To: ROY HARDY - CWRM
From: Tom Nance
Subject: SOUTH KOREA WATER WELD GROUP

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

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

Ryan - Found this. Should put copies in relevant files.
MEMORANDUM OF UNDERSTANDING BETWEEN MAUNA KEA PROPERTIES, INC., MAUNA LANI RESORT, INC., NANSAY 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 development 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 in the event negotiations fail to result in 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.  NANSAY HAWAII, INC.

By Its Exec.  By Its COO

MAUNA LANI RESORT, INC.  WAIKOLOA LAND COMPANY

By Its Vice President  By Its President
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.

2. 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.

3. 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.

4. 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. 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]

[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 fails 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
Our comments regarding Bridge Puako LLC's Razing Application are attached. The original is being sent via postal service today. Please contact my office at 885-6677 should you have any questions.

I look forward to seeing you on February 4th.
January 27, 2000

Mr. Richard B. Baker, Jr., Chairman
County of Hawaii Planning Commission
c/o Planning Department
25 Aupuni Street
Hilo, HI 96720-4252

Dear Chairman Baker:

Bridge Puako LLC
Puako Residential Golf Community
Waikoloa, South Kohala, Island of Hawaii, TMK: (3) 6-8-01: 25, 36-40

Mauna Lani Resort, along with its planning and engineering consultants, has reviewed Bridge Puako's applications for Project District Zoning, Amendments to Conditions of Ord. No. 96-153, Amendments to Conditions of Use Permit No. 90, and Designation of Timeshare Use. The contents of the applications, as well as the incompleteness of updated supporting studies and impact analysis, raise several concerns which we feel should be addressed more thoroughly before the applicant's requests are considered.

Specifically, there is no detailed study of the proposed timeshare use and potential impacts. The applicant is asking for a substantial reduction in the existing conditions of approval, while the impacts from the project with the addition of timeshare use most likely will be greater. Also, the currently configured project and the uses proposed will have a substantial impact on Mauna Lani Resort. We respectfully request that the Planning Commission defer action on the applications until the following concerns have been adequately addressed.

Timeshare Use

The applicant is asking for timeshare use within the Project District, without disclosing a cap on the number of timeshare units. Thus, up to 1,795 units would be permitted for timeshare use. Timeshare units have historically operated at high occupancies of 80% to 90%, which normally result in considerable added impact on public infrastructure and facilities such as roads, parks and beaches, as well as higher water and sewer use. Given that the original approval for this project was for conventional residential development, we request that a study on the characteristics of timeshare use and its
impacts be completed before the Planning Commission considers its inclusion in the Project District.

Location of Project Access Points

Two project access points (State Department of Transportation approved locations) are shown on the Puako Residential Golf Community plan, the major one assumed to be across from the Mauna Lani Resort Entrance. (It is assumed that this is the primary access since it is the first access to the project from the airport direction and the one adjacent to the 30-acre commercial area.) According to the applicant’s plan, the Mauna Lani entrance would become a cross intersection whereas it is now a t-intersection.

Mauna Lani strongly objects to the location of the major access to the Bridge Puako project directly across from Mauna Lani Resort's existing entrance. We are concerned about the impacts of a cross intersection which is likely to have more conflicting movements than the existing t-intersection. Queen Kaahumanu Highway within the coastal resort area where Mauna Lani Resort is situated currently has only t-intersections. A cross intersection may require improvements which are more urban in nature and incompatible with a designated major resort area. Mauna Lani is also concerned about the impacts of the proximity to the proposed intersection of high traffic commercial uses such as hardware stores, gas stations and supermarkets.

Although the traffic study has been updated for the current applications, they are not complete and we request that a full traffic study be prepared. Given the potential for much increased traffic due to time share use and the extensive commercial uses proposed, we request that the possibility of moving the approved highway access point away from the existing Mauna Lani Resort entrance be explored. To lessen conflicts, entry to the proposed project from the airport direction might more logically be from a t-intersection at another location on Queen Kaahumanu Highway at a safe distance from the existing Mauna Lani Resort t-intersection.

Water Supply

Attached is a memo from TNWRE, our water resource engineering consultant, which addresses some of our concerns with the proposed project and its impact on regional resource and supply, as well as on Mauna Lani Resort. Please refer to it for a full review of the application in regard to water supply.

