CHECKLIST

Well Construction Permit

Water Use Permit Required Also

Pump Installation Permit

Well Name & Number 5650-04-02 & 5749-01
Island Hawaii

Applicant Mauna Lani Resort
Landowner Same
Consultant Tom Nance WRE

Date application received ................... 4/13/94 (agreement)

Date acknowledged receipt/request more info ..........................................

Date filing fee deposited ................................................................. Done

Application sent to following:
Dept. of Health
   Safe Drinking Water Branch
   Wastewater Branch
Office of Hawaiian Affairs
Dept. of Hawaiian Home Lands

State Historic Preservation Div.
Sierra Club Legal Defense Fund
Honolulu Board of Water Supply
Maui Dept. of Water Supply
Kauai Dept. of Water Supply
Hawaii Dept. of Water Supply
Hawaii Dept. of Public Works
Koolauola NB #28 (Oahu)
Additional List (Molokai)
Eric Hirano/Lyann Mizuno
DIV. OF AQUATIC RES.

Date agenda due .................................................................
Date submittal due ...............................................................  
Date submittal sent to applicant ..................................................  
Date application approved OR disapproved .....................................
Date applicant notified of decision .................................................

Remarks: 5651-01 (after w. F. Field) Others installed but not used

Map, assign well no. (Pencil in INDEX/SUMMARY)
Log in logbook (manual)
Log in computer (WELL PERMITS)
CHECKLIST

√ WELL CONSTRUCTION PERMIT    __ PUMP INSTALLATION PERMIT

WELL NAME or LOCATION: Mauna Lani Resort       WELL ISLAND: Hawaii

WELL NUMBER: 5650-01, 02, 03    Tax Map Key: 6-8-01:52

OWNER/OPERATOR: Mauna Lani Resort, Inc.
Firm Name
Contact Person B. M. Spitz
Firm Name
Address P.O. Box 4959, HCR 2
Address
Phone 885-6677
Phone

LANDOWNER:
Firm Name
Firm Name
Address
Address
Phone
Phone

Date application received.......................... 6-13-90 6-25-90 (04/03)
Date acknowledged receipt/request more info..... 6-22-90
Date application accepted................................
Suspense date (90 days)............................... 
Date filing fee deposited................................

Application sent to following:

<table>
<thead>
<tr>
<th>Dept. of Health</th>
<th>Date sent</th>
<th>Comments received</th>
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</thead>
<tbody>
<tr>
<td>County water board/dept</td>
<td>6-22-90</td>
<td></td>
</tr>
<tr>
<td>Dept. Pub. Wrks (Hawaii)</td>
<td>6-22-90</td>
<td></td>
</tr>
<tr>
<td>Dept. of Hawn Homes</td>
<td>6-22-90</td>
<td></td>
</tr>
<tr>
<td>Koolauloa NB #28</td>
<td>7-6-90</td>
<td>7-30-90</td>
</tr>
<tr>
<td>HISTORIC PRES</td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

Date agenda due........................................
Date submittal due........................................
Date submittal sent to applicant......................

Date application √ approved or  disapproved.... 9-19-90
Date applicant notified of decision.................. 10-02-90

REMARKS:

____________________________________________________
____________________________________________________
____________________________________________________
____________________________________________________
____________________________________________________
____________________________________________________
____________________________________________________
____________________________________________________

To:  ROY HARDY - CWRM
From:  Tom Nance
Date:  Jan. 21, 2000
Subject:  SOUTH KOREA WATER WELD GROUP

(1) Copy of the signed Memorandum of Understanding (pp. 2-5)
(2) Unsinged copy of Policies and Procedures (pp. 6-9)

680 Ala Moana Boulevard, Suite 406 - Honolulu, Hawaii 96813-5411 - Phone: (808) 537-1141 - Fax: (808) 538-7757

Ryan: Found this. Should put copies in relevant Big Island well folders.
MEMORANDUM OF UNDERSTANDING BETWEEN MAUNA
KEA PROPERTIES, INC., MAUNA LANI RESORT, INC.,
NANSAI HAWAII, INC. AND WAIKOLOA LAND COMPANY
ON COOPERATIVE REGIONAL WATER DEVELOPMENT

Mission Statement

To work jointly and cooperatively in developing and
implementing a regional water plan which best serves the
collective water needs of the parties and others within the
region in a manner acceptable to relevant governmental
authorities.

Objectives

The parties to this Memorandum of Understanding
(collectively referred to as "South Kohala Water Study
Group" or "Group") acknowledge and agree that it is in their
long-term best interests to achieve the Mission set forth
above in the following manner:

- Reach agreement on a regional plan for the
devolution of sources and distribution systems
for potable, non-potable water and effluent
reuse;

- Form and establish, as equity participants, a
private, regional water company or companies
for the development, production, distribution
and sale of potable, non-potable and effluent
reuse resources serving the parties and others
within the region;

- Reach bilateral and multilateral agreements
achieving the staged implementation of the
regional water plan;

- Publicly support and consider the commitment to
the conditional, partial funding of the County
of Hawaii Department of Water Supply's (DWS)
development of its planned North Kohala
Pipeline;

- Develop a Water Commitment Policy, which is
incorporated herein by reference, containing
guidelines and requirements for each Group
Member securing a sufficient supply of water
for actual use in accordance with a realistic
timetable;
Coordinate the activities of the Water Study Group with all relevant State of Hawaii authorities, including but not limited to its Water Commission, in a manner which promotes and preserves the Group's ability to deal with regional water issues on a collective basis;

Communicate, where appropriate, with other interested parties within the region;

Enter into subsequent joint agreements intended to implement the objectives adopted herein.

Governance

The activities of the Group shall be governed and coordinated through an Executive Committee comprised of a designated representative of each signatory to this Memorandum of Understanding.

The Group Executive Committee shall:

- Approve all policies, agreements and expenditures made on behalf of the Group; provided, that if the representative of any Group member specifically disapproves of any such expenditure, that Group member shall be excused from its pro rata share of such expenditure;

- Approve the inclusion of additional members to and approve, except member in question, for the exclusion of existing members from the Water Study Group;

- Approve public statements and testimony regarding Water Study Group activities;

- Develop and approve an annual operating budget, project budgets and the individual party's obligations to fund the operations and the development of these planned projects;

- Be kept informed of all agreements entered into between Water Study Group members affecting the Group's Mission and Objectives;

- Coordinate all contact regarding the activities of the Water Study Group with governmental agencies;
Direct and approve the activities of all consultants retained by the Water Study Group relating to its stated Mission and Objectives.

All decisions of the Group shall be by the majority of the members of the Executive Committee except for "key decisions" which require unanimous approval. Key decisions include approval of the annual operating budget and individual members' obligation to fund operations or make contributions to the development of planned projects, expenditures which are outside of the approved budget in excess of $5,000 in any single case or $25,000 in the aggregate and the addition of any new member to the Executive Committee.

Dispute Resolution

It is acknowledged that from time to time, disputes and disagreements may arise between the parties to this Memorandum of Understanding regarding regional water issues and that it is in their long-term collective best interests that such disputes be resolved without resort to governmental or judicial involvement.

The parties agree that they shall use their individual and collective best efforts to resolve any and all outstanding issues covered by this Memorandum. The parties further agree that if in the event negotiations fail to result in an acceptable agreement or resolution, they may voluntarily submit outstanding issue(s) to binding or nonbinding arbitration pursuant to terms agreed to by the parties.

North Kohala Pipeline

The parties agree to support the concept of a North Kohala pipeline transporting potable water to South Kohala being pursued by the Department of Water Supply, County of Hawaii.

In the event that the parties are reasonably satisfied that the North Kohala pipeline will be built, but no later than the start of construction, individual signatories to this agreement shall commit, on a fair and equitable basis, to the partial funding of said pipeline under acceptable terms and conditions to be negotiated.
Termination/Withdrawal

A majority of the members of the Group may terminate the Group and joint obligations contained in this Memorandum of Understanding. Individual Group members may withdraw from the South Kohala Water Study Group upon written notice to other members; provided, that members shall remain liable for their or its pro-rata share of costs of operations per the approved budget or amendments thereto, incurred during their membership or prior to withdrawal, as the case may be.

This Memorandum of Understanding is entered into this 9th day of February, 1992.

MAUNA KEA PROPERTIES, INC.

By

Its

MAUNA LANI RESORT, INC.

By

Its

WAIKOLOA LAND COMPANY

By

Its

NANSAY HAWAII, INC.

By

Its

MAUNA KEA PROPERTIES, INC.
DRAFT
Water Commitment Policies and Procedures
of the
South Kohala Water Users' Group
Revised: [February 4, 1993]
March 9, 1993

The South Kohala Water Users Group ("Group") recognizes the need to develop a coherent set of policies and procedures for the development of groundwater to ensure maximum beneficial use of this limited resource, avoid conflicts among users, and facilitate the timely development of water tied to actual use. The parties to this document agree to abide by the policies and procedures it contains and encourage the State Commission on Water Resource Management ("Commission") to evaluate all drilling and pump installation permits received from other water users in the basin by the same criteria.

POLICIES

1. The group recognizes that all parties need assurance of the availability of water for their developments. The group further recognizes that such assurances can occur only if it is agreed to by all parties.

1. All drilling, well modification, and pump installation permits will be formulated to conform to the intent of the then current version of the Group's approved South Kohala Water [Master] Resource Plan.

2. All drilling, well modification, and pump installation permits will be submitted to the Group for its approval prior to submittal to the Commission. The Group's approval shall be based on the applicant's conformance with these policies, and the procedures listed below. The Group's approval shall not be unreasonably withheld if such conformance is demonstrated.

3. To minimize excessive use of groundwater, all effluent from sewage treatment plants shall be reused for irrigation unless it can be conclusively demonstrated to be physically and/or economically impractical for the developer of the irrigation supply or the ultimate user of the water.
4. All new landscaping, including golf course turfgrass, will be designed and implemented to minimize irrigation use. Efforts toward this end shall include choosing appropriate plant materials, use of proper soil types and thickness, and avoiding excessive turfgrass areas. Any new 18-hole golf course shall not use more than 0.75 MGD on year-round average nor more than 1.00 MGD over any seven-day period.

5. All new hotel, residential, commercial, and industrial development shall be designed to minimize water use and shall include appropriate water saving devices.

6. Drilling permits should be supported if consistent with the Water Resource Plan as they provide much needed information about this region’s aquifer.

7. [Drilling and] Pump installation permits shall not be sought more than two years in advance of actual need [to avoid creating false shortages of supply and inappropriate positioning for the resource, potentially denying others their fair and equitable use].

8. Members of the Group agree to devise water use standards for consumption of potable and irrigation water use in order to implement these policies.

9. It is recognized that agreements between two or more parties may be necessary to facilitate respective water development. [Such agreements shall be consistent with these policies and procedures.]

PROCEDURES

1. All applications for drilling, well modification, and pump installation permits, including extensions of these permits, will be submitted for review and approval by the Group to ensure conformance with the intent of the Group’s policies and [master] water resource plan prior to submission to the Commission.

2. To initiate the Group’s review, application will be submitted with the following supporting information:

   a. Quantity [and timing] of potable and/or non-potable supply requirements, including the basis for these projections (unit counts, acreage, etc.).
b. Measures taken to avoid excessive potable and/or non-potable water use.

c. Exact location of the water uses, including land use plans, TMKs, etc.

d. Approved State land use designation; County General Plan designation; County zoning; use permit for district use; and the prospective land use approvals, including subdivision, needed to achieve the desired land use.

e. The project's site specific water master plan for potable and not potable water shall be submitted.

f. Exact location, dimensions, and pump capacity of the well (or wells) to be developed to meet these supply requirements.

[g. A development schedule indicating the date of actual water use.]

3. The Group's review and response to the application shall be completed within 45 days. The response shall judge the application's conformance with these policies and with the South Kohala Water [Master] Resource Plan, [the appropriateness of the timing of the application] and the [the Group's review of applications.]

[Unless there are compelling reasons otherwise, the timing of an application shall be deemed inappropriate unless all land use approvals through and including County zoning have been received and the actual use of water, based on a firm schedule, is to begin within two years.] Listed below are specific criteria of the Group's review of applications.

a. If conformance with these policies and procedures is demonstrated [and the timing of the application is appropriate,] the Group's approval shall not be unreasonably withheld.

b. If the application falls to meet the standards for acceptability set out herein, no submittal of the application to the Commission shall be made until revisions satisfactory to the Group are made.

c. The Group's approval for a pump installation permit shall be given only after tentative subdivision approval for the project to be served has been given.]

d. If a proven water source is a condition of County zoning or use permit approvals, the Group's approval of a well construction permit shall be given only if evidence of the actual water use within two years is provided.]
These Water Commitment Policies and Procedures are entered into this day of ______________, 1993.

