Dear Water Use Permittee:

Hawaii Prince Golf Club/Hawaii Prince Hotel Waikiki Corp.,
Well Nos. 1900-02, 1900-17 to 20, 1901-03, WUP No. 469, 0.301 mgd, TMK 9-1-10:6
Haseko (Ewa), Inc., Well Nos. 1901-06, 1902-01, 1902-09 to 11, WUP No. 650, 3.300 mgd, TMK 9-1-12:5
Department of Parks and Recreation, Well No. 2001-03, WUP No. 167, 0.030 mgd, TMK 9-1-61:35
Palm Court Association, Well No. 2001-07, WUP No. 171, 0.063 mgd, TMK 9-1-61:32
Palm Villa II Association, Well No. 2001-08, WUP No. 168, 0.048 mgd, TMK 9-1-61:27
Arbors Association, Well No. 2001-14, WUP No. 247, 0.216 mgd, TMK 9-1-17:12
Gentry Development Co., Well No. 2001-04, WUP No. 302, 0.040 mgd, TMK 9-1-61:7
Gentry Development Co., Well No. 2001-09, WUP No. 344, 0.023 mgd, TMK 9-1-61:2
Ewa by Gentry Community Association, Well No. 2001-05, WUP No. 450, 0.066 mgd, TMK 9-1-70:132
Gentry Homes, Ltd., Well No. 2001-12, WUP No. 504, 0.249 mgd, TMK 9-1-102:31
Gentry Homes, Ltd., Well No. 1901-05, WUP No. 505, 0.056 mgd, TMK 9-1-69:8
U.S. DOC/NOAA/NWS, Well No. 1900-23, WUP No. 501, 0.023 mgd, TMK 9-1-1:1
Coral Creek Golf, Inc., Well No. 2002-17, WUP No. 577, 0.498 mgd, TMK 9-1-69:10
Coral Creek Golf, Inc., Well No. 2001-13, WUP No. 578, 0.800 mgd, TMK 9-1-69:10
Coral Creek Golf, Inc., Well Nos. 2001-14, 2002-15, 17, 19,
WUP No. 579, 0.892 mgd, TMK 9-1-69:10&11, 9-1-61:54
AOAO Suncrest/The Shores/Lombard Way/Avalon, Well No. 2001-10,
WUP No. 629, 0.022 mgd, TMK 9-1-10:17
State Housing Community Development Corporation of Hawaii,
Well Nos. 2003-04,07, WUP No. 432, 0.494 mgd, TMK 9-1-16:25
State Housing Community Development Corporation of Hawaii,
Well Nos. 2003-08, WUP No. 520, 0.237 mgd, TMK 9-1-16:108
Kapolei People's Inc., Well Nos. 2003-01,02,05, WUP No. 438, 1.000 mgd, TMK 9-1-16:25
Honolulu Board of Water Supply, Well Nos. 1905-08,10, WUP No. 740, 0.302 mgd, TMK 9-1-16:1

Conversion of Interim Water Use Permits for
New Irrigation Uses to Permanent Water Use Permits
Puuloa and Kapolei Ground Water Management Areas, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on the subject water use permits.
By a unanimous vote at their meeting on July 12, 2006, the Commission corrected the error of approving and issuing interim permits for new irrigation uses in the Puuloa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted.

The Commission ruled that permittees shall be notified by letter of the Commission's action to convert these water use permits from interim to permanent and the deletion of Special Condition d. The Commission further ruled that re-issuance of these water use permits is not necessary.

Please be advised that a compliance review will be initiated shortly as required under §174C-56 Hawaii Revised Statutes. We recommend that you carefully review the conditions of your permit and ensure that you are in compliance with all Standard and Special Conditions.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

DEAN A. NAKANO
Acting Deputy Director

LYN:ss
Minutes July 12, 2006

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

MOTION: (Ching/Frazier)
To approve submittal as amended by staff
UNANIMOUSLY APPROVED

C. GROUND WATER REGULATION


CONVERSION OF INTERIM WATER USE PERMITS, FOR NEW IRRIGATION USES TO PERMANENT WATER USE PERMITS, Puuloa and Kapolei Ground Water Management Areas, Oahu

Presentation of submittal: Lenore Nakama
RECOMMENDATION:

Staff recommends that the Commission correct the error of approving and issuing interim permits for new irrigation uses in the Puuloa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted. The permittees shall be notified by letter of the Commission’s action to convert these water use permits from interim to permanent and the deletion of Special Condition d. Re-issuance of these water use permits is not necessary.

DISCUSSION:

Ms. Nakama stated that these interim permits expired on July 1, 2006 and staff is recommending that the Commission correct the error that was made in issuing the permits as interim, rather than permanent, water use permits. Action is also requested to inform these users that they may continue to pump their wells in accordance with their allocations and the chloride limit placed on irrigation wells in the Ewa Caprock Aquifer Sector Area.