Regarding potable water requirements for the Bridge Puako project, the estimates contained in the application seem to be low, as they are based on a low water use standard which is inappropriate for the South Kohala coast region, as well as time share use. A review of actual well development suggests that it is unlikely that the two Ouli wells could adequately provide the proposed project's potable supply requirements.
Regarding brackish groundwater supply for irrigation, there is already substantial well development both upgradient and downgradient of Bridge Puako's six proposed brackish water wells, as shown in the application. TNWRE estimates that the supply that can be safely developed in the Puako-to-Makaiwa section is on the order of 9 MGD. Given that current pumping is approximately 8.6 MGD, only a small amount is left to develop in the mauka-makai corridor before water quality is likely to be adversely impacted. This has direct consequences for Mauna Lani Resort whose wells may become useless due to high salinity levels resulting from over-pumping.

Mauna Lani Resort has monitored its wells since the opening of its golf courses, continues to conduct weekly testing for chlorides of all of its irrigation wells, and intends to continue this monitoring. We believe that similar weekly monitoring should be performed for the golf courses developed by Bridge Puako, and that the monitoring record compiled by Mauna Lani Resort and for the first Bridge Puako golf course be evaluated. We also request that the Commission consider adding a condition that Bridge Puako be required to perform this monitoring, and that the development of each golf course subsequent to the first be contingent on the evaluation of the results and the absence of adverse impact on the Mauna Lani wells.

Impact on Public Facilities

The impact on parks, beaches and the shoreline area resulting from development of a project of the magnitude proposed by Bridge Puako has the potential to be detrimental and is not fully addressed in the current applications. Existing resorts in the region have built and maintain facilities open to the public which are of a scale that may not be sufficient to accommodate the applicant's proposed project. We request that the potential impacts be addressed.

Amendments to Conditions of Approvals

The applicant proposes deletion of a 1,200-foot buffer along Queen Kaahumanu Highway (replacement with a 200-foot buffer shown on revised plan). We believe this greatly reduced buffer and the golf course development proposed adjacent to the highway may not provide a safe separation from highway users.

The applicant states that the project concept is essentially unchanged from that previously approved, with the exception of the addition of timeshare use which is potentially a more intense use than residential use. Nevertheless, the applicant is asking for relief from several conditions of approval without providing the rationale for such relief. The applicant requests reassigning to government entities the responsibility for constructing and maintaining substantial infrastructure and community facility improvements. Such relief from providing the improvements previously conditioned and the community package associated with the original project approvals will place a much greater burden on both the County and the State. We respectfully request that the
Planning Commission seriously consider the effect of deleting the conditions before doing so, as such action will set a precedent for future projects.

In conclusion, Mauna Lani requests that the Planning Commission defer action on the Bridge Puako applications so that the concerns raised above may be thoroughly addressed. We also request that the Planning Commission consider retaining existing conditions which tend to mitigate impacts from the project and which represent a fair share of improvement development, commensurate with what other developers have constructed and maintain. Finally, we request that the Planning Commission consider imposing performance controls through appropriate conditions.

Thank you for considering our comments and we would be pleased to answer any questions which they may elicit.

Sincerely,

Mauna Lani Service, Inc.

Sachiko Murano
Vice President

Attachment
MEMORANDUM

TO: Sachiko Murano

FROM: Tom Nance

SUBJECT: Water Supply Concerns Raised by the Proposed Puako Residential Golf Community

I reviewed the November 1999 zoning application report by Skinney M. Fuke and the supporting groundwater assessment by Den Lum dated March 1992. Both documents describe a development that would include more than 2600 residential units and six golf courses on the 3000-acre Puako property formerly owned by Nanney. Providing sufficient water supply for this development raises issues for the region and for Mauna Lani Resort in particular. These are briefly discussed in the paragraphs following.

Potable Supply

Two wells in the Nanney Golf parcel are to provide potable supply for the project, most likely by connecting these wells to the Department of Water Supply (DWS) system in South Kohala. The Fuke report states that both wells were completed and that their pump test results demonstrate the adequacy of their supply for the project. The problems with this and other representations regarding the project's potable supply are as follows:

Required Supply. Both the Fuke and Lum reports state that an ultimate average supply 1.3 MGD will be needed. This is based on potable water use of 400 GPD per residential unit, DWS' standard. However, experience along the South Kohala coast has universally shown that DWS' standard is too low for this dry region, particularly for the class of residential development intended. Using more realistic water use rates, the project's average supply requirement is likely to be more than two MGD (a projection of 2.5 MGD is shown in the tally below). This would require a maximum day well pumping capacity in excess of 3 MGD plus standby capacity.

