you have any questions, please call me at [redacted] or toll-free at [redacted] extension 70214.

Sincerely,

[Signature]
RAE M. LOUI
Deputy Director

C: Mayor Linda Crockett Lingle
   David Craddick, Maui Department of Water Supply
   Pat Kawano, Maui County Council
   Alice Lee, Maui County Council, Public Works and Water Committee
   Lynne Woods, Maui Chamber of Commerce
   Terryl Vencel, Maui Hotel Association
   Terry Tomlin, Maui Board of Realtors
   CWRM Commissioners
Ms. Norma Piltz, Chairperson
Maui Board of Water Supply
P.O. Box 1109
Wailuku, HI 96793

Dear Ms. Piltz:

North Waihe'e Pump Installation (Well No. 5631-02 & 03)
After-the-fact Kepaniwai Pump Replacement Permit (Well No. 5332-05)

MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: February 18, 1997
TIME: 8:00 a.m.
PLACE: DLNR Board Room

5. Maui Board of Water Supply, Extension of Permit, North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03), Request to Install 1050 gpm Pumps for Domestic Use, TMK 2-2-1:4, Waihee, Wailuku, Maui

PRESENTATION OF SUBMITTAL: Mr. Roy Hardy

STAFF RECOMMENDATION:

The staff recommendation was amended as follows:

A. That the Commission authorize the Chairperson to extend the pump installation permit for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) until April 1, 1997 and if work on the pump installation has not started, the permit will expire. "If work is not completed"

TESTIMONY BY APPLICANT:

Mr. Eric Okazaki, of the Maui Board of Water Supply, was available to answer questions.

Commissioner Miike asked Mr. Okazaki to have the Board of Water Supply Chairperson respond to the CWRM regarding the pumps.

Commissioner Wilson asked Deputy Director Rae Loui to send letters to the Maui Chamber of Commerce and Maui Hotel Association informing them of the numerous delays and that no one from the Maui Board of Water Supply, Maui County Council, or Maui County Mayor's office was present at the Commission to testify or answer questions. He also instructed that a letter be sent to the Maui Board of Water Supply Chairperson, Maui County Council, and the Mayor requesting that they be represented at all Commission meetings involving the Iao Aquifer.

MOTION: (MIIKE/GIRALD)

To approve staff's recommendation as amended.

UNANIMOUSLY APPROVED AS AMENDED.
Additionally, the Commission was concerned that no one from the Maui Board of Water Supply, County Council, or Mayor's Office was present to testify or answer questions regarding this permit.

Kepaniwai Pump Replacement

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If you have any questions, please call me at [redacted] or toll-free at [redacted] extension 70214.

Sincerely,

[Signature]
RAE M. LOUI
Deputy Director

Cc: Mayor Linda Crockett Lingle
    David Craddick, Maui Department of Water Supply
    Pat Kawano, Maui County Council
    Alice Lee, Maui County Council, Public Works and Water Committee
    Lynne Woods, Maui Chamber of Commerce
    Terryl Venc, Maui Hotel Association
    Terry Tomlin, Maui Board of Realtors
    CWRM Commissioners
Burial sites halt work on water main

Project could be altered once, no more — Craddick

WAIMEA — The discovery of two ancient burials under Kahekili Highway has caused the suspension of work on a 24-inch water main.

Department of Water Supply Director David Craddick says he believes solving the problem will take three to four weeks. That should not endanger the department's ability to meet "milestones" set by the state Commission on Water Resource Management to develop new water sources.

The new sources would relieve stress on the overused Iao aquifer that serves Central and South Maui.

"We knew we were in a sensitive area," says Craddick, and the contract with Goodfellow Brothers included an archaeologist.

While digging the trench, two burials were found.

One was in the side of the trench and was bypassed. But the other was in the middle of the pipeline's path.

Possible solutions include realigning the pipeline, but Craddick says he can do that just once.

The reason is that the big pipeline will carry water under a pressure of 200 pounds per square inch. This flow is so powerful that when it is forced to bend, it exerts a tremendous pressure, which is contained by concrete "reaction" or "thrust" blocks.

A series of jinks that required many blocks would guarantee a blowout, says Craddick.

So, he might be able to realign one section, but no more. The actual solution will be decreed by the state Historic Preservation Office after consultation with the Maui-Lanai Islands Burial Council.

In the past in Waimea, the council has favored burial in place rather than removing ancient burials. The burials had been paved over without being noticed. A 1994 consultant's report did not find them either.

However, because of the likelihood of finding old burials in the Waimea dunes, questions were raised, and a supplemental report was prepared in 1995.

The state says it has no record of ever receiving that report. "It was a mistake we made," says Craddick.

If the state should force the county to send the pipeline "wigwagging" down the highway, Craddick says, the burials the realignment is meant to preserve would be destroyed anyway.

When the pipeline blows, the rush of water will "eat through the sand," and "the crater will be so big, all archaeological evidence will be swept away."

About 1,600 feet of road remains to be excavated for the big pipe. After that, the route turns up the mountain, and in that terrain it is hoped that burials will be rare or absent.
Craddick to abide by burial guidelines

By VALERIE MONSON
Staff Writer

WAILUKU -- Water Supply Director David Craddick said Thursday he will abide by state recommendations to keep the North Waihee waterline away from the sensitive sand dune areas on the makai side of Kahekili Highway, and described how he plans to gently bend the pipe around any mauka burials that may be encountered during future trenching.

Those statements were made during an occasionally heated 90-minute presentation before the Maui/Lanai Islands Burial Council in the Planning Department building.

Despite criticism about a Mainland firm he had brought in, by the end of the session Craddick was complimented for his proposal to preserve in place any human skeletons.

"I congratulate you," said Chairwoman Dana Naone Hall when told about the revisions.

Craddick must now put his words in writing and submit those plans to the State Historic Preservation Division of the Department of Land and Natural Resources for acceptance before work can resume. Because the preservation division had not received or approved an updated archaeological survey from the Board of Water Supply, it ordered that construction be halted two weeks ago after two ancient burials were disturbed during unauthorized digging. Division officials also said that any future trenching should be conducted mauka of the highway because the sand dunes on the makai side were known to contain unmarked burials and cultural artifacts.

One of the recent burials unearthed was discovered mauka and the other makai.

The first phases of the project will have a 24-inch pipeline running 4.3 miles through Waihee and Waiehu connect with two wells that were drilled in 1981. The additional water is needed to reduce stress on the lao aquifer, which is in danger of being overtapped. A 12-inch companion pipeline along the same route is also in the plans.

Water Supply Department officials continued to insist Thursday that an updated report had been sent to the Historic Preservation Division and must have been lost. Hall reminded them that the division had not asked for the report just once, but had made repeated documented requests for the paperwork over a two-year period to both Craddick and the Department of Public Works and Waste Management. Craddick again pleaded innocent.

"We were under the impression that all permits were approved," he said. "We now know they weren't. I don't want to say that's an excuse for not doing our job, but that's what happened."

The Burial Council echoed the preservation division's concerns by officially voting to recommend that future trenching be confined to the mauka side of the highway. The panel also
passed a motion to recommend that, in the future, an easement farther up on the mauka side should be obtained by Maui County, the Board of Water Supply, the Department of Hawaiian Home Lands or any other entity that has future plans to route utilities or pipelines through the area.

Both actions were unanimous among the five members who voted: Hall, Leslie Kuloloio, Charles Kauluwehi Maxwell Sr., Akoni Akana and Sam Kalalau. James Murray abstained, while Mercer "Chubby" Vincens had to leave and missed both votes. Loretta Hera of Lanai was not present.

When questioned what he would do next, Craddick said he "doesn't intend to" go makai into the sand dunes even if burials are found mauka during construction. He said he wants to test for any possible burials before starting work again "to incorporate their presence in aligning the pipeline." That would allow workers to plan the entire trench and gently shape the waterline around any burials rather than encounter a skeleton during digging and be forced to abruptly detour the pipe at sharp angles. Craddick fears the last scenario could lead to increased pressure on the joints, resulting in destructive blowouts.

Hall said later that Craddick should remember that any remains discovered during testing must still be reported to the Historic Preservation Division and discussed before the burial council.

Kuloloio and Maxwell were both visibly upset about a Mainland consultant brought in to perform "ground-penetrating radar" surveys to locate unknown burials. Rowland Cromwell, a geophysicist for Golder Associates of Redmond, Wash., admitted that while the technology can detect disturbances below the surface, it can't actually distinguish a group of rocks from human bones.

"It (the system) cannot prove or disprove the existence of a burial," conceded Cromwell.

"Then I don't know what you came here for," responded Kuloloio.

Craddick said the company and its sensing devices were brought in "because they can detect things underground. They can't tell the difference between rocks, nails or bones" but they can register signals that can be followed up by archaeological subsoil testing to see if burials are present. That would limit the number of random excavations.

Cromwell wanted members to know that "this machine is not to replace archaeologists or the burial council. It's a tool to aid the county in its decisions on where to send the archaeologists first."

After only one day on Maui, Cromwell said early radar suggests disturbances both mauka and makai of the highway in the pipeline's path. Hands-on testing by archaeologists will follow.

Maxwell was especially concerned that if the company compiles a high-tech listing of grave sites, it could lead to vandalism or the robbing of bones.

Craddick said the contract to Golder Associates was for $5,000.
Water department accused of violating burial site guidelines

By VALERIE MONSON

Staff Writer

WAIHEE -- At least one of the ancient burials recently unearthed during the digging of a water main in Waihee by the Department of Water Supply might have been left in peace had repeated orders by the state Department of Land and Natural Resources been followed, according to Dana Naone Hall, chairperson of the Maui-Lanai Islands Burial Council.

Because Water Director David Craddick did not submit an acceptable archaeological survey to DLNR before construction began, neither the state nor the burial council had an opportunity to give the project the green light. Construction of such a project is forbidden by law without the approval of the State Historic Preservation Division of DLNR.

But Craddick admitted that digging began in January, without that approval.

"The burials and another cultural layer that was also encountered were affected, perhaps needlessly, because the review process had not been completed," said Hall. "This was clearly a violation of the law."

The pipeline is to carry water to Central Maui from a new well in Waihee. The county has been under pressure to open up another well to alleviate the demand on the central Iao aquifer, which some believe is in danger of being overtapped. The state Commission on Water Resources Management is still considering plans to take over the county's management of the aquifer, a move that the business community and Mayor Linda Crockett Lingle strongly oppose.

To obtain a stream channel alteration permit for the project in March of 1995 from DLNR Chairman Michael D. Wilson, Craddick had to sign papers along with the co-applicant, a representative of C. Brewer Homes Inc. One of the conditions was that an updated survey needed to be submitted and approved by SHPD before digging could begin.

Craddick said last week that his department had sent in the survey, as required, but later in the interview, he admitted that "the archaeological work was not in final form." DLNR officials wrote to Craddick, as recently as Feb. 3, that an acceptable survey had not been received and continued to ask the water department to comply.
Hall claims that, had the report been completed and sent out for comment before approval, the human remains uncovered might have been avoided.

In December of 1994, SHPD had requested an updated archaeological inventory survey from the county for review. The county was planning to dig in an area mauka of the road as well as on the makai side, where it was already well known that numerous Native Hawaiian burials and artifacts were contained in the sensitive sand dune area.

When reports of trenching reached Honolulu, officials were caught off guard.

"Our office was surprised to learn that they had begun the construction work," said Sara Collins, state archaeologist for Maui.

Although SHPD continued to ask for the updated survey, Craddick said he thought it had been completed.

"Let's put it this way," said Craddick when asked to comment on the missing report, "DLNR said they didn't receive it."

Craddick also told The Maui News that, in the future, he believes if burials are encountered in the area in construction of the pipeline, they should be moved.

"It's not his call," said Hall.

Once the two burials had been disturbed, SHPD administrator Don Hibbard ordered the project stopped via fax on Feb. 3. Craddick claimed this week that he had already halted the project the day before, but Hall disputed that.

In his Feb. 3 letter, Hibbard called commencement of the construction work at the site "premature" and said it "already had an 'adverse effect' on significant historic sites in the project area."

Hall was also concerned that permits needed for construction might have been issued. On Dec. 24, 1996, Hibbard asked engineer Bert Ratte of the county Land Use and Codes Administration "that the permit be held until we have an opportunity to submit our recommendations . . . ." Ratte refused to comment and referred all questions to Charles Jencks, director of Public Works and Waste Management for Maui County.

When contacted Wednesday, Jencks said that grading permits were not required for the project, but that a plumbing permit was. When asked if his department had issued a plumbing permit, Jencks said he didn't know, but he would get the information to The Maui News. He has yet to do so.
AGENDA

FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: February 18, 1997
TIME: 8:00 a.m.
PLACE: DLNR Board Room

1. Minutes of the January 23, 1997 meeting.

2. Old Business/Announcements

3. City and County of Honolulu, Department of Transportation Services, Request for Extension to Stream Channel Alteration Permit, Reconstruction of a Bikeway Bridge, Kaelepu Stream, Kailua, Oahu (TMK:4-3-10:84)

4. Department of Transportation, Application for a Stream Channel Alteration Permit Construction of Bridge Abutments, Footing and Wing Walls for a Highway Widening Project, Pohakea Stream, North Kihei, Maui, (TMK 3-6-01:14 and 3-8-5)

5. Maui Board of Water Supply, Extension of Permit, North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03), Request to Install 1050 gpm Pumps for Domestic Use, TMK 3-2-1:4, Waiheee, Wailuku, Maui

6. Maui Board of Water Supply, After-the-Fact Application for Well Permit, Kepaniwai Well (Well No. 5332-05), Pump Replacement: 700-gpm Pump for municipal use, Wailuku, Maui, TMK 3-3-3:5

7. Hawaii Country Club, Application for a Water Use Permit, Hawaii Country Club Well (Well No. 2603-01), TMK 9-4-2:8, Modification of Water Use Permit for Future Golf Course Irrigation Use for 1.0 mgd, Waipahu-Waiawa Ground Water Management Area, Oahu

8. Luana Hills Country Club (formerly Royal Hawaiian Country Club), Transferral of Water Use Permits, Royal Hawaiian Wells (Well Nos. 2145-01 and 2045-06), TMK 4-2-8:001 & 4-2-9:001, Waimanalo Ground Water Management Area, Kailua, Oahu
Agenda
Commission on Water Resource Management

9. Honolulu Board of Water Supply, Application for a Water Use Permit, Nuuanu Aerator Well, (Well No. 2149-03), TMK 1-09-07:2, Future Municipal Use for 0.5 mgd, Nuuanu Ground Water Management Area, Oahu

10. The Estate of James Campbell, Modification of a Water Use Permit, EP 7, 8 Well (Well No. 2202-15 to 20), TMK 9-1-17:04, Future Nonpotable Urban Use for 1.142 mgd, Waipahu-Waiawa Ground Water Management Area, Oahu

11. Land Process Service Corporation, Revocation of Water Use Permit, LandPro Well (Well No. 1849-07), TMK 2-8-09:76 for 0.001 mgd, Nuuanu Ground Water Management Area, Oahu

12. Other Business

Materials related to items on this agenda are available for review at our office at 1151 Punchbowl Street, Room 227, and also will be available at the meeting.

Any person may testify or present information on any meeting agenda item, unless the item involves a proceeding in an existing contested case. In addition, if you have a legal interest that may be adversely affected by the proposed action, you may have a right to an administrative contested case hearing. You must make the request for such a hearing either orally or in writing at the public hearing or meeting for which this notice is given. Hawaii Administrative Rules (H.A.R.) Section 13-167-52(a).

If you request a contested case hearing, you will have the opportunity to present to the Commission oral or written evidence or testimony or both to establish your standing. You may present your testimony or evidence on standing at the meeting or public hearing described above or, alternatively, at a hearing set by the Commission at a later date.

If you request a contested case hearing either orally or in writing, you must also complete and file (or mail and postmark) a written petition for a contested case with the Commission within ten days after the date of the public hearing or meeting noticed here. Petition forms are available from the Commission. H.A.R. Section 13-167-52(a).

If you do not make such a request or fail to file a timely written petition with the Commission, the consequence is that you will be precluded from later obtaining a contested case hearing and seeking judicial review of any adverse decision. H.A.R. Chapter 13-167.

Disabled individuals planning to attend the public hearing or meeting are asked to contact the Commission at the above address or phone (Kauai) ext. 70214, (Maui) ext. 70214, (Hawaii) 974-4000 ext. 70214, (Molokai or Lanai) 1-800-GOV-INHI ext. 70214 or 587-0214 to indicate if they have special needs which require accommodation.
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

February 18, 1997
Honolulu, Oahu

Maui Board of Water Supply
Extension of Permit
North Waihee Wells 1 & 2, (Well Nos. 5631-02 & 03)
Request to Install 1050 gpm Pumps for Domestic Use
TMK 3-2-1:4 Waihee, Wailuku, Maui

APPLICANT:  
Maui Board of Water Supply
P.O. Box 1109
Wailuku, HI 96793

LANDOWNER:  
Same

ACTIONS REQUESTED:

Extension of pump installation permit four months, from March 1, 1997 to July 1, 1997, for installing a 1050 gpm (gallons per minute) pump in each of two North Waihee Wells for private municipal use.

LOCATION: See Exhibit 1.  
DIMENSIONS: See Exhibit 2.

BACKGROUND:

March 25, 1993  
Pump Installation Permits for North Waihee Wells 1 & 2 were issued. Due to delays in other aspects of the residential development project, action on the permits was also delayed. Several requests for extension of the start date were made and administratively approved.

March 1, 1995  
Pump Installation Permits were extended, with a new expiration date of March 1, 1997. The start date was set to expire in two months, to require applicant to return to the Commission if delays continued. The permits were issued March 14, 1995.
Nov. 14, 1995 Following three separate two-month extensions of the start date, all of which went to the Commission for action, the Commission denied further extension of the start date, allowing for revocation of the permit as of January 13, 1996, unless the site ownership was successfully transferred and a schedule of actual installation work was provided to the Commission.

January 24, 1996 The Commission rescinded the revocation of the permit, as its conditions for doing so were met. Transfer of the permit was duly recorded. In a separate action concerning designation of Iao Aquifer as a water management area, action milestones were set in place, including a start deadline for pump installation at North Waihee (Phase I - first well/1.5 mgd) of November 1, 1996. On March 18, 1996, staff received a written request for a two-month start date extension under the original permit extension, with a work schedule attached; the extension was accepted administratively, from May 14, 1996 to July 14, 1996. Another written request was submitted June 10, for a start date extension to September 14, 1996; no staff action was taken at this point in view of the November 1, 1996 deadline set under the Iao milestones.

December 9, 1996 Staff received a letter from the applicant 1) indicating that a notice to proceed had been issued October 14, 1996; and 2) requesting an extension of the permit beyond the original March 1, 1997 deadline to June 16, 1997 to be consistent with a new contract schedule of work. BWS staff indicated that the contractor was beginning to marshal materials and grub the site, while a shipping delay meant that the pump would be installed in February 1997.

At a meeting on Maui to discuss designation of the Iao Aquifer, the Commission approved new action milestones, including commencement of work on pump installation by February 1, 1997, with evidence to be provided by February 8, 1997.

WATER AVAILABILITY:

Waihee Aquifer System (at Iao System boundary) of Wailuku Sector.
Estimated Sustainable Yield: 8 mgd. Existing Use: none.
Proposed Use: 2-3 mgd.
Anticipated pump capacity: 1050 gpm.
ISSUES/ANALYSIS:

The wells will develop fresh, basal water for municipal use. The wells' static head currently stands about 7-8 feet above sea level. Pump tests have demonstrated that the drawdown from heavy pumping is relatively minor, with full recovery nearly instantaneous. Salinity is very low. Recent work by USGS indicates that these wells interact with the Iao Aquifer system and that current water levels and well depths may limit the capacity to produce water from these wells with chlorides below 250 mg/l. The applicant has chosen to reduce the pump size from 1400 to 1050 gpm, with the expectation that the total safe yield from these wells is probably closer to 3 mgd than the original prospective 4 mgd. Phase 1 will install the first pump in one of two wells, with capacity of 1.5 mgd; Phase 2, to install a pump in the other well for a total capacity of 3 mgd, is scheduled about four months behind Phase 1.

John Mink believes that there should be no stream effects because the stream channel in this vicinity is 200 feet above sea level.

While the BWS witnessed the lengthy period of failure to perform on this permit by the previous permittee and the Commission's determination to have the project problems resolved, the BWS has continued to make optimistic estimates of time for completing this project. The Commission has accommodated new work schedules by the applicant, extending the start date for twice the normal period once the permit was transferred.

RECOMMENDATION:

A. That the Commission authorize the Chairperson to extend the pump installation permit for North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for four (4) months, to July 1, 1997, based upon evidence that work actually started.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Exhibit(s) 1 (Location Map)
2 (Proposed Well Section)
Briefly describe the proposed work:

Subject wells were drilled and tested between March and August 1981.

PROPOSED SECTION OF WELL

Elevation at top of casing:
284 ft., msl.

Cement Grout: 200 ft.

Hole Diameter: 20 in.

Total Depth: 363 ft.

Rock Packing: 108 ft.

Ground Elevation: 283 ft., msl.

Solid Casing: ASTM Designation A-242
USS Cor-ten, Kaiser
Material Steel Kaisaloy
Length 289 ft.
Diameter 16 in.
Wall thickness 0.3125 in.

Casing: ☐ Perforated ☐ Screen
USS Cor-ten, Kaiser
Material Steel Kaisaloy
Length 20 ft.
Diameter 16 in.
Wall thickness 0.25 in.
Openings 100 sq. in./A.F.

Open Hole:
Length 79
Diameter 15 in.
DATE: 07/15/96

TO: Rae Lewis, Dep. Dir

Fax No. 581-02-19

Subject: NWaihee Evaluation on Dispute between Wailuku Agribus/DWS

No. of Pages (including this transmittal): 5

REMARKS:

Transmitter: Daddick

NOTE: If you have not received all of the pages, please call (808) 243-7816
Mr. David Craddick  
Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Maui, Hawaii 96793

January 8, 1996

RE: C. BREWER HOMES & MAUI BOARD OF WATER SUPPLY

Dear Mr. Craddick:

In response to your letter of December 18, 1995, I submit the following information.

Pursuant to the Letter of Engagement, I agreed to serve as Evaluator on the dispute between Wailuku Agribusiness Co., Inc. and the Board of Water Supply concerning the Waihee Aquifer. The scope of my work was spelled out to be:

1. Assess the land and water resource, based on information provided by the parties or requested of the parties by the evaluator.

2. Assess the positions of the parties concerning the nature and scope of compensability for the value of the resources under consideration and the methods to quantify the value.

3. If requested by the parties, provide direction to the parties as to possible avenues and methods to narrow the gap in the positions of the parties, if any.

I met with the representatives of Wailuku Agribusiness and the Board of Water Supply on two occasions, July 17, 1995 in Wailuku, and again on August 10, 1995 in Honolulu at my office. The initial meeting was to enable me to gain a better understanding of my
role as an evaluator and to adopt a briefing schedule for
the parties.

Pursuant to a schedule established, briefs were
submitted to me by the parties. Subsequent to reviewing
the briefs and forming an understanding of the issues
from the parties, I met with the Board of Water Supply
representatives; John S. Rapacz, Esq., Deputy Corporation
Counsel; Marie Kimmey, AIA; J. Alan Kugle, Executive Vice
President/General Counsel of C. Brewer; Pete Moynahan,
President/Chief Executive Officer of C. Brewer; and Paul
Mancini, Esq., representing Wailuku Agribusiness.

During these sessions, I gained an
understanding of the goals of the parties and perception
each party had on legal and factual issues. In my
discussions with the parties, I formulated and expressed
to them an opinion that condemnation of the property by
the Board pursuant to Eminent Domain powers would
undoubtedly meet with vigorous resistance by Wailuku
Agribusiness and would clearly not meet the objectives
that each of the parties had established. It would be
an unsatisfactory solution based on the considerable
costs involved, the time consumed, and the great
uncertainties for both parties. I emphasized to the
parties that because of the more than 20 years of
litigation involved in the Hanapepe litigation, there
exists considerable confusion regarding the law on water
rights in the State of Hawaii. Particularly with
the wide split between Federal and State courts, there is
great confusion presently because of this conflict. The
valuation matter would also involve a battle of experts
over valuation.

For these and other reasons, I explained that
I did not believe, and they both concurred that a
judicial resolution would not satisfy the business and
political objectives of each of the parties. I suggested
that the parties compromise their positions to resolve
the valuation matters at hand. I understand that this
has been accomplished and the matter is now proceeding
to closing.
Mr. David Craddick
January 8, 1996
Page 3

I congratulate the parties on their ability to focus on the issues and to come to a resolution which I believe serves both purposes of the private and public sectors in a reasonable manner.

Very truly yours,

FONG & FONG
Attorneys-at-Law

By [Signature]

ARThUR S.K. FONG

ASKF:jfm
December 18, 1995

Mr. Arthur S.K. Fong
FONG & FONG
Attorneys At Law
Grosvenor Center, PRI Tower
733 Bishop Street, Suite 1550
Honolulu, Hawaii 96813-4006

Dear Mr. Fong:

We would like to request a write-up on your analysis of the N. Waihee evaluation performed for the Board of Water Supply and C. Brewer.

We would pay for the write-up at the previously agreed rate. This write-up is needed for the record.

Your early response is greatly appreciated.

Sincerely,

David Craddick, Director
DC/jaw
CO. MISSION ON WATER RESOURCE MANAGEMENT

FROM:   
DATE: 6/17
SUSPENSE DATE

PLEASE:

See Me
Review & Comment
Take Action
Type Draft
Type Final
File
Xerox copies

TO: INIT. TO: INIT. FOR: PLEASE:
BAUER, G. LOUI, R. Approval
CHING, F. NAKAMA, L. Signature
FUJII, N. NAKANO, D. Information
HARDY, R. OHYE, M.
HIGA, D. SAKODA, E.
HIRANO, E. SUBIA, S.
ICE, C. SWANSON, S.
JINNAI, R. UWAINIE, J.
KUNIMURA, I. YODA, K.

publ. for bid: July 5
opening date: Aug 8
award bid: Aug 26
NTP: Sep. 17 Ed Mty.  1965 20

2 July 2065: Ed Mty.
June 10, 1996

Mr. Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii  96809

Dear Mr. Wilson:

Subject: Pump Installation Permit
North Waihee Wells 1 and 2
(Wells No. 5631-02 & 03)

We have reviewed our schedule and progress of the completed bid documents and have determined that our plans will not be completed in timely manner to meet the revised start date for the pump installation work.

We respectfully request an extension of two (2) months for a start date by September 14, 1996.

If there are any questions, please call our Engineering Division at [Phone number]

Sincerely,

David R. Craddick
Director

hk
March 15, 1996

Honorable Rae M. Loui
Deputy to Chairperson
State of Hawaii
Department of Land & Natural Resources
Commission on Water Resource Management
P. O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Loui:

In response to your letter of March 12, we offer the following:

1. Enclosed are copies of Exhibits A & B for the Unemori Contract showing preparation of the bid package for the North Waihee well development were included in the contract;

2. Colored copy of attachment to, and documentation of the extension of the December 21, 1995 Closing Agreement with Wailuku Agribusiness;

3. Item #4 requests information regarding the relationship the "Purchase Agreement dated December 21, 1995 and the Grant of Easement for North Waihee Wells.