Mauna Kea Properties, Inc.
By: ____________________________
   Its

Nansay Hawaii, Inc.
By: ____________________________
   Its

Mauna Lani Resort, Inc.
By: ____________________________
   Its

Waikoloa Land Company
By: ____________________________
   Its
August 17, 1999

Ms. Sachiko Murano
Mauna Lani Resort
68-1310 Mauna Lani Drive, Suite 101
Kohala Coast, Hawaii 96743-9704

Dear Ms. Murano:

IRRIGATION WELLS CERTIFICATION
MAUNA LANI RESORT
At Waikoloa, South Kohala, Island of Hawaii, Hawaii

The undersigned hereby certifies that a field survey was performed to establish elevations on the listed irrigation wells at Mauna Lani Resort with the following results:

1. North Well, Well No. 5749-01:
   a. Elevation of "+" cut on concrete pad is 92.56 feet.

2. Fire Station Well, Well No. 5750-03:
   a. Elevation of "+" cut on steel plate is 59.48 feet.

3. Culvert Well, Well No. 5650-02:
   a. Elevation of "+" cut on concrete pad is 123.77 feet.
   b. Elevation of top of base plate is 123.92 feet.

4. Entrance Well, Well No. 5651-01:
   a. Elevation of "+" cut on concrete pad is 136.64 feet.
   b. Elevation of top of base plate is 136.81 feet.

5. Highway Well, Well No. 5651-01:
   a. Elevation of "+" cut on concrete pad is 120.96 feet.
   b. Elevation of top of base plate is 121.12 feet.

The elevations are referred to Mean Sea Level (MSL) and based upon Kawaihale Harbor Tidal Bench Mark 3 with an elevation of 7.23 feet, MSL.

R.M. TOWILL CORPORATION

Robert K.Y. Lee
Licensed Professional Surveyor
Certificate Number 5075

Cc: Greg Pukumatu, TNWR
August 17, 1999

Ma. Sachiko Murano
Mauna Lani Resort
68-1310 Mauna Lani Drive, Suite 101
Kohala Coast, Hawaii 96743-9704

Dear Ma. Murano:

IRRIGATION WELLS CERTIFICATION
MAUNA LANI RESORT
At Waikoloa, South Kohala, Island of Hawaii, Hawaii

The undersigned hereby certifies that a field survey was performed to establish elevations on the listed irrigation wells at Mauna Lani Resort with the following results:

1. North Well, Well No. 5749-01:
   a. Elevation of "4" cut on concrete pad is 92.56 feet.

2. Fire Station Well, Well No. 5750-03:
   a. Elevation of "4" cut on steel plate is 59.48 feet.

3. Culvert Well, Well No. 5650-02:
   a. Elevation of "4" cut on concrete pad is 123.77 feet.
   b. Elevation of top of base plate is 123.92 feet.

4. Entrance Well, Well No. 5650-01:
   a. Elevation of "4" cut on concrete pad is 136.64 feet.
   b. Elevation of top of base plate is 136.81 feet.

5. Highway Well, Well No. 5651-01:
   a. Elevation of "4" cut on concrete pad is 120.96 feet.
   b. Elevation of top of base plate is 121.12 feet.

The elevations are referred to Mean Sea Level (MSL) and based upon Kawaihae Harbor Tidal Bench Mark 3 with an elevation of 7.23 feet, MSL.

R.M. TOWILL CORPORATION

Robert K. Y. Lee
Licensed Professional Surveyor
Certificate Number 5075
FORM I:

COMMISSION ON WATER RESOURCE MANAGEMENT

FROM: Ed
DATE: 6/8/99
SUSPENSE DATE

TO: BAUER, G.
INIT.

TO: LUM, A.
INIT.
FOR: Approval

TO: NAKAMA, L.
INIT.
FOR: Signature

TO: NAKANO, D.
INIT.
FOR: Information

TO: OHYE, M.
INIT.
FOR: Information

TO: SAUODA, E.
INIT.
FOR: Information

TO: SUBIA, S.
INIT.
FOR: Information

TO: SWANSON, S.
INIT.
FOR: Information

TO: UYENO, D.
INIT.
FOR: Information

TO: YODA, K.
INIT.
FOR: Information

PLEASE:

See Me

Review & Comment

Take Action

Type Draft

Type Final

File

Xerox ___ copies

Before I can analyze pump test data, I need some

We need to double check well nos and names. I'm a little

confused.

Thanks

Although old permit and reports (not subject to standards)

old reports w/ no signatures - I think we could get Tom's signature for some

if not all. Names are different then past documentation.

Talked to Tom Nance 6/15 - he'll mail #5's
Dear Mr. Sakoda:

As-Built Well Sections for Mauna Lani Resort Irrigation Well
Nos. 5651-01, 5650-01, 5650-02, and 5749-01

In response to your June 2, 1999 letter to Mr. Hajime Yoshida at Mauna Lani Resort, we are enclosing as-built well sections, pump installation drawings, and other relevant data for the four wells cited in your letter. For clarity, their names and numbers are slightly different than cited in your letter. In sequence from south to north, they are as follows:

<table>
<thead>
<tr>
<th>Resort Number</th>
<th>Resort Name</th>
<th>State Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Highway</td>
<td>5651-01</td>
</tr>
<tr>
<td>5</td>
<td>Entrance</td>
<td>5650-01</td>
</tr>
<tr>
<td>6</td>
<td>Culvert</td>
<td>5650-02</td>
</tr>
<tr>
<td>7</td>
<td>North</td>
<td>5749-01</td>
</tr>
</tbody>
</table>

Please let me know if there are any other outstanding issues in the processing of the Resort's applications for Wells 8 and 9 (State Nos. 5849-02 and -03). Thank you for your attention to this matter.

Sincerely,

Tom Nance

cc: Sachiko Murano
Hajime Yoshida

Enclosures
PEERLESS PUMP

SURFACE DISCHARGE

7" TO FACE OF FLANGE

MOTOR: 240A-9MA MFR. GEAR TYPE
24 H.P. 1800 R.P.M. PH. FRAME

7" BASE TO C OF DISCHARGE

DISCHARGE COMPANION FLANGE FOR

6x6x12.5 DISCHARGE HEAD
1 1/4" O.D. TOP COL. FLANGE:

12" I.D. OF WELL

6 1/2" O.D. OF COUPLING

5" COLUMN

1" SHAFT

1/2" TUBE

BOWL UNIT:

8LB ASSEMBLY

9 STAGE

7 3/4" O.D. OF BOWLS

1/4" SUCTION PIPE

STRAINER:

5 SIZE - O.D.

CONOF TYPE

PUMP IDENTIFICATION:

SOLD TO: MARRIOT LAND

ORDER NO.

USER:

ITEM NO.

PUMP NO.

PEERLESS PUMP

Los Angeles St. Calif. Indianapolis 8. Ind.

HYDRODYNAMICS DIVISION

PEERLESS PUMP

ENVELOPE E

CONDUIT SIZE

TOP VIEW

DIA. HOLES

SQ.

SQ.

FOR APPROVAL

BY DATE

FOR CONSTRUCTION

BY DATE

PUMP NO.
PUMP DESCRIPTION: **Duett Diesel Engine**; Head 6x6x125; Column 6"

GUARANTEED FIELD PERFORMANCE: Capacity 250 gpm; Head 77 ft; Eff 80%; BHP 77

**Laboratory Performance**

- **Size**: 8 LB
- **RPM**: 1760
- **Curved**: 2831691

<table>
<thead>
<tr>
<th>HYDRAULIC PERFORMANCE WARRANTY</th>
<th>CURVE NO.</th>
<th>IMPELLER NO.</th>
<th>IMPELLER DIA.</th>
<th>TAKEN FROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed at designated point only, and contingent on:</td>
<td>1</td>
<td>2616465</td>
<td>5 7/16&quot;</td>
<td>35481</td>
</tr>
<tr>
<td>Proper flow to pump suction</td>
<td>2</td>
<td>2616465</td>
<td>5 7/16&quot; x 5 7/16&quot;</td>
<td>37215</td>
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<tr>
<td>Proper submergence</td>
<td>3</td>
<td>2616465</td>
<td>5 7/16&quot; x 5 7/16&quot;</td>
<td>37225</td>
</tr>
<tr>
<td>Fluid free of gas, air &amp; abrasives</td>
<td>4</td>
<td>2616465</td>
<td>5 7/16&quot; x 5 7/16&quot;</td>
<td>37322</td>
</tr>
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</table>

**Customer**

Mauna Loa

**Item** Entrace 6

**Peerless Ref. No.**

Laboratory Performance

**Bowl 2616457 CIE**

- **Size**: 8 LB
- **RPM**: 1760
- **Curve**: 2831691
Entrance #5
State No. 5650-01
STATE WELL NO. 5650-01
WELL NAME: Mauna Lani No. 5
ISLAND: Hawaii

A. LOCATION: Mauna Lani Resort, South Kohala
B. TAX MAP KEY: 6-8-01: 52
C. WELL OWNER: Mauna Lani Resort, Inc.
D. DRILLING OR PUMP INSTALLATION CONTRACTOR: Fred Page Drilling International
E. TYPE OF RIG: Rotary
F. DATE OF WELL COMPLETION: May 1991
G. DATE OF PUMP INSTALLATION: Pending
H. TOTAL DEPTH OF WELL BELOW GROUND: 180 ft.
I. HOLE SIZE: 12 inch dia. from 0.0 ft. to 180 ft. below ground
J. CASING INSTALLED: R. 1 in. I.D. x 0.125 in. wall solid section to 145 ft. below ground
K. ANNULUS: Grouted from 0.0 ft. to 130 ft. below ground
L. PERMANENT PUMP INSTALLATION: Permit Pending
M. PROPOSED USE: Golf Course and Landscape Irrigation
N. INITIAL WATER LEVEL: 132 ft. below ground
O. INITIAL CHLORIDE: 910 ppm
P. PUMPING TESTS: Reference point (R.P.) used: Grd which elevation is 134 ft.
Q. DRILLER’S LOG:

<table>
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<tr>
<th>Depth (ft.)</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level (ft.)</th>
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</thead>
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<tr>
<td>0 to 5</td>
<td>Loose Clinker</td>
<td>to</td>
</tr>
<tr>
<td>5 to 21</td>
<td>Hard Blue Rock</td>
<td>to</td>
</tr>
<tr>
<td>21 to 122</td>
<td>Alternating Flow</td>
<td>to</td>
</tr>
<tr>
<td>122 to 154</td>
<td>Layers</td>
<td>to</td>
</tr>
<tr>
<td>154 to 156</td>
<td>Hard Blue Rock</td>
<td>to</td>
</tr>
<tr>
<td>156 to 159</td>
<td>Fractured and Loase</td>
<td>to</td>
</tr>
<tr>
<td>159 to 177</td>
<td>Hard Rock w/o Fractures</td>
<td>to</td>
</tr>
<tr>
<td>177 to 180</td>
<td>Loose and Fractured</td>
<td>to</td>
</tr>
<tr>
<td>180 to</td>
<td>Hard Rock</td>
<td>to</td>
</tr>
</tbody>
</table>

REMARKS: ________________________________________________________________

Submitted by (print) Tom Nance Water Resources Engineering
Title

Signature ___________________________ Date [ADD: ENTRANCE WELL 5650-01]
If you do not receive all pages, please telephone immediately.