Commissioner Ching inquired whether the subject permits covered all the users in the Ewa Caprock Aquifer Sector Area. She was concerned that giving certain permits a permanent status may give them a higher priority or status over other interim permits.

Ms. Nakama stated that the submittal covered all the new irrigation users which had a duration of July 1, 2006 attached to their interim permits. There are other interim permits that have been issued for industrial and other non-irrigation uses in the Ewa Caprock Aquifer Sector Area, there are also other interim permits that have been issued for other new and existing uses elsewhere in the State. Staff will address the rest of the interim permits as part of the 20-year compliance review that is mandated by the Water Code. Staff does not feel that the type of permit (i.e., interim or permanent) under which the water is being used will have a bearing on water use priorities should a future competition situation arise.

MOTION: (Ching/Frazier)
Approval of staff recommendation
UNANIMOUSLY APPROVED

G. NON-ACTION ITEMS

1. Rainfall Index Update Presentation by Dr. Pao Shin Chu, State Climatologist, University of Hawaii, Department of Meteorology

Presentor of non-action item: Neal Fujii
Minutes

July 12, 2006

Graduate student, Ms. Cindy Ditner presented an update of rainfall throughout the state through a PowerPoint presentation. She stated that it has been 33 years since the last update was done. In preparing this index they gathered rainfall data throughout the State through temperature, elevation and rain gages. If a station did not submit information for 4 months within a calendar year then it was deleted.

H. NEXT COMMISSION MEETING (TENTATIVE)

1. August 16, 2006
2. September 20, 2006

The meeting was adjourned at 12:00 p.m.

Respectfully submitted,

PAULYNE K. ANAKALEA
Secretary

Approved as submitted:

DEAN A. NAKANO
Acting Deputy Director
Ref: ewa caprock interim wup conversion.sub

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 12, 2006
Honolulu, Oahu

Hawaii Prince Golf Club/Hawaii Prince Hotel Waikiki Corp.,
Well Nos. 1900-02, 1900-17 to 20, 1901-03, WUP No. 469, 0.301 mgd, TMK 9-1-10:6
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CONVERSION OF INTERIM WATER USE PERMITS
FOR NEW IRRIGATION USES TO PERMANENT WATER USE PERMITS
Puuloa and Kapolei Ground Water Management Areas, Oahu
PERMITTEES: See Exhibit 1
LANDOWNERS: See Exhibit 1

SUMMARY OF REQUEST:

Staff recommends that the Commission correct past water use permit approval errors in the Puuloa and Kapolei Aquifer Systems Areas of the Ewa Caprock Ground Water Management Area and convert the interim water use permits for new irrigation uses to permanent water use permits.

LOCATION MAP: See Exhibit 2

BACKGROUND:

On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer overlying the existing designated ground water management areas of the Waipahu-Waiau, Ewa-Kunia, and Makaiwa Aquifer System Areas. Due to uncertainties regarding the caprock's sustainable yield and nonpotable utility, the Commission did not adopt a sustainable yield estimate for the caprock. All permitted Ewa Caprock irrigation uses prior to 1993 were operating under permanent water use permits.

Designation of the Ewa Caprock and its Aquifer System Areas as water management areas was precipitated by the City and County of Honolulu's (City) urbanization plans for the Ewa area and a City ordinance requiring dual water systems for all new developments. Potable water was to be provided through the municipal system. Possible sources of non-potable water were brackish ground water from the Ewa Caprock Aquifer Sector Area and reclaimed sewage effluent from the Honolulu Wastewater Reclamation Facility. The estimated non-potable demand of 25 mgd after full buildout (Kumagai, 1996) far exceeded the estimated natural recharge to the caprock aquifer of less than 16 mgd (Bauer, 1996).

Because there were concerns regarding the future viability of the caprock as a dependable source of brackish water due to the significant loss of return irrigation recharge from sugarcane agriculture, in 1993, the Commission began awarding temporary one-year permits for new uses of caprock ground water. In analyzing water availability, the Commission used guidelines for estimating sustainable yields for the Puuloa, Kapolei, and Malakole Aquifer System Areas (Yuen & Associates, Inc., 1989; Exhibit 2).

On July 13, 1994, the Commission extended temporary one-year permits. The duration of the extended permits was to July 12, 1995.

On July 5, 1995, the Commission extended the permits, which were now called interim (instead of temporary) permits.

On March 13, 1996, the Commission deferred action on existing interim permits and new applications pending a decision on the establishment of a formal sustainable yield for the caprock.

Also on March 13, 1996, the Commission adopted the following policy statement, clearing the way for application of reclaimed water on lands overlying the Ewa Caprock Aquifer Sector Area:
"It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses."