680 Ala Moana Boulevard, Suite 400 • Honolulu, Hawaii 96813-5411 • Phone: (808) 537-1141 • Fax: (808) 538-7757 • E-mail: kona@aloha.net
Conservative Estimate of Actual Potable Supply Requirements

<table>
<thead>
<tr>
<th>Type of Development</th>
<th>No. of Units</th>
<th>Average</th>
<th>Max. Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>GPD/HR</td>
<td>MOD</td>
</tr>
<tr>
<td>Ag-Zoned Residential</td>
<td>663</td>
<td>1,200</td>
<td>1.038</td>
</tr>
<tr>
<td>Other Residential</td>
<td>1795</td>
<td>700</td>
<td>1.255</td>
</tr>
<tr>
<td>Golf Course Clubhouse</td>
<td>6</td>
<td>25,000</td>
<td>0.180</td>
</tr>
<tr>
<td>Commercial</td>
<td>30 Ac.</td>
<td>3,000</td>
<td>0.090</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,612</strong></td>
<td><strong>3.788</strong></td>
<td></td>
</tr>
</tbody>
</table>

Actual Well Development. The first of the two Ouli wells (State No. 6048-01) was developed and pump tested at 1.5 MGD by Signal Oil in 1988. The second well is located just 1000 feet north of the first well, a less than desirable spacing at the proposed 1.5 MGD pumping rates. The second well was not actually completed. Nanay halted its construction after the pilot hole had been drilled and, to my knowledge, no pump test was ever conducted in the pilot borehole. Based on salinity and temperature profiles I've made in both of these wells, on static samples I've collected from them, and on other information such as from the nearby Kawamata well (No. 6143-01), it is clear that the quality of the second well will not be as good as the first. Its potential yield will only be known after an approximate pump test is conducted.

Unresolved Issues. It is unlikely that the two Ouli wells could actually provide all of the project's potable supply requirements. Given the limited spacing between the wells, their concurrent operation would have to be at moderate pumping rates of not more than 1.0 MGD per well. When standby capacity is considered, the two wells could only supply a smaller scale project than the one proposed.

Brackish Groundwater for Irrigation

Based on irrigation supply of 0.75 to 1.0 MGD for each of six golf courses and another 0.10 MGD for a golf academy, the Lurk report forecasts a total brackish groundwater requirement of 4.86 to 6.19 MGD. This is to be obtained from six wells which would be arrayed along the inland boundary of the property. The Lurk report only briefly deals with the potential impact of this pumping based on regional scale numbers for the sustainable yield of groundwater. His analysis ignores local-scale impacts which would clearly be significant. Substantial well development already exists upgradient of the Puako parcel (the West Hawaii Utility Company's potable wells) and downgradient in the Mauna Lani Resort (a seven active brackish wells). When the impacts within this mauka-makai corridor are assessed, it is clear that drawing 4.5 to 6.0 MGD more for the Puako project will have a significant impact on the water quality of Mauna Lani's wells.
Memo To: Sachiko Murano  
January 24, 2000  —  00:062  
Page three  

Regional Groundwater Flow. The best estimate of groundwater flow in South Kohala is the detailed water budget analysis by Brian Kanshir and Frank Peterson in 1977 (UH WRC Technical Report 110). It calculated a groundwater flow of 6.35 MGD per coastal mile. For the 3.25-mile section of the coastline from Puako Bay to Makaiwa Bay, total groundwater flow would be about 21 MGD. Only a portion of this could be developed without impairing water quality, probably in the range of one-third to one-half of the total flow. Since the State Water Commission uses 44 percent to establish sustainable yields for inft basal aquifers, that fraction can be applied here. For the Puako-to-Makaiwa section, then, the supply which can be safely developed is on the order of 9 MGD.

Existing Groundwater Use. The attached map shows the locations of the existing Walokoa and Mauna Lani wells in relation to the Nansay-Puako parcel and the proposed six wells along its inland boundary. Pumping from existing wells is approximately 8.8 MGD at present (refer to the tally below). This leaves only a small amount left to develop in this particular mauka-makai corridor before water quality is likely to be adversely impacted.