We got a nice result in the 24-hour test—chlorides dropped steadily through the test, starting out at 933 mg/L initially and ending at 745 mg/L. The jump up at 18 hours doesn't make much sense, but I've referred to make sure it is not an analytical error. Having the water freshen during a pump test is not unprecedented but it is unusual.
Step-Drawdown Test Analysis Using Thiem (from Mink, 1999)

Well Name: No. 6 Culvert Well No. 5650-\(X\), Mauna Lani Hotel

Date of Test: February 4, 1991

Analyzed by: Glenn Bauer

<table>
<thead>
<tr>
<th>Q (gpm)</th>
<th>s</th>
<th>(s/Q)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230</td>
<td>0.1</td>
<td>0.0004</td>
</tr>
<tr>
<td>335</td>
<td>0.2</td>
<td>0.0006</td>
</tr>
<tr>
<td>435</td>
<td>0.3</td>
<td>0.0007</td>
</tr>
<tr>
<td>540</td>
<td>0.43</td>
<td>0.0008</td>
</tr>
</tbody>
</table>

Aquifer drawdown = \(s(a) = aQ\)

Therefore \(s(a) = 1.892E-04\) Q (rounded)

To convert to ft\(^3\)/d then divide by 192.5 \(s(a) = 9.8265E-07\) Q

Thiem Eq. for Steady-State: \(s(a) = Q/(2\pi T)\{\ln[r(e)/r]\}\)

From \(s(a) = aQ\) then: \(T = 1/(2\pi a)\{\ln[r(e)/r]\}\)

assume \(r(e) = 2000\) ft. then \(\ln = 7.6\)

assume \(r = 1\)

Therefore \(T = 1.23E+06\) ft\(^2\)/d
You asked for the step-test data. For two of the five wells, the data are on the Well Completion Report Form (the Highway and North wells, 5651-01 and 5660-01). No step-test was ever run on the relatively low yield Mini-Wells (5650-01). Step data for the Culvert Well (5650-02) are as follows:

<table>
<thead>
<tr>
<th>Flowrate (gpm)</th>
<th>Drawer (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230</td>
<td>0.10</td>
</tr>
<tr>
<td>335</td>
<td>0.20</td>
</tr>
<tr>
<td>435</td>
<td>0.30</td>
</tr>
<tr>
<td>540</td>
<td>0.43</td>
</tr>
</tbody>
</table>
Mr. Edwin T. Sakoda  
Acting Deputy Director  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P. O. Box 621  
Honolulu, Hawaii 96809  

Dear Mr. Sakoda:

As-Built Well Sections for Mauna Lani Resort Irrigation Well  
Nos. 5651-01, 5650-01, 5650-02, and 5749-01

In response to your June 2, 1999 letter to Mr. Hajime Yoshida at Mauna Lani Resort, we are enclosing as-built well sections, pump installation drawings, and other relevant data for the four wells cited in your letter. For clarity, their names and numbers are slightly different than cited in your letter. In sequence from south to north, they are as follows:

<table>
<thead>
<tr>
<th>Resort Number</th>
<th>Resort Name</th>
<th>State Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Highway</td>
<td>5651-01</td>
</tr>
<tr>
<td>5</td>
<td>Entrance</td>
<td>5650-01</td>
</tr>
<tr>
<td>6</td>
<td>Culvert</td>
<td>5650-02</td>
</tr>
<tr>
<td>7</td>
<td>North</td>
<td>5749-01</td>
</tr>
</tbody>
</table>

Please let me know if there are any other outstanding issues in the processing of the Resort's applications for Wells 8 and 9 (State Nos. 5849-02 and -03). Thank you for your attention to this matter.

Sincerely,

Tom Nance

cc: Sachiko Murano  
    Hajime Yoshida

Enclosures
PUMP DESCRIPTION: Driver **DUETZ DIESEL ENGINE**; Head \(6 \times 6 \times 125\); Column \(6\)".

GUARANTEED FIELD PERFORMANCE: Capacity **360** gpm; Head **100** ft; Eff **81\%**; BHP **8**.

**HYDRAULIC PERFORMANCE WARRANTY**

Guaranteed at designated point only, and contingent on:
- Proper flow to pump suction
- Proper submergence
- Fluid free of gas, air & abrasives
- Proper lateral setting of impeller

<table>
<thead>
<tr>
<th>CURVE NO.</th>
<th>IMPELLER NO.</th>
<th>IMPELLER DIA.</th>
<th>TAKEN FROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T-84323</td>
<td>6(3/4)&quot;</td>
<td>32825</td>
</tr>
<tr>
<td>2</td>
<td>T-84323</td>
<td>6(1/4)&quot;</td>
<td>27497</td>
</tr>
<tr>
<td>3</td>
<td>T-84323</td>
<td>6(3/4)&quot;</td>
<td>31374</td>
</tr>
</tbody>
</table>

Customer: **MUNA CASH (5690-02)**

Item No: **CULVERT #6**

Peerless Ref. No: **Laboratory Performance**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>RPM</th>
<th>CURVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 LA</td>
<td>1760</td>
<td>2842909</td>
</tr>
</tbody>
</table>

**NOTE:** Any change in efficiency affects either the head or horsepower, consequently.
Culvert #6
State No. 5650-02
WATER QUALITY DURING 25-HOUR PUMP TEST AT 540 GPM (2/4/95/91)

<table>
<thead>
<tr>
<th>DAY</th>
<th>TIME</th>
<th>CHLORIDES (MGL)</th>
<th>COND. (µMhos)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEB. 4</td>
<td>7:30 a</td>
<td>875</td>
<td>34:50</td>
</tr>
<tr>
<td></td>
<td>10:30 a</td>
<td>900</td>
<td>35:00</td>
</tr>
<tr>
<td></td>
<td>1:30 p</td>
<td>915</td>
<td>35:20</td>
</tr>
<tr>
<td></td>
<td>4:30 p</td>
<td>895</td>
<td>35:20</td>
</tr>
<tr>
<td></td>
<td>7:30 p</td>
<td>865</td>
<td>35:20</td>
</tr>
<tr>
<td></td>
<td>10:30 p</td>
<td>885</td>
<td>34:70</td>
</tr>
<tr>
<td></td>
<td>1:30 a</td>
<td>900</td>
<td>34:90</td>
</tr>
<tr>
<td></td>
<td>4:30 a</td>
<td>900</td>
<td>35:20</td>
</tr>
<tr>
<td></td>
<td>7:30 a</td>
<td>865</td>
<td>34:70</td>
</tr>
<tr>
<td></td>
<td>8:30 a</td>
<td>885</td>
<td>34:80</td>
</tr>
</tbody>
</table>

NOTES:
1. CHLORIDES DETERMINED BY MERCURY NITRATE TITRATION
2. CONDUCTIVITY DETERMINED BY YSI TYPE 33 S-CT METER
3. FLOW RATE WAS REDUCED FROM 540 TO 350 GPM FOR THE LAST HOUR OF THE TEST

Tom Nance
Feb. 6, 1991
WELL COMPLETION REPORT

A. STATE WELL NO. 5650-02 WELL NAME Mauna Lani No. 6 ISLAND Hawaii
B. LOCATION Mauna Lani Resort, South Kohala TAX MAP KEY 6-8-01: 52
C. WELL OWNER Mauna Lani Resort, Inc.
D. DRILLING OR PUMP INSTALLATION CONTRACTOR Fred Page Drilling International
E. TYPE OF RIG Rotary DRILLER Fred Page
F. DATE OF WELL COMPLETION February 1991 DATE OF PUMP INSTALLATION Permit Pending
G. GROUND ELEVATION (mal) 118 ft. Top of Drilling Platform (mal) 118 ft. Height of drilling platform above ground surface 0.0 ft. Bench mark and method used to determine ground elevation -- ft.
H. TOTAL DEPTH OF WELL BELOW GROUND
I. HOE SIZE: 17 inch dia. from 0.0 ft. to 160 ft. below ground 17 inch dia. from 0.0 ft. to 160 ft. below ground 17 inch dia. from 0.0 ft. to 160 ft. below ground
J. CASING INSTALLED: 12 in. I.D. x 0.3125 in. wall solid section to 127 ft. below ground none in. I.D. x ____ in. wall perforated section to ____ ft. below ground Type of perforation none
K. ANNULUS: Grouted from 0.0 ft. to 120 ft. below ground Gravel packed from ____ ft. to ____ ft. below ground
L. PERMANENT PUMP INSTALLATION: Pump type, make, serial No. Permit Pending Capacity 350 gpm Motor type, H.P., voltage, r.p.m. ____ ft. below ground Depth of pump intake setting ____ ft. below ground which elevation is ____ ft. Depth of bottom of airline ____ ft. below ground which elevation is ____ ft.
M. PROPOSED USE
N. INITIAL WATER LEVEL 121 ft. below ground. Date and time of measurement 2-4-91 7:35 a.m.
O. INITIAL CHLORIDE 875 ppm. Date and time of sampling ________________
P. PUMPING TESTS: Reference point (R.P.) used: Ground which elevation is 118 ft.

<table>
<thead>
<tr>
<th>Date</th>
<th>Start water level (ft. below R.P.)</th>
<th>End water level (ft. below R.P.)</th>
<th>Depth of well (ft. below R.P.)</th>
<th>Draw-down Time (hours)</th>
<th>Draw-down (ft.)</th>
<th>Rate (ppm)</th>
<th>Cl. (ppm)</th>
<th>Temp. (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-4-91</td>
<td>121 ft. below R.P.</td>
<td>121 ft. below R.P.</td>
<td>160 ft. below R.P.</td>
<td>____ to ____</td>
<td>____ to ____</td>
<td>____ to ____</td>
<td>____ to ____</td>
<td>____ to ____</td>
</tr>
<tr>
<td></td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
<td>to Refer To Attached Sheet</td>
</tr>
</tbody>
</table>

Q. DRILLER'S LOG:

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10</td>
<td>Clinker and Boulders</td>
<td></td>
<td>0 to 10</td>
<td>Clinker and Boulders</td>
<td></td>
</tr>
<tr>
<td>10 to 115</td>
<td>Alternating Flow Layers</td>
<td></td>
<td>10 to 115</td>
<td>Alternating Flow Layers</td>
<td></td>
</tr>
<tr>
<td>115 to 132</td>
<td>Fractured and Loose</td>
<td></td>
<td>115 to 132</td>
<td>Fractured and Loose</td>
<td></td>
</tr>
<tr>
<td>132 to 156</td>
<td>Hard and Solid</td>
<td></td>
<td>132 to 156</td>
<td>Hard and Solid</td>
<td></td>
</tr>
<tr>
<td>156 to 180</td>
<td>Fractured and Loose</td>
<td></td>
<td>156 to 180</td>
<td>Fractured and Loose</td>
<td></td>
</tr>
<tr>
<td>158 to 160</td>
<td>Hard and Solid</td>
<td></td>
<td>158 to 160</td>
<td>Hard and Solid</td>
<td></td>
</tr>
</tbody>
</table>

REMARKS: A. P. Chilton 5690-D

Submitted by (print) ________________ Title ________________

Signature ___________________________ Date ________________
<table>
<thead>
<tr>
<th>TO:</th>
<th>INIT.</th>
<th>TO:</th>
<th>INIT.</th>
<th>FOR:</th>
<th>PLEASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAUER, G.</td>
<td></td>
<td>LUM, A.</td>
<td></td>
<td>Approval Signature</td>
<td>See Me</td>
</tr>
<tr>
<td>CHING, F.</td>
<td></td>
<td>NAKAMA, L.</td>
<td></td>
<td>Information</td>
<td>Review &amp; Comment</td>
</tr>
<tr>
<td>FUJII, N.</td>
<td></td>
<td>NAKANO, D.</td>
<td></td>
<td></td>
<td>Take Action</td>
</tr>
<tr>
<td>HARDY, R.</td>
<td></td>
<td>OHYE, M.</td>
<td></td>
<td></td>
<td>Type Draft</td>
</tr>
<tr>
<td>HIGA, D.</td>
<td></td>
<td>SAKODA, E.</td>
<td></td>
<td></td>
<td>Type Final</td>
</tr>
<tr>
<td>HIRANO, E.</td>
<td></td>
<td>SUBIA, S.</td>
<td></td>
<td></td>
<td>File</td>
</tr>
<tr>
<td>ICE, C.</td>
<td></td>
<td>SWANSON, S.</td>
<td></td>
<td>Need Data for</td>
<td>Xerox ___ copies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Following Writs</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMATA, R.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JINNAI, R.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KUNIMURA, I.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Database shows we have not received any signed permits from Manoa Leads nor accepted WER for work done - we should follow up on the status of these.

ELEVAUTION SURVEYS:

1. 5150-04 91P - No WER/IEP - No WER 1+2
2. 5750-02 91A 6 - No PIP - WER 2
3. 5750-01 91A 4 - No PIP - WER 2
May 7, 1996

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

Dear Mr. Johns:

RE: Ownership and Operation of the Brackish Irrigation Wells
At Mauna Lani Resort in South Kohala, Hawaii

The eight brackish wells listed below are used to irrigate Mauna Lani Resort's two 18-hole golf courses. Pump installation permits for their operation are presently in the name of Mauna Lani Resort, Inc. In a recent re-organization, Mauna Lani Resort, Inc. was dissolved and its operating functions were assumed by Mauna Lani Resort (Operation), Inc. By this letter, we respectfully request that the permits for the irrigation wells be transferred to Mauna Lani Resort (Operation), Inc.

Mauna Lani Resort Irrigation Wells

<table>
<thead>
<tr>
<th>State No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>5651-01</td>
<td>Highway</td>
</tr>
<tr>
<td>5650-01</td>
<td>Entrance</td>
</tr>
<tr>
<td>5650-02</td>
<td>Culvert</td>
</tr>
<tr>
<td>5750-01</td>
<td>Puako Shaft</td>
</tr>
<tr>
<td>5750-02</td>
<td>Parker 6 Shaft</td>
</tr>
<tr>
<td>5750-03</td>
<td>Fire Station</td>
</tr>
<tr>
<td>5750-04</td>
<td>STP</td>
</tr>
<tr>
<td>5749-01</td>
<td>North</td>
</tr>
</tbody>
</table>

Please feel free to call me at (808) 885-6677 if you have any questions. Thank you for your attention to this matter.

Sincerely,

MAUNA LANI RESORT (OPERATION), INC.