The Purchase Agreement referred to is the Closing Agreement. The Closing Agreement was used to outline each parties position prior to final agreement. After a due diligence period, the "deal" documents were executed and consideration given. "Deal documents" include:

- Limited Warranty Deed
- Co-Tenancy Agreement and Agreement for Restrictive Covenants;
- Grant of Easement (Well Field 1);
- Release and Quitclaim of Right in Easement Area (Well Fields 2 and 3);
- Grant of Easement (Well Fields 2 and 3);
- Notice of Agreement;
- Declaration of Restrictive Covenant.

"By Water All Things Find Life"
Honorable Rae M. Loui  
Page Two  
March 15, 1996

The Grant of Easement gives the Board of Water Supply (BWS) the unfettered right to drill and develop water on a number of sites and the right to relocate sites, if required. The Limited Warranty deal with the purchase of a portion of North Waihee watershed property (A-1 on Item 2) and a Conservation Easement for a portion of the South Waihee watershed and portions of Waiehu watershed (A-2 on Item 2).

Water Source credits are not being given to anyone in these agreements. There is a provision for participation with Brewer after 5 MGD of water is developed.

Item #5 and #6 are enclosed for your review.

The contract for installation of pumps into the Hamakuapoko Wells has been executed and a contract for an EIS Supplement has been executed. The pumps will be used for testing only until DOH & OEQC requirements have been met.

The Haiku Well is not connected to the Central Maui System and cannot be used to reduce Iao demand.

We hope these answers satisfy your requirements.

Sincerely,

David Craddick, Director  
DC/jaw

copy: Marie Kimmey, BWS Chairperson  
George Y. Tengan, Deputy Director
EXHIBIT A

SCOPE OF ENGINEERING SERVICES
FOR THE DESIGN OF
THE DEVELOPMENT OF THE
NORTH WAIHEE WELLS
IN WAIHEE, MAUI, HAWAII

WARREN S. UMEMORI ENGINEERING, INC. will proceed through a series of tasks comprising of the design of the development of the North Waihee Wells. The scope of the work is described in the attached letters.
December 7, 1995

Mr. David Craddick, Director  
Department of Water Supply  
County of Maui  
200 South High Street  
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Wainee Wells Development

In response to your request of December 4, 1995 we are pleased to submit this proposal to complete the work necessary to finalize plans and specifications for the following:

PHASE I. INSTALLATION OF 24 INCH TRANSMISSION LINE ON KAHEKILI HIGHWAY BETWEEN KUHINIA STREET AND WELL SITE ACCESS ROAD. ALSO 16 INCH TANK FEEDER LINE BETWEEN WELL SITES 1 AND 2 AND KAHEKILI HIGHWAY

Scope of Services in Proposal to C. Brewer Homes, Inc.:


  - Work Completed to Date:

  1.1 Conducted topographic survey of Kahekili Highway between project limits. Located existing water meters, water lines, fire hydrants, valves, culvert crossings, sidewalks, sewer lines, etc.

  1.2 Developed topographic map therefrom plotting adjoining property boundaries, driveways, etc.

  1.3 Developed approximate right-of-way line for Kahekili Highway based on adjoining property descriptions and right-of-way maps available.

  1.4 Conducted topographic survey of access road between Well Site 1 and 1 and Kahekili Highway.
Task 2. Engineering Design Services.

Work Completed to Date:

2.1 Met with client, SDOT, and DWS to discuss objectives and scheduling of project.

2.2 Developed plan and profile for waterline along Kahekili Highway and Waihee Stream crossing.

2.3 Determined size of waterline needed to deliver minimum of 9 MGD, allowing for reasonable head losses.

2.4 Developed details for stream crossing and typical trench and pavement sections.

2.5 Developed construction traffic control plan per State DOT standards.

2.6 Submitted construction plans to State DOT and Department of Water Supply for approval. (First Submittal)

Work Remaining:

2.7 Incorporate agency comments after first review and resubmit for final.

2.8 Prepare NPDES permit application and Best Management Practice BMP plan for trench bewatering and submit to DOH for approval.

2.9 Develop technical specs.

2.10 Develop cost estimate.

2.11 Develop contract bid documents.

2.12 Assist client with the bidding and bid review process.
Mr. David Craddick
North Waihee Wells Development
December 7, 1995
Page 3

• Task 3. Installation of 16 Inch Tank Feeder Line Between Well Sites 1 and 2 and 24-inch Line on Kahekili Highway.

• Additional Work:

3.1 Develop plan and profile for 16-inch tank feeder line along existing access road.

3.2 Develop plans for temporary connection between 16-inch tank feeder line and 24-inch transmission line on Kahekili Highway.

• Task 4. Temporary Connection Between 24-inch Transmission line on Kuhinina Street and existing Distribution System on Kahekili Highway.

• Additional Work:

4.1 Prepare plans to connect new 24-inch transmission line to the existing 6-inch line on Kanekili Highway south of Kuhinina Street intersection.

4.2 Prepare plans to install pressure regulator assembly between the 24-inch transmission line and Waihee Village distribution system north of Kuhinina Street.

COMPENSATION

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>Engineering Design Services</td>
<td>$ 51,000</td>
</tr>
<tr>
<td>4.0</td>
<td>16-inch Feeder Line along Access Road</td>
<td>$ 12,000</td>
</tr>
<tr>
<td>4.1</td>
<td>Temporary Connection on Kanekili Highway in Vicinity of Kuhinina Street</td>
<td>$ 4,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE I: $ 67,000
PHASE II. DEVELOPMENT OF NORTH WAIHEE WELLS 1 AND 2

Scope of Services in proposal to C. Brewer Homes Inc.

- Task 1. Civil Engineering.
  - Work Completed to Date:
    1.1 Prepared well site grading plan.
    1.2 Prepared site plan showing layout of equipment building, generator, electrical transformer pad and driveway.
    1.3 Prepared site drainage plan.
    1.4 Prepared plans to pave well site and access driveway.
    1.5 Prepared fencing plan to secure well site.
    1.6 Designed equipment building to house chlorinator, MCC, diesel generator and JCHSA system.
    1.7 Coordinated work with electrical and mechanical subcontractant and submitted plans and specs for agency review. "First Submittal"
  - Work Remaining:
    1.8 Incorporate agency review comments and resubmit plans and specs for final approval of DPW, IWS, JCH, and JLR.
    1.9 Prepare engineering report for approval by DOH Clean Water Branch.
    1.10 Prepare technical specs, proposal, and contract bid documents.
    1.11 Assist client solicit and review bids.
Task 2. Mechanical and Electrical Engineering.

- Work Completed to Date:
  2.1 Prepared plans for deepwell pumps to be installed in existing wells.
  2.2 Prepared plans for two sets of discharge piping, control valves, flow switches, solenoid valves, and well level recording devices.
  2.3 Designed chlorination system, exhaust air system, compressor, and flow meter assembly.
  2.4 Prepared plans for Motor Control Center (MCC), electrical conduits and wiring, incoming power ducts and transformer pad, and meter system.
  2.5 Prepared plans for emergency generator, automatic transfer switch and concrete mounting pad for same.
  2.6 Prepared plans for SCADA and telemetry system.

Task 3. Geologist (John Mink)

- Work Remaining:
  3.1 Provide general advice on setting for installation of pumps in North Waihee Wells 1 and 2.
  3.2 Write protocol for engineering report to be submitted to DOH.
  3.3 Oversee pumping tests on these wells.

Task 4. Temporary Pump Control for Wells 1 and 2 and Connection to Existing Distribution System.

- Additional Work:
  4.1 Run pipe analysis to determine capacity of existing system.
4.2 Evaluate pump curve to determine whether deep-well pump needs to be modified for temporary hook-up to existing low level water system.

4.3 Prepare plans and specifications for temporary pump control between Wells 1 and 2 and Waiehu Heights Tank.

COMPENSATION

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Task</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Civil Engineering</td>
<td>$5,500</td>
</tr>
<tr>
<td>2.</td>
<td>Mechanical and Electrical Engineering</td>
<td>$7,000</td>
</tr>
<tr>
<td>3.</td>
<td>Geologist</td>
<td>$2,500</td>
</tr>
<tr>
<td>4.</td>
<td>Temporary Pump Control Between Wells 1 and 2 and Waiehu Heights Tank</td>
<td>$4,200</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE II:

TOTAL FEE PROPOSED - PHASES I AND II:

The State G&T (4.16%) will be added to all fees.

DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is:

$3,100
SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases I and II within sixty (60) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project.

2. Environmental Assessment.
5. Soil Engineering, if required.

Thank you for giving us the opportunity to submit this proposal. If you have any questions, please call us. We look forward to receiving authorization to complete the design of Phases I and II of the project.

Sincerely,

Warren J. Memori
Mr. David Craddick, Director
Department of Water Supply
County of Maui
300 South High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waihee Wells Development

This proposal is being submitted to complete the unfinished scope of services for Phases III, IV, and V of subject project as requested in your letter of November 28, 1995. The proposal for Phases I and II, which had a higher urgency, was submitted yesterday.

The scope of services for Phases III, IV, and V are as follows:

PHASE III. INSTALLATION OF 24 INCH TRANSMISSION LINE BETWEEN KUHINIA STREET AND THE CMJV 1.0 MG RESERVOIR IN UPPER WAIEHU

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:

  1.1 Established horizontal and vertical survey controls along transmission line route between Kuhinia Street and CMJV well source.

  1.2 Conducted topographic survey of transmission line route including quick crossings, and developed topographic map therefrom.

- Work Remaining:

  1.3 Develop metes and bounds descriptions and maps for transmission line easement between Kuhinia Street and CMJV well source.
Task 2. Engineering Design Services

- Work Completed to Date:

2.1 Set up preliminary plan and profile work sheets for transmission line.

2.2 Prepared exhibits for stream alteration permit at four (4) drainage crossings.

- Work Remaining:

2.3 Finalize plan and profile of water system.

2.4 Design drainage structure at Waiehu Stream and Kope Gulch crossings.

2.5 Develop typical details of pavement section and construction traffic control plan for Maliahi Road in Upper Waiehu.

2.6 Prepare plan of water system details.

2.7 Prepare plans for connection to existing 1.0 MG Upper Waiehu Reservoir.

2.8 Develop technical specs, cost estimate and contract bid document.

2.9 Submit plans and specs for agency review.

2.10 Address review agency comments and resubmit plans for final approval.

2.11 Prepare NPDES permit application and Best Management Practice (BMP) plan for stream crossing and disposal of water from hydrotesting and rewatering.

2.12 Assist client with the bidding and bid review process.
COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$3,000</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$128,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE III: $137,000

PHASE IV. CONSTRUCTION OF 0.5 MG CONTROL TANK AND SITE IMPROVEMENTS, INCLUDING GRADING AND PAVING OF TANK SITE AND ACCESS ROAD, INSTALLATION OF 24 INCH INFLOW AND OUTFLOW LINES AND DRAINAGE SYSTEM

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- **Work Completed to Date:**
  
  1.1 Established horizontal and vertical survey controls along tank access road and at tank site.

  1.2 Conducted topographic survey of 0.5 MG tank site.

  1.3 Conducted topographic survey of access road to tank site.

  1.4 Developed topographic map therefrom.

- **Work Remaining:**
  
  1.5 Develop subdivision map to cut out tank site from TMK 3-2-01:03 following establishment of the tank site limits.

  1.6 Prepare easement for tank access road.
1.7 Prepare metes and bounds description for tank site and tank access road easement.

1.8 Prepare subdivision application and transmit to DWS for submittal to LUCA for processing.

Task 2. Design Engineering Services

- Work Remaining:

2.1 Prepare mass grading plans for tank site and access road.

2.2 Prepare plans for tank access road.

2.3 Prepare drainage and soil erosion control report.

2.4 Prepare drainage plans for tank site and access road.

2.5 Prepare fencing plans to secure tank site.

2.6 Coordinate plans with MECO to extend overhead power to tank site for booster pumps.

2.7 Prepare Best Management Practice, BMP, Plan and NPDES permit application.

2.8 Prepare plans to construct 3.5 MG reinforced concrete control tank with required piping, valves, and appurtenances.

2.9 Prepare plans to install concrete diversion main, concrete gutter, drainage system and pavement around reservoir site.

2.10 Prepare plans to construct equipment building to house WCO, UCMOD, and telemetry systems.

2.11 Prepare plan and profile for separate 14-inch inflow and outflow lines between Kanekili Highway and 3.5 MG control tank.
2.12 Prepare specs, cost estimate, and contract bid documents.

2.13 Submit plans and specs for agency review.

2.14 Address review agency comments and resubmit for final approval.

2.15 Assist client with the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>l.</td>
<td>Surveying Services</td>
<td>$12,000</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$129,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE IV: $141,000

PHASE V. BOOSTER PUMP STATION AT CONTROL TANK SITE AND SCADA TIE-IN AT DWS BASEYARD IN KAHLULI.

- Task 1:
  1.1 Prepare plans for two (2) short-coupled vertical booster pumping units.
  1.2 Prepare plans for two sets discharge piping, including control valves, flow switches, and solenoid valves.
  1.3 Prepare plans for Motor Control Center, electrical conduits and wiring, incoming power ducts and transformer pad, and metering system.
  1.4 Prepare plans for emergency generator, automatic transfer switch and concrete pad.
1.5 Design new instrument house to be located at Upper Waiehu Reservoir to house all SCADA and telemetry equipment, electrical and mechanical work.

1.6 Prepare plans to integrate SCADA system with Department of Water Supply's existing SCADA system.

1.7 Prepare cost estimate, specs and contract bid documents.

1.8 Submit plans and specs for agency review.

1.9 Address review agency comments and resubmit for final approval.

1.10 Assist client in the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fee:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design Engineering Services</td>
<td>$13,600</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE V: 13,600

TOTAL FEE PROPOSED - PHASES III, IV, AND V: 4,038,700

The State GET (4.167%) will be added to all fees.
DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $6,500

SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases III, IV, and V within one hundred fifty (150) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project:

1. Environmental Assessment.
2. Stream Alteration Permit.

We hope the foregoing reflects your understanding of the remaining work required to fully integrate Wells 1 and 2 with the TMJV transmission system. If not, please call us. We will be glad to meet with you to discuss any additional scope of services required.

Sincerely,

[Signature]

Warren S. Inemori
EXHIBIT B

TIME SCHEDULE

PHASE I AND PHASE II shall be completed within 60 days of the issuance on Notice to Proceed, exclusive of review time by governmental agencies.

PHASE III, PHASE IV, AND PHASE V shall be completed within 150 days of Notice to Proceed, exclusive of review time by governmental agencies.
GENERAL TERMS AND CONDITIONS OF CONTRACTS
OF THE DEPARTMENT OF WATER SUPPLY
FOR SERVICES OF CONSULTANTS

Section 1 - Definitions

1.01 Board
1.02 County
1.03 Consultant
1.04 Contract
1.05 Department
1.06 Director
1.07 HRS
1.08 Project

Section 2 - Award and execution of contract

2.01 Selection of consultant
2.02 Contract not binding unless properly executed
2.03 Agreements outside of the contract
2.04 Notice to proceed

Section 3 - Legal Relations and Responsibility

3.01 Independent contractor
3.02 Contracts by the consultant
3.03 Findings confidential
3.04 Ownership vested in department
3.05 Indemnity
3.06 Campaign contributions prohibited
3.07 Absence of interest
3.08 Laws, ordinances and codes, and rules
3.09 Arbitration
3.10 Professional liability insurance

Section 4 - Performance of contract

4.01 Time of performance
4.02 Delay
4.03 Liquidated damages
4.04 Prosecution of the work
4.05 Modification of contract
4.06 Authority of the director
4.07 Subcontracting or assignment of contract
4.08 Cooperation by the department
4.09 Use of department’s standards
4.10 Review by the department
Section 5 - Compensation

5.01 Compensation
5.02 Reduction or increase in compensation
5.03 Payments
5.04 Assignment of money due or payable

Section 6 - Remedies

6.01 Right of the board to suspend the performance of services
6.02 Right of the board to terminate the contract
6.03 Authority to withhold money due or payable
6.04 Remedies not exclusive

SECTION 1 - DEFINITIONS

1.01 "Board" means the Board of Water Supply, County of Maui.
1.02 "County" means the County of Maui, State of Hawaii.
1.03 "Consultant" means the individual, partnership, corporation, or joint venture engaged by the board to perform the services under the contract.
1.04 "Contract" means the written agreement covering the performance of certain professional services by the consultant. It shall include all referenced material, and all exhibits attached thereto and included therein. It shall also include all modifications of the contract by supplemental agreements thereto in writing and written orders of the director.
1.05 "Department" means the Department of Water Supply, County of Maui, including the Board of Water Supply.
1.06 "Director" means the director of the Department of Water Supply, County of Maui, or the director's representative.
1.07 "HRS" means Hawaii Revised Statutes.
1.08 "Project" means the undertaking under the contract.

SECTION 2 - SELECTION OF CONSULTANT AND EXECUTION OF CONTRACT

2.01 Selection of consultant. The consultant, upon being selected to render certain professional services for the project, will be notified of the consultant's selection by the director. The notice shall not be construed to be authorization to proceed with the performance of services.
2.02 Contract not binding unless properly executed. The contract shall not be binding or have any force until it has been fully and properly executed by all of the parties thereto, and the insurance policy required under subsection 3.10 is accepted by the director.

2.03 Agreements outside of the contract. The contract and this General Terms And Conditions Of Contracts Of The Department Of Water Supply For Services Of Consultants contain the complete understandings regarding the responsibilities of the department and the consultant, and as of the effective date of the contract, supersede all other understandings between the consultant and the department.

2.04 Notice to proceed. (a) The director shall issue a written notice to proceed, establishing the date on which the time of performance shall commence and authorizing the consultant to proceed with the performance of the consultant’s services.

(b) Services performed by the consultant prior to the date indicated in the notice to proceed shall be at the consultant’s own risk.

SECTION 3 - LEGAL RELATIONS AND RESPONSIBILITY

3.01 Independent contractor. The consultant shall perform the contract as an independent contractor. The consultant, the consultant’s subcontractors, agents, and employees shall not be entitled to the benefits and privileges of an employee of the county under the civil service system.

3.02 Contracts by the consultant. The consultant does not have the right to enter into any contract on behalf of or make any commitment on behalf of the department.

3.03 Findings confidential. Any report, information, or data prepared or assembled by the consultant under the contract shall not be made available to any individual or organization by the consultant without the prior written approval of the director.

3.04 Ownership vested in department. (a) Any and all data, information, field notes, designs, drawings, tracings, results, and any other thing derived or obtained directly or indirectly as a result of the contract shall be the sole and exclusive property of the department and the consultant shall not have any interest, right, or title in or to any of the foregoing.

(b) Prior to the release of retainage under subsection 5.03, or termination of the contract under subsection 6.02, the
consultant shall submit the items prepared pursuant to subsection (a) herein to the department.

3.05 Indemnity. The consultant shall defend, indemnify, and hold harmless the board, its officers, employees, and assigns, from and against any and all claims, suits, actions, injuries to persons, damages to property, and wrongful death, that may arise out of or in connection with any errors, omissions, or negligent acts by the consultant, the consultant's subcontractors, agents, and employees, in their performance of the contract until such time as any action against the consultant is barred by Chapter 657 HRS, as amended, and shall reimburse the board, its officers, employees, and assigns, for any judgments, costs, and expenses, including attorney's fees, incurred in connection with the defense of any such claim, or incurred by the board in enforcing this provision.

3.06 Campaign contributions prohibited. No portion of the consultant's compensation under the contract shall be used for campaign contributions.

3.07 Absence of interest. The consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. The consultant further covenants that in the performance of this contract, no person having any such interest shall be employed.

3.08 Laws, ordinances and codes, and rules and regulations. (a) The consultant shall be fully informed of all applicable federal and state laws, county ordinances and codes, and federal, state, and county rules and regulations, which in any manner affect the contract and the performance thereof, including but not limited to:

(1) Article 1 of Title 10, Maui County Code, as amended, relating to the traffic code,

(2) Title 12, Maui County Code, as amended, relating to streets, sidewalks, and public places,

(3) Article 1 of Title 14, Maui County Code, as amended, relating to improvement districts,

(4) Chapter 16.04, Maui County Code, as amended, relating to the Model Fire Code,

(5) Chapter 16.08, Maui County Code, as amended, relating to the Housing Code,

(6) Title 19, Maui County Code, as amended, relating to zoning,
(7) Chapter 16.24, Maui County Code, as amended, relating to the Building Code,

(8) Chapter 16.16, Maui County Code, as amended, relating to the Electrical Code,

(9) Chapter 16.20, Maui County Code, as amended, relating to the Plumbing Code,

(10) Chapter 103, HRS, as amended, relating to expenditure of public money,

(11) Chapter 104, HRS, as amended, relating to wages and hours of employees on public works,

(12) Chapter 22 of Title 12, Hawaii Administrative Rules, relating to wage determinations

(13) Chapter 132, HRS, as amended, relating to the fire marshal,

(14) Chapter 321, HRS, as amended, relating to the Health Department,

(15) Chapter 343, HRS, as amended, relating to environmental impact statements.

(16) Chapter 178, HRS, as amended, relating to fair employment practices,

(17) Chapter 376, HRS, as amended, relating to industrial safety,

(18) Chapter 386, HRS, as amended, relating to workers' compensation,

(19) Chapter 396, HRS, as amended, relating to occupational safety and health.

(20) Section 507-17, HRS, as amended, relating to recovery on bond for materials and labor used on public works.

(21) Chapter 200 of Title 11 of the department of health, relating to environmental impact statements.

(22) Part 3 of Subtitle 8 of Title 12, Hawaii Administrative Rules, relating to construction standards.

(23) Article II, Special Management Area Rules and Regulations of the County of Maui.

(24) Title 19 of the Maui County Code, relating to zoning.
(b) If any discrepancy or inconsistency is discovered between the contract and any such law, ordinance, code, or rule, the consultant shall forthwith advise the director, in writing, of such discrepancy or inconsistency.

(c) The consultant shall comply with all such current laws, ordinances and codes, and rules.

(d) If, in part, the consultant's work includes the preparation of construction bid documents, the department's furnishing of the general conditions, and forms of the proposal, bid bond, contract, and performance and payment bond under subsection 4.09, does not waive the consultant's responsibility under this subsection and consultant shall be fully responsible for the design of the project.

3.09 Arbitration. (a) Any controversy arising out of the contract, the refusal to perform the contract or any portion thereof, or the breach thereof shall be settled by arbitration in accordance with the rules of the American Arbitration Association and judgment rendered by such arbitration shall be binding upon the board and the consultant. Each party shall bear its own costs and shall equally pay for any and all fees, costs, and expenses of the arbitrator.

(b) The consultant shall not delay the work because arbitration proceedings are pending or in progress, unless approved, in writing, by the board.

3.10 Professional liability insurance. The insurance to be procured and maintained under the contract shall not be less than one million dollars.

SECTION 4 - PERFORMANCE OF CONTRACT

4.01 Time of performance. Time is of the essence of the contract. Performance of the services shall be commenced on the commencement date designated in the notice to proceed, and shall be completed within the contract time specified in the contract.

4.02 Delay. (a) If any delay in the performance of the consultant's services occur as a result of unforeseeable causes beyond the control and without the fault or negligence of the consultant, including but not limited to acts of God, acts of the public enemy, acts of the department with respect to the contract, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe unforeseeable causes beyond the control and without the fault or negligence of the consultant and the consultant's subconsultants, the consultant shall be granted an
extension of the time of performance, corresponding to the length of the delay.

(b) If, as a result of the delay, completion of performance within the extended time causes undue hardship to the consultant, the director may, in the director's discretion, grant a further extension of the time of performance.

(c) No extension of time shall be granted unless a written application, stating in detail the cause or causes for such delays is filed by the consultant with the director within ten calendar days after the commencement of the delay. The period of time of each extension of time shall be determined by the director. No such extension shall be deemed a waiver of the right of the board to terminate the contract for any other or additional delay not covered by the specific terms of such an extension or extensions.

4.03 Liquidated damages. Due to the speculative character and difficulty of ascertaining damages to the department resulting from any delay beyond the contract time, the consultant, for the purpose of putting the question of damages beyond controversy and dispute, shall pay the board an amount equal to the daily rate set forth in the contract multiplied by the number of days beyond the contract time as liquidated damages and not as a penalty for work which remains incomplete beyond the contract time or as extended by the director; provided that the remedy of liquidated damages shall be in addition to any other rights and remedies otherwise available to the board and not expressly waived herein.

4.04 Prosecution of the work. (a) The consultant shall be available upon reasonable demand to discuss the progress of the services being performed. All questions arising during the performance of the contract which must be resolved by the director shall be brought to the director's immediate attention.

(b) The consultant shall perform the consultant's work in accordance with established practices for good exterior appearance, and the natural and man-made environment; provided that if the project is for an economic feasibility study or other study, the consultant shall direct the consultant's work to relate appropriately to and in accordance with established principles, practices, and standards for such study.

(c) The consultant shall furnish sufficient technical supervision and administrative personnel to insure the proper performance of the services under the contract.

(d) The consultant shall be responsible for the accuracy of all computations, completeness, and integrity of all designs and plans or studies.
(e) The director shall have access at all reasonable times to all notes, designs, drawings, tracings, or other technical data pertaining to the services being performed under the contract for the purpose of inspection or making copies thereof.

4.05 Modifications of contract. (a) The department may at any time revise the scope of the project or the consultant’s scope of work provided that such revisions shall be made by an amendment to the contract.

(b) No waiver or modification of the contract, or any provision therein shall be valid unless such waiver or modification is in a form of an amendment to the contract and executed by the consultant and the board.

(c) No document, other than an amendment to the contract and executed by the consultant and the board, purported to be a waiver or modification of the contract, or any provision therein shall be offered or received in evidence of any proceeding, arbitration, or litigation arising out of or affecting the contract, or the rights or obligations of the consultant or the board.

4.06 Authority of the director. Any question or dispute concerning any provision of the contract which may arise during its performance shall be decided by the director. The decisions of the director shall be final and binding upon all parties unless such decisions is fraudulent, capricious, arbitrary, or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. Any appeal under this subsection shall be submitted to the board. Nothing herein shall be construed as making final and binding any decision of the director or the board, or both, on a question of law. Pending final decision of any dispute or question, the consultant shall proceed diligently with the consultant’s performance of services in accordance with the decision of the director or the board.

4.07 Subcontracting or assignment of contract. The consultant shall not subcontract or assign all or any part of the performance of the consultant’s services without the prior written consent of the director. Any consent by the director to subcontract any portion of the contract shall not be construed to relieve the consultant of any responsibility for the performance of the contract.

4.08 Cooperation by the department. The department, without cost to the consultant, shall cooperate fully with the consultant and will promptly place at the consultant’s disposal all available pertinent information which the department may have in its possession.

4.09 Use of department’s standards. (a) The consultant shall refer to the department’s standard details and shall not
duplicate such standard details in the consultant's work, unless the consultant makes modifications thereto.

(b) The department will provide the consultant with the general conditions, and formats of the proposal, bid bond, contract, performance and payment bond.

4.10 Review by the department. (a) The department will review the consultant's work, and may ask that certain modifications be made thereof. If, in the consultant's judgment, such modifications by the department affect the consultant's responsibilities under the contract, the consultant shall advise the director in writing.

(b) The inclusion of the department's comments does not waive the consultant's responsibilities under subsection 4.04.

SECTION 5 - COMPENSATION

5.01 Compensation. The consultant shall be paid the amount stated in the contract, reduced or increased pursuant to subsection 5.02, as full compensation for his services under the contract.

5.02 Reduction or increase in compensation. (a) The compensation of the consultant shall be reduced or increased in accordance with the modifications to the consultant's scope of work as the contract is amended under subsection 4.05.