On May 14, 1997, the Commission adopted a sustainable yield based on a sustainable capacity for each individual irrigation well at 1,000 milligrams per liter (mg/l) of chloride as an interim management plan, subject to review within two (2) years. The rationale behind the chloride cap was to limit pumpage in those wells approaching the limit, to prevent a build-up of sodium in the clay soils, and to protect other users adjacent to those pumping higher chloride water. The Commission also adopted the Puuloa, Kapolei, and Malakole Aquifer System Areas in the Ewa Caprock Aquifer Sector Area and approved pending applications for new and continued irrigation uses. The interim water use permits were to expire on October, 1998 or until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The October, 1998 date coincided with the possible revocation of unused (former Oahu Sugar Company) agricultural permits and also provided a milestone date to check on the progress of wastewater reuse for private caprock well owners, the availability of which was then scheduled for July, 1999. (Note: Wastewater reuse was anticipated due to the 309 Consent Decree settlement between the City and DOH/EP A in 1994, which required the City to implement a reuse program with agreed-upon time schedule and associated volumes: 2.0 mgd by 7/1/98, 5 mgd by 6/30/99 and 10 mgd by 7/1/01. The City requested and received extensions to the implementation schedule.)

On October 22, 1998, the Commission extended the interim water use permits, subject to the Standard Conditions of a water use permit and new special conditions. The interim permits specified a duration to July, 2001, or 1) until treated wastewater is available and acceptable for use, or 2) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

On July 20, 2000, an agreement was reached between the Honolulu Board of Water Supply (BWS), the City, and U.S. Filter for BWS’ purchase of the Honouliuli Wastewater Reclamation Facility. The agreement includes BWS becoming the purveyor of reuse water, with the task of securing customers for 10 mgd by July 1, 2001. U.S. Filter will operate the facility for BWS under a 20-year service agreement. The City will provide secondary effluent to the facility and will take back 4 mgd of the R-1 water for City reuse applications. Some of the reclaimed water will supply industrial uses at Campbell Industrial Park.

On July 18, 2001, the Commission extended the interim water use permits, subject to the Standard Conditions of a water use permit and new special conditions (Exhibits 3 and 4). Special Condition 3 specifies that the duration of the interim permits is to July 1, 2006, or 1) until treated wastewater is available and acceptable for use, or 2) until such time that a significant change in permitted, actual, or projected uses of water supply occurs.
ANALYSIS/ISSUES:

All of the subject permits are for new irrigation uses that have a July 1, 2006 expiration date. Under the Water Code and Administrative Rules, interim permits are only mentioned in the sections dealing with existing uses. Section §174C-50 HRS contains the provisions for existing uses. Subsection (e) provides for the issuance of interim permits for existing uses:

"§174C-50 Existing uses. ...(e) The commission shall issue an interim permit; provided that the existing use meets the conditions of subsection (b). The commission shall also issue an interim permit for an estimated, initial allocation of water if the quantity of water consumed under the existing use is not immediately verifiable, but the existing use otherwise meets the conditions of subsection (b) for a permit of an interim permit. An interim permit is valid for such time period specified therein. The commission may issue successive interim permits of limited duration. Interim permits are subject to revocation under section 174C-58. Whenever interim permits are to be issued, the time periods specified in subsection (d) apply to the issuance or nonissuance of interim permits." §174C-50(e) HRS

Staff believes the intent of the provision is to bring existing users in newly-designated areas under regulation in a timely manner by issuing interim permits pending verification of the quantity of the existing use. Subsection (f) provides for the installation of metering or gauging devices, and if so prescribed, "...such metering or gauging devices shall be in place and operational for at least one year before a determination is made as to the quantity of water being consumed in an existing use and a final permit is issued." §174C-50(f) HRS

Because the Water Code gives preference to existing uses over new uses and water reservations, it is important that permitted existing use quantities be verified. In the event of future competition, existing uses may have a higher priority than new uses.

In issuing permits for new uses, the applicable statute, §174C-53 HRS, does not mention interim permits.

The recommended action is to correct the error that was made in issuing interim permits for new uses and to let users know that they can continue their use beyond July 1, 2006, subject to the Standard and Special Conditions that have been attached to these permits (Exhibits 3 and 4), with the exception of Special Condition d., which limits the duration of these new use permits. Special Condition d. is not necessary because the Water Code provides for review of water use permits (§174C-56 HRS), modification of water use permits (§174C-57 HRS), and revocation of water use permits (§174C-58 HRS); therefore, permanent permits are still subject to review, modification, and revocation.

The Deputies Attorney General have concurred that the awarding of interim permit for new uses is an error. The erroneous practice of approving and issuing interim permits for new uses was corrected beginning in about 2003. The current practice of the Commission is to approve permanent permits for new uses, which are always subject to standard and special conditions that define limitations of these permits.