[Signature]

Hajime Yoshida
President

/cst
Mr. Keith W. Ahue  
Chairperson  
Commission on Water Resource Management  
Post Office Box 621  
Honolulu, HI 96809  

Re: Pump Installation Permits  

Dear Mr. Ahue:  

Enclosed please find the following executed original Pump Installation Permits:  

1. Mauna Lani Resort Irrigation Well No. 5650-01;  
2. Mauna Lani Resort Irrigation Well No. 5650-02  
3. Mauna Lani Resort Irrigation Well No. 5651-01; and  
4. Mauna Lani Resort Irrigation Well No. 5749-01;  

We have retained copies for our files.  

Please contact me should you have any questions.  

Sincerely,  

MAUNA LANI RESORT, INC.  

Morikuni Sasakura  
President  

Enclosures
PUMP INSTALLATION PERMIT

for

Mauna Lani Resort Irrigation Well
Well No. 5650-01
South Kohala, Hawaii

TO:  Mauna Lani Resort, Inc.
P.O. Box 4959-HCR 2
Kohala Coast, HI 96743

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 260 gallons per minute pump in Mauna Lani Resort Irrigation Well (Well No. 5650-01), 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 a 260 gpm capacity, or less, pump in the 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 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 comply with all applicable laws, rules, and ordinances.

5. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage and salinity shall be measured on a monthly basis and reported to the Commission.
6. This 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. The work proposed in the permit application shall be completed within two years from the date of permit approval.

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 permit application and staff submittal approved by the Commission at its meeting on June 15, 1994 shall be incorporated herein 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: Morikuni Sasakura  Date: 7-11-94

Printed Name: Morikuni Sasakura

Firm or Title: President

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
Hawaii Department of Water Supply
Tom Nance Water Resource Engineering
Mr. Keith W. Ahue  
Chairperson  
Commission on Water Resource Management  
Post Office Box 621  
Honolulu, HI 96809

Re: Pump Installation Permits

Dear Mr. Ahue:

Enclosed please find the following executed original Pump Installation Permits:

1. Mauna Lani Resort Irrigation Well No. 5650-01;  
2. Mauna Lani Resort Irrigation Well No. 5650-02  
3. Mauna Lani Resort Irrigation Well No. 5651-01; and  
4. Mauna Lani Resort Irrigation Well No. 5749-01;

We have retained copies for our files.

Please contact me should you have any questions.

Sincerely,

MAUNA LANI RESORT, INC.

Morikuni Sasakura  
President

Enclosures
PUMP INSTALLATION PERMIT

for

Mauna Lani Resort Irrigation Well
Well No. 5650-02
South Kohala, Hawaii

TO: Mauna Lani Resort, Inc.
P.O. Box 4959-HCR 2
Kohala Coast, HI 96743

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 350 gallons per minute pump in Mauna Lani Resort Irrigation Well (Well No. 5650-02), 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 a 350 gpm capacity, or less, pump in the 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 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 comply with all applicable laws, rules, and ordinances.

5. The applicant shall provide and maintain an approved meter or other appropriate device or means for measuring and reporting total water usage. Water usage and salinity shall be measured on a monthly basis and reported to the Commission.
6. This 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. The work proposed in the permit application shall be completed within two years from the date of permit approval.

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 permit application and staff submittal approved by the Commission at its meeting on June 15, 1994 shall be incorporated herein 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: Morikuni Sasakura Date: 7-11-'94
Printed Name: Morikuni Sasakura
Firm or Title: President

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
Hawaii Department of Water Supply
Tom Nance Water Resource Engineering
Item 6  Mauna Lani Resort, Inc., Application for Pump Installation Permits, Mauna Lani Resort Irrigation Wells, Well Nos. 5650-01 & 02, 5651-01 and 5749-01, South Kohala, Hawaii

NHAC WOULD LIKE MORE PUBLIC INVOLVEMENT AND INPUT INTO THE WORKINGS OF THE SOUTH KOHALA WATER USERS GROUP

The South Kohala Water Users Group has been operating independently from the Commission and has not fully disclosed its findings for public consumption and integration with the Hawaii Water Plan. The Mauna Lani-Nansay Irrigation Agreement and any other such agreements among Group members should not be condoned by the Commission until full public review and comment has occurred.

Item 8  Island Shores, Inc. Application for a Pump Installation Permit, Kahakuloa Acres Well, Well No. 5832-03, Kahakuloa, Maui

NHAC IS CONCERNED ABOUT THE VERY LIMITED INFORMATION PROVIDED IN THIS SUBMITTAL AND REQUESTS DEFERRAL OF THIS AGENDA ITEM

NHAC has been requested by the West Maui Molokai Taro Farmers Association to read the following letter into the record (see attached).

The very limited information provided in the submittal makes the potential impacts of this project very difficult to assess. NHAC requests more information be supplied by the applicant with regard to more specifics on the agriculture subdivision - how many total units are proposed - are other phases of this development being planned? What are the size of the units? What type of agriculture is planned? Has the applicant provided or been requested to provide an agricultural water plan?

What is the present status of the applicants compliance with applicable laws, rules and ordinances? (see condition #4) Does the proposed use of water by this project include domestic water service? If so, do PUC requirements apply? If there is the requirement to meet PUC regulations have they been met?

NHAC notes with particular concern the projections that by 2010 water use may be up to 100 percent of sustainable yield within the aquifer. Similarly, when Windward, Oahu went through the designation process regarding "approved and planned uses" the impacts to the aquifer systems there warranted designation and it would seem Waihee aquifer system would be a candidate for a designated area based on the sustainable yield projections.

With regard to the water source in the Waihee aquifer, although the hydrologic evidence to support fresh basal water is
Attached is a marking with our last update for Mauna Lani Resort for wells - FII!
## Irrigation Wells at Mauna Lani Resort

<table>
<thead>
<tr>
<th>State Well Number</th>
<th>Mauna Lani Name</th>
<th>Current Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>5650-01</td>
<td>Extrava Well</td>
<td>Recently completed; 350 GPM pump to be installed soon.</td>
</tr>
<tr>
<td>5650-02</td>
<td>Mauwhua Well</td>
<td>Recently completed; 350 GPM pump to be installed soon.</td>
</tr>
<tr>
<td>5650-03</td>
<td>Manawalei Well</td>
<td>Has not been drilled, location to be moved.</td>
</tr>
<tr>
<td>5651-01</td>
<td>Highway Well</td>
<td>450 GPM</td>
</tr>
<tr>
<td>5750-01</td>
<td>Puako Shaft</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5750-02</td>
<td>Nursery Well</td>
<td>Nursery Irrigation.</td>
</tr>
<tr>
<td>5750-03</td>
<td>Fire Station Well</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5750-04</td>
<td>STP Well</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5849-01</td>
<td></td>
<td>Old (1910) Puako Plantation dug well; has never been used by Mauna Lani Resort.</td>
</tr>
</tbody>
</table>

---

Post-it™ brand fax transmittal memo 7871  
# of pages: 1

To: **TOM NANCE**  
From: **ED SAKUDA**  
Co: **Co.**  
Dept: **Dept.**  
Phone #: **587-0225**  
Fax #: **587-0219**
## Irrigation and Saltwater Wells at Mauna Lani Resort

*September 30, 1992*

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Mauna Lani Name</th>
<th>Well Construction Permit</th>
<th>Well Completion Report Submitted</th>
<th>Pump Installation</th>
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<tbody>
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<tr>
<td>5650-01</td>
<td>Entrance Well</td>
<td>06-12-90</td>
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<td>10-02-92</td>
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<td>5650-02</td>
<td>Culvert Well</td>
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<td>Highway Well</td>
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<td>03-23-89</td>
<td>03-23-91</td>
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<td>Puako Shaft</td>
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<td>Nursery Well</td>
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<td>STP Well</td>
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<td>Feb-69</td>
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<td>--</td>
<td>Existing Well</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>5749-01</td>
<td>North Well</td>
<td>06-22-90</td>
<td>10-02-90</td>
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<table>
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<tr>
<td>5651-02</td>
<td>Well No. 1</td>
<td>02-12-91</td>
<td>04-02-91</td>
<td>04-02-93</td>
<td>10-04-91</td>
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<td>04-02-91</td>
<td>04-02-93</td>
<td>10-04-91</td>
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</tbody>
</table>

**Pump Installation**

- **Submitted**: Date the permit was submitted for approval.
- **Approval**: Date the permit was approved.
- **Expiration Date**: Date the permit expires.
- **Completion**: Date the pump installation was completed.

**Notes**:
- Recently completed wells are marked with an asterisk (*) in the completion column.
- Wells marked with "Not drilled" were not drilled as of September 30, 1992.
- Wells marked with "Has not been drilled" have not been drilled as of September 30, 1992.
- Wells marked with "Golf course irrigation" were used for golf course irrigation.
<table>
<thead>
<tr>
<th>Current Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\cdot$ 250 GPM pump to be installed soon.</td>
</tr>
<tr>
<td>$\cdot$ 300 GPM pump to be installed soon.</td>
</tr>
<tr>
<td>$\cdot$ Well to be moved to 5749-01.</td>
</tr>
</tbody>
</table>

- Plantation dug well, has never been installed.  
- 450 GPM pump to be installed soon.
Re: 4/11/94 letter from MLR

On agenda for 6/15/94.

5651-01 After-the-Fact (in operation)
Other - pumps installed but not in use. (per L&M)

Process as routine Pip? ATF?
(�waiting agreement)
Chairman and Members of the Commission
on Water Resources Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Re: Pump Installation Permit Applications for Mauna Lani
Resort, Inc., Brackish Water Wells, State Wells Nos. 5650-01,
5650-02, 5651-01 and 5749-01

Gentlemen:

Pump Installation Permit Applications dated July 22, 1991, for well nos. 5650-01,
5650-02 and 5749-01, and November 14, 1991, for well number 5651-01, have been
submitted to the Commission on Water Resource Management. The locations of
the subject wells are shown on the attached drawing. Subsequent to those
submittals, the Commission suggested the major South Kohala land owners form
a regional water users group to coordinate water development in the areas. That
group was formed and has been in operation since early 1992.

Attached are the original executed South Kohala Water Users Group memoranda
recommending Commission approval of the permits. These memoranda have
been signed by all members of the water users group. With this
recommendation, Mauna Lani Resort, Inc., respectfully requests the permit
applications be placed on the Commission's agenda at the earliest possible date.

Thank you for your assistance in this matter. If you have any questions
regarding the permit applications or any of the above, please call either Neil
O'Keeffe or Gordon Chapman at the telephone number listed below.

Sincerely,
MAUNA LANI RESORT, INC.

Morikuni Sasakura
President

MS/GC/Im
Enclosures
cc: T. Nance (w/encl.)
J. Watanabe (w/encl.)
N. O'Keeffe (w/o encl.)
G. Chapman (w/o encl.)
P.O. Box 4959, HCR2 • Kohala Coast • Island of Hawaii 96743-4959
Telephone: (808) 885-6677 • Facsimile: (808) 885-6375
MEMORANDUM

March 21, 1994

TO: Commission on Water Resource Management

FROM: South Kohala Water Users Group

SUBJECT: Mauna Lani Resort, Inc. Application for Pump Installation Permits, Well Nos. 5650-01, 5650-02, 5651-01 and 5749-01

The undersigned have reviewed the well locations, proposed pump capacities and timing of the subject wells and find them consistent with the water development strategies and commitment policies currently under consideration by the Group's members. We recommend the Commission approve the permits for the wells.

Agreed on this 30 day of March, 1994:

Mauna Kea Properties, Inc.

By ____________________________
Its President

Nansay Hawaii, Inc.

By ____________________________
Its COO

Mauna Lani Resort, Inc.

By ____________________________
Its President

Waikoloa Land Company

By ____________________________
Its ____________________________
MEMORANDUM

March 21, 1994

TO: Commission on Water Resource Management

FROM: South Kohala Water Users Group

SUBJECT: Mauna Lani Resort, Inc. Application for Pump Installation Permits, Well Nos. 5650-01, 5650-02, 5651-01 and 5749-01

The undersigned have reviewed the well locations, proposed pump capacities and timing of the subject wells and find them consistent with the water development strategies and commitment policies currently under consideration by the Group’s members. We recommend the Commission approve the permits for the wells.

Agreed on this 30 day of March, 1994:

Mauna Kea Properties, Inc.

By ______________________
Its ______________________

Nansay Hawaii, Inc.

By ______________________
Its ______________________

Mauna Lani Resort, Inc.

By ______________________
Its ______________________

Waikoloa Land Company

By ______________________
Its President
February 18, 1994

Department of Land &
Natural Resources
P.O. Box 621
Honolulu, HI 96809

Attention: Ms. Rae Loui

Re: Agreement between Mauna Lani Resort, Inc., and Nansay Hawaii, Inc.

Gentlemen:

This is to inform you that Mauna Lani Resort, Inc. ("Mauna Lani"), and Nansay Hawaii, Inc. ("Nansay"), have entered into a private letter of understanding concerning the development by Nansay and Mauna Lani of brackish water wells designated on Exhibit "A."

Mauna Lani and Nansay support the granting of respective governmental permits for the development and use of such wells pursuant to the terms of the private letter of understanding.