(b) The compensation of the consultant shall be increased to reimburse the consultant for increased costs to perform the services if performance of the services is delayed by more than six months by an act or omission of the department; provided that the consultant submits within thirty days following the termination of the delay, in writing, a request for reimbursement containing:

(1) the reimbursement requested;

(2) the act or omission of the department causing the request for reimbursement;

(3) the services of the consultant affected by the department's act or omission;

(4) a breakdown of the requested reimbursement; and

(5) other information which the consultant and the director deem relevant to the request.
5.03 Payments. (a) As long as the services of the consultant are performed in accordance with the contract, the department may pay the consultant monthly progress payments based upon the value of the services performed by the consultant, as estimated by the consultant and the director.

(b) The department may retain up to five percent from each monthly progress payment, and after fifty percent of the compensation under the contract is paid, and the consultant's performance is satisfactory, no additional amount will be retained; provided that if the consultant's performance is not satisfactory, the director may retain up to five percent of all amounts due the consultant.

(c) Final payment, inclusive of amounts retained by the department, shall be made (1) upon determination by the director that the consultant has satisfactorily fulfilled his obligations under the contract, and (2) in accordance with chapters 103-53 and 237-45, HRS, upon receipt of a tax clearance from the department of taxation, certifying that the consultant has paid all delinquent taxes levied or accrued.

5.04 Assignment of money due or payable. Assignments of money due or to become payable to the consultant shall not be valid without the prior written consent of the director. The rights of the assignee to moneys due or to become due to the consultant shall be subject to subsection 6.03.

SECTION 6 - REMEDIES

6.01 Right of the board to suspend the performance of services. (a) The board has the right to order the suspension of the performance of the services or portions thereof at any time. The order shall:

(1) Be in writing;

(2) State the reason or reasons for the suspension;

(3) Specify the portions of the contract being suspended; and

(4) Specify the estimated period of suspension.

(b) If the board orders the suspension of the entire performance of services and the estimated period of suspension is more than six months, the consultant has the right to terminate the contract; provided that he submits a request for termination within six months following receipt of the order for suspension.
(c) If the contract is not terminated within six months, the consultant may request reimbursement for additional costs incurred due to the suspension of work.

6.02 Right of the board to terminate the contract. (a) The board has the right to order the termination of the contract at any time. The order shall be in writing and shall be forwarded to the address of the consultant stated in the contract.

(b) The board may terminate the contract if the consultant:

1. fails to begin work under the contract at the time required;

2. is unnecessarily delaying the performance of the contract or any part thereof;

3. is failing to perform the contract with sufficient or adequate personnel, equipment, or materials, or is not making sufficient progress to ensure the completion of the contract within the time specified;

4. fails to perform the contract in accordance with directions of the director;

5. discontinues performance of the contract;

6. fails to recommence performance of the contract within a reasonable time after service of a written order to do so is the performance had been suspended;

7. becomes insolvent or is declared bankrupt;

8. commits any act of bankruptcy or insolvency;

9. allows any final judgment to stand against the consultant unsatisfied for a period of ten calendar days;

10. makes an assignment for the benefit of creditors;

11. fails to pay for all labor, tools, materials, and equipment;

12. has abandoned the contract; or

13. violates or fails to comply with any of the provisions of the contract or this General Terms and Conditions of Contracts of the Department of Water Supply for Services of Consultants.
(c) The board may also terminate the contract for reasons, which may include but are not be limited to, the abandonment, deferral, restudy, or revision of the project by the department.

(d) If the board terminates the contract due to the consultant’s default, the board may contract with another consultant to complete the remainder of the contract.

(e) In any termination, the consultant shall be compensated for all work performed until the termination order, upon the consultant’s compliance with subsections 3.04 and 5.03.

(f) Such compensation due the consultant shall take into account liquidated damages, and the value of materials, data, maps, plans, or other documents or information gathered, complied, produced, or obtained, which the consultant fails to deliver.

6.03 Authority to withhold money due or payable. The board may withhold such amounts from the money due or to become payable under the contract to the consultant, or any assignee under subsection 5.04, as may be necessary to protect the board against liability or to satisfy the obligations of the consultant to the board and to employees, subcontractors and material men who have performed labor or furnished material and equipment under the contract and may make such payments from such amounts as may be necessary to discharge such obligations and protect the board.

6.04 Remedies not exclusive. The express provision herein of certain measures which may be exercised by the board for its protection shall not be construed to preclude the board from exercising any other or further legal or equitable right to protect its interests.
FIRST AMENDMENT OF CLOSING AGREEMENT

This First Amendment is dated this 30th day of January, 1996 by and between the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, with its principal office and post office address at 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "Board") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, whose principal place of business and post office address is 90 Waiko Road, P. O. Box 520, Wailuku, Maui, Hawaii 96793 ("Wailuku").

RECITALS: Reference is made to the closing agreement dated December 21, 1995 between the Board and Wailuku (the "Agreement"). The purpose of this first amendment is to set forth the mutual agreement of the parties concerning the extensions of certain dates to the agreement.

AMENDMENT: For valuable consideration, the Board and Wailuku mutually agree as follows:

1. The last full paragraph in Section 6 of the agreement is amended to read in its entirety as follows:

"If the BOARD is not satisfied as to any matter referred to above or any other matter, whether related to the Property or not related to the Property, the BOARD may cancel this agreement by written notice to WAILUKU no later than February 7, 1996, in which event this Agreement will terminate. If counsel for the BOARD and WAILUKU shall be unable to agree on the form and content of all closing documents, WAILUKU may cancel this Agreement by written notice to the BOARD no later than February 7, 1996. In each such instance, prior to February 8, 1996, the BOARD will return to WAILUKU all of WAILUKU's studies, plans and other material in the Board's possession; and the parties shall be relieved from any liability hereunder."

2. In all other respects the agreement shall remain in full force and effect.

3. This amendment may be executed in counterparts. Signatures by facsimile transmission will be accepted as originals by each party.

Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

BY: ___________________________ DORVIN D. LEIS
    Its Chairperson

APPROVED AS TO FORM AND LEGALITY

GARY W. ZAPLAN

Deputy Corporation Counsel
County of Maui

KAHULUI1113520155.1TDW

I hate
WAILUKU AGRIBUSINESS CO., INC.

By: [Signature]

Its: Chairman of the Board

By: [Signature]

Its: Secretary
STATE OF HAWAI'I 
) SS.
COUNTY OF MAUl )

On this 30th day of January, 1996, before me personally appeared MARIE KIMMEY, to me known, who being by me duly sworn, did say that she is the chairperson of the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument was signed and sealed in behalf of said BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged said instrument to be the free act and deed of said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

______________________________
Notary Public, in and for said County and State

My commission expires: 4/19/98

______________________________
STATE OF HAWAII  
HONOLULU SS.
COUNTY OF MAUI

On this 30th day of January, 1998, before me personally appeared J. NEW FUGET and K. NEW F. OSHIRO, to me known, who being by me duly sworn, did say that they are the President and Secretary of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation. That said instrument was signed in behalf of said corporation by authority of said corporation, and that said instrument was acknowledged by said corporation.

[Signature]

Notary Public, in and for said County and State of Hawaii

My commission expires: 02/10/96

STATE OF HAWAII  
HONOLULU SS.
COUNTY OF MAUI

On this _____ day of ____________, 1998, before me personally appeared ______________ and ______________, to me known, who being by me duly sworn, did say that they are the ______________ and ______________ of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation. That said instrument was signed in behalf of said corporation by authority of said corporation, and that said instrument was acknowledged by said corporation.

[Signature]

Notary Public, in and for said County and State of Hawaii

My commission expires: ______________
SECOND AMENDMENT OF CLOSING AGREEMENT

This Second Amendment is dated this 16th day of February, 1996 by and between the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, with its principal office and post office address at 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "Board") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, whose principal place of business and post office address is 90 Wai Ko Road, P. O. Box 520, Wailuku, Maui, Hawaii 96793 ("Wailuku").

RECITALS: Reference is made to the closing agreement dated December 21, 1995 between the Board and Wailuku as amended by First Amendment of Closing Agreement dated January 30, 1996 (the "Agreement"). The purpose of this second amendment is to set forth the mutual agreement of the parties concerning the extensions of certain dates to the agreement.

AMENDMENT: For valuable consideration, the Board and Wailuku mutually agree as follows:

1. The last full paragraph in Section 8 of the agreement is amended to read in its entirety as follows:

"If the BOARD is not satisfied as to any matter referred to above or any other matter, whether related to the Property or not related to the Property, the BOARD may cancel this agreement by written notice to WAILUKU no later than February 16, 1996, in which event this Agreement will terminate. If counsel for the BOARD and WAILUKU shall be unable to agree on the form and content of all closing documents, WAILUKU may cancel this Agreement by written notice to the BOARD no later than February 16, 1996. In each such instance, prior to February 16, 1996, the BOARD will return to WAILUKU all of WAILUKU's studies, plans and other material in the Board's possession; and the parties shall be relieved from any liability hereunder."

2. In all other respects the agreement shall remain in full force and effect.

3. This amendment may be executed in counterparts. Signatures by facsimile transmission will be accepted as originals by each party.
Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE
COUNTY OF MAUI

By
MARIE KIMMEE
Its Chairperson

WAILUKU AGRIBUSINESS CO., INC.

By
J. Alan Edge
Its:
Chairman of the Board

By
Kathleen F. Behra
Its:
Secretary
Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By __________________________

Its:

By __________________________

Its:

WAILUKU AGRIBUSINESS CO., INC.

By __________________________

Its:

By __________________________

Its:

APPROVED AS TO FORM AND LEGALITY:

GARY W. ZAKIAN
Deputy Corporation Counsel
County of Maui

STATE OF HAWAI'I

COUNTY OF MAUI

On this day of , 1980, before me personally appeared MARIE KIMMEY, to me known, who being by me duly sworn, did say that she is the chairperson of the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument was signed and sealed in behalf of said BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged said instrument to be the free act and deed of said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Notary Public, in and for said County and State

My commission expires: 

STATE OF HAWAI'I

COUNTY OF MAUI

On this day of , 1996, before me personally appeared J. Alan Kugle and Kathleen F. Oshiro, to me known, who being by me duly sworn, did say that they are the Chairman and Secretary of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, and that said instrument was signed in behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, in and for said County and State of Hawaii

My commission expires: 02/10/96
THIRD AMENDMENT OF CLOSING AGREEMENT

This Third Amendment is dated this 21\textsuperscript{st} day of February, 1996 by and between the BOARD OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, with its principal office and post office address at 200 South High Street, Wailuku, Maui, Hawaii 96793 (the "Board") and WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, whose principal place of business and post office address is 90 Waiko Road, P. O. Box 520, Wailuku, Maui, Hawaii 96793 ("Wailuku").

RECITALS: Reference is made to the closing agreement dated December 21, 1995 between the Board and Wailuku as amended by First Amendment of Closing Agreement dated January 30, 1996 (the "Agreement") and Second Amendment of Closing Agreement dated February 6, 1996. The purpose of this third amendment is to set forth the mutual agreement of the parties concerning the extension of the closing date under the agreement to no later than February 22, 1996.

AMENDMENT: For valuable consideration, the Board and Wailuku mutually agree as follows:

1. Paragraph 4, page 2 of the agreement is amended to read in its entirety as follows:

   For the purpose of the agreement, closing shall be the date when all appropriate conveyance documents are recorded. WAILUKU and the BOARD agree to promptly execute appropriate and customary documents when requested by escrow to do so. The "scheduled closing date" shall be on or before February 22, 1996. There is no automatic right to extend. Time is of the essence and the "scheduled closing date" may not be extended unless both the BOARD and WAILUKU so agree in writing. This transaction shall be escrowed by Title Guaranty Escrow Services of Hawaii (Wailuku Branch).

2. In all other respects the agreement shall remain in full force and effect.

3. This amendment may be executed in counterparts. Signatures by facsimile transmission will be accepted as originals by each party.
Executed the day and year first above written.

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

[Signature]

By ____________________________

Its Authorized Signatory

WAILUKU AGRIBUSINESS CO., INC.

By ____________________________

Its CHAIRMAN OF THE BOARD

By ____________________________

Its Secretary

APPROVED AS TO FORM AND LEGALITY:

[Signature]

Gary W. Zakia
Deputy Corporation Counsel
On this 21st day of February, 1996, before me personally appeared J. ALAN KUGLE and KATHLEEN F. OSHIRO, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board and Secretary, respectively, of WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, State of Hawaii

My Commission Expires: 11/2/97
STATE OF HAWAII  )
COUNTY OF MAUI  ) SS.

On this 20th day of February, 1996, before me appeared BYRON WALTERS, to me personally known, who, being by me duly sworn, did say that he is a Member of the Board of Water Supply of the County of Maui, and was authorized by the BOARD OF WATER SUPPLY on February 15, 1996 to execute any and all documents as set forth in the COUNTY OF MAUI BOARD OF WATER SUPPLY RESOLUTION RELATING TO THE PURCHASE OF THE WAIHEE VALLEY PROPERTY, and that the said instrument was signed on behalf of the said Board of Water Supply, and the said BYRON WALTERS acknowledged the said instrument to be the free act and deed of the said Board of Water Supply.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 11/25/96
March 13, 1996

TO: Mr. David Craddick  
Department of Water Supply  
County of Maui  
P.O. Box 1109  
200 S. High Street, 5th Floor  
Wailuku, Maui, Hawaii 96793-7109

FROM: Jill M. Teutsch

RE: Wailuku Agribusiness Co., Inc./BWS

Transmitted is/are:

<table>
<thead>
<tr>
<th>Item</th>
<th>Copies</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>original</td>
<td>Limited Warranty Deed dated 2/21/96, recorded in the Bureau of Conveyances of the State of Hawaii as Document No. 96-023915</td>
</tr>
<tr>
<td>2.</td>
<td>original</td>
<td>Co-Tenancy Agreement and Agreement for Restrictive Covenants dated 2/21/96, recorded in said Bureau as Document No. 96-023916</td>
</tr>
<tr>
<td>3.</td>
<td>original</td>
<td>Grant of Easement (Well Field 1) dated 2/21/96, recorded in said Bureau as Document No. 96-023917</td>
</tr>
<tr>
<td>4.</td>
<td>original</td>
<td>Release and Quitclaim of Right in Easement Area (Well Fields 2 and 3) dated 2/21/96, recorded in said Bureau as Document No. 96-023918</td>
</tr>
<tr>
<td>5.</td>
<td>original</td>
<td>Grant of Easement (Well Fields 2 and 3) dated 2/21/96, recorded in said Bureau as Document No. 96-023919</td>
</tr>
<tr>
<td>6.</td>
<td>original</td>
<td>Notice of Agreement dated 2/21/96, recorded in said Bureau as Document No. 96-023920</td>
</tr>
<tr>
<td>7.</td>
<td>original</td>
<td>Declaration of Restrictive Covenant dated 2/21/96, recorded in said Bureau as Document No. 96-023921</td>
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</tbody>
</table>

HONOLULU OFFICE  
Mailing Address:  
Post Office Box 131  
Honolulu, HI 96810

Street Address:  
Alii Place, Suite 1400  
1099 Alaikana Street  
Honolulu, HI 96813

Telephone:  
(808) 533-4945  
Facsimile  
(808) 533-4945

KAPOLEI OFFICE  
Kapolei Bldg, Suite 310  
1001 Kapolei Blvd  
Kapolei, HI 96707

Telephone:  
(808) 533-4945  
Facsimile  
(808) 533-4945

KAILUA-KONA OFFICE  
Kukuihaele Tower, Suite 206  
75-5722 Kukui Hwy  
Kailua-Kona, HI 96740

Telephone:  
(808) 329-7700  
Facsimile  
(808) 329-7520

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RIGHT OF ENTRY AND OPERATING AGREEMENT - SECOND EXTENSION

THIS SECOND EXTENSION OF RIGHT OF ENTRY AND OPERATING AGREEMENT ("Second Extension Agreement") is entered into this 15th day of March, 1996, by and between MAUI LANI PARTNERS, a Hawaii general partnership, whose principal place of business and mailing address is 810 Richards Street, Suite No. 900, Honolulu, Hawaii, 96813 ("Grantor"), and the MAUI COUNTY BOARD OF WATER SUPPLY ("Board"), a body politic and corporate of the State of Hawaii, whose place of business and mailing address is 200 South High Street, Wailuku, Maui, Hawaii, 96793, collectively referred to as the "Parties".

RECITALS

1. The Grantor and Board entered into a RIGHT OF ENTRY AND OPERATING AGREEMENT dated July 27, 1992 ("Agreement") which, among other things, granted the Board a temporary license over a portion of the property described in Exhibit "A" attached to the Agreement ("Property") for the purpose of testing and drawing water from certain of the wells on the Property and conducting activities related and accessory to the use of the water by the Board.

2. The Grantor subsequently sent to the Board by certified mailing, a letter dated August 5, 1992, which clarified among other things, that based upon the effective date of the Agreement and the provisions contained therein, the Agreement would terminate on November 24, 1993.

3. The Board, through its Director of the Department of Water Supply ("Director" and "Department", respectively) verbally notified Grantor's designated representative on October 20, 1993, that an extension of the Agreement would be desirable and indicated that such an extension to July 27, 1994, would be acceptable.

4. The Grantor and the Board entered into a RIGHT OF ENTRY AND OPERATING EXTENSION AGREEMENT ("Extension Agreement") dated December 9, 1993, by which the terms of the Agreement were extended to July 27, 1994.

5. The Board, through the Director, verbally notified Grantor's designated representative of its desire for an additional extension of the Agreement.

6. The Agreement contains several provisions which address the right to an extension:
   (a) Paragraph 13(b) provides that in the event the Board desires an extension of the Agreement, and if the Grantor shall choose to consent to the extension, the Grantor shall be compensated by the Board who shall pay a pro rata portion of the Grantor's interest cost on the portion of the Property which could have otherwise been developed but had to be delayed;
(b) Paragraph 16 provides that the Board designates its Director of the Board of Water supply as its authorized agent and authorizes him to, among other things, act for the Board in matters that include extension of the Agreement; and (c) Paragraph 19 provides that the Agreement cannot be altered, amended, modified or otherwise changed except in writing executed by a duly authorized representative of the Grantor and the Board.

7. Bill Mills is the President of Bill Mills Development Company, Inc., and represents:
   (a) Horita-Maui Lani, Inc. is no longer the Managing General Partner of Maui Lani Partners;
   (b) Bill Mills Development Company, Inc., is now the Managing General Partner of Maui Lani Partners and that the address to which notice is to be sent to the Grantor should be changed.

BASED ON THE FOREGOING, GRANTOR AND BOARD HEREBY AGREE AS FOLLOWS:

1. The term of the Agreement shall be extended up to and including December 31, 1997.

2. Paragraph 1 is amended to read as follows:

"1. The "Licensed Area" is located on a parcel of land owned by Grantor, identified as Tax Map Key No. 2-3-8-7:121, as shown on the map attached hereto as Exhibit "B". The Licensed Area includes the "Maui Lani Wells" and State Well Number 5228-06, and any existing pumping stations, the existing unimproved roadways designated the "Primary Access Road", and the temporary pipelines located on the property.

3. Paragraph 9 is amended by deleting the last sentence which reads "The cost and expenses of all such relocation shall be paid for by the Board." and inserting in its place "Grantor may relocate the wells (at Grantor's cost) at anytime during the Agreement."

4. Paragraph 15 is amended to read as follows:

"15. Any notice by either party to the other shall be in writing and shall be personally delivered or sent by certified or registered mail to the Board or Grantor, as the case may be, addressed as follows:

If to the Board:
   Maui County Board of Water Supply
   200 South High Street
   Wailuku, Maui, Hawaii 96893
   Attention: Director
If to the Grantor:
Maui Lani Partners
810 Richards Street, Suite 900
Honolulu, Hawaii 96813
Attention: Mr. Bill Mills

5. Paragraph 16 is amended to read as follows:

"The Board hereby designates and authorizes the Director of the Department of Water Supply as its authorized agent for the purpose of acting for the Board and communicating for the Board to the Grantor in all matters including extension under this Agreement. Grantor may conclusively rely on all actions of and communications from the Director as duly authorized by the Board and binding on it."

6. Rather than renumbering the entire Agreement, two new paragraphs are added as paragraphs 21 and 22, and the original paragraph 21 (the last paragraph in the Agreement) is renumbered to be paragraph 23. It is the intent of the Grantor and Board that these new paragraphs are to be read in their appropriate context as if they appeared elsewhere in the Agreement. New paragraphs 21 and 22 read as follows:

"21. The Board will utilize State Well No. 5228-06, located in the Licensed Area up to 250,000 gallons of water per day."

"22. The Board will issue to Grantor, or its designates, 417 five-eighths inch (5/8") water meters, or its equivalents based on departmental standards, upon payment of the then current Water System Development Fees and in accord with all applicable governmental rules, regulations, findings and proceedings."

7. As this extension of the Agreement will not delay development of the Property, or any portion thereof, the Grantor makes no claim for any pro rata portion of interest costs under Paragraph 13(b). This does not impair the Grantor's right to compensation for damages due to delay past December 31, 1997, or for compensation as provided for in Paragraph 13(a), or in any other portion of the Agreement.

8. The Board shall indemnify and defend the Grantor, and its directors, officers, employees, agents, successors, licensees, affiliates and assigns, from and against any loss, damage, cost, expense or liability, including without limitation any personal injury, wrongful death or property damage (real or personal) proximately arising out of, or attributable to the testing, transmission or use of the wells by the Board for public potable water, including without limitation, all reasonable costs and
expenses incurred by the Grantor in connection therewith.

9. All other provisions of the Agreement, including the Extension Agreement, shall remain in full force and effect. Should there be any conflict between the provisions of the Agreement, the Extension Agreement, and this Second Extension Agreement such that the provisions of all three documents cannot be given full force and effect, the provisions of this Second Extension Agreement shall prevail only to the extent there is an unresolvable conflict. All other provisions that may be carried into effect shall remain in effect.

10. This Second Extension may be executed in counterpart signature pages.

11. For purposes of this Second Extension, a signature transmitted via facsimile transmission is deemed to be the original.

In witness whereof the parties have executed this Second Extension Agreement on the date first written above.

MAUI LANI PARTNERS

By BILL MILLS DEVELOPMENT COMPANY, INC.
Its Managing General Partner

By Bill Mills, Its President
"Grantor"

BOARD OF WATER SUPPLY
COUNTY OF MAUI

By David R. Craddick, Its Director
"Board"

Approved as to Form and Legality

Gary W. Zakian
Deputy Corporation Counsel
STATE OF HAWAI\textit{I} \\
\textit{SS.}
COUNTY OF MAUI

On this \textit{15th} day of \textit{March}, 1996, before me appeared DAVID R. CRADDICK, to me personally known, who, being by me duly sworn, did say that he is the Director of the DEPARTMENT OF WATER SUPPLY of the County of Maui, a political subdivision of the State of Hawaii, and that the seal affixed to the foregoing instrument is the lawful seal of the BOARD OF WATER SUPPLY of the County of Maui, and that the said instrument was signed and sealed in behalf of the said DEPARTMENT OF WATER SUPPLY of the County of Maui, and the said DAVID R. CRADDICK, acknowledged that said instrument to be the free act and deed of the said DEPARTMENT OF WATER SUPPLY of the County of Maui.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

\begin{center}
\textit{Notary Public, State of Hawaii}
\end{center}

My commission expires: 4/19/98
RIGHT OF ENTRY AND OPERATING AGREEMENT - SECOND EXTENSION

THIS SECOND EXTENSION OF RIGHT OF ENTRY AND OPERATING AGREEMENT ("Second Extension Agreement") is entered into this ___ day of ___, 1996, by and between MAUI LANI PARTNERS, a Hawaii general partnership, whose principal place of business and mailing address is 810 Richards Street, Suite No. 900, Honolulu, Hawaii, 96813 ("Grantor"), and the MAUI COUNTY BOARD OF WATER SUPPLY ("Board"), a body politic and corporate of the State of Hawaii, whose place of business and mailing address is 200 south High Street, Wailuku, Maui, Hawaii, 96793, collectively referred to as the "Parties".

RECITALS

1. The Grantor and Board entered into a RIGHT OF ENTRY AND OPERATING AGREEMENT dated July 27, 1992 ("Agreement") which, among other things, granted the Board a temporary license over a portion of the property described in Exhibit "A" attached to the Agreement ("Property") for the purpose of testing and drawing water from certain of the wells on the Property and conducting activities related and accessory to the use of the water by the Board.

2. The Grantor subsequently sent to the Board by certified mailing, a letter dated August 5, 1992, which clarified among other things, that based upon the effective date of the Agreement and the provisions contained therein, the Agreement would terminate on November 24, 1993.

3. The Board, through its Director of the Department of Water Supply ("Director" and "Department", respectively) verbally notified Grantor's designated representative on October 20, 1993, that an extension of the Agreement would be desirable and indicated that such an extension to July 27, 1994, would be acceptable.

4. The Grantor and the Board entered into a RIGHT OF ENTRY AND OPERATING EXTENSION AGREEMENT ("Extension Agreement") dated December 9, 1993, by which the terms of the Agreement were extended to July 27, 1994.

5. The Board, through the Director, verbally notified Grantor's designated representative of its desire for an additional extension of the Agreement.

6. The Agreement contains several provisions which address the right to an extension:

   (a) Paragraph 13(b) provides that in the event the Board desires an extension of the Agreement, and if the Grantor shall choose to consent to the extension, the Grantor shall be compensated by the Board who shall pay a pro rata portion of the Grantor's interest cost on the portion of the Property which could have otherwise been developed but had to be delayed;
(b) Paragraph 15 provides that the Board designates its Director of Operations as its authorized agent and authorizes him to, among other things, act for the Board in matters that include extension of the Agreement; and

(c) Paragraph 19 provides that the Agreement cannot be altered, amended, modified or otherwise changed except in writing executed by a duly authorized representative of the Grantor and the Board.

7. Bill Mills is the President of Bill Mills Development Company, Inc., and represents:
(a) Horita-Maui Lani, Inc. is no longer the Managing General Partner of Maui Lani Partners;
(b) Bill Mills Development Company, Inc., is now the Managing General Partner of Maui Lani Partners and that the address to which notice is to be sent to the Grantor should be changed.

BASED ON THE FOREGOING, GRANTOR AND BOARD HEREBY AGREE AS FOLLOWS:

1. The term of the Agreement shall be extended up to and including December 31, 1997.

2. Paragraph 1 is amended to read as follows:

"1. The "Licensed Area" is located on a parcel of land owned by Grantor, identified as Tax Map Key No. 2-3-8-7:121, as shown on the map attached hereto as Exhibit "B". The Licensed Area includes the "Maui Lani Wells" and State Well Number 5228-06, and any existing pumping stations, the existing unimproved roadways designated the "Primary Access Road", and the temporary pipelines located on the property.

3. Paragraph 9 is amended by deleting the last sentence which reads "The cost and expenses of all such relocation shall be paid for by the Board." and inserting in its place "Grantor may relocate the wells (at Grantor's cost) at anytime during the Agreement.".