Present Pumpage of Existing Wells

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Average Use (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walokoa Potable Wells (Nos. 5746-01, 02, &amp; 03 and 5848-01 &amp; 02)</td>
<td>4.0</td>
</tr>
<tr>
<td>Walokoa Village Golf Course Well (No. 5548-01)</td>
<td>0.7</td>
</tr>
<tr>
<td>Mauna Lani Resort Irrigation Wells (Nos. 5749-07, 5750-01, 02, 03, &amp; 04, 5680-02, and 5851-01)</td>
<td>3.9</td>
</tr>
<tr>
<td>Total Present Pumpage</td>
<td>8.8</td>
</tr>
</tbody>
</table>

High Salinity in Mauna Lani’s Irrigation Wells. The salinity of Mauna Lani Resort’s irrigation wells has been stable through the 1980s, but their high levels have been an ongoing problem for golf course operation and maintenance (refer to the tally of individual well pumpage and chlorides below). Small salinity increases will render some of these wells useless and leave an inadequate remaining supply to irrigate the Resort’s two golf courses. In my view, there is no question that withdrawing an additional 4.8 to 8.2 MGD of groundwater from new wells directly upgradient will cause such a salinity rise to occur.
Memo To:  Sachiko Murano  
January 24, 2000  -  00/032  
Page four

Summary of Mauna Lani Resort’s Brackish Irrigation Wells

<table>
<thead>
<tr>
<th>Well</th>
<th>Average MOD</th>
<th>Average Chlorides (MG/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STH</td>
<td>0.388</td>
<td>939</td>
</tr>
<tr>
<td>Fire Station</td>
<td>0.383</td>
<td>842</td>
</tr>
<tr>
<td>Puka Shaft</td>
<td>1.622</td>
<td>914</td>
</tr>
<tr>
<td>Highway</td>
<td>0.592</td>
<td>751</td>
</tr>
<tr>
<td>Culvert</td>
<td>0.334</td>
<td>844</td>
</tr>
<tr>
<td>North</td>
<td>0.628</td>
<td>814</td>
</tr>
<tr>
<td>Parker II Shaft</td>
<td>0.033</td>
<td>800</td>
</tr>
<tr>
<td>Total for Six Wells</td>
<td>3.683</td>
<td>838</td>
</tr>
</tbody>
</table>

**Suggested Pragmatic Approach to Golf Course Construction.** Given the possible adverse impact of the six proposed golf courses, proceeding with their development should occur on a cautiously pragmatic basis. Mauna Lani Resort conducts weekly testing for chlorides of all of its irrigation wells and the record of these tests and pumping amounts provide a valuable baseline. The same weekly monitoring should be required for the first and all subsequent golf courses constructed in the Pukalani. When the Pukalani project then wants to proceed on the second or any subsequent golf course after the second, the monitoring record compiled by Mauna Lani Resort and for the Pukalani golf courses should be evaluated. Approval of all golf courses after the first one should be contingent on their having been no adverse impact on the Mauna Lani wells resulting from pumpage to irrigate the then-existing Pukalani golf courses.

cc:  Anne Mapes - BCH  [Fax only: 5 pages]

Attachment
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. 5530-02:
   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. 5550-01:
   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 Kawaihae Harbor Tidal Bench Mark 3 with an elevation of 7.23 feet, MSL.

[Signature]
Robert K.Y. Lee
Licensed Professional Surveyor
Certificate Number 5075

[Seal]
Robert K.Y. Lee
Licensed Professional Surveyor
Certificate Number 5075

C: Greg Polkamatsu, TNWR
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
North #7
State No. 5749-01
HYDRAULIC PERFORMANCE WARRANTY

Guaranteed at designated point only, and contingent on:

- Proper submergence
- Proper flow to pump suction
- 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>
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<tbody>
<tr>
<td>1</td>
<td>T-84323</td>
<td>UNDERCUT ALL THE WAY 61/16&quot;</td>
<td>32825</td>
</tr>
<tr>
<td>2</td>
<td>T-84323</td>
<td>STANDARD FILING 61/16&quot;</td>
<td>27497</td>
</tr>
<tr>
<td>3</td>
<td>T-84323</td>
<td>61/16&quot;</td>
<td>31374</td>
</tr>
</tbody>
</table>

PUMP DESCRIPTION: Driver: DUEZ DIESEL ENGINE ; Head 6 x 6 x 125 ; Column 6

GUARANTEED FIELD PERFORMANCE: Capacity 450 gpm; Head 150 ft; Eff 80%; BHP 19
STATE WELL NO. 5749-01

WELL NAME: Mauna Lani No. 7

ISLAND: Hawaii

LOCATION: Puako, South Kohala, Hawaii

TAX MAP KEY: 6-8-01:52

WELL OWNER: Mauna Lani Resort, Inc.