There are other instances in which the Commission has issued interim permits for new uses in the Ewa Caprock and other water management areas. However, the Commission did not attach specific expiration dates to other interim permits for new uses. Therefore, the staff is planning to address the status of other interim permits, as well as all permanent water use permits, including the subject permits, as part of the 20-year compliance review that is required under §174C-56 HRS. This compliance review will be initiated in 2007 and completed in 2008.
RECOMMENDATION:

Staff recommends that the Commission correct the error of approving and issuing interim permits for new irrigation uses in the Pualoa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted. The permittees shall be notified by letter of the Commission’s action to convert these water use permits from interim to permanent and the deletion of Special Condition d. Re-issuance of these water use permits is not necessary.

Respectfully submitted,

DEAN A. NAKANO
Acting Deputy Director

Exhibit(s):
1 (Interim Water Use Permittees)
2 (Location Map)
3 (Standard Water Use Permit Conditions)
4 (Special Water Use Permit Conditions)

APPROVED FOR SUBMITTAL:

PETER T. YOUNG
Chairperson
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<td>HASEKO</td>
<td>91-1001 KAIMALIE ST., STE. 205</td>
<td>EWA BEACH</td>
<td>96706</td>
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<td>PEARL HARBOR</td>
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**Exhibit 1**
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<td>432</td>
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<td>STATE HCDCH</td>
<td>677 QUEEN ST., STE. 300</td>
<td>HONOLULU</td>
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<tr>
<td>438</td>
<td>2003-01-02</td>
<td>KAPOLEI PEOPLE'S INC.</td>
<td>91-701 FARRINGTON HWY</td>
<td>KAPOLEI</td>
<td>96707</td>
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<tr>
<td>520</td>
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<td>740</td>
<td>1905-08-10</td>
<td>HONOLULU BWS</td>
<td>630 S. BERETANIA</td>
<td>HONOLULU</td>
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</table>
STANDARD WATER USE PERMIT CONDITIONS

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

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its July 18, 2001 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights.

EXHIBIT 3
c. insure adequate conservation measures;
d. require efficiency of water uses;
e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

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

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

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

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

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

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

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

EXHIBIT 3
16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the [Puuloa or Kapolei] Ground-Water Management Area.

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

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

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

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

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

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

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

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

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

h. Require adherence to the Conservation Conditions shown in Attachment C.

i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWACAPROCK

1. Sample Collection

   • Sampling Schedule

      The sampling schedule depends upon your pump capacity:

      | Pump Capacity (gpm) | Sampling Schedule |
      |---------------------|-------------------|
      | Less than or equal to 50 | Once a month |
      | Greater than 50 | Once a week |

   • When to Sample

      Before taking a sample, allow a minimum length of time to elapse after turning on the pump. This minimum time can be read off the attached table for your well casing diameter and your pump capacity. If you sample 20 minutes after the minimum time, you should consistently sample 20 minutes after the minimum time each time you take samples.

   • Sample Bottle

      Use a plastic container and cap that holds a volume of about a pint. Rinse the container three times with the water to be sampled before taking the sample. Also rinse the cap with sample water.

   • Labeling

      On the sample bottle, affix a label that contains the following information:

      Well No.
      Date
      Time Sampled
      Elapsed Time after pump on
      Sampler's Name
      Water Temperature (if available)
      Pumping Rate (prior to sampling)
2. **Determination of Chloride Concentration**

- **Private Laboratories**

  If the sample is sent to a private laboratory, then prepare the water sample and label the bottle in the manner described above.

  Private laboratories will use methods that are more accurate than field methods described below.

- **Hach Kit (Drop Count Titrator)**

  Be aware of the approximate chloride concentration range in your well. Use the appropriate sample bottle for titration. **Be consistent with the end-point color change.**

  For low chloride concentrations (5-100 mg/l) each drop will equal 5 mg/l. For higher concentrations (20-400 mg/l) each drop equals 20 mg/l. Other kits for concentrations greater than 400 mg/l (500-10,000 mg/l) each drop is equal to 500 mg/l. Obviously, for water greater than 400 mg/l, a "drop-count" Hach Kit is not appropriate, and a digital titrator, described below, should be used.

- **Hach Kit (Digital Titrator)**

  A digital titrator is the appropriate method for water with greater than 400 mg/l chloride. A digital titrator using silver nitrate is accurate to within 10 mg/l for a chloride range from 10-10,000 mg/l, and for a titrator using mercuric nitrate accuracy varies from 0.1-20 mg/l for a chloride range of 10-8,000 mg/l.

  **Note:** Be consistent with the end-point color. Silver nitrate ages and needs to be replenished within the recommended guidelines of the Hach Company.