Thank you for your cooperation and the assistance of your staff.

Sincerely,

[Signatures]

Morikuni Sasakura
President
Mauna Lani Resort, Inc.

Thomas H. Yamamoto
Chief Operating Officer
Nansay Hawaii, Inc.
Typical Above-Ground Equipment (All 4 Wells)

Resort #4 Highway S651-01
#9 Entrance S650-01
#6 Culvert S650-02
#7 North S749-01
Brackish Wells of the Mauna Lani - Nansay Irrigation Agreement

<table>
<thead>
<tr>
<th>Mauna Lani Resort, Inc.</th>
<th>Nansay Hawaii, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Wells</td>
<td>Irrigation Wells</td>
</tr>
<tr>
<td>5650-01</td>
<td>5549-01</td>
</tr>
<tr>
<td>5650-02</td>
<td>5549-02</td>
</tr>
<tr>
<td>5651-01</td>
<td>5648-02</td>
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<tr>
<td>5749-01</td>
<td>5648-03</td>
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<td>5648-04</td>
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<td>5750-02</td>
<td>5748-01</td>
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<td>5750-03</td>
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<tr>
<td>5750-04</td>
<td></td>
</tr>
<tr>
<td>5849-01</td>
<td></td>
</tr>
</tbody>
</table>

Exhibit A
Mauna Lani - Nansay Irrigation Agreement
OCT 21 1991

Mauna Lani Resort, Inc.
P.O. Box 4959-HCR 2
Kohala Coast, HI 96743

Gentlemen:

We acknowledge receipt of your letter concerning the relocation of Mauna Lani 3 Well, at Mauna Lani, Hawaii.

Relocating the well changes the well number from Well No. 5650-03 to Well No. 5749-01.

By this letter, your requested change is approved. If you have any questions, please contact Manabu Tagomori, Deputy Director, at 548-7533.

Very truly yours,

WILLIAM W. PATY

C:

USGS
Department of Health
Ground Water Protection Program
Safe Drinking Water Branch
Hawaii Department of Water Supply
Tom Nance Water Resources Engineering
Mr. Manabu Tagomori  
Commission on Water Resource Management  
Department of Land & Natural Resources  
State of Hawaii  
P. O. Box 373  
Honolulu, Hawaii  96809

Dear Manabu:

Pump Installation Permit Applications  
for Mauna Lani Resort  
South Kohala, Hawaii

The enclosed permit applications and filing fee are submitted on behalf of Mauna Lani Resort.  
Pumps would be installed in three recently completed wells (Nos. 5650-01 & -02 and 5749-01) to augment Mauna Lani's brackish irrigation system for its golf courses and roadside landscaping.

If any questions arise during your review of this application, please call Bill Spitz at Mauna Lani Resort (885-6677) or me. Thank you for your attention to this matter.

Sincerely,

Tom Nance

TN:It

cc:       Bill Spitz

Enclosures
APPLICATION FOR

WELL CONSTRUCTION PERMIT

PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water Resource Management, P.O. Box 313, Honolulu, Hawaii 96813. Application must be accompanied by a non-refundable filing fee of $153.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-3143, Hydrology/Groundwater Section for assistance.

1. WELL LOCATION

Island: Hawaii  Tax Map Key: 6-8-01:52
Address: Mauna Lani Resort  State Well No.: 5650-01

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

2. WELL OWNER

Firm Name: Mauna Lani Resort, Inc.
Contact Person: Bill Spitz
Address: P.O. Box 4959-HCR 2
          Kohala Coast, Hawaii 96743
Phone: 885-6677

3. PROPOSED CONTRACTOR FOR:

Name: Roscoe Moss Company
Phone: 839-6888
Address: 830 Ahua Street
         Honolulu, Hawaii 96819

4. PROPOSED WORK

☐ Drill New Well  ☐ Alter  ☐ Seal
☐ Deepen  ☐ Redrill  ☐ 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 systems)  ☐ Industrial
☐ Irrigation (specify): Golf Course and other Landscape  ☐ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL: 375,000 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: ☐ Vertical Turbine  ☐ Submersible
☐ Centrifugal
Motor: ☐ Diesel  ☐ Gas  ☐ Electric: 20
Rated Pump Capacity: 260 gallons per minute (gpm)

Well Owner (print):  Mauna Lani Resort, Inc.
Landowner (print):  Same (HLR inc.)

Signature:  Curtin
Date  7/15/91

For Official Use Only:
Field Checked By
Signature
Date

Latitude  Hydrologic Unit
Longitude  State Well No. 5650-01
Briefly describe the proposed work:

A new pump will be installed in the well. It is to be used for golf course and other landscape irrigation.

PROPOSED SECTION OF WELL

Elevation at top of casing 135 ft., msl.

Ground Elev. 134 ft., msl*

Cement Grout 130 ft.

Solid Casing:
Material Steel
Length 145 ft.
Diameter 8 in.
Wall thickness 0.3125 in.

Hole Dia. 12 in.

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

Total Depth 180 ft.

Rock Packing None ft.

Open Hole:
Length 35 feet
Diameter 12 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 PERMIT
X PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96819. Application must be accompanied by a non-refundable filing fee of $15.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 48-1261, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Hawaii Tax Map Key 6-8-01:52
Address Mauna Lani Resort State Well No. 5650-02
(Address Mauna Lani Resort Key referenced to
property tax map showing well location
(Attach a USGS map (scale 1"=2000’) and property tax map showing well location
(referenced to established property boundaries.)

2. WELL OWNER

Firm Name Mauna Lani Resort, Inc. Firm Name Mauna Lani Resort, Inc.
Contact Person Bill Spitz Contact Person Bill Spitz
Address P.O. Box 4959-HCR 2
Kohala Coast, Hawaii 96743
Phone 885-6677

3. PROPOSED CONTRACTOR FOR:

Name Roscoe Moss Company Phone 839-6888
Address 830 Ahua Street
Honolulu, Hawaii 96819

4. PROPOSED WORK

[] Drill New Well [] Well Drilling [] Pump Installation
[] Deepen [] Alter [] Seal
[] Install New Pump [] Replace Pump [] Redrill
[] Modify Pump [] Abandon

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

5. PROPOSED USE

[] Municipal (including hotels, stores, etc.) [] Military
[] Domestic (individual, noncommercial water systems) [] Industrial
[] Irrigation (specify) Golf Course and Other Landscape [] Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL 500,000 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: [] Vertical Turbine [] Submersible
Motor: [] Diesel [] Gas [] Electric: 15 [] Centrifugal
Rated Pump Capacity 350 gallons per minute (gpm)

Well Owner (print) Mauna Lani Resort, Inc. Landowner (print) Same (Mauna Lani Resort, Inc.)
Signature _______ _______ Date 7/22/91 Signature _______ _______ Date 7/13/91

For Official Use Only:
Field Checked By _______ Latitude _______ Hydrologic Unit _______
Date _______ Longitude _______ State Well No. 5650-02
Briefly describe the proposed work:

A new pump will be installed in the well. It is to be used for golf course and other landscape irrigation.

PROPOSED SECTION OF WELL

Elevation at top of casing 119 ft. msl.

Cement Grout 120 ft.

Hole Dia. 17 in.

Total Depth 160 ft.

Rock Packing None ft.

Ground Elev. 118 ft. msl*

Solid Casing:

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<th>Steel</th>
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<td>Diameter</td>
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<td>Wall thickness</td>
<td>0.3125 in.</td>
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Casing: / /Perforated / /Screen

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<thead>
<tr>
<th>Material</th>
<th>None</th>
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<tbody>
<tr>
<td>Length</td>
<td></td>
</tr>
<tr>
<td>Diameter</td>
<td></td>
</tr>
<tr>
<td>Wall thickness</td>
<td></td>
</tr>
<tr>
<td>Openings</td>
<td>sq. in./L.F.</td>
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</table>

Open Hole:

<table>
<thead>
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<th>Length</th>
<th>23 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>17 in.</td>
</tr>
</tbody>
</table>

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
To:       DOWARD
Attention:  Ed Sekoda
From:     Tom Nance
Subject:  MLR Irrigation Well

If you do not receive all pages, please telephone immediately.

copies of our request to "slide" the well site, accompanying map.

680 Ala Moana Boulevard, Suite 200 • Honolulu, Hawaii 96813 • Phone: (808) 521-5361 • Fax: (808) 538-7819
A Belt Collins & Associates Company
April 23, 1991
91TN-045 (839-0901)

Mr. Manabu Tagomori
Commission on Water Resource Management
Department of Land & Natural Resources
State of Hawaii
P. O. Box 373
Honolulu, Hawaii 96809

Dear Manabu:

Modification of an Irrigation Well Site at Mauna Lani Resort

Mauna Lani Resort recently received permits to drill three new irrigation wells within its property (State Nos. 5650-01, -02, and -03). The first two of these have been drilled with only modest success. It was necessary to drill 50 and 60 feet into the water table to get adequate yields of 250 and 350 GPM and salinity levels are near the maximum acceptable for irrigation use.

Based on our recent results, we are requesting that the third well site (5650-03) be relocated as shown on the sketch enclosed. It would become State Well No. 5749-01. As a matter of reference, the sketch also shows other irrigation wells at Mauna Lani and an updated listing provides an update on the status of each of these.

Thank you for your attention to this matter. We look forward to hearing from you.

Sincerely,

Tom Nance

TN:It

c: Neil O'Keefte

Enclosures
PAY

EXACTLY $75.00

TO THE ORDER OF

Department of Land and Natural Resources

DATE DETACH AND RETAIN THIS STATEMENT

THE ATTACHED CHECK IS IN PAYMENT OF ITEMS DESCRIBED BELOW.

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

DE LUXE FORM WVC-3 V-2

<table>
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<tr>
<th>DATE</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
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<td>Filing Fee: Pump Installation Permit Applications for Mauna Lani Resort</td>
<td>$75.00</td>
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<td>Mauna Lani 1 (5650-01)</td>
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<tr>
<td></td>
<td>2 (5650-02)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (5749-01)</td>
<td></td>
</tr>
</tbody>
</table>
Mr. Manubu Tagomori  
Water & Land Development Division  
Department of Land & Natural Resources  
State of Hawaii  
P.O. Box 373  
Honolulu, HI  96809

Dear Manubu:

Well Completion Reports for Mauna Lani Resort  
Irrigation Wells

Enclosed are Well Completion Reports for three recently completed irrigation wells within Mauna Lani Resort (State Numbers 5650-01 and 02 and 5749-01). We anticipate submitting pump installation permits for these wells within the week.

Sincerely,

Tom Nance

TN:kh
Enclosures
cc: Bill Spitz with enc.
INSTRUCTIONS: Please print or type and submit completed report within 30 days of well completion to the Division of Water & Land Development, P.O. Box 373, Honolulu, HI 96803. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-1443, Hydrology, Geology Section for assistance.

A. STATE WELL NO. 5650-01 WELL NAME Mauna Lani Island Hawaii
B. LOCATION Mauna Lani Resort, South Kohala Tax Map Key 6-8-01: 52
C. WELL OWNER Mauna Lani Resort, Inc.
D. DRILLING OR PUMP INSTALLATION CONTRACTOR Fred Page Drilling International
E. TYPE OF RIG Rotary DRILLER Fred Page
F. DATE OF WELL COMPLETION May 1991 DATE OF PUMP INSTALLATION Pending
G. GROUND ELEVATION (msl) 134 ft. Top of Drilling Platform (msl) 134 ft. Height of drilling platform above ground surface 0.0 ft. Bench mark and method used to determine ground elevation
H. TOTAL DEPTH OF WELL BELOW GROUND 180 ft.
I. HOLE SIZE: 12 inch dia. from 0.0 ft. to 180 ft. below ground
J. CASING INSTALLED:
   - 0.0 in. I.D. x 0.3125 in. wall solid section to 145 ft. below ground
   - None in. I.D. x in. wall perforated section to 145 ft. below ground
   - None
K. ANNULUS: Grouted from 0.0 ft. to 130 ft. below ground
   - Gravel packed from None to 180 ft. below ground
L. PERMANENT PUMP INSTALLATION:
   - Pump type, make, serial No. Permit Pending
   - Motor type, H.P., voltage, r.p.m.
   - Depth of pump intake setting 180 ft. below ground which elevation is 180 ft. below ground
   - Depth of bottom of slinle 180 ft. below ground which elevation is 180 ft.
M. PROPOSED USE Golf Course and Landscape Irrigation
N. INITIAL WATER LEVEL 132 ft. below ground. Date and time of measurement 3-7-91
O. INITIAL CHLORIDE 910 ppm. Date and time of sampling 3-7-91
P. PUMP TESTS: Reference point (R.P.) used: Grd which elevation is 134 ft.
   - Start water level 134 ft. below R. P.
   - End water level 134 ft. below R. P.
   - Depth of well 134 ft. below R. P.
   - Elapsed Time (hours) 0 to 3 3 to 6 6 to 9 9 to 12
   - Rate (gpm) 0 to 90 90 to 180
   - Draw-down (ft.) 360 726
   - Cl. (ppm) 
   - Temp. °F
   - Elapsed Time (hours) 0 to 18 18 to 21
   - Rate (gpm) 0 to 20
   - Draw-down (ft.) 0 to 3.0
   - Cl. (ppm)
   - Temp. °F

Q. DRILLER’S LOG:
   - Depth ft.
   - Rock Description & Remarks
   - Water Level
   - Depth ft.
   - Rock Description & Remarks
   - Water Level

   0 to 5
   - Loose Clinker
   - to
   - to

   5 to 21
   - Hard Blue Rock
   - Alternating Flow
   - to
   - to

   21 to 122
   - Layers
   - Hard Blue Rock
   - to
   - to

   122 to 154
   - Fractured and Loose
   - Hard Rock
   - to
   - to

   154 to 177
   - Hard Rock W/O Fractures
   - to
   - to

   177 to 180
   - Loose and Fractured
   - to
   - to

REMARKS:

Submitted by (print) Tom Nance Water Resources Engineering Title

Signature Date
### WELL COMPLETION REPORT

**InSTRUCTIONS:** Please print or type and submit completed report within 30 days of well completion to the Division of Water & Land Development, P.O. Box 373, Honolulu, HI 96809. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-7543, Hydrology, Geology Section for assistance.