DRILLING OR PUMP INSTALLATION CONTRACTOR: Fred Page Drilling International

DRILLER: Fred Page

DATE OF WELL COMPLETION: June 1991

DATE OF PUMP INSTALLATION: Pending

GROUND ELEVATION (m) 90 ft.

TOTAL DEPTH OF WELL BELOW GROUND: 100 ft.

HOLE SIZE: 17 in. I.D. to 98 ft. below ground

Casing Installed:

- 12 in. I.D. x 0.3125 in. wall solid section to 88 ft. below ground
- 12 in. I.D. x 0.3125 in. wall perforated section to 98 ft. below ground

PERMANENT PUMP INSTALLATION:

- Motor: 450 hp, 345 rpm
- Pump: Vertical Multistage, 400 gpm
- Water Level: 98 ft. below ground

PROPOSED USE: Golf Course and Landscape Irrigation

INITIAL WATER LEVEL: 88.0 ft. below ground

INITIAL CHLORIDE: 600 ppm

PUMPING TESTS: Reference point (R.P.) used:

- Top of casing which elevation is 91 ft.

- Date of test: June 10, 1991
- Time: 10:00 a.m.
- Date of sampling: June 10, 1991
- Time: 10:00 a.m.

Q. DRILLER'S LOG:

- Rock Description & Remarks
- Water Level
- Depth, ft.
- Water Level
- Depth, ft.

- 0 to 10 ft.: Loose Rubble
- 10 to 85 ft.: Alternating Flow
- 85 to 98 ft.: Soft, Red-Brown
- 98 to 100 ft.: Hard, Gray-Black
- 100 to...

REMARKS: The well completed report within 30 days of work completion to the Department of Land and Natural Resources, Division of Water Resource Management.
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
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 450 gallons per minute pump in Mauna Lani Resort Irrigation Well (Well No. 5749-01), 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 450 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: 7-16-94

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
To: Water Resource Management Division
   Dept. of Land & Natural Resources
   State of Hawaii
   P. O. Box 373
   Honolulu, Hawaii 96809

Attention: Mr. Glenn Bauer

Gentlemen: We are sending you the following items:

- For approval
  No exceptions taken
  Resubmit ____________ copies for approval

- For your use
  Make corrections noted
  Submit ____________ copies for distribution

- As requested
  Revise and resubmit
  Return ____________ corrected prints

- For review and comment
  Rejected

Remarks:

Copy to:

Signed:

If enclosures are not as noted, kindly notify us at once.
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.
<table>
<thead>
<tr>
<th>Column</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>STATE WELL NO. 5749-01</td>
</tr>
<tr>
<td>B.</td>
<td>LOCATION Puako, South Kohala, Hawaii</td>
</tr>
<tr>
<td>C.</td>
<td>WELL OWNER Mauna Lani Resort, Inc.</td>
</tr>
<tr>
<td>D.</td>
<td>DRILLING OR PUMP INSTALLATION CONTRACTOR Fred Page Drilling International</td>
</tr>
<tr>
<td>F.</td>
<td>DATE OF WELL COMPLETION June 1991</td>
</tr>
<tr>
<td>G.</td>
<td>GROUND ELEVATION (msl) 90 ft.</td>
</tr>
<tr>
<td>I.</td>
<td>HOLE SIZE: 17 inch dia. from 0.0 ft. to 98 ft. below ground</td>
</tr>
<tr>
<td>J.</td>
<td>CASING INSTALLED: 12 in. I.D. x 0.3125 in. wall solid section to 88 ft. below ground</td>
</tr>
<tr>
<td>L.</td>
<td>PERMANENT PUMP INSTALLATION: Permit Pending</td>
</tr>
<tr>
<td>N.</td>
<td>INITIAL WATER LEVEL 88.0 ft. below ground.</td>
</tr>
<tr>
<td>O.</td>
<td>INITIAL CHLORIDE 600 ppm.</td>
</tr>
<tr>
<td>P.</td>
<td>PUMPING TESTS: Reference point (R.P.) used: Top of casing</td>
</tr>
<tr>
<td>Q.</td>
<td>DRILLER'S LOG:</td>
</tr>
<tr>
<td>R.</td>
<td>Remarks:</td>
</tr>
</tbody>
</table>