- **Other Methods**

  An ion-selective probe for chloride is available, and can measure concentration from 1.8-35,500 mg/l.
3. Reporting Results

How to Report

The following information should be entered on the "Monthly Ground Water Use Report" form provided by the Commission on Water Resource Management:

1. Chloride concentration (mg/l) and temperature (°F) in the columns provided.

Under "Notes" Section of the Monthly Water Use Report:

2. Method used for chloride analysis:

3. Total elapsed time before sampling:

If there are any questions, please call the Commission on Water Resource Management staff at 587-0265 on Oahu or toll free from the neighbor islands 1-800-468-4644 ext. 70265.
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¹ Assumes saturated well depth of 100 feet.

² Five well volumes is a standard guideline recommended by EPA.
1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

   a. Reduce the demand for non-potable water by:
      - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      - Mulching planting areas with organic materials, etc., to minimize evaporation;
      - Efficiently maintaining the plants;
      - Improving land management practices to conserve water.

   b. Improve efficiency in use and reduce losses and waste of non-potable water by:
      - Using efficiently designed landscaping and irrigation systems;
      - Monitoring irrigation requirements and controlling usage accordingly;
      - Managing irrigation scheduling to minimize water demand;
      - Eliminating opportunities for water wastage;
      - Maintaining and improving irrigation systems as necessary.

   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

Attachment C
MEMORANDUM FOR THE RECORD

FROM: Kevin Gooding
     Lenore Nakama

SUBJECT: Water Use Reporting Requirements for Ewa by Gentry Nonpotable Caprock Wells

On July 18, 2003, CWRM staff met with Paul Young, manager of the Sunrise residential complex in Ewa by Gentry, who requested that CWRM staff explain the water use data gathering and reporting requirements for Ewa by Gentry developments under the management of Certified Management. In addition to Sunrise, these include the Coronado, Palm Villas I, and Palm Villas II residential complexes. Other managerial staff present included Roger (Coronado, Well No. 2001-09), Frenchy and Randy Texeira (Palm Villas I, Well No. 2001-06), Linda (Palm Villas II, Well No. 2001-08), and Albert (Sunrise, Well No. 2001-04).

CWRM staff explained that the most important piece of information at this time is monthly total pumpage. Total water use should be recorded every month based on meter readings, but bimonthly or quarterly reporting is fine. Only 1 copy of the report is needed. The reports can be faxed in to CWRM, if that is more convenient than regular mail.

Because water levels in the caprock are only about 1 foot above mean sea level, any measurements would need to be very precise to be useful. In addition, water levels are impacted by the tides and other pumping wells. For these reasons, water levels need not be measured.

Chlorides can be measured using a Hach kit or by the drip (titration) method, which is more exact. Hach kits can be purchased online or from any pool supply store. For Ewa Caprock wells, buy the highest range test strip (300-6000 ppm). Water samples can be taken from sprinkler heads, as long as it is certain that the water source is the caprock well, and not water from the municipal system. Sampling every other month should be sufficient. CWRM staff distributed chloride graphs for Ewa Caprock wells (300-800 ppm) and explained the relationship to drinking water (250 ppm) and seawater (19,000 ppm).

Water temperature data is not important and need not be collected.

Summary of reporting requirements and intervals:

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<th>Data Type</th>
<th>Sampling Schedule</th>
<th>Reporting Schedule</th>
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</thead>
<tbody>
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<td>Monthly</td>
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<tr>
<td>Water Levels</td>
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<tr>
<td>Chlorides</td>
<td>Monthly to Bimonthly</td>
<td>Monthly to Quarterly</td>
</tr>
<tr>
<td>Temperature</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

CWRM staff explained the purpose of water data reporting:

- Loss of OScO return irrigation recharge since 1994
- New equilibrium being established
- Trend towards increasing salinities in caprock water
- Concerns of golf courses and other users
- Sustainable yield is defined as 1000 ppm at irrigation wells
- Monitoring pumpage to ensure the aquifer doesn't salt up to the point that municipal water is needed for irrigation purposes
CERTIFIED
MANAGEMENT, INC.

"Property Management at its best"

Paul D. Young
Resident Manager

SUNRISE AOAO
91-299 Hanapouli Circle #1-A
Ewa, HI 96706

Bus: (808) 683-0161
Pager: 571-2784
Fax: (808) 683-0162

Huffy Service First

Randal A. Teixeira
Service Technician
1342 Hoona Street
Pearl City, Hawaii 96782
(808) 464-0108
Cell: (808) 385-4997
Notice of Action
Extension of Interim Water Use Permit
Puuloa Ground Water Management Area, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on July 18, 2001, to extend your interim water use permit (WUP No. 168, Well No. 2001-08), subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace former special conditions):

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

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

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

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

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

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery
 Consult postmaster for fee.