<table>
<thead>
<tr>
<th>A. STATE WELL NO. 5650-01</th>
<th>WELL NAME</th>
<th>Mauna Lani Resort, South Kohala</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. LOCATION</td>
<td></td>
<td>Mauna Lani Resort, South Kohala</td>
</tr>
<tr>
<td>C. WELL OWNER</td>
<td></td>
<td>Mauna Lani Resort, Inc.</td>
</tr>
<tr>
<td>D. DRILLING OR PUMP INSTALLATION CONTRACTOR</td>
<td>Fred Page</td>
<td>Fred Page</td>
</tr>
<tr>
<td>E. TYPE OF RIG</td>
<td>Rotary</td>
<td></td>
</tr>
<tr>
<td>F. DATE OF WELL COMPLETION</td>
<td>May 1991</td>
<td>Date of Pump Drilling International</td>
</tr>
<tr>
<td>G. GROUND ELEVATION (ma)</td>
<td>134 ft.</td>
<td></td>
</tr>
<tr>
<td>H. TOTAL DEPTH OF WELL BELOW GROUND</td>
<td>180 ft.</td>
<td></td>
</tr>
<tr>
<td>I. HOLE SIZE</td>
<td>12 inch dia. from 0.0 ft. to 180 ft. below ground</td>
<td></td>
</tr>
<tr>
<td>J. CASING INSTALLED</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>K. ANNULUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. PERMANENT PUMP INSTALLATION</td>
<td>Permit Pending</td>
<td>Capacity 260 gpm</td>
</tr>
<tr>
<td>M. PROPOSED USE</td>
<td>Golf Course and Landscape Irrigation</td>
<td></td>
</tr>
<tr>
<td>N. INITIAL WATER LEVEL</td>
<td>132 ft. below ground</td>
<td>Date and time of measurement 3-7-91</td>
</tr>
<tr>
<td>O. INITIAL CHLORIDE</td>
<td>910 ppm.</td>
<td>Date and time of sampling 3-7-91</td>
</tr>
<tr>
<td>P. PUMPING TESTS: Reference point (R.P.) used: Grd which elevation is 134 ft.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. DRILLER'S LOG:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. REMARKS:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5</td>
<td>Loose Clinker</td>
<td></td>
<td>0 to 5</td>
<td>Loose Clinker</td>
<td></td>
</tr>
<tr>
<td>5 to 21</td>
<td>Hard Blue Rock</td>
<td></td>
<td>5 to 21</td>
<td>Hard Blue Rock</td>
<td></td>
</tr>
<tr>
<td>21 to 122</td>
<td>Alternating Flow</td>
<td></td>
<td>21 to 122</td>
<td>Alternating Flow</td>
<td></td>
</tr>
<tr>
<td>to Layers</td>
<td></td>
<td></td>
<td>to Layers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125 to 154</td>
<td>Hard Blue Rock</td>
<td></td>
<td>125 to 154</td>
<td>Hard Blue Rock</td>
<td></td>
</tr>
<tr>
<td>154 to 159</td>
<td>Fractured and Loose</td>
<td></td>
<td>154 to 159</td>
<td>Fractured and Loose</td>
<td></td>
</tr>
<tr>
<td>159 to 177</td>
<td>Hard Rock W/O Fractures</td>
<td></td>
<td>159 to 177</td>
<td>Hard Rock W/O Fractures</td>
<td></td>
</tr>
<tr>
<td>177 to 179</td>
<td>Loose and Fractured</td>
<td></td>
<td>177 to 179</td>
<td>Loose and Fractured</td>
<td></td>
</tr>
<tr>
<td>179 to 180</td>
<td>Hard Rock</td>
<td></td>
<td>179 to 180</td>
<td>Hard Rock</td>
<td></td>
</tr>
</tbody>
</table>

**REMARKS:**

Submitted by (print) Tom Nance Water Resources Engineering Title 

Signature ___________________________ Date __________
Mr. Manabu Tagomori  
Commission on Water Resource Management  
Department of Land & Natural Resources  
State of Hawaii  
P. O. Box 373  
Honolulu, Hawaii  96809  

Dear Manabu:  

Modification of an Irrigation Well Site at Mauna Lani Resort  

Mauna Lani Resort recently received permits to drill three new irrigation wells within its property (State Nos. 5650-01, -02, and -03). The first two of these have been drilled with only modest success. It was necessary to drill 50 and 60 feet into the water table to get adequate yields of 250 and 350 GPM and salinity levels are near the maximum acceptable for irrigation use.  

Based on our recent results, we are requesting that the third well site (5650-03) be relocated as shown on the enclosed sketch. It would become State Well No. 5749-01. As a matter of reference, the sketch also shows other irrigation wells at Mauna Lani and an enclosed listing provides an update on the status of each of these.  

Thank you for your attention to this matter. We look forward to hearing from you.  

Sincerely,  

Tom Nance  

TN:It  
cc: Neil O'Keefe  
Enclosures
WELL COMPLETION REPORT

INSTRUCTIONS: Please print or type and submit completed report within 30 days of well completion to the Division of Water & Land Development, P.O. Box 973, Honolulu, HI 96808. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-1543, Hydrology, Geology Section for assistance.

A. STATE WELL NO. 5650-02 WELL NAME Mauna Lani No. 1c ISLAND Hawaii

B. LOCATION Mauna Lani Resort, South Kohala TAX MAP KEY 6-8-01: 52

C. WELL OWNER Mauna Lani Resort, Inc.

D. DRILLING OR PUMP INSTALLATION CONTRACTOR Fred Page Drilling International

E. TYPE OF RIG Rotary

F. DATE OF WELL COMPLETION February 1991 DATE OF PUMP INSTALLATION Permit Pending

G. GROUND ELEVATION (mal) 118 ft. Top of Drilling Platform (mal) 110 ft. Height of drilling platform above ground surface 0.0 ft. Bench mark and method used to determine ground elevation -- ft.

H. TOTAL DEPTH OF WELL BELOW GROUND

I. HOLE SIZE: 17 inch dia. from 0.0 ft. to 160 ft. below ground

J. CASING INSTALLED: 12 in. I.D. x 0.3125 in. wall solid section to 137 ft. below ground none in. I.D. x in. wall perforated section to ft. below ground Type of perforation none

K. ANNULUS: Grouted from 0.0 ft. to 120 ft. below ground Gravel packed from ft. to ft. below ground

L. PERMANENT PUMP INSTALLATION: Pump type, make, serial No. Permit Pending Capacity 350 gpm Motor type, H.P., voltage, r.p.m.

M. PROPOSED USE

N. INITIAL WATER LEVEL 121 ft. below ground. Date and time of measurement 2-4-91 / 7:35 a.m.

O. INITIAL CHLORIDE 875 ppm.

P. PUMPING TESTS: Reference point (R.P.) used: Ground which elevation is 118 ft.

Q. DRILLER'S LOG:

Rock Description & Remarks

Water Level

Depth, ft. to

0 to

10

10 to

115

115 to

122

122 to

132

132 to

142

142 to

152

152 to

158

158 to

160

Depth, ft.

Rock Description & Remarks

Water Level

Lat. 19° 56' 32" Long. 155° 50' 34" Well No. 5650-02

REMARKS:

Submitted by (print) ____________________________ Title ____________________________

Signature ____________________________ Date ____________________________
GRAFT Filled Annulus

cement basket

static water level

2+ ft. settled cutting

12" (ID), 5/16" wall solid steel casing 196' long

Ex. Grd 118 ±

Step-Drawdown Test
Feb. 4, 1991

WATER QUALITY DURING 25-HOUR PUMP TEST AT 540 GPM (2/4+5/91)

<table>
<thead>
<tr>
<th>DAY</th>
<th>TIME</th>
<th>CHLORIDES (mg/l)</th>
<th>COND. (µhos)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEB. 4</td>
<td>7:30</td>
<td>875</td>
<td>3450</td>
</tr>
<tr>
<td></td>
<td>10:30</td>
<td>900</td>
<td>3500</td>
</tr>
<tr>
<td></td>
<td>1:30P</td>
<td>915</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>4:30P</td>
<td>895</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>7:30P</td>
<td>865</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>10:20</td>
<td>885</td>
<td>3470</td>
</tr>
<tr>
<td>FEB. 5</td>
<td>1:30</td>
<td>900</td>
<td>3490</td>
</tr>
<tr>
<td></td>
<td>4:30P</td>
<td>900</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>7:30P</td>
<td>865</td>
<td>3470</td>
</tr>
<tr>
<td></td>
<td>8:30P</td>
<td>895</td>
<td>3480</td>
</tr>
</tbody>
</table>

Notes:
1. Chlorides determined by mercuric nitrate titration
2. Conductivity determined by YSI Type 33 S-C-T Meter
3. Flowrate was reduced from 540 to 350 GPM for the last hour of the test

Tom Atance
Feb. 8, 1991
**State of Hawaii**  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
**Department of Land and Natural Resources**  
**Division of Water Resource Management**  

**WELL COMPLETION REPORT**

**INSTRUCTIONS:** Please print or type and submit completed report within 30 days of well completion to the Division of Water & Land Development, P.O. Box 373, Honolulu, HI 96809. An as-built drawing of the well and chemical analysis, if available, should also be submitted. If necessary, phone 548-1452, Hydrology, Geology Section for assistance.

<table>
<thead>
<tr>
<th>A. STATE WELL NO.</th>
<th>5650-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. LOCATION</td>
<td>Mauna Lani Resort, South Kohala</td>
</tr>
<tr>
<td>C. WELL OWNER</td>
<td>Mauna Lani Resort, Inc.</td>
</tr>
<tr>
<td>D. DRILLING OR PUMP INSTALLATION CONTRACTOR</td>
<td>Fred Page Drilling International</td>
</tr>
<tr>
<td>E. TYPE OF RIG</td>
<td>Rotary</td>
</tr>
<tr>
<td>F. DATE OF WELL COMPLETION</td>
<td>February 1991</td>
</tr>
<tr>
<td>G. DATE OF PUMP INSTALLATION</td>
<td>Permit Pending</td>
</tr>
<tr>
<td>H. TOTAL DEPTH OF WELL BELOW GROUND</td>
<td>118 ft.</td>
</tr>
<tr>
<td>I. HOLE SIZE:</td>
<td>17 inch dia. from 0.0 ft. to 160 ft. below ground</td>
</tr>
<tr>
<td>J. CASING INSTALLED:</td>
<td>12 in. I.D. x 0.3125 in. wall solid section to 137 ft. below ground</td>
</tr>
<tr>
<td>K. ANNULUS:</td>
<td>Grouted from 0.0 ft. to 120 ft. below ground</td>
</tr>
<tr>
<td>L. PERMANENT PUMP INSTALLATION:</td>
<td>Permit Pending</td>
</tr>
<tr>
<td>M. PROPOSED USE</td>
<td>Ground which elevation is 118 ft.</td>
</tr>
<tr>
<td>N. INITIAL WATER LEVEL</td>
<td>121 ft. below ground.</td>
</tr>
<tr>
<td>O. INITIAL CHLORIDE</td>
<td>875 ppm</td>
</tr>
<tr>
<td>P. PUMPING TESTS:</td>
<td>Reference point (R.P.) used: Ground which elevation is 118 ft.</td>
</tr>
<tr>
<td>Q. DRILLER'S LOG:</td>
<td></td>
</tr>
<tr>
<td>R. REMARKS:</td>
<td></td>
</tr>
</tbody>
</table>