**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 548-7443, Hydrology, Geology Section for assistance.

**Submitted by (print):**

**Signature:**
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
To: DOWARD
Attention: Ed Sakoda
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 sites accompanying map.
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. 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:RT

cc: Neil O'Keefe

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 and Land Development, P.O. Box 373, Honolulu, Hawaii 96829. 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 148-1543, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island: Hawaii

Address: Mauna Lani Resort

State Well No.: 5749-01

(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: Roscoe Moss Company

Address: 830 Ahau Street

Honolulu, Hawaii 96819

Contractor's License No.: C-5101

Phone: 839-6888

4. PROPOSED WORK

☐ Drill New Well

☐ Deepen

☐ Alter

☐ Install New Pump

☐ Seal

☐ Replace Pump

☐ Redrill

☐ Abandon

☐ Modify Pump

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

5. PROPOSED USE

☐ Municipal (including hotels, stores, etc.)

☐ Military

☐ Domestic (individual, noncommercial water systems)

☐ Industrial

☐ Irrigation (specify)

☐ Golf Course and Other Landscape

☐ Other (specify)

6. PROPOSED AMOUNT OF WITHDRAWAL

650,000 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: ☐ Vertical Turbine

☐ Submersible

☐ Centrifugal

Motor: ☐ Diesel

☐ Gas

☐ Electric:

20

Rated Horsepower

Rated Pump Capacity:

450 gallons per minute (gpm)

Well Owner (print): Mauna Lani Resort, inc.

Signature: [Signature]

Date: [Date]

Landowner (print): [Signature]

Date: [Date]

For Official Use Only:

Field Checked By:

Latitude:

Longitud

Hydrologic Unit:

State Well No.: 5749-01

Mauna Lani
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 91 ft., msl.

Cement Grout 85 ft.

Hole Dia. 17 in.

Total Depth 100 ft.

Rock Packing None ft.

Ground Elev. 90 ft., msl*

Solid Casing:
Material Steel
Length 88 ft.
Diameter 12 in.
Wall thickness 0.3125 in.

Casing: / /Perforated / /Screen
Material Steel
Length 10 ft.
Diameter 12 in.
Wall thickness 0.3125 in.
Openings 60 sq. in./L.F.

Open Hole:
Length 2 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.
**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.

A. **STATE WELL NO.** 5749-01
   **WELL NAME** Mauna Lani No. 5
   **ISLAND** Hawaii

B. **LOCATION** Puako, South Kohala, Hawaii
   **TAX MAP KEY** 6-8-01:52

C. **WELL OWNER** Mauna Lani Resort, Inc.

D. **DRILLING OR PUMP INSTALLATION CONTRACTOR** Fred Page Drilling International
   **TYPE OF RIQ** Rotary
   **DRILLER** Fred Page

E. **DATE OF WELL COMPLETION** June 1991
   **DATE OF PUMP INSTALLATION** Pending

F. **GROUND ELEVATION (m.a.s.l.)** 90 ft.
   **Top of Drilling Platform (m.a.s.l.)** 92 ft.
   **Height of drilling platform above ground surface** 2 ft.
   **Bench mark and method used to determine ground elevation** 2 ft.

G. **TOTAL DEPTH OF WELL BELOW GROUND** 100 ft.

H. **HOLE SIZE:**
   - 12 in. I.D. x 0.3125 in. wall solid section to 88 ft. below ground
   - 12 in. I.D. x 0.3125 in. wall perforated section to 98 ft. below ground

I. **CASING INSTALLED:**
   - Louvers

K. **ANNUALS:**
   - Grouted from 0 to 85 ft. below ground
   - Gravel packed from (None) ft. to ft. below ground

L. **PERMANENT PUMP INSTALLATION:**
   - **Type of pump, make, serial No.**
   - **Permit Pending**
   - **Capacity** 450 gpm
   - **Pumping Tests: Reference point (R.P.) use, Top of casing which elevation is 91 ft.