3. Article Addressed to:
   Mr. Treston Storm
   Palm Villa II Association
   91-1119 Mihoku St., Apt. #D
   Ewa Beach HI 96706

4a. Article Number
   P 354 448 625

4b. Service Type
   ☑ Certified
   ☐ Registered
   ☐ Express Mail
   ☐ Insured
   ☑ Return Receipt for Merchandise
   ☐ COD

5. Received By: (Print Name)
   Preston Storm

6. Signature: (Addressed or Agent)
   X

7. Date of Delivery
   8/2/94

8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.

PS Form 3811, December 1994
UNITED STATES POSTAL SERVICE

Print your name, address, and ZIP Code in this box.

COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. Box 621
Honolulu, Hawaii 96809
<table>
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<tr>
<td>Return Receipt showing to whom, Date, and Address of Delivery</td>
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<tr>
<td>TOTAL Postage and Fees</td>
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STICK POSTAGE STAMPS TO ARTICLE TO COVER FIRST CLASS POSTAGE, CERTIFIED MAIL FEE, AND CHARGES FOR ANY SELECTED OPTIONAL SERVICES. (See front)

1. If you want this receipt postmarked, stick the gummed stub to the right of the return address leaving the receipt attached and present the article at a post office service window or hand it to your rural carrier. (no extra charge)

2. If you do not want this receipt postmarked, stick the gummed stub to the right of the return address of the article, date, detach and retain the receipt, and mail the article.

3. If you want a return receipt, write the certified mail number and your name and address on a return receipt card, Form 3811, and attach it to the front of the article by means of the gummed ends if space permits. Otherwise, affix to back of article. Endorse front of article RETURN RECEIPT REQUESTED adjacent to the number.

4. If you want delivery restricted to the addressee, or to an authorized agent of the addressee, endorse RESTRICTED DELIVERY on the front of the article.

5. Enter fees for the services requested in the appropriate spaces on the front of this receipt. If return receipt is requested, check the applicable blocks in item 1 of Form 3811.

6. Save this receipt and present it if you make inquiry.
f. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.

g. Require adherence to the chloride sampling protocol shown in Attachment B and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

h. Require adherence to the Conservation Conditions shown in Attachment C.

i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

The Commission will suspend the four-year period of nonuse for permittees that convert to reclaimed water service, beginning from the first date of reclaimed water service delivery under an agreement with the Board of Water Supply. The suspension will be for the duration of the interim permit or until the agreement with Board of Water Supply for reclaimed water service delivery ends, whichever comes first.

The Commission decided that interim permittees shall be notified by letter of the Commission action and extended permit duration and that re-issuance of new interim water use permits for these extended permits is unnecessary.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director

LN:ky
Attachments
TESTIMONY BY APPLICANT:

Mrs. Harms stated that according to the Hawaii County Department of Water Supply (DWS), she would need 2 hookups per unit and a total of 16 units that require water. She stated that the units are located approximately 100 feet from where the County system terminates at the entrance to Vacationland. Mrs. Harms stated that DWS informed her that only 50 hookups were allowable to the Association meter, and that the association meter was filled to the maximum. At the present, Mrs. Harms stated that she has a temporary hookup of 10 lines with DWS.

MOTION: (RICHARDS/NOBRIGA)
To approve the submittal as amended in Alternate Recommendation #1.
UNANIMOUSLY APPROVED AS AMENDED.

4. Extension Of Interim Water Use Permits, Puuloa and Kapolei Ground Water Management Areas, Oahu

PRESENTATION OF SUBMITTAL: Ms. Lenore Nakama

AMENDED RECOMMENDATIONS:

That the Commission:

1. Extend the interim permits shown in Exhibit 4, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former special conditions):

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

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

   c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride, unless a variance from the chloride limit has been granted.

   d. The duration of the interim permit shall be

      a) to July 1, 2006, or
      b) until treated wastewater is available and acceptable for use, or
      c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.
e. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).

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

g. Require adherence to the chloride sampling protocol shown in Exhibit 8 and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirements is delegated to the Chairperson.

h. Require adherence to the Conservation Conditions shown in Exhibit 9.

i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

2. Grant variances from the 1,000 mg/l chloride limit to Hawaii Prince Golf Club (Well Nos. 1900-02, 1900-17 to 20, 1901-03), Pacific Tsunami Warning Center (Well No. 1900-23), and The Estate of James Campbell (Well Nos. 1905-08,10). The variances shall expire six (6) months after the first date of reclaimed water service delivery.

3. Delegate the authority to the Chairperson to approve future variance requests.

4. The permittees shall be notified by letter of the Commission action and extended permit duration. Re-issuance of new interim water use permits for these extended permits is unnecessary.