**DRILLER'S LOG:**

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10</td>
<td>Clinker &amp; Boulders</td>
<td></td>
</tr>
<tr>
<td>10 to 116</td>
<td>Alternating Flow Layers</td>
<td></td>
</tr>
<tr>
<td>115 to 135</td>
<td>Fractured and Loose</td>
<td>Latitude 19° 56' 32&quot;</td>
</tr>
<tr>
<td>135 to 155</td>
<td>Hard and Solid</td>
<td>Longitude 155° 50' 34&quot;</td>
</tr>
<tr>
<td>155 to 198</td>
<td>Hard and Solid</td>
<td>Well No. 5650-02</td>
</tr>
<tr>
<td>198 to 200</td>
<td>Hard and Solid</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

Submitted by (print) ___________________  
Title ___________________  
Signature ___________________  
Date ___________________
WATER QUALITY DURING 25-HOUR PUMP TEST AT 540 GPM (2/4-5/91)

<table>
<thead>
<tr>
<th>DAY</th>
<th>TIME</th>
<th>CHLORIDES (MCL)</th>
<th>COND. (uMhos)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEB. 4</td>
<td>7:30 a</td>
<td>875</td>
<td>3450</td>
</tr>
<tr>
<td></td>
<td>10:30 a</td>
<td>900</td>
<td>3500</td>
</tr>
<tr>
<td></td>
<td>1:30 p</td>
<td>915</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>4:30 p</td>
<td>895</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>7:30 p</td>
<td>865</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>10:30 p</td>
<td>885</td>
<td>3570</td>
</tr>
<tr>
<td>FEB. 5</td>
<td>1:30 a</td>
<td>900</td>
<td>3490</td>
</tr>
<tr>
<td></td>
<td>4:30 a</td>
<td>900</td>
<td>3520</td>
</tr>
<tr>
<td></td>
<td>7:30 a</td>
<td>865</td>
<td>3470</td>
</tr>
<tr>
<td></td>
<td>8:30 a</td>
<td>885</td>
<td>3480</td>
</tr>
</tbody>
</table>

NOTES:
1. CHLORIDES DETERMINED BY MERCURIC NITRATE TITRATION
2. CONDUCTIVITY DETERMINED BY YSI TYPE 93 S-C-T METER
3. FLOW RATE WAS REDUCED FROM 540 TO 350 GPM FOR THE LAST HOUR OF THE TEST

Tom Nance
Feb. 6, 1991
## Irrigation Wells at Mauna Lani Resort

<table>
<thead>
<tr>
<th>State Well Number</th>
<th>Mauna Lani Name</th>
<th>Current Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>5650-01</td>
<td>Mauna Lani 1</td>
<td>Recently completed; 250 GPM pump to be installed soon.</td>
</tr>
<tr>
<td>5650-02</td>
<td>Mauna Lani 2</td>
<td>Recently completed; 350 GPM pump to be installed soon.</td>
</tr>
<tr>
<td>5650-03</td>
<td>11&quot; -- 32&quot;</td>
<td>Has not been drilled, location to be moved; 450 GPM</td>
</tr>
<tr>
<td>5651-01</td>
<td>Highway Well</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5750-01</td>
<td>Puako Shaft</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5750-02</td>
<td>Nursery Well</td>
<td>Nursery irrigation.</td>
</tr>
<tr>
<td>5750-03</td>
<td>Fire Station Well</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5750-04</td>
<td>STP Well</td>
<td>Golf course irrigation.</td>
</tr>
<tr>
<td>5849-01</td>
<td>--</td>
<td>Old (1910s) Puako Plantation dug well; has never been used by Mauna Lani Resort.</td>
</tr>
</tbody>
</table>
WELL CONSTRUCTION PERMIT

for

Maunalani Resort Wells
Well Nos. 5650-01 to 03
Kohala Coast, Hawaii

TO: Mauna Lani Resort, Inc.
P.O. Box 4959
Kohala Coast, HI 96743

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your applications to construct and test Mauna Lani Resort Wells (Well Nos. 5650-01 to 03) for golf course irrigation, are approved subject to the following conditions:

1. The Division of Water Resource Management (DWRM), Geology-Hydrology Section, shall be notified at 548-7543, before any work covered by these permits commences.

2. The permits shall be for construction and testing only. No permanent pumps may be installed and no water used from the wells without the necessary pump installation permits from the Commission.

3. The proposed use shall not adversely affect existing legal uses in the area.

4. The grouted annulus of each well shall be from 0 to 100 ft.

5. The following shall be submitted to DWRM, P.O. Box 373, Honolulu, Hawaii 96809, within 30 days after completion of the wells:
   a. Well Completion Reports.
   b. Elevation (referenced to mean sea level) survey by a Hawaii-licensed surveyor.
WELL CONSTRUCTION PERMIT
Well Nos. 5650-01 to 03

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 date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

Date of Issuance

cc: USGS
Department of Health
Drinking Water Branch
Ground Water Protection Program
Hawaii Department of Water Supply
Tom Nance Water Resources Engineering
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Mauna Lani Resort, Inc.
Application for Well Construction Permits
Mauna Lani Resort Wells, Kohala Coast, Hawaii

Applicant: Mauna Lani Resort, Inc.
P.O. Box 4959 - HCR 2
Kohala Coast, HI 96743

Landowner: Same

Action Requested: Permission to construct and test three wells (Well Nos. 5650-01 to 5650-03) for golf course irrigation.

Proposed Amount of Withdrawal: 600,000 gallons per day per well.

<table>
<thead>
<tr>
<th>Well Description:</th>
<th>5650-01</th>
<th>5650-02</th>
<th>5650-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground elevation:</td>
<td>130± ft.</td>
<td>160± ft.</td>
<td>130± ft.</td>
</tr>
<tr>
<td>Casing diameter:</td>
<td>12-inches</td>
<td>12-inches</td>
<td>12-inches</td>
</tr>
<tr>
<td>Solid casing depth:</td>
<td>128 ft.</td>
<td>158 ft.</td>
<td>128 ft.</td>
</tr>
<tr>
<td>Perforated casing depth:</td>
<td>148 ft.</td>
<td>178 ft.</td>
<td>148 ft.</td>
</tr>
<tr>
<td>Open Hole (as required):</td>
<td>10 ft.</td>
<td>10 ft.</td>
<td>10 ft.</td>
</tr>
<tr>
<td>Total depth:</td>
<td>158 ft.</td>
<td>188 ft.</td>
<td>158 ft.</td>
</tr>
</tbody>
</table>

Analysis: The wells are expected to develop a brackish basal water source for golf course irrigation. No adverse impacts are expected.

Water Availability: The wells are located in the Northwest Mauna Loa Sector, Anaehoomalu System of Hawaii, according to the latest work in conjunction with the Hawaii Water Plan. Sustainable yield is estimated at 30 mgd.

RECOMMENDATION:

That the Commission approve the issuance of well construction permits for Mauna Lani Resort Wells, subject to the following conditions:

1. The Division of Water Resource Management (DWRM) shall be notified before work commences.

2. The permits shall be for construction and testing only. No permanent pumps may be installed and no water used from the wells without the necessary pump installation permits from the Commission.
Chairperson and Members  
Commission on Water Resource Management  

September 19, 1990

(3) The proposed use shall not adversely affect existing legal uses in the area.

(4) The grouted annulus of each well shall be from 0 to 100 ft.

(5) The following shall be submitted to DWRM within 30 days after completion of the wells:
   a. Well Completion Report.
   b. Elevation (referenced to mean sea level) survey by a Hawaii-licensed surveyor.
   c. As-built sectional drawings of the wells.
   d. Plot plan and map showing the exact locations of the wells.
   e. Complete pumping test record; including time, pumping rate, drawdown, chloride content, and water quality data.

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

(7) The permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

Respectfully submitted,

[Signature]
MANABU TAGOMORI
Deputy Director

Attach.

APPROVAL FOR SUBMITTAL:

[Signature]
WILLIAM W. PATY, Chairperson
Mauna Lani Resort Wells

(Well Nos. 5650—01 to 03)
July 27, 1990

The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

SUBJECT:  WELL CONSTRUCTION PERMIT APPLICATIONS
MAUNA LANI RESORT WELLS
STATE WELL NOS. 5650-02 AND 5650-03
KOHALA COAST, HAWAII

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

1. Both applications indicate that the proposed wells will be used for golf course irrigation. Thus, the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems," will not be applicable. However, in the event that the proposed use were to change, please inform the Safe Drinking Water Branch.

2. One of the proposed wells (State well no. 5650-02) is situated above the Underground Injection Control (UIC) line. The second well (State well no. 5650-03) lies immediately below the UIC line. Land areas above the UIC line are considered to contain underground sources of drinking water. Thus, it is essential that both 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.

3. The application does not indicate the location of the golf course. However, the applicant should be reminded that various activities associated with golf courses should not be allowed to contaminate groundwater. Activities of concern include:
a. Application of biocides and fertilizers  
b. Storage of fuel for vehicles  
c. Maintenance of vehicles and equipment (cleaning, refueling, lubrication, etc.)  
d. Wastewater disposal

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

Very truly yours,

JOHN C. LEWIN, M.D.  
Director of Health

cc: Bill Spitz  
Mauna Lani Resort, Inc.  
P.O. Box 4959 - HCR 2  
Kohala Coast, HI  96743
July 27, 1990

MEMORANDUM

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

FROM: Don Hibbard, Director, Historic Preservation Program

SUBJECT: Well Construction Permit Applications -- 5650-02 & 5650-01
         (Mauna Lani)
         Waikoloa, South Kohala, Hawaii
         TMK: 6-8-1: parts 52

HISTORIC PRESERVATION PROGRAM CONCERNS:

Presumably these wells will require access roads. The roads and well sites could affect historic sites. We have no archaeological information on these areas. Before awarding the permits, we would recommend that archaeological surveys be required to determine if significant historic sites are present, and if so, to ensure that acceptable mitigation plans are devised to treat such sites.

[Note: When the DOWALT-Historic Preservation CIP position is finalized, this is the kind of survey that could be done internally. However, this position is not likely to be filled until October-November, which may be too late for this application.]
July 27, 1990

MEMORANDUM

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

FROM: Don Hibbard, Director, Historic Preservation Program

SUBJECT: Well Construction Permit Applications -- 5650-02 & -03
(Mauna Lani)
Waikoloa, South Kohala, Hawaii
TMK: 6-8-1: parts 52

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[Note: When the DOWALD-Historic Preservation CIP position is finalized, this is the kind of survey that could be done internally. However, this position is not likely to be filled until October-November, which may be too late for this application.]
William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii  96809

Dear Mr. Paty,

Well Construction Permit Application

We received information on the permit application for Mauna Lani Resort Well (5650-01), for our review.

The proposed well does not impact Hawaiian Home Lands. The information provided does not indicate whether the expected yield is potable or brackish. We support a policy of using treated non-potable sources for irrigation, reserving valuable potable sources for domestic uses.

Warmest aloha,

Hoaliku L. Drake, Chairman
Hawaiian Homes Commission
July 16, 1990

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

SUBJECT: WELL CONSTRUCTION PERMIT APPLICATION
Mauna Lani Resort Well Nos. 5650-02 & 5651-01
Mauna Lani Resort, Inc.
South Kohala, Hawaii
TMK: 6-8-01: 52

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

ROBERT K. YANABU, Division Chief
Engineering Division

CKY:1b
Honorable Hoaliku L. Drake  
Director  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, Hawaii 96805  

Dear Mrs. Drake,

Well Construction Permit Applications

We are sending you a copy of the following permit applications and ask that your staff review them to determine if Hawaiian Home Lands may be affected:

Mauna Lani Resort Well (Well No. 5650-02)  
Mauna Lani Resort Well (Well No. 5650-03)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please call Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

WILLIAM W. PATY

Encl.
Honorable John C. Lewin, M.D.
Director
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Attn. Mr. Thomas Arizumi, Drinking Water Branch

Dear Dr. Lewin:

Well Construction Permit Applications

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168-12(c), we are sending you a copy of the following permit applications for your review:

Mauna Lani Resort Well (Well No. 5650-02)
Mauna Lani Resort Well (Well No. 5650-03) 5\textsuperscript{7}14\textsuperscript{9} 01

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please contact Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

[Signature]

WILLIAM W. PATY

Encl.
July 13, 1990

Mr. Manabu Tagomori, Deputy Director
State Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

WELL CONSTRUCTION PERMIT APPLICATION
MAUNA LANI RESORT WELL (5650-02)
MAUNA LANI RESORT WELL (8850430) 5724-01

We have no objections to subject permit applications for the proposed wells which will be used for golf course irrigation.

H. William Sewake
Manager

GK

...Water brings progress...
July 6, 1990

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

SUBJECT: WELL CONSTRUCTION PERMIT APPLICATION
MAUNA LANI RESORT WELL (5650-1)
MAUNA LANI RESORT, INC.
SOUTH KOHALA, HI
TMK: 6-8-01: 52

We have reviewed the subject permit application and have no objections to the proposed well construction.