M. **PROPOSED USE**
   - Golf Course and Landscape Irrigation

N. **INITIAL WATER LEVEL** 88.0 ft. below ground
   **Date and time of measurement** 6-10-91 / 10:00 a.m.

O. **INITIAL CHLORIDE** 600 ppm
   **Date and time of sampling** 6-10-91 / 10:00 a.m.

P. **FLOODING TESTS:**

<table>
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<tr>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft)</th>
<th>Cl (ppm)</th>
<th>Temp. °F</th>
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</thead>
<tbody>
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<td>0.00 to 0.25</td>
<td>425</td>
<td>3.5</td>
<td>1.95</td>
<td>to</td>
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<td>0.25 to 0.50</td>
<td>325</td>
<td>2.7</td>
<td>1.75</td>
<td>to</td>
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<td>0.50 to 0.75</td>
<td>400</td>
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<td>0.75 to 1.00</td>
<td>475</td>
<td>3.31</td>
<td>to</td>
<td>to</td>
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<td>525</td>
<td>3.87</td>
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<td>1.25 to 2.00</td>
<td>540</td>
<td>4.04</td>
<td>6.00</td>
<td>to</td>
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Q. **DRILLER'S LOG:**

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<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
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<tbody>
<tr>
<td>0 to 10</td>
<td>Loose Rubble</td>
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<tr>
<td>10 to 85</td>
<td>Alternating Flow</td>
</tr>
<tr>
<td>85 to 98</td>
<td>Pahoehoe</td>
</tr>
<tr>
<td>98 to 100</td>
<td>Hard, Gray-Black</td>
</tr>
<tr>
<td>100 to</td>
<td>Lava</td>
</tr>
</tbody>
</table>

**REMARKS:**

Submitted by (print) __________________________
Signature __________________________

Title __________________________
Date __________________________
Mauna Lani - Nansay Irrigation Agreement

Mauna Lani Resort, Inc.
Irrigation Wells

<table>
<thead>
<tr>
<th>Well Number</th>
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<tbody>
<tr>
<td>5650-01</td>
</tr>
<tr>
<td>5650-02</td>
</tr>
<tr>
<td>5651-01</td>
</tr>
<tr>
<td>5749-01</td>
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<td>5750-01</td>
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<tr>
<td>5750-02</td>
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<tr>
<td>5750-03</td>
</tr>
<tr>
<td>5750-04</td>
</tr>
<tr>
<td>5849-01</td>
</tr>
</tbody>
</table>

Nansay Hawaii, Inc.
Irrigation Wells

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<tr>
<th>Well Number</th>
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<tr>
<td>5549-01</td>
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</tr>
<tr>
<td>5750-02</td>
</tr>
<tr>
<td>5750-03</td>
</tr>
</tbody>
</table>

Exhibit A
Mauna Lani - Nansay Irrigation Agreement
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.
c. As-built sectional drawings of the wells.
d. Plot plan and map showing the exact location of each well.
e. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and water quality data.

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
APPLICATION FOR

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 548-1544, 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. 5656-62

(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

3. PROPOSED CONTRACTOR FOR:

☐ Well Drilling   ☐ Pump Installation

Name   Will Be Competitively Bid

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

☐ Gas   ☐ Electric: 30   ☐ Centrifugal

Motor:   ☐ Diesel

Rated Pump Capacity   600   gallons per minute (gpm)

Well Owner (print)   MAUNA LANI RESORT, INC.

Landowner (print)   MAUNA LANI RESORT, INC.

Signature

Date 6/29/90

For Official Use Only:

Field Checked By

Latitude

Hydrologic Unit

Date 6/29/90

Longitude

State Well No. 5650-03
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.

Total Depth 158 ft.

Rock Packing None ft.

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.

Open Hole: (Only if required)
Length 10 for yield
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.
Brackish Wells of the Mauna Lani - Nansay Irrigation Agreement

<table>
<thead>
<tr>
<th>Mauna Lani Resort, Inc. Irrigation Wells</th>
<th>Nansay Hawaii, Inc. Irrigation Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>5650-01</td>
<td>5549-01</td>
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<tr>
<td>5650-02</td>
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Exhibit A
Mauna Lani - Nansay Irrigation Agreement