5. Suspend the four-year period of nonuse for the Hawaii Prince Golf Club, Coral Creek Golf Course and Barbers Point Kapolei Golf Course, beginning from the first date of reclaimed water service delivery under their agreement with the Board of Water Supply. The suspension will be for the duration of these interim permits or until the agreement with Honolulu Board of Water Supply for reclaimed water service delivery ends whichever comes first. This condition shall apply to any other interim permittee that converts to reclaimed water service.

TESTIMONY BY APPLICANT:

Ms. Terry Kondo of Watanabe Ing & Kawashima representing Hawaii Prince Golf Course expressed concerns on staff recommendations #2, and 1g.

Mr. Tom Nance stated that when the golf course switches over to the effluent, the wells will not be run weekly. They will be run on occasion to keep them viable for use when effluent is not available. They will not be used on a weekly basis so providing a weekly data will become difficult. In the case of Hawaii Prince, samples that were obtained at one-half to
one-hour intervals were misleading. An internal sample protocol was developed so that all wells have to be run continuously for 24 hours before samples can be obtained. For that reason, Mr. Nance asked if condition 1 g could be modified that reporting be done on a monthly basis. He stated that trends are better noticed on a monthly data report.

Ms. Nakama stated that an administrative waiver was granted for Kapolei Golf Course because the long-term data was so stable. No significant movements were indicated in the water levels. Hawaii Prince and Coral Creek could request an administrative waiver from the weekly chloride-sampling requirement from the Chairperson.

Mr. Glenn Bauer stated that records showed that there were no major differences for Hawaii Prince's chlorides in the weekly and monthly data. He felt that monthly data reporting would be sufficient.

MOTION: (NOBRIGA/GIRALD)
To approve the submittal as amended. 
UNANIMOUSLY APPROVED AS AMENDED.

5. County of Hawaii, Department of Public Works, Application for a Stream Channel Alteration Permit (SCAP-HA-325), Install Three Concrete Culverts and Replace Bridge Structures, Waiakea Stream, Hilo, Hawaii (TMK 2-4-01:007, 010, 122)

PRESENTATION OF SUBMITTAL: Mr. Edwin Sakoda

RECOMMENDATION:

That the Commission:

Approve a stream channel alteration permit for the construction of culverts at Puainako Street and bridge modifications at Komohana Street, Waiakea Stream, Hilo, Hawaii (TMK: 2-4-01:007, 010, 122). The permit shall be valid for two years subject to the standard stream channel alteration permit conditions in Exhibit 5.

MOTION: (NOBRIGA/RICHARDS)
To approve the submittal.
UNANIMOUSLY APPROVED.


PRESENTATION OF SUBMITTAL: Mr. Ryan Imata
EXTENSION OF INTERIM WATER USE PERMITS
Puuloa and Kapolei Ground Water Management Areas, Oahu

PERMITTEE(S): See Exhibit 1
LANDOWNER(S): See Exhibit 1

LOCATION MAP: See Exhibit 2

BACKGROUND:

On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer overlying the existing designated ground water management areas of the Waipahu-Waiawa, Ewa-Kunia, and Makaíwa Aquifer Systems. Due to uncertainties regarding the caprock’s sustainable yield and nonpotable utility, the Commission did not adopt a sustainable yield estimate for the caprock. Then-current uses were operating under permanent water use permits.

Designation of the Ewa Caprock as a water management area was precipitated by the City and County of Honolulu’s (City) urbanization plans for the Ewa area and a City ordinance requiring dual water systems for all new developments. Potable water was to be provided through the municipal system. Possible sources of non-potable water were brackish ground water from the Ewa Caprock aquifer and reclaimed sewage effluent. The estimated non-potable demand of 25 mgd after full buildout (Kumagai, 1996) far exceeded the estimated natural recharge to the caprock aquifer of less than 16 mgd (Bauer, 1996).

Because there were concerns regarding the future viability of the caprock as a dependable source of brackish water due to the significant loss of return irrigation recharge from sugarcane agriculture, in 1993, the Commission began awarding temporary one-year permits for new uses of caprock ground water. In analyzing water availability, the Commission used guidelines for estimating sustainable yields for the Puuloa, Kapolei, and Malakole areas (Yuen & Associates, Inc., 1989).
On July 13, 1994, the Commission extended temporary one-year permits. The duration of the extended permits was to July 12, 1995.

At the July 5, 1995 Commission meeting in Honokaa, Hawaii, the Commission extended the permits, which were now called interim permits, until such time that a formal decision could be made on Oahu.

On March 13, 1996, the Commission deferred action on existing interim permits and new applications pending a decision on the establishment of a sustainable yield for the caprock.

Also on March 13, 1996, the Commission adopted the following policy statement, clearing the way for application of reclaimed water on lands overlying the Ewa Caprock Aquifer:

"It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses."