4. Paragraph 15 is amended to read as follows:

"15. Any notice by either party to the other shall be in writing and shall be personally delivered or sent by certified or registered mail to the Board or Grantor, as the case may be, addressed as follows:

If to the Board:
Maui County Board of Water Supply
200 South High Street
Wailuku, Maui, Hawaii 96893
Attention: Director
If to the Grantor:
Maul Lani Partners
810 Richards Street, Suite 900
Honolulu, Hawaii 96813
Attention: Mr. Bill Mills

5. Paragraph 16 is amended to read as follows:

"The Board hereby designates and authorizes the Director of the Department of Water Supply as its authorized agent for the purpose of acting for the Board and communicating for the Board to the Grantor in all matters including extension under this Agreement. Grantor may conclusively rely on all actions of and communications from the Director as duly authorized by the Board and binding on it."

6. Rather than renumbering the entire Agreement, two new paragraphs are added as paragraphs 21 and 22, and the original paragraph 21 (the last paragraph in the Agreement) is renumbered to be paragraph 23. It is the intent of the Grantor and Board that these new paragraphs are to be read in their appropriate context as if they appeared elsewhere in the Agreement. New paragraphs 21 and 22 read as follows:

"21. The Board will utilize State Well No. 5228-06, located in the licensed Area up to 250,000 gallons of water per day."

"22. The Board will issue to Grantor, or its designates, 3417 five-eighths inch (5/8") water meters, or its equivalents based on departmental standards, upon payment of the then current Water System Development Fees and in accord with all applicable governmental rules, regulations, findings and proceedings."

7. As this extension of the Agreement will not delay development of the Property, or any portion thereof, the Grantor makes no claim for any pro rata portion of interest costs under Paragraph 13(b). This does not impair the Grantor's right to compensation for damages due to delay past December 31, 1997, or for compensation as provided for in Paragraph 13(a), or in any other portion of the Agreement.

8. The Board shall indemnify and defend the Grantor, its directors, officers, employees, agents, successors, licensees, affiliates and assigns, from and against any loss, damage, cost, expense or liability, including without limitation any personal injury, wrongful death or property damage (real or personal) proximately arising out of, or attributable to, the testing, transmission or use of the wells by the Board for public potable water, including without limitation, all reasonable costs and
expenses incurred by the Grantor in connection therewith.

9. All other provisions of the Agreement, including the Extension Agreement, shall remain in full force and effect. Should there be any conflict between the provisions of the Agreement, the Extension Agreement, and this Second Extension Agreement such that the provisions of all three documents cannot be given full force and effect, the provisions of this Second Extension Agreement shall prevail only to the extent there is an unresolvable conflict. All other provisions that may be carried into effect shall remain in effect.

10. This Second Extension may be executed in counterpart signature pages.

11. For purposes of this Second Extension, a signature transmitted via facsimile transmission is deemed to be the original.

In witness whereof the parties have executed this Second Extension Agreement on the date first written above.

MAUI LANI PARTNERS

By BILL MILLS DEVELOPMENT COMPANY, INC.

The Managing General Partner

By Bill Mills, Its President

"Grantor"

BOARD OF WATER SUPPLY
COUNTY OF MAUI

By

David R. Craddick, Its Director

"Board"

Approved as to Form and Legality

Gary W. Zakian
Deputy Corporation Counsel
1996

REYNOLDS' FOODS WELL =1

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CENTRAL MAUI BASEYARD

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LOCATION: REYNOLDS' FOOD WELL =1
1995

REYNOLDS' FOODS WELL #1

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* PENDING
Mr. David R. Craddick, Director  
Maui Department of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793-7109  

Dear Mr. Craddick:

Extension of Start Date  
North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03)

We received your March 18, 1996 request to extend the start date for installing pumps in the captioned wells two months beyond the May 14, 1996 date permitted by the Commission. We understand that the Department has entered a contract to complete construction documents, and that the initiation of construction may occur after May 14, 1996. You state that a two-month extension will assure compliance with the start time.

By this letter, the start date for your pump installation permit is extended to July 14, 1996. All the other conditions of your permit remain the same. If you are unable to start work by July 14, 1996, please inform us thirty (30) days prior to that date, to allow time to prepare a submittal for the Commission.

If you have any questions, please call Charley Ice at [blank]

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director
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"Did this need to go back to the Commission?"

Because we have a timetable, let's handle administratively; if it breaks down, let's go back to CWRM
March 18, 1996

Mr. Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Pump Installation Permit
North Waihee Wells 1 and 2
(Wells No 5631-02 & 03)

Thank you for the reminder dated March 5, 1996 regarding the subject wells. We are requesting an extension of the two months.

In the process of the agreement with C. Brewer Properties and transfer of permit, the Department has entered into a contract with the design consultants to complete the construction contract documents within sixty days. Based on this time table, the construction contracting process may not be completed by May 14, 1996. A two month extension will assure compliance with the start time.

Your favorable consideration will be greatly appreciated. If there are any questions, please call our Engineering Division at

Sincerely,

David R. Craddick
Director

hk
EXTENSION
PUMP INSTALLATION PERMIT

for

North Waihee Wells 1 & 2
Well Nos. 5631-02 & 03
Waihee, Maui

TO: C. Brewer Properties, Inc.
P.O. Box 1437
Wailuku, HI 96793

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your request to extend the permit to install pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03), is approved subject to the following conditions:

STANDARD PUMP INSTALLATION PERMIT CONDITIONS

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

2. The pump installation permits shall be for installation of a 1400 gpm capacity, or less, pump in each well. A means to accurately measure water levels, acceptable to the Commission, shall be provided.

3. The proposed use 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 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 applicant shall comply with all applicable laws, rules, and ordinances.

5. 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, which conforms with the Commission's September 16, 1992 direction on reporting requirements.
EXTENSION OF PUMP INSTALLATION PERMIT
Well Nos. 5631-02 & 03

Page 2

6. The permit may be revoked if work is not started within two (2) months after the date of issuance or if work is suspended or abandoned for two (2) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.

7. An as-built sectional drawing of the pump installation shall be submitted to the Commission within thirty (30) days after completion of work.

8. The pump installation permit application and staff submittals, approved by the Commission at its March 3, 1993 and March 1, 1995 meetings, are incorporated into the permit by reference.

MICHAEL D. WILSON, Chairperson
Commission on Water Resource Management

MAR 1-4 1995
Date of Issuance

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed.

Applicant's Signature: __________________________ Date: ______________

Printed Name: ________________________________

Firm or Title: __________________________________

Please sign and return one copy of this permit to the Commission and retain a copy for your record.

cc: USGS
Department of Health
    Safe Drinking Water Branch
    Ground Water Protection Program
    Wastewater Branch
    Maui Department of Water Supply
March 1, 1996

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

Dear Ms. Loui:

Subject: Iao Aquifer

Transmitting evidence of the following milestones achieved, as requested by the Commission:

1. Grant of Easement for the North Waihee Wells, Phase 1, is being sent under separate cover from our Attorney, Douglas W. MacDougal of Ashford & Wriston;

2. The membranes for treatment of Waihee/Iao Ditch water have been obtained, as evidenced by shipping notice (Attachment #1); and

3. A copy of the executed contract for professional services for the development of North Waihee Wells and a copy of the NTP (Attachment #2).

The final use of filter membranes being shipped are intended for Lahainaluna Treatment Facility. Upon arrival, we intend to utilize this equipment to perform testing required for DOH approvals, while we order the filters noted on the February 13, 1996 quotation from Memtec (Attachment #3).

Sincerely,

David Craddick, Director
DC/jaw

Attachments
copy w/o attachments: Marie Kimmey, BWS Chai
Douglas W. MacDougal

"By Water All Things Find Life"
Further to our telephone conversation, I confirm that 3 x 20' FCL containers have been booked to sail on board 'COLUMBUS CANADA' V16 which is due to sail Sydney 10.3.96 and arrive Honolulu 29.3.96 with a further 4 to 5 days to be added on for transhipment to Maui.

If I can be of any further assistance please do not hesitate to contact me.

Regards,
Lyn Cunliffe
Import/Export Clerk
CONTRACT NO. WC0053

CONTRACT FOR INDEPENDENT PROFESSIONAL SERVICES
RELATING TO THE PLAN AND DESIGN OF THE
THE DEVELOPMENT OF NORTH WAIHEE WELLS

Source of Funds: CENTRAL MAUI SOURCE

Certification requested: $384,150.00

THIS AGREEMENT, made and entered into this 29th day of February, 1996, by and between WARREN S. UNEMORI ENGINEERING, INC., a Hawaii corporation authorized to do business in Hawaii, whose address is 2145 Wells Street, Suite 403, Wailuku, Maui, Hawaii 96793, referred to as the "Consultant", and the BOARD OF WATER SUPPLY of the County of Maui, whose address is 200 South High Street, Wailuku, Hawaii 96793, referred to as the "Board",

W I T N E S S E T H:

WHEREAS, the Board desires to engage the Consultant as an independent contractor to provide professional and technical engineering services to prepare a study and plans, specifications, and contract documents for design of the Development of the North Waihee Wells, referred to as the "PROJECT"; and

WHEREAS, the Consultant desires to render such services as an independent contractor for and on behalf of the Board; and
WHEREAS, the Consultant has been engaged to provide engineering professional services to C. Brewer Homes, Inc., referred to as "CBHI" for the development of said wells; and

WHEREAS, CBHI has paid for all services performed up to December 7, 1995; and

WHEREAS, the Board is obtaining the well site and the previously performed services in connection with development of the wells from CBHI; and

WHEREAS, Consultant agrees that all work performed for CBHI is included as part of this Contract; and

WHEREAS, the Board desires to enter into an agreement to facilitate the completion of the Project, based on the Consultant's previous work on the Project; and

WHEREAS, time is of an essence to get the delivery of water to the water system; now therefore,

IN CONSIDERATION of the mutual promises and agreements hereinafter set forth, the parties hereto agree as follows:

1. **Scope of work.** The Consultant shall use the degree of care and skill normally exercised by members of the profession to carry out the following services as outlined in Exhibit "A" attached hereto and by reference made a part hereof.

2. **Time of performance.** Consultant shall complete Consultant's services as set forth in Exhibit "A" in accordance with the time schedules set forth in Exhibit "B", attached hereto and by reference made a part hereof.

3. **General Terms and Conditions of Contracts**
Department of Water Supply of the County of Maui for Services of Consultants. The General Terms and Conditions of Contracts of the Department of Water Supply of the County of Maui for Services of Consultants attached hereto are made a part hereof as fully and completely as if the same were set forth in its entirety herein.

4. Compensation. The Board shall pay the Consultant the amount of THREE HUNDRED EIGHTY-FOUR THOUSAND ONE HUNDRED FIFTY AND NO/100 DOLLARS, ($384,150.00), which amount shall constitute full and complete compensation, inclusive of all applicable taxes, for the Consultant's services as set forth in Section 1 Scope of Work. Compensation for the services shall be in accordance with the following Schedule of Fees:

PHASE I 24-INCH TRANSMISSION BETWEEN KUHINIA STREET AND WELL SITE ACCESS ROAD. $33,000

PHASE II DEVELOPMENT OF WELLS NO. 1 AND 2 $27,500
(G.E.T. for PH I & II) $2,500
(Direct Expense for PH I & II) $4,000

PHASE III 24-INCH TRANSMISSION BETWEEN KUHINIA STREET AND CMJV RESERVOIR $137,000

PHASE IV 0.5 MG TANK AND 24-INCH INFLOW-OUTFLOW LINES $123,100

PHASE V BOOSTER PUMP STATION AND SCADA TO KAHULUI BASEYARD $38,600
(G.E.T. for PH III, VI, & V) $12,450
(Direct Expense for PH III, VI, & V) $6,000

TOTAL $384,150
As long as the services of the Consultant are being performed as required herein, the Board may pay the Consultant monthly progress payments based upon the value of services performed by the Consultant as estimated by the Consultant and approved by the Department. Of any progress payments deemed to be due and owing, the Board may retain up to five percent (5%) of the payments due the Consultant, and after fifty percent (50%) of the contract is completed, and performance is satisfactory, no additional sum shall be withheld; provided, however, that if progress is not satisfactory, the Director may continue to hold as retainage sums not exceeding five percent (5%) of the amounts due the Consultant.

Final payment, inclusive of amounts retained by the Board, shall be made upon written acceptance from the Department to the Consultant advising it of the satisfactory fulfillment of the agreement requirements, and, pursuant to Sections 103-53 and 237-45 of the Hawaii Revised Statutes, the receipt of a tax clearance from the State Department of Taxation verifying that the Consultant has paid all delinquent taxes levied or accrued. Upon acceptable completion of the agreement or upon termination of this agreement, the Consultant shall turn over to the Board all tracings, drawings, masters, computations, computer data, etc., prepared or obtained by the Consultant or furnished by the Board in connection with the work performed under this agreement or in connection with work performed by Consultant for CBHI relating to the development of North Waihee Wells, at no extra cost to the Board.

5. **Liquidated damages.** The Consultant recognizes and agrees
that time is of the essence under this contract and due to the speculative character and difficulty of ascertaining damages to the Board resulting from any delay beyond the date set herein for contract completion, the parties hereto, for the purpose of putting the question of damages beyond controversy and dispute, hereby agree that the Consultant shall pay to the Board the sum of TWO THOUSAND AND NO/100 DOLLARS ($2,000.00) as liquidated damages and not as a penalty, for each and every day that work contemplated in this contract remains uncompleted beyond the time set herein for completion unless such delay is attributable to the Board. The Consultant further understands and agrees that the remedy of liquidated damages shall be in addition to any other rights and remedies otherwise available to the Board and not expressly waived herein. The Consultant agrees that the aforesaid sum is a reasonable estimate, of and reasonably proportionate to, the damages which will probably be sustained by the Board as a result of any delay.

6. **Employment Status.** It is agreed and understood that the Consultant shall be engaged as an independent contractor and shall not be entitled to the benefits and privileges of an employee of the County of Maui under the County’s Civil Service System, and it is further agreed and understood that the Consultant shall be excluded from participating in any fringe benefits not specifically enumerated herein.

7. **Best Efforts.** Consultant agrees that it will, at all times, faithfully, industriously, and to the best of its ability,
experience and talents, perform all of the duties that may be required of it pursuant to the expressed and implicit terms hereof to the reasonable satisfaction of the Board.

8. Consultant’s Inability to Contract for Board. Notwithstanding anything herein contained to the contrary, Consultant shall not have the right to make any contracts or commitments for or on behalf of the Board without first obtaining written consent of the Board.

9. Agreements Outside of Contract. This contract contains the complete agreement concerning the arrangement between the parties and shall, as of the effective date hereof, supersede all other agreements between the parties. The parties stipulate that neither of them have made any representation with respect to the subject matter of this agreement or any representations including the execution and delivery hereof except such representations as are specifically set forth herein and each of the parties hereto acknowledge that any payments or representations that may have hereinbefore been made by either of them to the other are of no effect and that neither of them have relied thereon in connection with its dealings with the other.

10. Modification of Contract. No waiver or modification of this agreement or of any covenant, condition, or limitation herein contained shall be valid unless in writing and duly executed by the party to be charged therewith and no evidence of any waiver or modification shall be offered or received in evidence of any proceeding, arbitration, or litigation between the parties hereto
arising out of or affecting this agreement, or the rights or obligations of the parties hereunder, unless such waiver or modification is in writing, duly executed as aforesaid, and the parties further agree that the provisions of this section may not be waived except as herein set forth.

11. Changes. The Board may from time to time require changes in the scope of services of Consultant to be performed hereunder. Such changes, including any increase or decrease in the amount of Consultant's compensation shall be incorporated by written amendment to this agreement.

12. Termination. The Board may terminate this contract without cause upon written notice to that effect delivered to the Consultant at the address set forth herein. It is agreed that the Consultant shall receive compensation from the Board for the time actually spent in the performance of the services hereunder to the date of termination. The Consultant shall also be entitled to recover any reasonable costs incurred in connection with the contract prior to the receipt of any notice of termination.

In the event the Consultant violates the terms of this agreement, the Board may elect any remedy available to it in law or in equity, without limitation, including, but not limited to:

A. Termination of this contract without prior notice in which event the Board shall be liable under this contract only for those services satisfactorily performed to the date of termination, if any. All materials, data, maps, plans or other documents or information gathered, compiled, produced or obtained pursuant to
this contract shall be the property of the Board and the Consultant shall immediately upon termination of this contract deliver said items to the Board.

B. Unilateral substitution of a suitable replacement for Consultant to complete the remainder of the contract in which event Consultant shall be liable to pay for the difference, if any, between the cost of the substituted Consultant and the cost of such similar services remaining to be completed under this contract by the Consultant at the time of termination.

13. Professional Liability Insurance. The insurance to be procured and maintained by Consultant pursuant to the General Terms and Conditions shall be in an amount not less than ONE MILLION AND NO/100 DOLLARS ($1,000,000.00).

14. Findings Confidential. Any reports, information, data, given to or prepared or assembled by the Consultant under this agreement, which the County deems confidential, shall not be made available to any individual or organization by the Consultant without the prior written approval of the Director.

15. Ownership Vested in Board. It is expressly understood that any and all equipment, materials, data, information, results and any other thing derived or obtained directly or indirectly as a result of the Project herein, including but not limited to equipment, materials, data, information, and results shall be the sole and exclusive property of the Board and that the Consultant shall have no interest, right, or title in or to any of the foregoing.
16. **Indemnity.** The Consultant shall indemnify, defend and hold harmless the Board from claims, suits, actions, damages, including attorney's fees, arising out of the Consultant's errors, omissions, or negligent acts in connection with the Consultant's performance under this agreement.

17. **Campaign Contributions Prohibited.** It is understood and agreed by the parties hereto that no portion of the Consultant's compensation to be paid under the terms of this agreement shall be used as a campaign contribution.

18. **Absence of Interest.** The Consultant covenants that it has no interest and shall not acquire any interest, direct, or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this agreement. The Consultant further covenants that in the performance of this agreement, no person having any such interest shall be employed.

19. **Severability.** If any provision of this contract is held invalid, the other provisions of this contract shall not be affected thereby. If the application of the contract or any of its provision of the contract and its provisions to other persons or circumstances shall not be affected thereby.

20. **Conflict.** In the event of any conflict between this contract and the incorporated documents, the terms of this contract shall prevail.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed on the date first above written.
DATE: 2/29/96

Consultant:

WARREN S. UNEMORI ENGINEERING, INC.

By Warren S. Unemori
Its President

BOARD OF WATER SUPPLY
COUNTY OF MAUI

Marie Kimmey
Its Chairperson

APPROVED AS TO FORM
AND LEGALITY:

Brian T. Moto
Deputy Corporation Counsel
County of Maui

STATE OF HAWAII )
COUNTY OF MAUI ) SS.
CITY AND COUNTY OF HONOLULU )

On this 29th day of February, 1996, before me appeared WARREN S. UNEMORI, to me personally known, who, being by me duly sworn, did say he is the President, of WARREN S. UNEMORI ENGINEERING, INC., a Hawaii corporation authorized to do business in Hawaii; that the seal affixed to the foregoing instrument is the corporate seal of said corporation; and that said instrument was signed and sealed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Is

Notary Public, State of Hawaii

My commission expires: 6/14/96
On this 29th day of February, 1996, before me appeared MARIE KIMMEY, to me personally known, who, being by me duly sworn, did say that he is the Chairperson of the BOARD OF WATER SUPPLY of the County of Maui and that the seal affixed to the foregoing instrument is the lawful seal of the BOARD OF WATER SUPPLY, and that said instrument was signed and sealed on behalf of the BOARD OF WATER SUPPLY, and the said MARIE KIMMEY acknowledged said instrument to be the free act and deed of said BOARD OF WATER SUPPLY.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii

My commission expires: 4/19/98
EXHIBIT A

SCOPE OF ENGINEERING SERVICES
FOR THE DESIGN OF
THE DEVELOPMENT OF THE
NORTH WAIHEE WELLS
IN WAIHEE, MAUI, HAWAII

WARREN S. UNEMORI ENGINEERING, INC. will proceed through a series of tasks comprising of the design of the development of the North Waihee Wells. The scope of the work is described in the attached letters.
Mr. David Craddick, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waihe Wells Development

In response to your request of December 4, 1995 we are pleased to submit this proposal to complete the work necessary to finalize plans and specifications for the following:

PHASE I. INSTALLATION OF 24 INCH TRANSMISSION LINE ON KAHEKILI HIGHWAY BETWEEN KUHINIA STREET AND WELL SITE ACCESS ROAD. ALSO 16 INCH TANK FEEDER LINE BETWEEN WELL SITES 1 AND 2 AND KAHEKILI HIGHWAY

Scope of Services in Proposal to C. Brewer Homes, Inc.:


  - Work Completed to Date:

    1.1 Conducted topographic survey of Kahekili Highway between project limits. Located existing water meters, water lines, fire hydrants, valves, culvert crossings, sidewalks, power poles, etc.

    1.2 Developed topographic map therefrom plotting adjoining property boundaries, driveways, etc.

    1.3 Developed approximate right-of-way line for Kahekili Highway based on adjoining property descriptions and right-of-way maps available.

    1.4 Conducted topographic survey of access road between Well Site 1 and 2 and Kahekili Highway.
• Task 2. Engineering Design Services.

• Work Completed to Date:

2.1 Met with client, SDOT, and DWS to discuss objectives and scheduling of project.

2.2 Developed plan and profile for waterline along Kahekili Highway and Waihee Stream crossing.

2.3 Determined size of waterline needed to deliver minimum of 8 MGD, allowing for reasonable head losses.

2.4 Developed details for stream crossing and typical trench and pavement sections.

2.5 Developed construction traffic control plan per State DOT standards.

2.6 Submitted construction plans to State DOT and Department of Water Supply for approval. (First Submittal)

• Work Remaining:

2.7 Incorporate agency comments after first review and resubmit for final.

2.8 Prepare NPDES permit application and Best Management Practice (BMP) plan for trench dewatering and submit to DOH for approval.

2.9 Develop technical specs.

2.10 Develop cost estimate.

2.11 Develop contract bid documents.

2.12 Assist client with the bidding and bid review process.
• Task 3. Installation of 16 Inch Tank Feeder Line Between Well Sites 1 and 2 and 24-inch Line on Kahekili Highway.

• Additional Work:

3.1 Develop plan and profile for 16-inch tank feeder line along existing access road.

3.2 Develop plans for temporary connection between 16-inch tank feeder line and 24-inch transmission line on Kahekili Highway.

• Task 4. Temporary Connection Between 24-inch Transmission line on Kuhinia Street and existing Distribution System on Kahekili Highway.

• Additional Work:

4.1 Prepare plans to connect new 24-inch transmission line to the existing 8-inch line on Kahekili Highway south of Kuhinia Street intersection.

4.2 Prepare plans to install pressure regulator assembly between the 24-inch transmission line and Waihee Village distribution system north of Kuhinia Street.

COMPENSATION

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>Engineering Design Services</td>
<td>$21,000</td>
</tr>
<tr>
<td>3.0</td>
<td>16-inch Feeder Line along Access Road</td>
<td>$10,000</td>
</tr>
<tr>
<td>4.0</td>
<td>Temporary Connection on Kahekili Highway in Vicinity of Kuhinia Street</td>
<td>$2,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE I: $33,000
PHASE II. DEVELOPMENT OF NORTH WAIHEE WELLS 1 AND 2

Scope of Services in proposal to C. Brewer Homes Inc.

- Task 1. Civil Engineering.
  
  - Work Completed to Date:
    
    1.1 Prepared well site grading plan.
    
    1.2 Prepared site plan showing layout of equipment building, generator, electrical transformer pad and driveway.
    
    1.3 Prepared site drainage plan.
    
    1.4 Prepared plans to pave well site and access driveway.
    
    1.5 Prepared fencing plan to secure well site.
    
    1.6 Designed equipment building to house chlorinator, MCC, diesel generator and SCADA system.
    
    1.7 Coordinated work with electrical and mechanical subconsultant and submitted plans and specs for agency review. (First Submittal)
  
  - Work Remaining:
    
    1.8 Incorporate agency review comments and resubmit plans and specs for final approval of DPW, TWC, DOH, and DLNR.
    
    1.9 Prepare engineering report for approval by DOH Clean Water Branch.
    
    1.10 Prepare technical specs, proposal, and contract bid documents.
    
    1.11 Assist client solicit and review bids.
• Task 2. Mechanical and Electrical Engineering.

  • Work Completed to Date:

  2.1 Prepared plans for deepwell pumps to be installed in existing wells.

  2.2 Prepared plans for two sets of discharge piping, control valves, flow switches, solenoid valves, and well level recording devices.

  2.3 Designed chlorination system, exhaust air system, compressor, and flow meter assembly.

  2.4 Prepared plans for Motor Control Center (MCC), electrical conduits and wiring, incoming power ducts and transformer pad, and meter system.

  2.5 Prepared plans for emergency generator, automatic transfer switch and concrete mounting pad for same.

  2.6 Prepared plans for SCADA and telemetry system.

• Task 3. Geologist (John Mink)

  • Work Remaining:

  3.1 Provide general advice on setting for installation of pumps in North Waihee Wells 1 and 2.

  3.2 Write protocol for engineering report to be submitted to DOH.

  3.3 Oversee pumping tests on these wells.

• Task 4. Temporary Pump Control for Wells 1 and 2 and Connection to Existing Distribution System.

  • Additional Work:

  4.1 Run pipe analysis to determine capacity of existing system.
4.2 Evaluate pump curve to determine whether deep-well pump needs to be modified for temporary hookup to existing low level water system.

4.3 Prepare plans and specifications for temporary pump control between Wells 1 and 2 and Waiehu Heights Tank.

**SPECIALTY**

We propose to provide the above mentioned remaining and additional work for the following fees:

<table>
<thead>
<tr>
<th>Task</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Civil Engineering</td>
<td>$6,500</td>
</tr>
<tr>
<td>2.</td>
<td>Mechanical and Electrical Engineering</td>
<td>$7,000</td>
</tr>
<tr>
<td>3.</td>
<td>Geologist</td>
<td>$10,000</td>
</tr>
<tr>
<td>4.</td>
<td>Temporary Pump Control Between Wells 1 and 2 &amp; Waiehu Heights Tank</td>
<td>$4,000</td>
</tr>
</tbody>
</table>

**SUBTOTAL - PHASE II:** $27,500

**TOTAL FEE PROPOSED - PHASES I AND II:** $60,500

The State GET (4.167%) will be added to all fees.

**DIRECT EXPENSES**

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $4,000
Mr. David Craddick  
North Waihee Wells Development  
December 7, 1995  
Page 7

SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases I and II within sixty (60) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project.

2. Environmental Assessment.
5. Soil Engineering, if required.

Thank you for giving us the opportunity to submit this proposal. If you have any questions, please call us. We look forward to receiving authorization to complete the design of Phases I and II of the project.

Sincerely,

[Signature]
Warren S. Unemori
Mr. David Craddick, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Craddick,

Subject: North Waihee Wells Development

This proposal is being submitted to complete the unfinished scope of services for Phases III, IV, and V of subject project as requested in your letter of November 28, 1995. The proposal for Phases I and II, which had a higher urgency, was submitted yesterday.

The scope of services for Phases III, IV, and V are as follows:

PHASE III. INSTALLATION OF 24 INCH TRANSMISSION LINE BETWEEN KUHINIA STREET AND THE CMJV 1.0 MG RESERVOIR IN UPPER WAIEHU

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:

  1.1 Established horizontal and vertical survey controls along transmission line route between Kuhinia Street and CMJV well source.

  1.2 Conducted topographic survey of transmission line route including gulch crossings, and developed topographic map therefrom.