ROBERT K. YAMABU, Division Chief
Engineering Division

CKY:sah
MEMORANDUM

To: Don Hibbard, Director
   Historic Preservation Program

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

Subject: Well Construction Permit Applications

We are sending you a copy of the following permit applications and ask that your staff review each application to determine if the proposed work could adversely affect significant historic sites:

Mauna Lani Well (Well No. 5650-02)
Mauna Lani Well (Well No. 5650-03) 01-49-01

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please contact Ed Sakoda at 548-7543 if you have any questions.
Mr. William Sewake, Manager  
Department of Water Supply  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720  

Dear Mr. Sewake:  

Well Construction Permit Applications  

We are sending you a copy of the following permit applications for your review:  

Mauna Lani Resort Well (5650-02)  
Mauna Lani Resort Well (5650-03)  

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.  

Please contact Ed Sakoda at 548-7543 if you have any questions.  

Sincerely,  

[Signature]  

MANABU TAGOMORI  
Deputy Director  

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

Dear Mr. McClure:

Well Construction Permit Applications  

We are sending you a copy of the following permit applications for your review:

Mauna Lani Resort Well (5650-02)  
Mauna Lani Resort Well (5650-03)  

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please contact Ed Sakoda at 548-7543 if you have any questions.

Sincerely,

MANABU TAGOMORI  
Deputy Director

ES: mh  
Enc.
Mauna Lani Resort, Inc.
P.O. Box 4959-HCR 2
Kohala Coast, HI 96743

Dear Mauna Lani Resort, Inc.:

We have received your two applications and $50.00 in filing fees to construct two wells (Well Nos. 5650-02 and 01) at Tax Map Key: 6-8-01:52, Kohala Coast, Hawaii.

We are reviewing your applications for completeness and will contact you if we need more information.

Please call Ed Sakoda at 548-7543 if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

ES: mh
July 5, 1990

The Honorable William W. Paty, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

SUBJECT: WELL CONSTRUCTION PERMIT APPLICATION
MAUNA LANI RESORT WELL
STATE WELL NO 5650-01
KOHALA COAST, HAWAII

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 proposed well will be used for golf course irrigation. Thus, the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems," will not be applicable. However, in the event that the proposed use were to change, please inform the Safe Drinking Water Branch.

2. The proposed well is situated above the Underground Injection Control (UIC) line. Land areas above the UIC line are considered to contain underground sources of drinking water. Thus, it is essential that the well be designed and constructed to prevent the possibility of groundwater contamination. For example, the well should have a concrete well pad and full grouting to prevent seepage or floodwaters from migrating down the well shaft.
3. The application does not indicate the location of the golf course. However, the applicant should be reminded that various activities associated with golf courses should not be allowed to contaminate groundwater. Activities of concern include:

   a. Application of biocides and fertilizers
   b. Storage of fuel for vehicles
   c. Maintenance of vehicles and equipment (cleaning, refueling, lubrication, etc.)
   d. Wastewater disposal

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

Very truly yours,

JOHN C. LEWIN, M.D.
Director of Health

cc: Bill Spitz
Mauna Lani Resort, Inc.
P.O. Box 4959 - HCR 2
Kohala Coast, HI 96743
June 28, 1990

Mr. Manabu Tagomori, Deputy Director  
State Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, HI 96809

WELL CONSTRUCTION PERMIT APPLICATION  
MAUNA LANI RESORT WELL (5650-01)

We have no objections to subject permit application for golf course irrigation purposes.

H. William Semente  
Manager  
GK

... Water brings progress...
June 22, 1990

Mr. Manabu Tagomori
Water & Land Development Division
Department of Land & Natural Resources
State of Hawaii
P. O. Box 373
Honolulu, Hawaii 96809

Dear Manabu:

Well Drilling Permit Applications for Mauna Lani Resort

Enclosed are applications to drill two test wells within Mauna Lani Resort. A check for $50 for the filing fee is also included. We expect to obtain brackish water. Depending on test results, the wells could be added to the Resort's brackish and effluent irrigation system.

If you have any questions regarding the applications, please contact me at 521-5361 or Bill Spitz at Mauna Lani Resort (885-6677).

Sincerely,

Tom Nance

TN: gk

cc: Bill Spitz

Enclosures
Pay exactly **$50.00** dollars.

To the order of **DEPARTMENT OF LAND AND NATURAL RESOURCES**

June 22, 1990

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<td>Wells 5680-02-03</td>
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</table>
Mr. Bruce C. McClure
Chief Engineer
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. McClure:

Well Construction Permit Application

We are sending you a copy of the following permit application for your review:

Mauna Lani Resort Well (5650-01)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please contact Ed Sakoda at 548-7543 if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

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

Dear Mr. Sewake:

Well Construction Permit Application

We are sending you a copy of the following permit application for your review:

Mauna Lani Resort Well (5650-01)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please contact Ed Sakoda at 548-7543 if you have any questions.

Sincerely,

[Signature]

MANABU TAGOMORI
Deputy Director

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

Dear Mrs. Drake:

Well Construction Permit Application

We are sending you a copy of the following permit application and ask that your staff review it to determine if Hawaiian Home Lands may be affected:

Mauna Lani Resort Well (Well No. 5650-01)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please call Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

WILLIAM W. PATY

Encl.
Honorable John C. Lewin, M.D.
Director
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Attn. Mr. Thomas Arizumi, Drinking Water Branch

Dear Dr. Lewin:

Well Construction Permit Application

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168-12(c), we are sending you a copy of the following permit application for your review:

Mauna Lani Resort Well (Well No. 5650-01)

Please submit your comments to us, orally or in writing, within three weeks from the date of this letter.

Please contact Manabu Tagomori at 548-7533 if you have any questions.

Very truly yours,

WILLIAM W. PATY

Encl.
Mauna Lani Resort, Inc.
P.O. Box 4959-HCR 2
Kohala Coast, HI 96743

Gentlemen:

We have received your application and $25.00 filing fee to construct a well (Well No. 5650-01) at Tax Map Key: 6-8-01:52, Kohala Coast, Hawaii.

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

Please call Ed Sakoda at 548-7543 if you have any questions.

Sincerely,

MANABU TAGOMORI
Deputy Director

ES:bm
APPLICATION FOR

X WELL CONSTRUCTION PERMIT
PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-5415, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Hawaii Tax Map Key 6-8-01:52 Address To Be Located Within Mauna Lani Resort; Would Be Well No. 5650-02

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

2. WELL OWNER

Firm Name Mauna Lani Resort, Inc. Firm Name Mauna Lani Resort, Inc.
Contact Person Bill Spitz Contact Person Bill Spitz
Address P. O. Box 4959- HCR 2 Address P. O. Box 4959 - HCR 2
Kohala Coast, Hawaii 96743 Kohala Coast, Hawaii 96743
Phone 885-6677 Phone 885-6677

3. PROPOSED CONTRACTOR FOR: ☐ Well Drilling ☐ Pump Installation
Name Will Be Competitively Bid Phone
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 systems) ☐ Industrial
☐ Irrigation (specify) Golf Course ☐ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL 600,000 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: ☐ Vertical Turbine ☐ Submersible
Motor: ☐ Diesel ☐ Gas ☐ Electric: 30 ☐ Centrifugal
Rated Pump Capacity 600 gallons per minute (gpm)

Well Owner (print) MAUNA LANI RESORT, INC. Landowner (print) MAUNA LANI RESORT, INC.

Signature Date 9/29/90 Signature Date 9/29/90

For Official Use Only:

Field Checked By __________________________ Latitude ________________ Hydrologic Unit ________________
Date ________________ Longitude ________________ State Well No. 5650-02
Briefly describe the proposed work:

The work will consist of drilling, casing, and pump testing the proposed well. If successful, the well would be added to the existing golf course irrigation system for Mauna Lani Resort.

PROPOSED SECTION OF WELL

Elevation at top of casing 162 ft., msl.

Ground Elev. 160 ft., msl*

Cement Grout 50 ft.

Hole Dia. 17 in.

Total Depth 178 ft.

Rock Packing None ft.

Solid Casing:
Material Steel ASTM A-242
Length 158 ft.
Diameter 12 in.
Wall thickness 0.3125 in.

Casing: /I/Perforated / /Screen
Material Steel ASTM A-242
Length 20 ft.
Diameter 12 in.
Wall thickness 0.3125 in.
Openings 60 sq. in./L.F.

Open Hole: (Only if required for yield)
Length 10 in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
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**CHECK TOTAL $25.00**

PAY**TWENTY-FIVE DOLLARS AND 00 CENTS**

TO THE ORDER OF

DIVISION OF WATER AND LAND DEVELOPMENT

**$25.00**

VOID IF NOT PRESENTED IN 90 DAYS
Well Construction Permit Application for

Mauna Lani Resort, South Kohala, Hawaii

The enclosed permit application and $25 filing fee is submitted on behalf of Mauna Lani Resort. The Resort intends to drill, case, and pump test the well for its possible use as an addition to its irrigation system. This system supplies brackish well water and sewage treatment plant effluent to irrigate the Resort's two golf courses.

If any questions arise during your review of this application, please call Bill Spitz at Mauna Lani Resort (885-6677) or me. Thank you for your attention to this matter.

Sincerely,

Tom Nance

TN:It

Enclosures

cc: Bill Spitz
APPLICATION FOR

X WELL CONSTRUCTION PERMIT
X PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-7543, Hydrology/Geology Section for assistance.

1. WELL LOCATION
   Island Hawaii Tax Map Key 6-8-01:52
   Address Within Mauna Lani Resort; will be Well No. 5650-01
   (Attach a USGS map (scale 1"=2000') and property tax map showing well location referenced to established property boundaries.)

2. WELL OWNER
   Firm Name Mauna Lani Resort, Inc.
   Contact Person Bill Spitz
   Address P.O. Box 4959 - HCR 2
   Kohala Coast, Hawaii 96743
   Phone 885-6677
   LANDOWNER
   Firm Name Mauna Lani Resort, Inc.
   Contact Person Bill Spitz
   Address P.O. Box 4959 - HCR 2
   Kohala Coast, Hawaii 96743
   Phone 885-6677

3. PROPOSED CONTRACTOR FOR: □ Well Drilling □ Pump Installation
   Name Will Be Competitively Bid
   Phone
   Address
   Contractor's License No.

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 systems) □ Industrial
   □ Irrigation (specify) □ Golf Course □ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL 600,000 gallons per day

7. PROPOSED PUMP INFORMATION
   Pump Type: □ Vertical Turbine □ Submersible □ Centrifugal
   Motor: □ Diesel □ Gas □ Electric: 30 □ Rated Horsepower
   Rated Pump Capacity 600 gallons per minute (gpm)

Well Owner (print) MAUNA LANI RESORT, INC. Landowner (print) MAUNA LANI RESORT, INC.

Signature ___________________________ Signature ___________________________
Date 01/04/90 Date 01/04/90

For Official Use Only:
Field Checked By ___________________________ Latitude ___________________________ Hydrologic Unit ___________________________
Date ___________________________ Longitude ___________________________ State Well No. 5650-01
Briefly describe the proposed work:

The work will consist of drilling, casing, and pump testing the proposed well. If successful, the well would be added to the existing golf course irrigation system for Mauna Lani Resort.

PROPOSED SECTION OF WELL

Elevation at top of casing 132 ft., msl.

Ground Elev. 130 ft., msl*

Cement Grout 50 ft.

Solid Casing:
Material Steel ASTM A-242
Length 128 ft.
Diameter 12 in.
Wall thickness 0.3125 in.

Hole Dia. 17 in.

Casing: /X/Perforated / /Screen
Material Steel ASTM A-242
Length 20 ft.
Diameter 12 in.
Wall thickness 0.3125 in.
Openings 60 sq. in./L.F.

Total Depth 158 ft.

Rock Packing None ft.

Open Hole:
Length 10 (if required)
Diameter 10 in.

*Approximate elevation at time of filing application. Final elevation (msl) by a surveyor licensed by the State must be submitted at start of construction.
Mauna Lani Resort Wells
(Well Nos. 5650-01 to 03)
### Brackish Wells of the Mauna Lani - Nansay Irrigation Agreement

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**Exhibit A**

Mauna Lani - Nansay Irrigation Agreement
PROJECT AREA

Keahole Pt.
KAWAIHAE

HONOKAA
Pohakuloa

Mauna Kea

KAILUA

HONAUNAU

Kilauea

KALAPANA

PUNALUU

Kalae

Keahole Pt.

KAPoho

Mauna Loa

Island of Hawaii

Scale in mile

North

0 4 8 12 16 20 24
PROJECT AREA

Keahole Pt.

KAWAIHAE

WAIMEA

HONOKAA

POHAKULOA

HILO

KILAUEA

KAPOHO

KAPOHO

NORTH

SCALE IN MILE

ISLAND OF HAWAII

Mauna Loa

Mauna Kea

KALAE

KALAPANA

PUNALUU

HONAUNAU

KAILUA

Keahole Pt.

Upolu Pt.