- Work Remaining:

  1.3 Develop metes and bounds descriptions and maps for transmission line easement between Kuhinia Street and CMJV well source.
Mr. David Craddick  
North Waihee Wells Development  
Phases III, IV, and V  
December 8, 1995  
Page 2

Task 2. Engineering Design Services

- Work Completed to Date:

  2.1 Set up preliminary plan and profile work sheets for transmission line.

  2.2 Prepared exhibits for stream alteration permit at four (4) drainage crossings.

- Work Remaining:

  2.3 Finalize plan and profile of water system.

  2.4 Design drainage structure at Waiehu Stream and Hope Gulch crossings.

  2.5 Develop typical details of pavement section and construction traffic control plan for Malaihi Road in Upper Waiehu.

  2.6 Prepare plan of water system details.

  2.7 Prepare plans for connection to existing 1.0 MG Upper Waiehu Reservoir.

  2.8 Develop technical specs, cost estimate and contract bid document.

  2.9 Submit plans and specs for agency review.

  2.10 Address review agency comments and resubmit plans for final approval.

  2.11 Prepare NPDES permit application and Best Management Practice (BMP) plan for stream crossing and disposal of water from hydrotesting and dewatering.

  2.12 Assist client with the bidding and bid review process.
Mr. David Craddick  
North Waihee Wells Development  
Phases III, IV, and V  
December 8, 1995  
Page 3

COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$9,000</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$128,000</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE III: $137,000

PHASE IV. CONSTRUCTION OF 0.5 MG CONTROL TANK AND SITE IMPROVEMENTS, INCLUDING GRADING AND PAVING OF TANK SITE AND ACCESS ROAD, INSTALLATION OF 24 INCH INFLOW AND OUTFLOW LINES AND DRAINAGE SYSTEM

Scope of services in proposal to C. Brewer Homes, Inc.

Task 1. Surveying Services

- Work Completed to Date:
  1.1 Established horizontal and vertical survey controls along tank access road and at tank site.
  1.2 Conducted topographic survey of 0.5 MG tank site.
  1.3 Conducted topographic survey of access road to tank site.
  1.4 Developed topographic map therefrom.

- Work Remaining:
  1.5 Develop subdivision map to cut out tank site from TMK 3-2-01:03 following establishment of the tank site limits.
  1.6 Prepare easement for tank access road.
Task 2. Design Engineering Services

- Work Remaining:

  2.1 Prepare mass grading plans for tank site and access road.
  
  2.2 Prepare plans for tank access road.
  
  2.3 Prepare drainage and soil erosion control report.
  
  2.4 Prepare drainage plans for tank site and access road.
  
  2.5 Prepare fencing plans to secure tank site.
  
  2.6 Coordinate plans with MECO to extend overhead power to tank site for booster pumps.
  
  2.7 Prepare Best Management Practice (BMP) Plan and NPDES permit application.
  
  2.8 Prepare plans to construct 0.5 MG reinforced concrete control tank with required piping, valves, and appurtenances.
  
  2.9 Prepare plans to install concrete diversion ditch, concrete gutter, drainage system and pavement around reservoir site.
  
  2.10 Prepare plans to construct equipment building to house MCC, SCADA, and telemetry systems.
  
  2.11 Prepare plan and profile for separate 24-inch inflow and outflow lines between Kahikili Highway and 0.5 MG control tank.
Mr. David Craddick  
North Waihee Wells Development  
Phases III, IV, and V  
December 8, 1995  
Page 5

2.12 Prepare specs, cost estimate, and contract bid documents.

2.13 Submit plans and specs for agency review.

2.14 Address review agency comments and resubmit for final approval.

2.15 Assist client with the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fees:

<table>
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<tr>
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<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Surveying Services</td>
<td>$13,500</td>
</tr>
<tr>
<td>2.</td>
<td>Design Engineering Services</td>
<td>$109,600</td>
</tr>
</tbody>
</table>

| SUBTOTAL - PHASE IV:                  | $123,100|

PHASE V. BOOSTER PUMP STATION AT CONTROL TANK SITE AND SCADA TIE-IN AT DWS BASEYARD IN KAHULUI.

* Task 1:

1.1 Prepare plans for two (2) short-coupled vertical booster pumping units.

1.2 Prepare plans for two sets discharge piping, including control valves, flow switches, and solenoid valves.

1.3 Prepare plans for Motor Control Center, electrical conduits and wiring, incoming power ducts and transformer pad, and metering system.

1.4 Prepare plans for emergency generator, automatic transfer switch and concrete pad.
Mr. David Craddick  
North Waihee Wells Development  
Phases III, IV, and V  
December 8, 1995  
Page 6

1.5 Design new instrument house to be located at Upper Waiheu Reservoir to house all SCADA and telemetry equipment, electrical and mechanical work.

1.6 Prepare plans to integrate SCADA system with Department of Water Supply’s existing SCADA system.

1.7 Prepare cost estimate, specs and contract bid documents.

1.8 Submit plans and specs for agency review.

1.9 Address review agency comments and resubmit for final approval.

1.10 Assist client in the bidding and bid review process.

COMPENSATION

We propose to provide the above mentioned remaining services for the following fee:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Description of Services</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design Engineering Services</td>
<td>$38,600</td>
</tr>
</tbody>
</table>

SUBTOTAL - PHASE V: $38,600

TOTAL FEE PROPOSED - PHASES III, IV, AND V: $298,700

The State GET (4.167%) will be added to all fees.
DIRECT EXPENSES

Cost of printing approved plans, specifications, and addenda for bidding purpose shall be reimbursed at invoiced amount. Suggested budget amount for this purpose is: $6,000

SCHEDULE OF PERFORMANCE

We propose to complete the above described remaining and additional work in Phases III, IV, and V within one hundred fifty (150) calendar days following receipt of the written Notice to Proceed, exclusive of review time by governmental agencies.

This proposal has been prepared with the understanding that the following services will be provided by the Department of Water Supply or other consultants retained by the Board for the project.

1. Environmental Assessment.
2. Stream Alteration Permit.

We hope the foregoing reflects your understanding of the remaining work required to fully integrate Wells 1 and 2 with the CMJV transmission system. If not, please call us. We will be glad to meet with you to discuss any additional scope of services required.

Sincerely,

Warren S. Unemori
EXHIBIT B

TIME SCHEDULE

PHASE I AND PHASE II shall be completed within 60 days of the issuance on Notice to Proceed, exclusive of review time by governmental agencies.

PHASE III, PHASE IV, AND PHASE V shall be completed within 150 days of Notice to Proceed, exclusive of review time by governmental agencies.
GENERAL TERMS AND CONDITIONS OF CONTRACTS
OF THE DEPARTMENT OF WATER SUPPLY
FOR SERVICES OF CONSULTANTS

Section 1 - Definitions
1.01 Board
1.02 County
1.03 Consultant
1.04 Contract
1.05 Department
1.06 Director
1.07 HRS
1.08 Project

Section 2 - Award and execution of contract
2.01 Selection of consultant
2.02 Contract not binding unless properly executed
2.03 Agreements outside of the contract
2.04 Notice to proceed

Section 3 - Legal Relations and Responsibility
3.01 Independent contractor
3.02 Contracts by the consultant
3.03 Findings confidential
3.04 Ownership vested in department
3.05 Indemnity
3.06 Campaign contributions prohibited
3.07 Absence of interest
3.08 Laws, ordinances and codes, and rules
3.09 Arbitration
3.10 Professional liability insurance

Section 4 - Performance of contract
4.01 Time of performance
4.02 Delay
4.03 Liquidated damages
4.04 Prosecution of the work
4.05 Modification of contract
4.06 Authority of the director
4.07 Subcontracting or assignment of contract
4.08 Cooperation by the department
4.09 Use of department’s standards
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6.02 Right of the board to terminate the contract
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SECTION 1 - DEFINITIONS

1.01 "Board" means the Board of Water Supply, County of Maui.
1.02 "County" means the County of Maui, State of Hawaii.
1.03 "Consultant" means the individual, partnership, corporation, or joint venture engaged by the board to perform the services under the contract.
1.04 "Contract" means the written agreement covering the performance of certain professional services by the consultant. It shall include all referenced material, and all exhibits attached thereto and included therein. It shall also include all modifications of the contract by supplemental agreements thereto in writing and written orders of the director.
1.05 "Department" means the Department of Water Supply, County of Maui, including the Board of Water Supply.
1.06 "Director" means the director of the Department of Water Supply, County of Maui, or the director’s representative.
1.07 "HRS" means Hawaii Revised Statutes.
1.08 "Project" means the undertaking under the contract.

SECTION 2 - SELECTION OF CONSULTANT AND EXECUTION OF CONTRACT

2.01 Selection of consultant. The consultant, upon being selected to render certain professional services for the project, will be notified of the consultant’s selection by the director. The notice shall not be construed to be authorization to proceed with the performance of services.
2.02 Contract not binding unless properly executed. The contract shall not be binding or have any force until it has been fully and properly executed by all of the parties thereto, and the insurance policy required under subsection 3.10 is accepted by the director.

2.03 Agreements outside of the contract. The contract and this General Terms And Conditions Of Contracts Of The Department Of Water Supply For Services Of Consultants contain the complete understandings regarding the responsibilities of the department and the consultant, and as of the effective date of the contract, supersede all other understandings between the consultant and the department.

2.04 Notice to proceed. (a) The director shall issue a written notice to proceed, establishing the date on which the time of performance shall commence and authorizing the consultant to proceed with the performance of the consultant's services.

(b) Services performed by the consultant prior to the date indicated in the notice to proceed shall be at the consultant's own risk.

SECTION 3 - LEGAL RELATIONS AND RESPONSIBILITY

3.01 Independent contractor. The consultant shall perform the contract as an independent contractor. The consultant, the consultant's subcontractors, agents, and employees shall not be entitled to the benefits and privileges of an employee of the county under the civil service system.

3.02 Contracts by the consultant. The consultant does not have the right to enter into any contract on behalf of or make any commitment on behalf of the department.

3.03 Findings confidential. Any report, information, or data prepared or assembled by the consultant under the contract shall not be made available to any individual or organization by the consultant without the prior written approval of the director.

3.04 Ownership vested in department. (a) Any and all data, information, field notes, designs, drawings, tracings, results, and any other thing derived or obtained directly or indirectly as a result of the contract shall be the sole and exclusive property of the department and the consultant shall not have any interest, right, or title in or to any of the foregoing.

(b) Prior to the release of retainage under subsection 5.03, or termination of the contract under subsection 6.02, the
consultant shall submit the items prepared pursuant to subsection (a) herein to the department.

3.05 Indemnity. The consultant shall defend, indemnify, and hold harmless the board, its officers, employees, and assigns, from and against any and all claims, suits, actions, injuries to persons, damages to property, and wrongful death, that may arise out of or in connection with any errors, omissions, or negligent acts by the consultant, the consultant’s subcontractors, agents, and employees, in their performance of the contract until such time as any action against the consultant is barred by Chapter 657 HRS, as amended, and shall reimburse the board, its officers, employees, and assigns, for any judgments, costs, and expenses, including attorney’s fees, incurred in connection with the defense of any such claim, or incurred by the board in enforcing this provision.

3.06 Campaign contributions prohibited. No portion of the consultant’s compensation under the contract shall be used for campaign contributions.

3.07 Absence of interest. The consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. The consultant further covenants that in the performance of this contract, no person having any such interest shall be employed.

3.08 Laws, ordinances and codes, and rules and regulations.

(a) The consultant shall be fully informed of all applicable federal and state laws, county ordinances and codes, and federal, state, and county rules and regulations, which in any manner affect the contract and the performance thereof, including but not limited to:

1. Article 1 of Title 10, Maui County Code, as amended, relating to the traffic code,

2. Title 12, Maui County Code, as amended, relating to streets, sidewalks, and public places,

3. Article 3 of Title 14, Maui County Code, as amended, relating to improvement districts,

4. Chapter 16.04, Maui County Code, as amended, relating to the Model Fire Code,

5. Chapter 16.08, Maui County Code, as amended, relating to the Housing Code,

6. Title 19, Maui County Code, as amended, relating to zoning,
(7) Chapter 16.24, Maui County Code, as amended, relating to the Building Code,

(8) Chapter 16.16, Maui County Code, as amended, relating to the Electrical Code,

(9) Chapter 16.20, Maui County Code, as amended, relating to the Plumbing Code,

(10) Chapter 103, HRS, as amended, relating to expenditure of public money,

(11) Chapter 104, HRS, as amended, relating to wages and hours of employees on public works,

(12) Chapter 22 of Title 12, Hawaii Administrative Rules, relating to wage determinations

(13) Chapter 132, HRS, as amended, relating to the fire marshal,

(14) Chapter 321, HRS, as amended, relating to the Health Department,

(15) Chapter 343, HRS, as amended, relating to environmental impact statements.

(16) Chapter 378, HRS, as amended, relating to fair employment practices,

(17) Chapter 376, HRS, as amended, relating to industrial safety,

(18) Chapter 386, HRS, as amended, relating to workers' compensation,

(19) Chapter 396, HRS, as amended, relating to occupational safety and health.

(20) Section 507-17, HRS, as amended, relating to recovery on bond for materials and labor used on public works.

(21) Chapter 200 of Title 11 of the department of health, relating to environmental impact statements.

(22) Part 3 of Subtitle 8 of Title 12, Hawaii Administrative Rules, relating to construction standards.

(23) Article II, Special Management Area Rules and Regulations of the County of Maui.

(24) Title 19 of the Maui County Code, relating to zoning.
(b) If any discrepancy or inconsistency is discovered between the contract and any such law, ordinance, code, or rule, the consultant shall forthwith advise the director, in writing, of such discrepancy or inconsistency.

(c) The consultant shall comply with all such current laws, ordinances and codes, and rules.

(d) If, in part, the consultant's work includes the preparation of construction bid documents, the department's furnishing of the general conditions, and forms of the proposal, bid bond, contract, and performance and payment bond under subsection 4.09, does not waive the consultant's responsibility under this subsection and consultant shall be fully responsible for the design of the project.

3.09 Arbitration. (a) Any controversy arising out of the contract, the refusal to perform the contract or any portion thereof, or the breach thereof shall be settled by arbitration in accordance with the rules of the American Arbitration Association and judgment rendered by such arbitration shall be binding upon the board and the consultant. Each party shall bear its own costs and shall equally pay for any and all fees, costs, and expenses of the arbitrator.

(b) The consultant shall not delay the work because arbitration proceedings are pending or in progress, unless approved, in writing, by the board.

3.10 Professional liability insurance. The insurance to be procured and maintained under the contract shall not be less than one million dollars.

SECTION 4 - PERFORMANCE OF CONTRACT

4.01 Time of performance. Time is of the essence of the contract. Performance of the services shall be commenced on the commencement date designated in the notice to proceed, and shall be completed within the contract time specified in the contract.

4.02 Delay. (a) If any delay in the performance of the consultant's services occur as a result of unforeseeable causes beyond the control and without the fault or negligence of the consultant, including but not limited to acts of God, acts of the public enemy, acts of the department with respect to the contract, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe unforeseeable causes beyond the control and without the fault or negligence of the consultant and the consultant's subconsultants, the consultant shall be granted an
extension of the time of performance, corresponding to the length of the delay.

(b) If, as a result of the delay, completion of performance within the extended time causes undue hardship to the consultant, the director may, in the director's discretion, grant a further extension of the time of performance.

(c) No extension of time shall be granted unless a written application, stating in detail the cause or causes for such delays is filed by the consultant with the director within ten calendar days after the commencement of the delay. The period of time of each extension of time shall be determined by the director. No such extension shall be deemed a waiver of the right of the board to terminate the contract for any other or additional delay not covered by the specific terms of such an extension or extensions.

4.03 Liquidated damages. Due to the speculative character and difficulty of ascertaining damages to the department resulting from any delay beyond the contract time, the consultant, for the purpose of putting the question of damages beyond controversy and dispute, shall pay the board an amount equal to the daily rate set forth in the contract multiplied by the number of days beyond the contract time as liquidated damages and not as a penalty for work which remains incomplete beyond the contract time or as extended by the director; provided that the remedy of liquidated damages shall be in addition to any other rights and remedies otherwise available to the board and not expressly waived herein.

4.04 Prosecution of the work. (a) The consultant shall be available upon reasonable demand to discuss the progress of the services being performed. All questions arising during the performance of the contract which must be resolved by the director shall be brought to the director's immediate attention.

(b) The consultant shall perform the consultant's work in accordance with established practices for good exterior appearance, and the natural and man-made environment; provided that if the project is for an economic feasibility study or other study, the consultant shall direct the consultant's work to relate appropriately to and in accordance with established principles, practices, and standards for such study.

(c) The consultant shall furnish sufficient technical supervision and administrative personnel to insure the proper performance of the services under the contract.

(d) The consultant shall be responsible for the accuracy of all computations, completeness, and integrity of all designs and plans or studies.
(e) The director shall have access at all reasonable times to all notes, designs, drawings, tracings, or other technical data pertaining to the services being performed under the contract for the purpose of inspection or making copies thereof.

4.05 Modifications of contract. (a) The department may at any time revise the scope of the project or the consultant’s scope of work; provided that such revisions shall be made by an amendment to the contract.

(b) No waiver or modification of the contract, or any provision therein shall be valid unless such waiver or modification is in a form of an amendment to the contract and executed by the consultant and the board.

(c) No document, other than an amendment to the contract and executed by the consultant and the board, purported to be a waiver or modification of the contract, or any provision therein shall be offered or received in evidence of any proceeding, arbitration, or litigation arising out of or affecting the contract, or the rights or obligations of the consultant or the board.

4.06 Authority of the director. Any question or dispute concerning any provision of the contract which may arise during its performance shall be decided by the director. The decisions of the director shall be final and binding upon all parties unless such decisions is fraudulent, capricious, arbitrary, or so grossly erroneous as necessarily to imply bad faith or is not supported by substantial evidence. Any appeal under this subsection shall be submitted to the board. Nothing herein shall be construed as making final and binding any decision of the director or the board, or both, on a question of law. Pending final decision of any dispute or question, the consultant shall proceed diligently with the consultant’s performance of services in accordance with the decision of the director or the board.

4.07 Subcontracting or assignment of contract. The consultant shall not subcontract or assign all or any part of the performance of the consultant’s services without the prior written consent of the director. Any consent by the director to subcontract any portion of the contract shall not be construed to relieve the consultant of any responsibility for the performance of the contract.

4.08 Cooperation by the department. The department, without cost to the consultant, shall cooperate fully with the consultant and will promptly place at the consultant’s disposal all available pertinent information which the department may have in its possession.

4.09 Use of department’s standards. (a) The consultant shall refer to the department’s standard details and shall not
duplicate such standard details in the consultant's work, unless the consultant makes modifications thereto.

(b) The department will provide the consultant with the general conditions, and formats of the proposal, bid bond, contract, performance and payment bond.

4.10 Review by the department. (a) The department will review the consultant's work, and may ask that certain modifications be made thereof. If, in the consultant's judgment, such modifications by the department affect the consultant's responsibilities under the contract, the consultant shall advise the director in writing.

(b) The inclusion of the department's comments does not waive the consultant's responsibilities under subsection 4.04.

SECTION 5 - COMPENSATION

5.01 Compensation. The consultant shall be paid the amount stated in the contract, reduced or increased pursuant to subsection 5.02, as full compensation for his services under the contract.

5.02 Reduction or increase in compensation. (a) The compensation of the consultant shall be reduced or increased in accordance with the modifications to the consultant's scope of work as the contract is amended under subsection 4.05.

(b) The compensation of the consultant shall be increased to reimburse the consultant for increased costs to perform the services if performance of the services is delayed by more than six months by an act or omission of the department; provided that the consultant submits within thirty days following the termination of the delay, in writing, a request for reimbursement containing:

(1) the reimbursement requested;

(2) the act or omission of the department causing the request for reimbursement;

(3) the services of the consultant affected by the department's act or omission;

(4) a breakdown of the requested reimbursement; and

(5) other information which the consultant and the director deem relevant to the request.
5.03 Payments. (a) As long as the services of the consultant are performed in accordance with the contract, the department may pay the consultant monthly progress payments based upon the value of the services performed by the consultant, as estimated by the consultant and the director.

(b) The department may retain up to five percent from each monthly progress payment, and after fifty percent of the compensation under the contract is paid, and the consultant’s performance is satisfactory, no additional amount will be retained; provided that if the consultant’s performance is not satisfactory, the director may retain up to five percent of all amounts due the consultant.

(c) Final payment, inclusive of amounts retained by the department, shall be made (1) upon determination by the director that the consultant has satisfactorily fulfilled his obligations under the contract, and (2) in accordance with chapters 103-53 and 237-45, HRS, upon receipt of a tax clearance from the department of taxation, certifying that the consultant has paid all delinquent taxes levied or accrued.

5.04 Assignment of money due or payable. Assignments of money due or to become payable to the consultant shall not be valid without the prior written consent of the director. The rights of the assignee to moneys due or to become due to the consultant shall be subject to subsection 6.01.

SECTION 6 - REMEDIES

6.01 Right of the board to suspend the performance of services. (a) The board has the right to order the suspension of the performance of the services or portions thereof at any time. The order shall:

(1) Be in writing;

(2) State the reason or reasons for the suspension;

(3) Specify the portions of the contract being suspended; and

(4) Specify the estimated period of suspension.

(b) If the board orders the suspension of the entire performance of services and the estimated period of suspension is more than six months, the consultant has the right to terminate the contract; provided that he submits a request for termination within six months following receipt of the order for suspension.
(c) If the contract is not terminated within six months, the consultant may request reimbursement for additional costs incurred due to the suspension of work.

6.02 Right of the board to terminate the contract. (a) The board has the right to order the termination of the contract at any time. The order shall be in writing and shall be forwarded to the address of the consultant stated in the contract.

(b) The board may terminate the contract if the consultant:

(1) fails to begin work under the contract at the time required;

(2) is unnecessarily delaying the performance of the contract or any part thereof;

(3) is failing to perform the contract with sufficient or adequate personnel, equipment, or materials, or is not making sufficient progress to ensure the completion of the contract within the time specified;

(4) fails to perform the contract in accordance with directions of the director;

(5) discontinues performance of the contract;

(6) fails to recommence performance of the contract within a reasonable time after service of a written order to do so is the performance had been suspended;

(7) becomes insolvent or is declared bankrupt;

(8) commits any act of bankruptcy or insolvency;

(9) allows any final judgment to stand against the consultant unsatisfied for a period of ten calendar days;

(10) makes an assignment for the benefit of creditors;

(11) fails to pay for all labor, tools, materials, and equipment;

(12) has abandoned the contract; or

(13) violates or fails to comply with any of the provisions of the contract or this General Terms and Conditions of Contracts of the Department of Water Supply for Services of Consultants.
(c) The board may also terminate the contract for reasons, which may include but are not be limited to, the abandonment, deferral, restudy, or revision of the project by the department.

(d) If the board terminates the contract due to the consultant's default, the board may contract with another consultant to complete the remainder of the contract.

(e) In any termination, the consultant shall be compensated for all work performed until the termination order, upon the consultant's compliance with subsections 3.04 and 5.03.

(f) Such compensation due the consultant shall take into account liquidated damages, and the value of materials, data, maps, plans, or other documents or information gathered, compiled, produced, or obtained, which the consultant fails to deliver.

6.03 Authority to withhold money due or payable. The board may withhold such amounts from the money due or to become payable under the contract to the consultant, or any assignee under subsection 5.04, as may be necessary to protect the board against liability or to satisfy the obligations of the consultant to the board and to employees, subcontractors and material men who have performed labor or furnished material and equipment under the contract and may make such payments from such amounts as may be necessary to discharge such obligations and protect the board.

6.04 Remedies not exclusive. The express provision herein of certain measures which may be exercised by the board for its protection shall not be construed to preclude the board from exercising any other or further legal or equitable right to protect its interests.
I, Kim Nuyen, Fiscal Officer of the Department of Water Supply, County of Maui, State of Hawaii, do certify that there is available appropriation or balance of an appropriation over and above all outstanding contracts, sufficient to cover the amount required by the foregoing contract, i.e.

<table>
<thead>
<tr>
<th>Appropriation Symbol</th>
<th>Source of Funds</th>
<th>Amount Required</th>
</tr>
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<tbody>
<tr>
<td>CENTRAL MAUI</td>
<td>SOURCE</td>
<td>$384,150</td>
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</table>

Contract No. WC0653 - WENMORI ENGINEERING, INC.

Dated this 29th day of FEBRUARY, 1996.

JN 92-5

Holly Perdido Adm.

for Kim Nuyen
Fiscal Officer
February 29, 1996

Mr. Warren Unemori
Warren S. Unemori Engineering, Inc.
2145 Wells Street, Suite 403
Wailuku, Maui, Hawaii 96793

Dear Mr. Unemori:

Subject: Independent Professional Services for the Development of North Waihee Wells

This letter constitutes NOTICE TO PROCEED for all work under the subject project.

You are hereby notified that the official commencement date of this project shall be February 29, 1996. The time allowed to complete the required services is specified in the contract, exclusive of time required for governmental review.

Please acknowledge receipt of this notice in the space provided below on the original and two copies and return them to the Department of Water Supply. Please keep the third copy of this letter for your files.

A copy of the fully executed contract will be forwarded for your files.

Sincerely,

David R. Craddick
Director

hk

cc: DWS Fiscal
    DWS Contractor
    DWS Engineer
    Director

NOTICE TO PROCEED RECEIVED
THIS 29th DAY OF FEBRUARY
1996.

Warren S. Unemori

"By Water All Things Find Life"
Tuesday, February 13, 1996

Paul Seitz
BWS County of Maui
614 PalaPala Drive
Kahului, Maui, Hawaii 96732

Dear Mr. Seitz,

Memtec America Corporation (Memcor Division), has pleasure in submitting this budgetary quotation for the supply of Microfiltration technology for the Olinda WTF.

The Memcor® Continuous Microfiltration (CMF) technology will provide the Island of Maui with a very high quality water for its potable water applications.

In this quotation, Memcor has detailed a CMF system to handle the requirements of 2 mgd by utilizing modular microfiltration units 3 x 90M10C for a total price of $1,659,340. Also, the price to supply a 2 x 90M10C system would be $1,295,650.

As we previously discussed, this project is quoted as a bare minimum. This does not include freight, except the microfiltration skids themselves, which are FOB Port of Honolulu, all other equipment is FOB supplier. Additionally, there are no submittal drawings, spare parts, any additional training, control programming, any state, federal or local taxes, and the Terms and Conditions and payment terms are as previously negotiated for Lahaina and Kamole WTF's. Memcor have attempted to cut everything that is not absolutely necessary in order to give the County of Maui the absolute lowest price.

What it does include is, three microfiltration skids, one control system using a Pentium based processor (Wonderware or equal), two air compressors w/ air dryers, one air receiver, one CIP tank w/ no immersion heater, one CIP recirculation pump, essential actuated valves on CIP line, concentrate solution feed system, 55 gallons of Memclean® concentrate, 15 man days of startup, and six standard O&M manuals. Our standard scope of supply as we have quoted in the past.

Memcor will supply our generic drawings for process layout, but will not provide any site specific detailed drawings, telemetry is also excluded.
Memcor has allowed for microfiltration equipment inspection at our factory, if this is necessary.

Delivery is 10 to 14 weeks after acceptance of purchase order. This delivery is based on present inventory and may change at any time.

This offer is valid for 45 days.

We look forward to working with you on this project to satisfy your filtration requirements.

Sincerely,

Paul Johnson
Regional Manager

cc: Claude Jordan - Memtec America
    John Crapper - Memtec Limited
GRANT OF EASEMENT  
(Well Field 1)

This Indenture is made this 21st day of February, 1996 by and between WAILUKU AGRI-BUSINESS CO., INC., a Hawaii corporation, whose business and post office address is 90 Waiko Road, P. O. Box 520, Wailuku Maui, Hawaii 96793 ("Grantor") and THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI, a political subdivision of the State of Hawaii whose principal office and post office address is 200 South High Street, Wailuku, Maui, Hawaii 96793 ("Grantee").

BACKGROUND STATEMENT:

1. Grantor owns that certain parcel of land situated at Waihee, Maui, Hawaii, described on Exhibit "A" attached hereto and made a part hereof (the "Grantor's Land").
2. The purpose of this indenture is to establish an easement in accordance with that certain Right-of-Entry Agreement to Grant Easements between Grantor and Grantee, dated Feb 21, 1996.

**EASEMENT:** For valuable consideration, Grantor hereby grants and conveys to the Grantee an "Easement" (defined below) over the "Easement Area" (defined below and located on the Grantor's Land described in Exhibit A), upon and in accordance with all of the following terms and conditions:

1. **Easement Defined.** This easement shall include the following rights:
   
   (a) To construct, maintain, operate, repair and replace the following facilities:

   two existing water wells together with appurtenant pipelines, valves, fences, security devices, electrical power lines, communication lines and other facilities associated with the use and operation of said wells;

   (b) The right of pedestrian and vehicular ingress and egress and the right to construct, operate, repair, maintain and replace a road or driveway, as needed for the purpose of constructing, maintaining and operating the facilities described in subparagraph (a) above; and

   (c) The right to drain overflows and discharges of water from said wells and appurtenant pumps, provided that all such overflows and discharges shall be managed within the Easement Area, so that the volume or flow of drainage from the Easement Area to adjoining lands shall not be increased or altered from its presently existing natural flow.

2. **Easement Area Defined.** The Easement Area is the area described and located as set forth in Exhibit B attached hereto and made a part hereof.

3. **Grantor's Limited Warranty.** Grantor for itself and its successors and assigns does hereby covenant with Grantee that Grantor is seised in fee simple of the Easement Area; the Grantor's Land is free and clear of all liens and encumbrances made by Grantor or by persons claiming by, through or under the Grantor except for those encumbrances and other matters set forth on Exhibit A; and Grantor will, and its successors and assigns shall, warrant and defend the interest unto Grantee, its successors and assigns against the lawful claims and demands of all persons claiming by, through or under Grantor, except as aforesaid.
4. **Responsibility.** Grantee will at all times in connection with all uses or actions within the Easement Area by Grantee or its agents and licensees, (a) observe and perform all laws, ordinances, rules and regulations now or hereafter imposed by any governmental authority which are applicable to the Easement Area; (b) not at any time make or suffer any strip or waste or unlawful, improper or offensive use of the Easement Area; (c) keep the Easement Area reasonably clear of litter and refuse; (d) keep and maintain the Easement Area in reasonably safe condition and in good repair; (e) not permit the Easement Area to be used for any purpose other than the purposes expressly permitted under paragraph 1 above; and (f) complete the construction of all improvements, once begun, promptly and with due care and diligence and free and clear of all liens.

5. **Use of Easement Area by Grantor.** This Easement shall be exclusive as to those areas containing the facilities described in Section 1(a) above, but shall be nonexclusive as to those areas designated for roadway or access purposes. Grantee understands that the existing driveway is used for access to abutting properties other than Grantor's land, and that third parties may have rights to use said access.

6. **Relocation of Easement Area by Grantor.** At any time and from time to time the Grantor may relocate the Easement Area in order to facilitate the Grantor's use and development of the Grantor's land, provided that:

   (a) Said relocation right shall apply only to roadways, pipelines, buildings and moveable equipment, and shall not apply to permanent fixtures which cannot physically be moved such as developed wells.

   (b) All expenses in connection with governmental approvals for the relocation of the easement area and the establishment of record of the relocated easement shall be borne by the Grantor at no cost to the Grantee;

   (c) Said relocated Easement shall provide for Grantee's rights and obligations on all of the same terms and conditions as set forth in this Easement; and

   (d) As a condition of said relocation becoming effective, Grantor will pay all costs to relocate all of the Grantee's improvements and facilities to the relocated easement area in at least as good condition and remaining useful life as existed prior to the relocation.

Simultaneously with Grantor's conveyance and grant to the Grantee of a new Easement over the relocated easement area, meeting all the terms and conditions
hereof, (i) Grantee will release and transfer to Grantor all of its rights and interest in the Easement Area as it existed prior to the relocation becoming effective, free and clear of all liens, claims, and encumbrances made or suffered by Grantee, and (ii) Grantor and Grantee will execute and record an appropriate amendment to this easement under which all of the terms and conditions of this easement will remain applicable to the relocated easement.

Grantee intends to install overhead utility lines as part of Grantee's improvements, within the Easement Area. Grantee agrees to convert such overhead utility lines to underground utility lines when requested, in writing, by Grantor, provided however that Grantee's obligation to so convert to underground utilities is on the condition that Grantor has first created an underground conduit in order for Grantee to install the power lines underground. It is agreed and understood that the cost to construct the underground conduit will be borne totally by Grantor and the cost to convert the overhead utility line to underground, that is, the cost to remove the overhead power lines, poles and facilities and to install the power lines in Grantor's conduit shall be borne totally by Grantee.

7. Maintenance of Easement Area by Grantor. Grantor shall have the right to improve or maintain the Easement Area in its sole discretion. However, Grantor will not be obligated in any way to maintain or improve the Easement Area or to maintain, safeguard or repair Grantee's facilities within the Easement Area.

8. Construction, Bonding and Insurance. All of Grantee's construction work shall be performed in accordance with all applicable governmental law, rules and regulations of the State of Hawaii and Grantee. This includes the performance of all construction work by appropriately qualified contractors, the provision of performance and payment bond(s), and the maintenance of all insurance coverage for the duration of the construction period. Grantor shall be named as an additional insured under all insurance policies, including comprehensive general liability insurance and such coverage shall be required in the bid specifications for the construction work.

9. Taxes. Grantee shall pay as and when due all real estate taxes and assessments which shall become due with respect to and are properly allocable to Grantee's facilities and those areas of Grantor's land encumbered by the Grantee's facilities.

10. Grantor's Agricultural Activities and Right to Farm. Grantor and the Grantee agree that lands located adjacent to or in the vicinity to the Easement Area which are now owned, used or hereafter acquired by Grantor are or will be in agricultural operation and Grantor will have the unrestricted right to engage in any type of farming operation, including, but not limited to, open burning, percolating, evaporating, fertilizing, milling, generating power, water diversion, plowing grading, storing, hauling, spraying pesticides, irrigating, crop dusting, and all other activities
incidental to the planning farming, harvesting and processing of agricultural products and that smoke, dust, light, heat, vapor, odor, chemicals, vibration, and other nuisances may be discharged or emitted over and upon the Easement Area. Grantor, its successors and assigns, shall not be responsible or liable to the Grantee, its successors and assigns, for the consequences from the creation and discharge of such noxious emissions.

11. **Property “As Is”**. This Easement is granted subject to the encumbrances affecting Grantors' land as set forth in Exhibit A hereto. Grantee accepts the physical condition of the land and all Easement Areas in "as is" condition. Grantor makes no representations or warranties whatsoever, as to the physical condition of the Easement Area, the suitability of the land for the Grantee’s intended purposes, the availability, quantity or quality of any developed or undeveloped water resources, or the applicability of any laws, rules or regulations.

12. **Mediation**. If any claim or dispute shall arise in connection with the interpretation of this agreement or the performance or breach by any party, both parties agree in good faith to attempt to settle such dispute by non-binding mediation in Wailuku, Hawaii conducted under the Commercial Mediation Rules of the American Arbitration Association.

13. **Attorney’s Fees**. If any legal action or arbitration shall be brought by a party to enforce or interpret any provision of this agreement or to redress any breach by the other party, the prevailing party shall be entitled to recover its reasonable attorney’s fees and costs.

14. **Appurtenance and Successors**. This Agreement shall inure to the benefit of and shall be binding upon the parties hereto and their respective successors and assigns. The terms "Grantor" and "Grantee" herein shall include their respective successors.

15. **Governing Law**. This Agreement shall be governed by the laws of the State of Hawaii.

16. **No Waiver**. No failure by any party to insist upon strict performance by the other party of any of the terms and provisions of this agreement shall be deemed to be a waiver of any such terms or provisions or of the other party’s obligation to comply with such terms or provisions; and notwithstanding such failure, each party shall have the right thereafter to insist upon the other party’s strict performance of such terms and provisions. Any waiver of the terms of this agreement shall not be effective unless given in writing.

17. **Amendments**. This agreement may not be amended unless mutually agreed to in writing and signed by the parties hereto.
18. **Notices.** All notices or other communications given by either party hereto shall be deemed to be duly given and received by the other party upon the earlier to occur of (a) actual receipt by a duly elected or appointed officer, director or authorized employee of said other party, either by mail, courier, hand delivery or facsimile transmission, or (b) three business days after having been deposited in the United States Mail, postage prepaid, sent by registered or certified mail (whether or not actually received by the other party), addressed to the other party at the address set forth at the top of this agreement, or to such other address as such other party may have given notice of to the sending party in accordance with the foregoing provision.

19. **Counterparts.** This Easement may be executed in counterparts, and said execution shall have the same effect as if all parties executed the same original copy hereof. Either party shall be authorized to combine all signed original pages and notary acknowledgments within a single copy of this document for purposes of recording in the State of Hawaii Bureau of Conveyances and submission to any tribunal in any proceeding.

Executed as of the day and year first above written.

Grantor:

WAILUKU AGROBUSINESS CO., INC.

By [Signature]

Its: CHAIRMAN OF THE BOARD

By [Signature]

Its: Secretary

Grantee:

THE BOARD OF WATER SUPPLY OF THE COUNTY OF MAUI

By [Signature]

Its: Authorized Signatory
Approved as to Form and Legality

[Signature]
Gary W. Zakian
Deputy Corporation Counsel
County of Maui
On this 21st day of February, 1996, before me personally appeared J. ALAN KUGLE and KATHLEEN F. OSHIRO, to me personally known, who, being by me duly sworn, did say that they are the Chairman of the Board and Secretary, respectively, of WAILUKU AGribusiness Co., Inc., a Hawaii corporation, that the foregoing instrument was signed on behalf of said corporation by authority of its Board of Directors, and the said officers acknowledged said instrument to be the free act and deed of said corporation.

Notary Public, State of Hawaii

My Commission Expires: 11/2/97
On this 20th day of February, 1996, before me appeared BYRON WALTERS, to me personally known, who, being by me duly sworn, did say that he is a Member of the Board of Water Supply of the County of Maui, and was authorized by the BOARD OF WATER SUPPLY on February 15, 1996 to execute any and all documents as set forth in the COUNTY OF MAUI BOARD OF WATER SUPPLY RESOLUTION RELATING TO THE PURCHASE OF THE WAIHEE VALLEY PROPERTY, and that the said instrument was signed on behalf of the said Board of Water Supply, and the said BYRON WALTERS acknowledged the said instrument to be the free act and deed of the said Board of Water Supply.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

[Signature]
Notary Public, State of Hawaii
My commission expires: 11/25/96
EXHIBIT A

All of that certain parcel of land (being portion of the land(s) described in and covered by Royal Patent Number 4475, Land Commission Award Number 7713, Apana 24 to V. Kamamalu and Royal Patent Number 6207, Land Commission Award Number 4405-EE, Apana 1 to Kaokaa) situate, lying and being at Waihee, District of Wailuku, Island and County of Maui, State of Hawaii, bearing Tax Key designation 3-2-001-004 (2) and containing an area of 12.122 acres, more or less.

Subject, to the following:

1. Reservation in favor of the State of Hawaii of all mineral and metallic mines.

2. Water rights, easements and other rights as set forth in Deed of Exchange dated June 23, 1924, by and between HAWAIIAN COMMERCIAL SUGAR COMPANY, now known as Alexander and Baldwin, Inc., and WAILUKU SUGAR COMPANY, recorded in Liber 740 at Page 134, as amended by Agreement dated March 24, 1937, recorded in Liber 1371 at Page 227.

3. Water rights in favor of HAWAIIAN COMMERCIAL AND SUGAR COMPANY, LIMITED, now known as ALEXANDER AND BALDWIN, INC., and WAILUKU SUGAR COMPANY, as set forth in instrument dated July 15, 1927, recorded in Liber 893 at Page 316.


5. That certain unrecorded Agreement dated January 6, 1949, by and between the COUNTY OF MAUI and WAILUKU SUGAR COMPANY; re: water distribution system.

6. Non-exclusive easements over, under and across a portion of Easement "A" for road and utility purposes in favor of George Ezaki, et al., as set forth and described in Deed dated June 25, 1979, recorded in Liber 13830 at Page 232.
7. RIGHT OF ENTRY AGREEMENT dated May 17, 1983, recorded in Liber 17090 at Page 20, in favor of County of Maui for the purposes of performing surveys and design engineering for a new water tank, inlet and outlet waterlines, and appurtenances.

8. Grant dated January 5, 1987, recorded in Liber 20331 at Page 23, in favor of MAUI ELECTRIC COMPANY, LIMITED and HAWAIIAN TELEPHONE COMPANY, now known as GTE HAWAIIAN TELEPHONE COMPANY INCORPORATED, granting nonexclusive right and easement to build, construct, reconstruct, repair, maintain, operate and remove pole and wire lines and underground lines, etc. for the transmission of electricity.

9. SUBDIVISION AGREEMENT (THREE LOTS OR LESS) dated July 27, 1987, recorded in Liber 20986 at Page 529, by and between WAILUKU AGRIBUSINESS CO., INC., "Owner" and THE COUNTY OF MAUI, "County".

10. SUBDIVISION AGREEMENT (LARGE LOTS) dated July 27, 1987, recorded in Liber 20986 at Page 535, by and between WAILUKU AGRIBUSINESS CO., INC., "Owner" and THE COUNTY OF MAUI, "County".

11. FARM DWELLING AGREEMENT dated July 27, 1987, recorded in Liber 20986 at Page 544, by and between WAILUKU AGRIBUSINESS CO., INC., "Owner" and THE COUNTY OF MAUI, "County".

12. GRANT OF EASEMENT dated April 25, 1991, recorded as Document No. 91-063482, by and between WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, "Grantor" and WILLIAM B. FREITAS, JR., a married person, "Grantee", granting a perpetual non-exclusive road easement for pedestrian and vehicular ingress and egress to and from a public road over and across:
EASEMENT "A"
over and across portion of R. P. 4475, L. C. Aw. 7713, Ap. 24 to V. Kamamalu situated on the westerly side of Kahekili Highway at Waihee, Maui, Hawaii, being more particularly described as follows:

Beginning at a point at the most northerly corner of this easement, the coordinates of said point of beginning referred to Government Survey Triangulation Station "HAY" being 9,347.68 feet North and 7,323.39 feet West and running by azimuths measured clockwise from True South:

1. 319' 00' 197.53 feet along the westerly side of Kahekili Highway;

2. Thence over and across a portion of R. P. 4475, L. C. Aw. 7713, Ap. 24 to V. Kamamalu on a curve to the right having a radius of 197.07 feet, the chord azimuth and distance being:

   332' 00' 88.66 feet;

3. 345' 00' 90.00 feet over and across same;

4. Thence over and across same on a curve to the right having a radius of 122.00 feet, the chord azimuth and distance being:

   7' 30' 93.37 feet;

5. 30' 00' 21.00 feet over and across same;

6. Thence over and across same on a curve to the right having a radius of 222.00 feet, the chord azimuth and distance being:

   50' 00' 151.86 feet;

7. 70' 00' 71.00 feet over and across same;

8. Thence over and across same on a curve to the left having a radius of 178.00 feet, the chord azimuth and distance being:

   62' 30' 46.47 feet;
9.  55° 00'  504.75  feet over and across same;

10. Thence over and across same on a curve to the right having a radius of 272.00 feet, the chord azimuth and distance being:

     66° 15'  106.13  feet;

11.  77° 30'  115.84  feet over and across same along R. P. 5331, L. C. Aw. 4405-Q:1 to Kaalepo;

12.  68° 00'  65.99  feet along R. P. 5331, L. C. Aw. 4405-Q:1 to Kaalepo;

13.  54° 30'  134.00  feet along same and along R. P. 4120, L. C. Aw. 4405-P:2 & 4 to Moo;


15. 110° 00'  78.70  feet over and across R. P. 4475, L. C. Aw. 7713, Ap. 24 to V. Kamamalu;

16. Thence over and across same on a curve to the left having a radius of 50.00 feet, the chord azimuth and distance being:

     92° 30'  30.07  feet;

17.  75° 00'  162.00  feet over and across same;

18. Thence over and across same on a curve to the left having a radius of 680.00 feet, the chord azimuth and distance being:

     70° 45'  100.79  feet;

19.  66° 30'  40.00  feet over and across same;
20. Thence over and across same on a curve to the right having a radius of 370.00 feet, the chord azimuth and distance being:

<table>
<thead>
<tr>
<th>Azimuth</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>72° 45'</td>
<td>80.56</td>
</tr>
</tbody>
</table>

21. 79° 00' 138.00 feet over and across same;

22. 86° 38' 20" 75.50 feet over and across same;

23. 103° 45' 38.08 feet over and across same;

24. 66° 35' 40.00 feet over and across same;

25. 77° 50' 32.00 feet over and across same;

26. 9° 55' 48.00 feet over and across same;

27. 52° 40' 94.00 feet over and across same;

28. 63° 00' 37.96 feet over and across same;

29. 94° 00' 34.89 feet over and across same;

30. Thence over and across same on a curve to the right having a radius of 97.36 feet, the chord azimuth and distance being:

<table>
<thead>
<tr>
<th>Azimuth</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>104° 45'</td>
<td>36.32</td>
</tr>
</tbody>
</table>

31. 115° 30' 53.00 feet over and across same;

32. Thence over and across same on a curve to the left having a radius of 150.00 feet, the chord azimuth and distance being:

<table>
<thead>
<tr>
<th>Azimuth</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>101° 45'</td>
<td>71.31</td>
</tr>
</tbody>
</table>

33. 88° 00' 126.80 feet over and across same;

34. Thence over and across same on a curve to the left having a radius of 500.00 feet, the chord azimuth and distance being:
83° 30' 78.46 feet;
35. 79° 00' 81.00 feet over and across same;
36. Thence over and across same on a curve to the left having a radius of 200.00 feet, the chord azimuth and distance being:

65° 15' 95.07 feet;
37. 51° 30' 251.00 feet over and across same;
38. Thence over and across same on a curve to the right having a radius of 160.00 feet, the chord azimuth and distance being:

65° 37' 30" 78.09 feet;
39. 79° 45' 307.38 feet over and across same;
40. Thence over and across same on a curve to the left having a radius of 53.95 feet, the chord azimuth and distance being:

54° 52' 30" 45.39 feet;
41. 97° 40' 21.62 feet over and across same;
42. 210° 00' 8.22 feet over and across same;
43. Thence over and across same on a curve to the right having a radius of 73.95 feet, the chord azimuth and distance being:

234° 52' 30" 62.21 feet;
44. 259° 45' 307.38 feet over and across same;
45. Thence over and across same on a curve to the left having a radius of 140.00 feet, the chord azimuth and distance being:
245' 37' 30" 68.33 feet;
46. 231' 30' 251.00 feet over and across same;
47. Thence over and across same on a curve to the right
having a radius of 220.00 feet, the chord azimuth
and distance being:
   245' 15' 104.58 feet;
48. 259' 00' 81.00 feet over and across same;
49. Thence over and across same on a curve to the right
having a radius of 520.00 feet, the chord azimuth
and distance being:
   263' 30' 81.60 feet;
50. 268' 00' 175.01 feet over and across same;
51. Thence over and across same on a curve to the right
having a radius of 150.00 feet, the chord azimuth
and distance being:
   281' 45' 71.31 feet;
52. 295' 30' 19.47 feet over and across same;
53. Thence over and across same on a curve to the left
having a radius of 57.36 feet, the chord azimuth
and distance being:
   276' 15' 37.82 feet;
54. Thence over and across same on a curve to the left
having a radius of 120.00 feet, the chord azimuth
and distance being:
   244' 50' 50.58 feet;
55. 232' 40' 158.00 feet over and across same;
56. Thence over and across same on a curve to the right
having a radius of 93.26 feet, the chord azimuth
and distance being:
256' 35' 75.62 feet;

57. Thence over and across same on a curve to the left having a radius of 160.00 feet, the chord azimuth and distance being:

269' 45' 59.69 feet;

58. 259' 00' 138.00 feet over and across same;

59. Thence over and across same on a curve to the left having a radius of 330.00 feet, the chord azimuth and distance being:

252' 45' 71.35 feet;

60. 246' 30' 40.00 feet over and across same;

61. Thence over and across same on a curve to the right having a radius of 720.00 feet, the chord azimuth and distance being:

250' 45' 106.72 feet;

62. 255' 00' 162.00 feet over and across same;

63. Thence over and across same on a curve to the right having a radius of 90.00 feet, the chord azimuth and distance being:

272' 30' 54.13 feet;

64. 290' 00' 23.79 feet over and across same;

65. Thence over and across same on a curve to the left having a radius of 100.00 feet, the chord azimuth and distance being:

268' 35' 73.03 feet;

66. 247' 10' 30.36 feet over and across same;

67. Thence over and across same on a curve to the left having a radius of 180.00 feet, the chord azimuth and distance being:
240' 50' 83.84 feet; 68. 234' 30' 79.05 feet over and across same;

69. Thence over and across same on a curve to the right having a radius of 218.00 feet, the chord azimuth and distance being:

246' 00' 86.92 feet;

70. 257' 30' 119.05 feet over and across same;

71. Thence over and across same on a curve to the left having a radius of 232.00 feet, the chord azimuth and distance being:

246' 15' 90.52 feet;

72. 235' 00' 504.75 feet over and across same;

73. Thence over and across same on a curve to the right having a radius of 218.00 feet, the chord azimuth and distance being:

242' 30' 56.91 feet;

74. 250' 00' 71.00 feet over and across same;

75. Thence over and across same on a curve to the left having a radius of 182.00 feet, the chord azimuth and distance being:

230' 00' 124.50 feet;

76. 210' 00' 21.00 feet over and across same;

77. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:

187' 30' 62.76 feet;

78. 165' 00' 90.00 feet over and across same;
79. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:

142' 30' 62.76 feet;

80. 120' 00' 99.00 feet over and across same;

81. Thence over and across same on a curve to the right having a radius of 68.00 feet, the chord azimuth and distance being:

174' 30' 110.72 feet;

82. Thence over and across same on a curve to the left having a radius of 20.00 feet, the chord azimuth and distance being:

184' 00' 28.28 feet to the point of beginning, containing an area of 3.269 acres, more or less.

13. UTILITY EASEMENT dated November 19, 1991, recorded as Document No. 91-179022 in favor of MAUI ELECTRIC COMPANY LIMITED and GTE HAWAIIAN TELEPHONE COMPANY INCORPORATED, re: perpetual right and easement to build, construct, reconstruct, rebuild, repair, maintain and operate pole and wire lines and underground power lines for the transmission of electricity.

14. ACCESS EASEMENT dated May 26, 1995, recorded as Document No. 95-083357, in favor of MILES H. KAWASAKI, husband of Cheryl N. Kawasaki, DOMINICK A. MARINO and PATRICIA A. MARINO, husband and wife, re: perpetual access easements over and across the following described easements:

EASEMENT "A-1"
Situated at Waihee, Wailuku, Maui, Hawaii
Being a portion of Royal Patent 4475,
Land Commission Award Number 7713, Apana 24 to V. Kamamalu

An easement (20.00 feet wide) for access and utility purposes affecting Lot 3, Waihee Valley Large-Lot Subdivision, in favor of Parcels 19, 20 and 21 of Tax Map
Key (2) 3-2-03 and described as follows:

Beginning at the Southwest corner of this Easement, on the South boundary of Lot 3, Waihee Valley Large-Lot Subdivision, the coordinates of said point of beginning referred to Government Survey Triangulation Station "HAY" being 8,420.41 feet North and 7,912.27 feet West and running by azimuths measured clockwise from True South:

1. 181' 00' 1.93 feet along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision;

2. Thence, along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being:
   
   129' 15 23.56 feet;

3. 257' 30' 45.11 feet along existing Roadway and Utility Easement "A";

4. Thence, along existing Roadway and Utility Easement "A" on a curve to the left with a radius of 272.00 feet, the chord azimuth and distance being:
   
   256' 52' 05" 6.00 feet;

5. Thence, along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being:
   
   38' 37' 05" 18.31 feet;

6. 1' 00' 14.00 feet along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision;

7. 91' 00' 20.00 feet along Parcel 20 of Tax Map Key (2) 3-2-03 to the point of beginning and containing an area of 576 square feet.
EASEMENT "A-2"

Situated at Waihee, Wailuku, Maui, Hawaii
Being a portion of Royal Patent 4475,
Land Commission Award 7713, Apana 24 to V. Kamamalu

An Easement (40.00 feet wide) for access and utility
purposes affecting Lot 3, Waihee Valley Large-Lot
Subdivision, in favor of Parcels 19, 20 and 21 of Tax Map
Key (2) 3-2-03 and described as follows:

Beginning at the South corner of this Easement, on the
South boundary of Lot 3, Waihee Valley Large-Lot
Subdivision, the coordinates of said point of beginning
referred to Government Survey Triangulation Station "HAY"
being 8,454.13 feet North and 7,802.76 feet West and running
by azimuths measured clockwise from True South:

1. 149° 50' 8.88 feet along the remainder
   of Lot 3, Waihee Valley
   Large-Lot Subdivision;

2. Thence along the remainder of Lot 3, Waihee Valley
   Large-Lot Subdivision on
   a curve to the left with
   a radius of 15.00 feet,
   the chord azimuth and
   distance being:
   106° 59' 35.4" 20.40 feet;

3. Thence along existing Roadway
   and Utility Easement "A"
   on a curve to the left
   with a radius of 272.00
   feet, the chord azimuth
   and distance being:
   239° 34' 35.4" 43.41 feet;

4. 235° 00' 24.29 feet along existing
   Roadway and Utility
   Easement "A";

5. Thence along the remainder of Lot 3, Waihee Valley
   Large-Lot Subdivision on
   a curve to the left with
   a radius of 15.00 feet,
   the chord azimuth and
   distance being:
   12° 25' 20.30 feet;
6. 329' 50' 11.13 feet along the remainder of Lot 3, Waihee Valley Large-Lot Subdivision.

7. 59' 50' 40.00 feet along Parcel 20 of Tax Map Key (2) 3-2-03 to the point of beginning and containing an area of 1,026 square feet.

15. Any unrecorded leases and tenancy agreements and matters arising from or affecting the same.

16. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct boundary and improvement survey or archaeological study would disclose, including, without limitation, trails, rights of way, historic property and burial sites.

-Note:- A current survey, with metes and bounds description, should be made of said premises so that the boundaries can be determined.

17. Claims arising out of right customarily and traditionally exercised for subsistence, cultural, religious, access or gathering purposes as provided for in Hawaii Revised Statutes or the Hawaii Constitution.
Exhibit B

Well Field 1 and
Area for Access, Pipeline and Utility Lines

Easement "A-1" over and across portion of R.P. 4475, L.C. Aw. 7713 Ap. 24 to V. Kamamalu, also being portion of Lot 3 of Waihee Valley Large-Lot Subdivision (TMK: 3-2-01:4) situated on the westerly side of Kahekili Highway at Waihee, Maui, Hawaii, being more particularly described as follows:

Beginning at a point at the most northerly corner of this easement, the coordinates of said point of beginning referred to Government Survey Triangulation Station "HAY" being 9,347.68 feet North and 7,323.39 feet West and running by azimuths measured clockwise from True South:

1. 319° 00' 197.53 feet along the westerly side of Kahekili Highway;

2. Thence over and across a portion of R.P. 4475, L.C. Aw. 7713 Ap. 24 to V. Kamamalu on a curve to the right having a radius of 197.07 feet, the chord azimuth and distance being:
   32° 00' 88.66 feet;

3. 345° 00' 90.00 feet over and across same;

4. Thence over and across same on a curve to the right having a radius of 122.00 feet, the chord azimuth and distance being:
   7° 30' 93.37 feet;

5. 30° 00' 21.00 feet over and across same;

6. Thence over and across same on a curve to the right having a radius of 222.00 feet, the chord azimuth and distance being:
   50° 00' 151.86 feet;

7. 70° 00' 71.00 feet over and across same;
8. Thence over and across same on a curve to the left having a radius of 178.00 feet, the chord azimuth and distance being: 62° 30' 46.47 feet;

9. 55° 00' 504.75 feet over and across same;

10. Thence over and across same on a curve to the right having a radius of 272.00 feet, the chord azimuth and distance being: 66° 15' 106.13 feet;

11. 77° 30' 115.84 feet over and across same;

12. 68° 00' 65.99 feet along R.P. 5331, L.C. Aw. 4405 Q:1 to Kaalepo;

13. 54° 30' 134.00 feet along R.P. 5331, L.C. Aw. 4405 Q:1 to Kaalepo and along R.P. 4120, L.C. Aw. 4405 P:2 and 4 to Moo;

14. 67° 10' 131.89 feet over and across a portion of R.P. 4475, L.C. Aw. 7713 Ap. 24 to Kamamalu;

15. 110° 00' 78.70 feet over and across same;

16. Thence over and across same on a curve to the left having a radius of 50.00 feet, the chord azimuth and distance being: 92° 30' 30.07 feet;

17. 75° 00' 162.00 feet over and across same;

18. Thence over and across same on a curve to the left having a radius of 680.00 feet, the chord azimuth and distance being: 70° 45' 100.79 feet;

19. 66° 30' 40.00 feet over and across same;

20. Thence over and across same on a curve to the right having a radius of 370.00 feet, the chord azimuth and distance being: 72° 45' 80.56 feet;
21. 79° 00' 17.22 feet over and across same;
22. 113° 40' 66.30 feet over and across same;
23. 82° 30' 6.73 feet over and across same;
24. 90° 00' 228.40 feet over and across same;
25. 180° 00' 33.00 feet over and across same;
26. 249° 30' 15.00 feet over and across same;
27. 262° 30' 49.50 feet over and across same;
28. 257° 30' 120.00 feet over and across same;
29. 264° 15' 17.00 feet over and across same;
30. 274° 00' 13.50 feet over and across same;
31. 308° 00' 16.50 feet over and across same;
32. 349° 20' 44.48 feet over and across same;
33. 293° 40' 25.87 feet over and across same;
34. 259° 00' 50.40 feet over and across same;
35. Thence over and across same on a curve to the left having a radius of 330.00 feet, the chord azimuth and distance being:
   252° 45' 71.85 feet;
36. 246° 30' 40.00 feet over and across same;
37. Thence over and across same on a curve to the right having a radius of 720.00 feet, the chord azimuth and distance being:
   250° 45' 106.72 feet;
38. 255° 00' 162.00 feet over and across same;
39. Thence over and across same on a curve to the right having a radius of 90.00 feet, the chord azimuth and distance being:
   272° 30' 54.13 feet;
40. 290° 00'  23.79 feet over and across same;
41. Thence over and across same on a curve to the left having a radius of 100.00 feet, the chord azimuth and distance being:
   268° 35'  73.03 feet;
42. 247° 10'  30.36 feet over and across same;
43. Thence over and across same on a curve to the left having a radius of 380.00 feet, the chord azimuth and distance being:
   240° 50'  83.84 feet;
44. 234° 30'  79.05 feet over and across same;
45. Thence over and across same on a curve to the right having a radius of 218.00 feet, the chord azimuth and distance being:
   246° 00'  86.92 feet;
46. 257° 30'  119.05 feet over and across same;
47. Thence over and across same on a curve to the left having a radius of 232.00 feet, the chord azimuth and distance being:
   246° 15'  90.52 feet;
48. 235° 00'  504.75 feet over and across same;
49. Thence over and across same on a curve to the right having a radius of 218.00 feet, the chord azimuth and distance being:
   242° 30'  56.91 feet;
50. 250° 00'  71.00 feet over and across same;
51. Thence over and across same on a curve to the left having a radius of 182.00 feet, the chord azimuth and distance being:
   230° 00'  124.50 feet;
52. 210° 00' 21.00 feet over and across same;

53. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:
   187° 30' 62.76 feet;

54. 165° 00' 90.00 feet over and across same;

55. Thence over and across same on a curve to the left having a radius of 82.00 feet, the chord azimuth and distance being:
   142° 30' 62.76 feet;

56. 120° 00' 99.00 feet over and across same;

57. Thence over and across same on a curve to the right with the point of curvature azimuth from the radial point being:
   30° 00', and the point of tangency azimuth from the radial point being:
   139° 00', having a radius of 68.00 feet, the chord azimuth and distance being:
   174° 30' 110.72 feet;

58. Thence over and across same on a curve to the left with the point of curvature azimuth from the radial point being:
   319° 00', and the point of tangency azimuth from the radial point being:
   229° 00', having a radius of 20.00 feet, the chord azimuth and distance being:
   184° 00' 28.28 feet to the point of beginning and containing an Area of 2.562 acres.
SUBJECT, HOWEVER, to the following:

1. An existing Roadway and Utility Easement "A".

Licensed Professional Land Surveyor Certificate No. 1569
Ms. Marie Kimmey, Chairperson  
Maui Board of Water Supply  
P.O. Box 1109  
Wailuku, Hawaii 96793-7109

Dear Ms. Kimmey:

Pump Installation Permit Transfer  
North Waihee Wells 1 & 2  
(Well Nos. 5631-02 & 03)

By your February 20, 1996 letter, the Commission on Water Resource Management acknowledges the transfer of the captioned permit from C. Brewer Properties, Inc. to the Maui Board of Water Supply.

Enclosed are copies of the permit and its extensions. Please be advised that the permit requires that work be started by May 14, 1996, and be completed by March 1, 1997. Should you be unable to meet those deadlines, please submit a request to extend them, showing cause why the permit should not be revoked.

Aloha,

MICHAEL D. WILSON  
Chairperson

Enclosures

C: C. Brewer Homes, Inc.
FROM: ___________________________ DATE: 3/15 ______________________ SUSPENSE DATE: ______________________

TO: __________________ INIT: ______ TO: __________________ INIT: ______ FOR: __________________ PLEASE: __________________

| BAUER, G.    | LOUI, R.    | Approval   | See Me    |
| CHING, F.   | MIZUNO, L. | Signature  | Review & Comment |
| FUJII, N.   | NAKAMA, L. | Information| Take Action  |
| HARDY, R.   | OHYE, M.   |            | Type Draft  |
| HIGA, D.    | SAKODA, E. |            | Type Final  |
| HIRANO, E.  | SUBIA, S.  |            | File       |
| ICE, C. file| SWANSON, S.|            | Xerox copies|
| JINNAI, R.  | UWAINA, J. |            |            |
| KUNIMURA, I.| YODA, K.   |            |            |

① copy for Rae
March 5, 1996

HAND DELIVERY

Ms. Rae M. Loui
Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
1151 Punchbowl Street
Honolulu, Hawaii 96813

Re: North Waihee Wells

Dear Ms. Loui:

As indicated by separate correspondence to you from Mr. David Craddick of the Maui Department of Water Supply, we have been asked to transmit to you a fully executed copy of the Grant of Easement (Well Field 1) dated February 21, 1996 executed by Wailuku Agribusiness Co., Inc., as Grantor, and The Board of Water Supply of the County of Maui, as Grantee. The Grant was recorded in the Bureau of Conveyances as Document No. 96-023917.

Yours truly,

ASHFORD & WRISTON

Douglas W. MacDougal

Enclosure

cc: Mr. David Craddick
DATA SET: WAIHEE2.DAT
11/07/95

AQUIFER MODEL: Confined

SOLUTION METHOD: Theis

PROJECT DATA:
  test date: May 15-19, 1989
  test well: North Waihee Well #2
  obs. well: North Waihee Well #1

TEST DATA:
  Q = 4.717E+05 ft³/day
  r = 176. ft
  r_c = 0.67 ft
  r_w = 0.62 ft
  b = 448. ft
  Pumping Well Screen Depth:
    top = 19. ft
    bottom = 106. ft
  Obs. Well Screen Depth:
    top = 6. ft
    bottom = 106. ft

PARAMETER ESTIMATES:
  T = 289. ft²/min
  S = 0.4826
DATA SET: WAIHEE2.DAT
11/07/95

AQUIFER MODEL: Unconfined

SOLUTION METHOD: Theis

PROJECT DATA:
test date: May 15-19, 1989
test well: North Waihee Well #2
obs. well: North Waihee Well #1

TEST DATA:
Q = 4.717E+05 ft³/day
r = 176. ft
r_c = 0.67 ft
r_w = 0.62 ft
b = 448. ft

PARAMETER ESTIMATES:
T = 221.6 ft²/min
S = 0.3432
DATA SET: WAIHEE2.DAT
11/07/95

AQUIFER MODEL: Unconfined

SOLUTION METHOD: Theis

PROJECT DATA:
- test date: May 15-19, 1989
- test well: North Waihee Well #2
- obs. well: North Waihee Well #1

TEST DATA:
- Q = 4.717E+05 ft³/day
- r = 176. ft
- r_c = 0.67 ft
- r_w = 0.62 ft
- b = 448. ft

PARAMETER ESTIMATES:
- T = 224.4 ft²/min
- S = 0.3188
DATA SET:
WAIHEE2.DAT
11/07/95

AQUIFER MODEL:
Confined

SOLUTION METHOD:
Theis

PROJECT DATA:
test date: May 15-19, 1989
test well: North Waihee Well #2
obs. well: North Waihee Well #1

TEST DATA:
Q = 4.717E+05 ft³/day
r = 176. ft
r_c = 0.67 ft
r_w = 0.62 ft
b = 448. ft
Pumping Well Screen Depth:
top = 19. ft
bot. = 106. ft
Obs. Well Screen Depth:
top = 6. ft
bot. = 106. ft

PARAMETER ESTIMATES:
T = 301.6 ft²/min
S = 0.5205
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<th>DATE:</th>
<th>SUSPENSE DATE:</th>
</tr>
</thead>
<tbody>
<tr>
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<td>INIT:</td>
<td>TO:</td>
</tr>
<tr>
<td>R. LOUI</td>
<td>J. UWAIN</td>
<td>E. SAKODA</td>
</tr>
<tr>
<td>F. CHING</td>
<td>S. SUBIA</td>
<td>D. HIGA</td>
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<td>K. YODA</td>
<td>E. HIRANO</td>
<td>L. NAKAMA</td>
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<tr>
<td>SURVEY BRANCH</td>
<td>G. BAUER</td>
<td>C. ICE</td>
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<td>R. HARDY</td>
<td>R. JINNAI</td>
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<td>N. FUJI</td>
<td>S. SWANSON</td>
</tr>
<tr>
<td></td>
<td>M. OHYE</td>
<td>S. EDMUNDS</td>
</tr>
<tr>
<td></td>
<td>I. KUNIMURA</td>
<td>L. MIZUNO</td>
</tr>
</tbody>
</table>

02/95
THEIS DRAWDOWN CALCULATION by Glenn Bauer & Roy Hardy with numerical approximations by Huntoon (1980)

INPUT PARAMETERS BOLD GREEN VALUES

For Well No.: 5631-02 obs well, N. Waihee

Transmissivity T = 320,000.00 sq.ft/day
Storage Coeff. S = 0.200 dimensionless
Time t = 18250 days
Pumping Rate Q = 269,518.72 cubic ft/day

Aquifer thickness b = 410 ft.
Hydraulic Conductivity K = 780.5 ft/day
Pumping rate Q = 1,400 gpm

For Well No.: 5631-02 obs well, N. Waihee

Radial distance from well r ft.

Drawdown s ft.

1 24.907 1.669
10 20.301 1.361
50 17.082 1.145
100 15.696 1.052
250 13.864 0.929
500 12.477 0.836
1,000 11.091 0.743
1,500 10.280 0.689
2,000 9.705 0.650
2,500 9.258 0.621
3,000 8.894 0.596
5,000 7.872 0.528
10,000 6.487 0.435

Radial distance r from pumping well

Drawdown s ft.

1 ft.

Time, t (days, year)

Drawdown s ft.

0.1 0.857
1 0.00 0.857
2 1.012
3 1.058
4 1.085
5 1.105
6 1.120
7 1.132
8 1.142
9 1.151
10 1.212
100 1.320
200 1.367
500 1.428
1,000 1.475
2,000 1.521
5,000 1.583
10,000 1.629
20,000 1.675
50,000 1.737
100,000 1.783

For both wells (2) pumping 2 x 2mgd each
drawdown will double in each in Tables.
Example: if both pump 2 mgd drawdown @ 50 yrs
1.7 + 1.3 = 3.4 ft
**THEIS DRAWDOWN CALCULATION**

by Glenn Bauer & Roy Hardy with numerical approximations by Huntoon (1983)

**INPUT PARAMETERS GREEN VALUES**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
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<td>Transmissivity T</td>
<td>318,512.00 ft./day</td>
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<tr>
<td>Storage Coeff. S</td>
<td>0.270 dimensionless</td>
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<tr>
<td>Time t</td>
<td>20000 days</td>
</tr>
<tr>
<td>Pumping Rate Q</td>
<td>269,518.72 cubic ft./day</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Radial distance u from well r ft.</th>
<th>Drawdown s W(u) ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.000000</td>
</tr>
<tr>
<td>10</td>
<td>0.000000</td>
</tr>
<tr>
<td>50</td>
<td>0.000000</td>
</tr>
<tr>
<td>100</td>
<td>0.000000</td>
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<tr>
<td>250</td>
<td>0.000001</td>
</tr>
<tr>
<td>500</td>
<td>0.000003</td>
</tr>
<tr>
<td>1000</td>
<td>0.000011</td>
</tr>
<tr>
<td>1500</td>
<td>0.000024</td>
</tr>
<tr>
<td>2000</td>
<td>0.000043</td>
</tr>
<tr>
<td>2500</td>
<td>0.000067</td>
</tr>
<tr>
<td>3000</td>
<td>0.000095</td>
</tr>
<tr>
<td>5000</td>
<td>0.000208</td>
</tr>
<tr>
<td>10000</td>
<td>0.001005</td>
</tr>
</tbody>
</table>

**Aquifer thickness b = 448 ft.**

**Hydraulic Conductivity K = 706.5 ft./day**

**Pumping rate Q = 1,400 gpm**

**3.119 cfs**

---

**OBSERVATION WELL**

Radial distance r from pumping well 1000 ft.

<table>
<thead>
<tr>
<th>Time, t (days)</th>
<th>u</th>
<th>Drawdown s W(u) ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>0.00</td>
<td>2.130251</td>
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<tr>
<td>1</td>
<td>0.00</td>
<td>0.213025</td>
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<tr>
<td>2</td>
<td>0.01</td>
<td>0.106513</td>
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<td>3</td>
<td>0.01</td>
<td>0.071008</td>
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<td>0.01</td>
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<td>5</td>
<td>0.01</td>
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<td>6</td>
<td>0.02</td>
<td>0.035504</td>
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<td>7</td>
<td>0.02</td>
<td>0.030432</td>
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<tr>
<td>8</td>
<td>0.02</td>
<td>0.026628</td>
</tr>
<tr>
<td>10</td>
<td>0.03</td>
<td>0.021303</td>
</tr>
<tr>
<td>100</td>
<td>0.27</td>
<td>0.002130</td>
</tr>
<tr>
<td>200</td>
<td>0.55</td>
<td>0.001065</td>
</tr>
<tr>
<td>500</td>
<td>1.37</td>
<td>0.000426</td>
</tr>
<tr>
<td>1,000</td>
<td>2.74</td>
<td>0.000213</td>
</tr>
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<td>2,000</td>
<td>5.48</td>
<td>0.000107</td>
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<tr>
<td>5,000</td>
<td>13.70</td>
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<td>10,000</td>
<td>27.40</td>
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<td>20,000</td>
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<td>50,000</td>
<td>136.99</td>
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<td>100,000</td>
<td>273.97</td>
<td>0.000002</td>
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</table>
DATA SET: WAIHEE2.DAT
12/04/95

AQUIFER MODEL: Confined

SOLUTION METHOD: Cooper-Jacob

PROJECT DATA:
test date: May 15-19, 1989
test well: North Waihee Well #2
obs. well: North Waihee Well #1

TEST DATA:
Q = 4.71E+05 ft³/day
r = 176. ft
r_c = 0.67 ft
r_w = 0.62 ft
b = 448. ft

PARAMETER ESTIMATES:
T = 219.8 ft²/min = 316.5 ft⁻¹/²
S = 0.2697
Chairperson and Members  
Commission on Water Resource Management  
State of Hawaii  
Honolulu, Hawaii  

Gentlemen:

C. Brewer Properties, Inc.  
Application for Pump Installation Permits  
North Waihee Wells 1 & 2, Waihee, Maui

Applicant: C. Brewer Properties, Inc.  
Landowner: Wailuku Agribusiness Company, Inc.  
P.O. Box 1437  
P.O. Box 520  
Wailuku, HI 96793  
Wailuku, HI 96793

Action Requested: Permission to install 1400 gallons per minute (gpm) pumps in North Waihee Wells 1 & 2 (Well Nos. 5631-02 & 03) for private/municipal use. The proposed total amount of use from both wells is 2,000,000 gallons per day (2 mgd).

Well Location/Tax Map Key: The wells are located at Tax Map Key: 3-2-01:4 (see attached map).

Well Description (typical):

- Ground elevation: 283 ft.
- Casing diameter: 16 inches
- Solid casing depth: 289 ft.
- Screen casing depth: 309 ft.
- Open hole: 79 ft.
- Total depth: 388 ft.
- Proposed pump capacity: 1400 gpm per well

Agency Review: The application has been sent to the Maui Department of Water Supply, the State Historic Preservation Division, the Office of Hawaiian Affairs, and to the State Departments of Health and Hawaiian Home Lands for review. There have been no objections to the project.

Analysis: The well will develop fresh, basal water, for private/municipal use. The wells tap a basal aquifer with a static head standing about 10 ft. above mean sea level. John Mink, in a letter to C. Brewer Properties, Inc. states, "The water table in the North Waihee wells lies 10 to 11 feet above sea level while the channel of the stream opposite the wells is 200 feet above sea level. A small depression in the water table caused by pumping will not influence Waihee upstream of the wells. Nor is it likely that the stream will suffer in the downstream direction because of the high invert of the channel compared to the position of the water table". The wells were drilled and tested in 1981 and tested again in 1989. A pumping test conducted between May 15 and May 19, 1989, using Well 2 as the pumping well and Well 1 along with a specially drilled boring at Kanoa as observation wells, showed that the aquifer is extensive and potentially very productive. Well 2 was pumped at 2480 gpm (3.57 mgd) and experienced drawdown of just 5 feet. Recovery was virtually instantaneous following 96 hours of continuous pumping. The salinity of the water was constant at less than 20 mg/l chloride. No adverse impacts are expected.
Water Availability: The wells are located in the Wailuku Sector, Waihee System of Maui. Sustainable yield of the Waihee System is estimated at 8 mgd. There is no pumpage from the aquifer. Ground water use from the aquifer system is expected to be about 4.2 mgd by the year 2010. The wells are listed for potential development in the Maui County Water Use and Development Plan.

RECOMMENDATION:

That the Commission approve the issuance of pump installation permits for North Waihee Wells 1 & 2, subject to the following conditions:

1. The Commission on Water Resource Management (Commission) shall be notified before work commences.

2. The permits shall be for installation of 1400 gpm capacity pumps in the wells. The total pumpage from both wells shall average 2 mgd.

3. The proposed uses shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. These permits or the authorization to pump water from the wells 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 each well could be reduced by the Commission in the future. These permits are not a commitment that the pump capacities permitted here or even some lesser amount are guaranteed in the future.

4. 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.

5. The following shall be submitted to the Commission within 30 days after completion of the work:
   a. Well Completion Reports.
   b. As-built sectional drawings of the pump installations.

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

7. These permits may be revoked if work is not started within six months of the dates of issuance or if work is suspended or abandoned for six months. The work proposed in these permit applications shall be completed within two years from the dates of permit issuance.

Respectfully submitted,

RAE M. LOUI
Deputy Director

APPROVED FOR SUBMITTAL:

JOHN P. KEPPELER II, Acting Chairperson
TEST WELL DATA
NORTH WAIHEE WELL #2

Test well elevation at top of casing 281.98
Measure point at base of gearing 282.73
Pump location (-300 feet from M.P.) -17.27
Air line location (top of bowl assembly) - 6.27
Pressure gauge reading at beginning of test (to 1/10) 17.5

Distance from North Waihee Well #1 176 feet
to North Waihee Well #2

Chloride readings were taken twice daily. All were between 37.5 mg/l and 50 mg/l. NaCl measured with the HACH chloride test kit, Model 7-P, using low range measure 0-250 mg/l.
The pump test at North Waihee Well #2 began on Monday, May 15, 1989, at noon.

Pumping was to be at a constant rate of 2,400-2,500 gpm for 5 days.

Between 6:00 p.m. on Wednesday, May 17 and 9:00 a.m. on Thursday, May 18 the in-line flow meter malfunctioned. Not knowing this, we increased the pump's rpm to keep up the 2,450 gpm rate.

The pumping was at this increased rate (1,900 rpm) from 9:00 a.m. on Thursday, May 17 to 6:00 p.m. on Thursday, May 17. At that time the pumping was reduced to approximately 2,450 gpm by reducing the pump rotation to the original 1,700 rpm. The remainder of the test was run at this rate.

Pumping at the test well was stopped at 12:00 p.m. (noon) on Friday, May 18, 1989.

Recovery was almost immediate and by 2:00 p.m. the pressure gauge at the test well read 17.2 feet. By 5:00 p.m., Friday it was back to the original 17.5 feet on the gauge.

On Saturday at 8:00 a.m. the water level at the test well was measured by tape to be 11.25 feet above sea level. At this time the gauge was at 17.5 feet.

With the air line at -6.27 feet and water level at 11.25 feet, the gauge reading should be at 17.52 feet. The gauge reading correlates well with these results.
WAILENA WELL
ELEVATION = 608.23
(AT TOP OF PIPE)

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<th>TOP WATER ELEVATION</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>02/17/89</td>
<td>X</td>
<td>Poor reading - chloride content 87.5 mg/l</td>
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<tr>
<td>03/01/89</td>
<td>6.63</td>
<td>Good results; 3:00 p.m. - NaCl 87.5 mg/l</td>
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<tr>
<td>03/08/89</td>
<td>6.67</td>
<td>4:30 p.m.; river nearby flowing</td>
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<td>03/15/89</td>
<td>6.44</td>
<td>4:00 p.m.; river not flowing</td>
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<tr>
<td>03/22/89</td>
<td>6.16</td>
<td>4:00 p.m.; river not flowing</td>
</tr>
<tr>
<td>04/03/89</td>
<td>6.61</td>
<td>10:15 a.m.; no water in river</td>
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<tr>
<td>04/11/89</td>
<td>6.54</td>
<td>1:30 a.m.; 150 mg/l - river running strong</td>
</tr>
<tr>
<td>04/17/89</td>
<td>6.20</td>
<td>9:00 a.m.; from chart</td>
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</table>
# KANOA WELL
WELL ELEVATION
305.94 ft. AT
2 1/2 IN. CASING

<table>
<thead>
<tr>
<th>DATE</th>
<th>ELEVATION</th>
<th>TIME</th>
<th>COMMENTS</th>
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<td>2:00 p.m.</td>
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<td>11:00 a.m.</td>
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<td>12/29/89</td>
<td>11.90</td>
<td>9:00 a.m.</td>
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<td>01/05/89</td>
<td>11.96</td>
<td>11:00 a.m.</td>
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<td>01/13/89</td>
<td>11.09</td>
<td>10:00 a.m.</td>
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<td>01/20/89</td>
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<td>4:00 p.m.</td>
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<td>01/27/89</td>
<td>11.55</td>
<td>5:00 p.m.</td>
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<td>02/03/89</td>
<td>11.59</td>
<td>2:00 p.m.</td>
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<td>02/10/89</td>
<td>11.59</td>
<td>4:00 p.m.</td>
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<tr>
<td>02/17/89</td>
<td>11.57</td>
<td>3:00 p.m.</td>
<td>NaCl content 50 mg/l</td>
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<tr>
<td>02/24/89</td>
<td>11.50</td>
<td>4:00 p.m.</td>
<td>NaCl content 38 mg/l</td>
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<td>03/01/89</td>
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<td>1:30 p.m.</td>
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<td>05/13/89</td>
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<td>11:30 a.m.</td>
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<td>05/15/89</td>
<td>12.42</td>
<td>9:30 a.m.</td>
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<td>05/15/89</td>
<td>12.31</td>
<td>8:30 p.m.</td>
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<tr>
<td>05/16/89</td>
<td>12.14</td>
<td>9:00 a.m.</td>
<td>Pump Test Today - Noon</td>
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<td>05/17/89</td>
<td>12.05</td>
<td>9:00 a.m.</td>
<td>(chart reading)</td>
</tr>
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<td>05/19/89</td>
<td>11.98</td>
<td>11:15 a.m.</td>
<td>(tape)</td>
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<td>12.14</td>
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<td>(tape)</td>
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</table>
## KANOA WELL

**Elevation:** 305.94 feet

*(Bubbler System)*

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<tr>
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<th>Time</th>
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<tr>
<td>5/16/89</td>
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<td>12.10</td>
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<td>9:30 am</td>
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<tr>
<td>5/18/89</td>
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<tr>
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*Measured by steel tape.

On Monday, May 22, 1989, at 8:30 a.m. a final measure was taken by tape to read 12.35 feet.
# PUMP TEST AT NORTH WAIHEE WELL NO. 2

HP Elevation = 282.73 (Bottom of Housing)

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<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>PUMPING RATES X 100</th>
<th>WATER RATE (GPM)</th>
<th>WATER LEVEL (FT.) (AT GAUGE)</th>
<th>WATER LEVEL (FT.)</th>
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<tbody>
<tr>
<td>Mon. 5/15</td>
<td>Noon</td>
<td>Begin Pump Test</td>
<td>Begin. Level</td>
<td>17.10</td>
<td>11.2</td>
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<td>Mon. 5/15</td>
<td>2:15 p.m.</td>
<td>409651</td>
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<td>Tues. 5/16</td>
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<td>6:30 a.m.</td>
<td>472020</td>
<td>&gt; 2506</td>
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<td>5.9</td>
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<tr>
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<td>12:00 noon</td>
<td>477283</td>
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<td>9:00 a.m.</td>
<td>Increased Pump Rotation</td>
<td>1700 rpm - 1900 rpm</td>
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<td>5.9</td>
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<td>9:05 a.m.</td>
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<td>5.9</td>
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<tr>
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<td>Reduced Pump Rotation</td>
<td>1900 rpm - 1700 rpm</td>
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<tr>
<td>Fri. 5/19</td>
<td>12:00 noon</td>
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NORTH WAIHEE WELL NO. 2
PUMP TEST FIELD DATA
5/15/89 TO 5/19/89

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<th>DATE</th>
<th>TIME</th>
<th>WATER METER TOTALIZER (X'S 100)</th>
<th>PUMP RATE</th>
<th>RECORDER LEVEL</th>
<th>WATER LEVEL ELEVATION (Mg/l)</th>
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<tbody>
<tr>
<td>5/15/89</td>
<td>12:00 noon</td>
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<td>2450</td>
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<tr>
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<td>1:00 p.m.</td>
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<td>2440</td>
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<td>Pumping</td>
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<tr>
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## NORTH WAIHEE WELL NO.2
### PUMP TEST FIELD DATA
#### 5/15/89 to 5/19/89

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<th>DATE</th>
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<th>PUMP RECORDER LEVEL</th>
<th>WATER LEVEL</th>
<th>NaCl (mg/l)</th>
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<td>DATE</td>
<td>TIME</td>
<td>WATER METER TOTALIZER (X's 100)</td>
<td>PUMP RATE</td>
<td>RECORDER LEVEL</td>
<td>WATER LEVEL ELEVATION</td>
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</table>
**PUMP TEST AT**  
**NORTH WAIHEE WELL NO. 2**  

**MP Elevation = 282.73 (Bottom of Housing)**

<table>
<thead>
<tr>
<th>DATE</th>
<th>PUMPING TIME</th>
<th>RATES X 100</th>
<th>RATE (GPM)</th>
<th>WATER LEVEL (FT.)</th>
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<td>409651</td>
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<td>-</td>
<td>1840</td>
<td>10.60</td>
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</table>

*(Increased Pump Rotation 1700 rpm - 1900 rpm)*

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At 6 p.m. 5/15 reduced rpm's to 1700. Water level went up to 12.0

---

Fru Field Work
5/15/69 Dust to Henry = 0.4 miles. \( A (\text{in}^{2} - \text{in}^{2}) = 1700 \text{ ft} \) by tagging.

MP (top cut every afterpump) 281.98 + .75 = water = 282.73 ft.

Start meter: 466417
Pump setting of 300 (-17.27) 

Start Test @ 1200 51589 & Outlook 2400 ppm

Wb level at 17.14 ft (below wat). \( A(1720) = 2.8 \) \( A(12:40) = 3.8 \) \( A(12:00) = 3.4 \)

Pump Settings: 1200 51589 A = 5.2 & \( t = 30 \text{ sec} \) A = 0.2 ft. 5.0 mini. 

---

\( A(12:00) = 3.4 \)
# KANOA WELL

Elevation = 305.94
(Bubbler System)

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<tr>
<th>TIME</th>
<th>5/15/89 Monday</th>
<th>5/16/89 Tuesday</th>
<th>5/17/89 Wednesday</th>
<th>5/18/89 Thursday</th>
<th>5/19/89 Friday</th>
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**Field Work: (Elevation E1 305.94)**

5/15/89 $h_0 = 12.42 + t = 0.90$ measured by 14:30 when $h_2 = 12.42$

5/16/89 $R = 11.98 (by top)$

5/18/89 (chart) $A = 12.42 - 11.98 = 0.44$

11:15 $A = 0.32$ measurement

$A = 0.28$

$h = 12.14$
North Waihee Wells  
Pump Test Protocol

John F. Mink  
April 4, 1989

The pump rate will be held constant at 2000 gpm over a continuous period of 96 hours. The continuous rate may be prolonged another 24 hours at the discretion of the test supervisor.

In the Waihee-Kahakuloa sector water level measurements will be taken in the pumping well, the other North Waihee well, the Kanoa boring and the Wailena well. In the Waihee-Waiehu sector, measurements will be taken in Test Hole A-1. The unpumped North Waihee well is outfitted with a continuous water level recorder and in the Kanoa boring a bubbler will be installed. The Wailena well and A-1 are open. Manual measurements will be made with an insulated copper wire equipped with an electrode, or a steel tape.

Static water level measurements by steel tape or wire will be taken as follows.

1. Both North Waihee wells and the Kanoa boring.
   a. Three days before the start of the test in the A.M.
   b. One day before the start, also A.M.
   c. 30 minutes before the start.

2. Wailena well.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

3. Test Hole A-1.
   a. Within five days of the start of the test.
   b. The day of the start of the test.

After the test is started, water level measurements will be taken as follows.

1. Pumping North Waihee well (manual measurements preferred; airline if manual not possible).
   a. 1 reading per minute for 5 minutes.
   b. 1 reading per 5 minutes for 25 minutes.
   c. 1 reading per 10 minutes for 60 minutes.
   d. 1 reading every hour thereafter.
2. Unpumped North Waihee well. Drawdowns will be traced on the continuous recorder, but manual measurements should be made as follows to check the reliability of the recorder.
   a. At 10 minutes
   b. At 30 minutes.
   c. Every hour thereafter.

3. Kanoa boring. Drawdowns will be determined by the bubbler arrangement but need to be checked manually. Recognizable drawdown of about 0.1 feet will not occur until 48 hours after the start of the test if the aquifer is unconfined and not narrowly bounded. If the aquifer is confined, drawdown will be measurable sooner. The sequence of readings should be:
   a. At 10 minutes.
   b. At 30 minutes.
   c. Every hour thereafter.

4. Wailena well. The Wailena well is so distant from North Waihee that drawdown of 0.1 feet and more isn’t likely to occur unless the aquifer is confined. Nevertheless, manual measurements should be made as follows.
   a. At 6 hours.
   b. At 24 hours.
   c. at 30 hours.
   d. At 48 hours.
   e. At 54 hours.
   f. At 72 hours.
   g. At 78 hours.
   h. At 96 hours.

   If a response is noted, the frequency of measurements will be increased as practicable.

5. Test Hole A-1. Same schedule as the Wailena well.

   Recoveries will be measured after the pump is turned off. Recovery measurements at the pumped well, the unpumped North Waihee well and the Kanoa boring will follow the same schedule as the drawdown measurements over a period of 12 hours. Thereafter single measurements will be made in the A.M. for the following 5 days. Recovery measurements will be made at Wailena and A-1 only if these wells experienced measurable drawdown. The schedule for such measurements will be drawn up before the end of the test.
# Pump Test at Well A-1

**Elevation = 248.11**

(Water Level in Feet)

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## WELL A-1

Elevation: 248.11 feet  
(Water Level in Feet)

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10:40 am  
18.04  

(noon-
begin test)  

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All measurements taken by steel tape.

The A-1 well is located far enough away from the test well, North Waihee #2, that any effect on A-1 would be doubtful.

A final reading of Well A-1 was taken on Monday, May 22, 1989 at 8:00 a.m. with a water level elevation of 18.08 feet above sea level.
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Legend:
- T: Time
- ±: Time ±
- 0: Temperature
- °C

North Wall 1
Test 5/15 25/19/99
Recovery: Sheet D الطلبة
### NORTH WAIHEE WELL NO. 1
Measurement By Chart

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<th>5/18/89</th>
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* Rate of Pump increased from 1000 rpm to 1900 rpm

** All measurements taken by chart.

<table>
<thead>
<tr>
<th>Time</th>
<th>Flow (cu. ft.)</th>
<th>Actual A</th>
<th>cone (cu. ft.)</th>
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<tr>
<td>14:00</td>
<td>2.00</td>
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</table>

5:19  11:30

** Pumps 1200

\[ \text{Volume} = \text{Flow} \times \text{Time} \]

\[ \text{Pump Factor} = \frac{1700}{1200} = 1.4167 \]

\[ A' = 0.35 \]
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<tr>
<th>Date</th>
<th>Place</th>
<th>Time (Hawaii)</th>
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<td>Naoumalu Bay, KAUAI</td>
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<tr>
<td>Wednesday</td>
<td>Tin Atlee, KAUAI</td>
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<tr>
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<td>Hanauma Bay, OAHU</td>
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<td>Kahaluu, KAUAI</td>
<td>10:36</td>
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<tr>
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<td>Hanauma Bay, OAHU</td>
<td>10:55</td>
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<tr>
<td>Monday</td>
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<tr>
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<td>Jake, HAWAII</td>
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<tr>
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<td>Waianae, OAHU</td>
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<td>Waianae, OAHU</td>
<td>10:15</td>
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Add or subtract from Honolulu time for local time at the following places:

- Hanalei Bay, KAUAI: -1:40
- Naoumalu Bay, KAUAI: -0:32
- Tin Atlee, KAUAI: -0:32
- Hanauma Bay, OAHU: -1:36
- Kahului, M!UI: -18:14
- Kahaluu, KAUAI: -10:36
- Hanauma Bay, OAHU: -10:55
- Kaneohe Bay, OAHU: -11:35
- Jar, HAWAII: -0:59
- Jake, HAWAII: -11:48
- Waianae, OAHU: -10:44
- Waianae, OAHU: -10:15

Hawaii time is 1 hour behind Pacific Time.
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<th>Time</th>
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<td>11.74</td>
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<td>10.54</td>
<td>11 am</td>
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<td>9  am</td>
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<tr>
<td>12/16/89</td>
<td>11.56</td>
<td>11 am</td>
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<tr>
<td>12/17/89</td>
<td>11.55</td>
<td>10 pm</td>
</tr>
<tr>
<td>2/12/89</td>
<td>11.59</td>
<td>2  pm</td>
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<tr>
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<td>4  pm</td>
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<tr>
<td>2/17/89</td>
<td>11.57</td>
<td>3  pm</td>
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<td>1:30 pm</td>
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<tr>
<td>5/13/89</td>
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</tr>
<tr>
<td>5/26/89</td>
<td>12.14</td>
<td>9:15 am</td>
</tr>
</tbody>
</table>
| 5/17/89    | 12.05     | 9:00 am (chart reading)
NORTH WAIHEE WELLS

Site Description
Pump Test Results

JOHN F. MINK

Submitted to:
Hawaiiana Investment Co., Inc.
October 20, 1981
NORTH WAIHEE WELLS

Summary

The basal aquifer extending southward from Waihee Stream to Waikapu Stream, which is now referred to as the Waiehu aquifer, is being exploited nearly to the limit of its sustainable yield, and an additional significant contribution from it to Central Maui's water supply is not reasonable to expect. To develop more water different sources must be explored, and to this purpose an exploration-production well field was proposed in the region north of Waihee Stream where the aquifer was thought to be either separate or only poorly connected to the aquifer south of the valley. A separate aquifer would provide a new exploitable source of water supply, while proof of connection with the Waiehu aquifer would extend the limits of that aquifer and increase the overall allowable sustainable yield.

Two wells have now been drilled on the north side of Waihee Valley by Roscoe Moss Co. for Hawaiian Investment Co., Inc. (See Figure 1 for location). Both have been successfully tested and have proved that a substantial, highly transmissive aquifer extends toward Kohakuloa from Waihee. A sustained rate of about 1,700 gpm over 48 hours was pumped from each well with very small drawdown and with no change in
the low initial salinity (15 mg/l chloride). Interpretation of the initial conditions and the pump test results indicate that the aquifer, to be referred to as the North Waihee aquifer, is essentially independent of the Waiehu basal aquifer. If a hydraulic connection exists, it is very weak.

The two wells can be safely fitted with 1,750 gpm pumps. The North Waihee aquifer is large enough to support more production than can be provided by the completed well field. The site of the next well is proposed in the small valley about 1,600 feet northward at a ground elevation of 400 to 500 feet.

**North Waihee Aquifer**

The region north of Waihee Stream toward Kohakuloa over a width of about two miles is probably underlain by a basal aquifer, perhaps modified by stray dikes, in the Wailuku volcanic series, a highly permeable basaltic formation. Dense trachytic flows of the Honolua series overlie the Wailuku series except in the deeper valleys where erosion has exposed the basaltic rocks. The trachytes do not constitute a principal aquifer and should be avoided if possible because they are difficult to drill through.

The North Waihee wells were located to avoid the trachyte but as a result had to penetrate about 100 feet of
talus and alluvium before striking the basalt. Drilling logs indicate that bedrocks of the Wailuku series was encountered 70 to 100 feet below ground surface. The deep alluvial fill of Waihee Valley was successfully avoided. Dikes were not observed in the vicinity of the well field but are known to occur about 3,500 feet upstream, approximately coincident with the forest reserve line. The rift zone is close enough to the wells that local geohydrologic conditions may be dike-basal rather than strictly basal.

The Wells

The North Waihee wells lie 2,150 feet inland of Kahekili Highway about 250 feet from the stream channel. Ground elevation is 280 to 283 feet. The wells are fitted with 16 inch casing and were drilled to a depth of 105 feet below sea level. The casing is perforated from five to 25 feet below sea level, and the remainder of the bore is open (uncased). The wells are on a line parallel to the stream, 178 feet apart. The most inland well is called North Waihee 1, the other is called North Waihee 2. They are identical in design and nearly so in performance. The first well was completed in March of 1981 and tested in April and June. The second well was completed in July and tested in August.
Pump Tests

Step Drawdown

Step drawdown tests were conducted on North Waihee 1 on April 15 and June 3 and on North Waihee 2 on August 3. Initial head was nine to ten feet at each well and initial chloride about 15 mg/l. Behavior of the wells was similar during pumping; in each drawdown was small even at high rates of draft and recovery was instantaneous. The specific capacity of Well 1 was 450 gpm/ft. drawdown at 1,765 gpm, and of Well 2 550 gpm/ft. drawdown at 1,715 gpm. Tables 1 and 2 list the step drawdown results and Figure 2 shows a plot of $s = f(Q)$ for each.
TABLE 1

NORTH WAIHEE WELL 1
Step Drawdown Pump Test

April 15, 1981

Ground elev. 283 ft.; Bowls set 309.5 ft.; Airline at 310 ft.; uncased.

<table>
<thead>
<tr>
<th>Time</th>
<th>Min.</th>
<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
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</tr>
<tr>
<td>08:48</td>
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<tr>
<td>08:50</td>
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<tr>
<td>08:52</td>
<td>38</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:00</td>
<td>46</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:43</td>
<td>89</td>
<td>16.75</td>
<td>1.73</td>
<td>1071</td>
</tr>
<tr>
<td>09:44</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:45</td>
<td>91</td>
<td>16.5</td>
<td>2.31</td>
<td>1364</td>
</tr>
<tr>
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<td>94</td>
<td>16.5</td>
<td>2.31</td>
<td>1333</td>
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<tr>
<td>10:13</td>
<td>119</td>
<td>16.4</td>
<td>2.54</td>
<td>1333</td>
</tr>
<tr>
<td>10:38</td>
<td>144</td>
<td>16.5</td>
<td>2.31</td>
<td>1333</td>
</tr>
<tr>
<td>10:39</td>
<td>145</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:43</td>
<td>149</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
<tr>
<td>10:51</td>
<td>157</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
<tr>
<td>11:12</td>
<td>178</td>
<td>15.8</td>
<td>3.93</td>
<td>1765</td>
</tr>
<tr>
<td>11:17</td>
<td>183</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:18</td>
<td>184</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
TABLE 2
NORTH WAIHEE WELL 2
Step Drawdown Test
August 3, 1981

Ground elevation 282.21 feet; airline set 304 feet; cased.

<table>
<thead>
<tr>
<th>Time</th>
<th>Min.</th>
<th>P.S.I.</th>
<th>D.D. Ft.</th>
<th>Rate GPM</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15</td>
<td>0</td>
<td>13.75</td>
<td>0</td>
<td>0</td>
<td>Start pump</td>
</tr>
<tr>
<td>08:20</td>
<td>5</td>
<td>13.25</td>
<td>1.16</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>08:23</td>
<td>8</td>
<td>13.25</td>
<td>1.16</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>08:35</td>
<td>20</td>
<td>13.50</td>
<td>0.58</td>
<td>346</td>
<td></td>
</tr>
<tr>
<td>08:38</td>
<td>23</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td>Increase rate</td>
</tr>
<tr>
<td>08:39</td>
<td>24</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td></td>
</tr>
<tr>
<td>08:41</td>
<td>26</td>
<td>13.0</td>
<td>1.73</td>
<td>1,071</td>
<td></td>
</tr>
<tr>
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<td>32</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td></td>
</tr>
<tr>
<td>09:00</td>
<td>45</td>
<td>13.0</td>
<td>1.73</td>
<td>1,071</td>
<td></td>
</tr>
<tr>
<td>09:13</td>
<td>58</td>
<td>13.0</td>
<td>1.73</td>
<td>1,132</td>
<td></td>
</tr>
<tr>
<td>09:39</td>
<td>84</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td></td>
</tr>
<tr>
<td>09:40</td>
<td>85</td>
<td>13.0</td>
<td>1.73</td>
<td>1,111</td>
<td>Increase rate</td>
</tr>
<tr>
<td>09:48</td>
<td>93</td>
<td>12.6</td>
<td>2.66</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>09:57</td>
<td>102</td>
<td>12.6</td>
<td>2.66</td>
<td>1,539</td>
<td></td>
</tr>
<tr>
<td>10:10</td>
<td>115</td>
<td>12.6</td>
<td>2.66</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>10:15</td>
<td>120</td>
<td>12.5</td>
<td>2.89</td>
<td>1,715</td>
<td>Increase rate</td>
</tr>
<tr>
<td>10:38</td>
<td>143</td>
<td>12.4</td>
<td>3.12</td>
<td>1,715</td>
<td></td>
</tr>
<tr>
<td>10:43</td>
<td>148</td>
<td></td>
<td></td>
<td></td>
<td>Stop. Instant recovery.</td>
</tr>
</tbody>
</table>
Sustained Pump Test

Both wells were subjected to 48 hours of continuous pumping at a constant rate. The first well was tested before the second was drilled so that drawdown measurements were restricted to the pumping well. While Well 2 was being pumped, Well 1 was available for use as an observation well. Sustained pumping at Well 1 at 1,715 gpm for 48 hours was successful on the first try and the results indicated the aquifer to be highly transmissive. At Well 2, two attempts to sustain a constant rate for 48 hours failed, the first after 30 hours and the other after 26 hours, but the third attempt succeeded at a rate of 1,680 gpm. During all three attempts, drawdown measurements were taken at Well 1, a distance of 178± feet away. With these drawdown observation it was possible to compute the transmissivity and specific yield of the aquifer. Drawdown at Well 1 caused by draft at Well 2 and a summary of aquifer characteristics is given in Figure 3. The aquifer was proved to be extensive and highly transmissive, conditions needed for successful exploitation.

Drawdown at pumping wells during sustained tests give well efficiency but generally are not adaptable for calculating aquifer characteristics. The North Waihee wells are very efficient, having specific capacities in excess of
500 gpm/ft. drawdown. During the sustained test at Well 1 drawdown stabilized at 2.54 feet at 1,715 gpm and at Well 2 it stabilized at 3.0 feet at 1,680 gpm.

The drawdowns induced at Well 1 by constant pumping at Well 2 were carefully analyzed to determine, in addition to the aquifer constants, the following:

1. whether the aquifer is effectively closed by impermeable boundaries at short to moderate distances from the well field
2. whether the aquifer has unimpeded hydraulic connection with the Waiehu aquifer
3. whether the aquifer is extensive and effectively unconnected, or poorly connected, with the Waiehu aquifer.

The values for transmissivity and specific yield (effective porosity) were computed by employing the short form (Jacob's method) of the non-equilibrium well hydraulic formula. The short form is permissible because the drawdown data at Well 1 for sustained Test 1 at Well 2 includes early and late measurements that fall on a continuous curve expressed by:

\[ s = \frac{Q W(u)}{4\pi T} \]

in which \( s \) is drawdown, \( Q \) is constant pumping rate, \( T \) is transmissivity, and \( W(u) \) is the solution for the series
that expands the variable, \[ u = \frac{r^2S}{4Tt} \], in which

\[ r \] is distance between the pumping and observation wells, \( S \) is specific yield, and \( t \) is time. Units are in feet and days. Proof that the \( s = f(u) \) curve is continuous was demonstrated by assuming that the straight line portion of the plot (after about three hours) fit the Jacob criteria, then employing the computed \( S \) and \( T \) values in calculating the ratio, \( s/W(u) \), for the early part of the curve to check its values against the fixed value of \( Q/4\pi T \). The accord is good and thus it is permissible to conclude that all of the drawdowns fall along a continuous curve. Table 3 below summarizes the computations.

\textbf{TABLE 3}

Aquifer Characteristics by Jacob Method

Continuity of \( s = f(u) \)

\((T = 320,000 \text{ ft}^2/\text{d}; S = .284; r = 178 \text{ ft.}; Q/4\pi T = .0737)\)

<table>
<thead>
<tr>
<th>Time Days</th>
<th>( u )</th>
<th>( \text{W(u)} )</th>
<th>( s(\text{ft.}) )</th>
<th>( s/\text{W(u)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0417</td>
<td>.1686</td>
<td>1.3648</td>
<td>.11</td>
<td>.0805</td>
</tr>
<tr>
<td>.0625</td>
<td>.1125</td>
<td>1.7172</td>
<td>.12</td>
<td>.0699</td>
</tr>
<tr>
<td>.0833</td>
<td>.0844</td>
<td>1.9777</td>
<td>.14</td>
<td>.0698</td>
</tr>
<tr>
<td>.1042</td>
<td>.0675</td>
<td>2.1853</td>
<td>.16</td>
<td>.0709</td>
</tr>
<tr>
<td>.1250</td>
<td>.0562</td>
<td>2.3564</td>
<td>.17</td>
<td>.0717</td>
</tr>
<tr>
<td>.50</td>
<td>.0141</td>
<td>3.7012</td>
<td>.26</td>
<td>.0702</td>
</tr>
<tr>
<td>1.0</td>
<td>.0070</td>
<td>4.3874</td>
<td>.32</td>
<td>.0738</td>
</tr>
<tr>
<td>2.0</td>
<td>.0035</td>
<td>5.0770</td>
<td>.38</td>
<td>.0739</td>
</tr>
</tbody>
</table>
The aquifer parameters are comparable to those of the best aquifers in Hawaii. The transmissivity is about 320,000 \( \text{ft}^2/\text{day} \), which implies a hydraulic conductivity of 2,000 to 3,000 \( \text{ft.}/\text{day} \), based on partial penetration of 100 feet in the saturated aquifer, and an average specific yield of at least .20.

Continuity of the early and later drawdown data implies that the aquifer is extensive. On the other hand, hydraulic connection between it and the Waiehu aquifer is, at best, very weak. The nearest test hole in the Waiehu aquifer is A-1, which lies 5,100 feet south of the North Waihee wells. Head in this test hole quickly responds to pumping by the Mokuha and Waiehu wells in the Waiehu aquifer, and the speed of the response indicates that head changes are transmitted under confined aquifer conditions. No such response showed up on the recorder chart at A-1 as a result of the pumping at North Waihee. If continuous confined conditions existed between North Waihee and A-1, a drawdown of 0.1 feet would have been recorded at A-1 within 70 minutes of the start of each pump test.

For unconfined conditions between the two sites almost ten days would be required for transmittal of 0.1 feet of drawdown. The record at A-1 is too responsive to pumping starts and stops at the Mokuha and Waiehu wells to unambiguously display any long term effects from North Waihee.
if they occurred. Following is a summary of behavior at A-1 during the North Waihee tests.

**TEST 4**

**Head Changes at A-1**

**Pump Tests at North Waihee**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time of Test</th>
<th>Type of Test</th>
<th>Rate (GPM)</th>
<th>Head-changes at A-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/15/81</td>
<td>08:14 - 11:18</td>
<td>Well 1</td>
<td>1765</td>
<td>No change.</td>
</tr>
<tr>
<td>6/3 - 5/81</td>
<td>07:30 - 07:30</td>
<td>Well 1</td>
<td>1715</td>
<td>No significant change during test; slight gain in head 6/3-6/10; abrupt drawdown of 0.1 ft. on 6/12, probably caused by Mokuhau-Waiehu pump start up. Gradual increase of .15 ft. by 6/18. Head at A-1 20.5 to 21.0 ft.</td>
</tr>
<tr>
<td>8/3/81</td>
<td>08:15 - 10:43</td>
<td>Step</td>
<td>1715</td>
<td>No change.</td>
</tr>
<tr>
<td>8/3 - 4/81</td>
<td>13:00 - 19:00</td>
<td>Well 2</td>
<td>1540</td>
<td>Head at A-1 about 15.5 ft. Variable small head changes, up and down. Same head at end of period as at start.</td>
</tr>
<tr>
<td>8/10 - 11/81</td>
<td>09:00 - 11:00</td>
<td>Sustained</td>
<td>1580</td>
<td></td>
</tr>
<tr>
<td>8/12 - 14/81</td>
<td>15:00 - 15:00</td>
<td>Sustained</td>
<td>1680</td>
<td></td>
</tr>
</tbody>
</table>

A more telling argument against free hydraulic connection between North Waihee and Waiehu is the large difference in head between A-1 and the new wells. At A-1 the head is about 20 feet when Mokuhau and Waiehu are not pumping,
or 15 to 16 feet when they are, while at North Waihee the head is nine to ten feet. The hydraulic gradient in the Waiehu aquifer is 1 ft./mile, but between A-1 and North Waihee it is five to ten feet per mile, an impossible gradient if free connection prevailed. Whatever connection exists is highly damped by the alluvial fill and weathered rock in Waihee Valley. For planning purposes it is reasonable to consider the North Waihee aquifer to be effectively separate from the Waiehu aquifer.

Water Quality

Analyses by Brewer Analytical Laboratories of water collected in April during the pump test at Well 1 and in August at Well 2 showed no change in chloride from 15 mg/l. A more complete analysis for Well 1 is given below.

TABLE 5
North Waihee Water Quality

pH 7.58
Conductance 272 micromhos
Alkalinity as CaCO$_3$ 108 mg/l
Sodium 9.43 mg/l
Chloride 14.0 mg/l
Nitrate-Nitrogen 2.03 mg/l
Calcium 10.7 mg/l
Magnesium 8.94 mg/l
The quality of the water is excellent for any purpose. Chloride content did not increase during the tests.

Conclusions and Recommendations

The North Waihee aquifer is extensive and potentially very productive. The aquifer consists of Wailuku basalt with hydraulic conductivity of 2,000 to 3,000 ft./day and specific yield of .20. The aquifer is basal, possibly affected by widespread dikes, with a static head of about ten feet. The two wells drilled to date are very efficient, displaying specific capacities in excess of 500 gpm/ft. drawdown at high pumping rates. Water quality is excellent.

The two wells at North Waihee could safely be outfitted with 1,750 gpm pumps to provide a potential field output of five mgd. Northward toward Kohakuloa more water could be developed from the aquifer. When an additional water supply is planned, a well field could be located in the next valley about 0.3 miles north of Waihee Stream at an elevation of 400 to 500 feet (See Figure 1).

JOHN F. MINK
Figure 2

North Waihee Wells 1 and 2
Step Drawdown Pump Test

April 15, 1981 (Well No. 1)
August 3, 1981 (Well No. 2)

Drawdown in Feet

Pumping Rate in GPM
SUSTAINED PUMP TEST
NORTH WAIHEE WELL FIELD, MAUI
WELL 2 PUMPING : WELL 1 OBSERVATION
Figure 2

NORTH WAIHEE WELLS 1 AND 2
STEP DRAWDOWN PUMP TEST

APRIL 15, 1981 (WELL NO. 1)
AUGUST 3, 1981 (WELL NO. 2)