On May 14, 1997, the Commission adopted a sustainable yield based on a sustainable capacity for individual irrigation wells at 1,000 milligrams per liter (mg/l) of chloride as an interim management plan, subject to review within two (2) years. The rationale behind the chloride cap was to limit pumpage in those wells approaching the limit, to prevent a build-up of sodium in the clay soils, and to protect other users adjacent to those pumping higher chloride water. The Commission also adopted the Puuloa, Kapolei, and Malakole Aquifer Systems in the Ewa Caprock Sector and approved pending applications for new and continued irrigation uses. The specified duration of the interim water use permits was to October, 1998 or until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The October, 1998 date coincided with the possible revocation of unused (former Oahu Sugar Company) agricultural permits and also provided a milestone date to check on the progress of wastewater reuse for private caprock well owners, the availability of which was then scheduled for July, 1999.

On October 22, 1998, the Commission extended the interim water use permits, subject to the Standard Conditions of a water use permit and new special conditions (Exhibit 3). The interim permits specified a duration to: 1) July, 2001, or 2) until treated wastewater is available and acceptable for use, or 3) until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The list of interim permits due to expire in July, 2001 is shown in Exhibit 4. The graphs of reported pumpage and chlorides are shown in Exhibit 5.

On July 20, 2000, an agreement was reached between the Honolulu Board of Water Supply (BWS), the City, and U.S. Filter for BWS' purchase of the Honouliuli Wastewater Reclamation Facility. The agreement includes BWS becoming the purveyor of reuse water, with the task of securing customers for 10 mgd by July 1, 2001. U.S. Filter will operate the facility for BWS under a 20-year service agreement. The City will provide secondary effluent to the facility and will take back 4 mgd of the R-1 water for City reuse applications. Some of the reclaimed water will supply industrial uses at Campbell
Industrial Park. (A briefing by the BWS on their reclamation program is scheduled as a separate item on this agenda.)

ANALYSIS/ISSUES:

A significant change in the water supply picture has been the acquisition of the Honouliuli Wastewater Reclamation Facility by the BWS and BWS' new role as purveyor of reclaimed water. Since their recent acquisition of the plant, BWS has been actively promoting the use of reclaimed water for non-potable needs over the Ewa Caprock Aquifer. Negotiations have been finalized for some City projects (West Loch and Ewa Villages developments) and for some of the golf courses that have interim caprock permits. Currently, we understand that a memorandum of understanding for golf course irrigation has been negotiated with Coral Creek, Hawaii Prince, and Barber's Point. The agreement provides for a set rate to July 1, 2006. The staff feels that this would be a good time to revisit these permits and the progress of the reclaimed water effort.

Even with reclaimed water as the primary irrigation source, ground water would still be used for the golf course water features, to maintain the pumps, and to mitigate potential reclaimed water quality or odor issues that may arise. The long-term goal of the golf courses is to blend reclaimed water with caprock ground water. Until reclaimed water is actually delivered and has been shown to be a reliable and acceptable source, the golf courses have requested that their interim permits be renewed for the same quantities. They have also requested that the Commission suspend the four-year nonuse clause for permit revocation. Section 174C-58 Haw. Rev. Stat. provides for the Commission and permittee to enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year revocation period. The staff feels that the promotion of alternative non-potable sources to meet non-potable needs is a satisfactory reason to suspend the four-year revocation period, given the uncertainties associated with this new source conversion, provided that other users and the resource are adequately protected.

PROTECTION OF THE RESOURCE

The current sustainable yield for the caprock aquifers is defined by a sustainable capacity at all irrigation wells in the Puuloa and Kapolei Aquifer Systems which prohibits individual pumpages that cause the specific well to exceed a 1,000 mg/l chloride cap. Enforcement of the chloride cap provides adequate protection for the aquifer. Management of the resource via a chloride cap was adopted on May 14, 1997 as an interim management plan. The staff feels that this management approach has been effective and is not recommending that the strategy be changed at this time.

MAXIMIZING THE UTILITY OF THE RESOURCE

Maximizing the utility of the caprock is intimately tied to wastewater reuse. As wastewater reuse comes on line, the sustainable yield of the caprock will increase, meaning more pumpage may be sustained under the 1,000 mg/l chloride limit. However, the distribution of reclaimed wastewater is uncertain, which will affect chloride distributions and total nonpotable supply. Of the projected total 13 mgd of R-1 water from the Honouliuli Wastewater Reclamation Plant, 1 mgd is needed for in-plant process water, and 2 mgd is planned for industrial uses at James Campbell Industrial Park. This leaves about 10 mgd available for irrigation needs in the region.
Given the City’s current plans, the staff estimates that the potential future supply of nonpotable water for irrigation uses on lands overlying the Puuloa Aquifer System, where the competition for nonpotable irrigation water is most severe, could be up to about 15 mgd: 10 mgd reclaimed water plus approximately 5 mgd natural sustainable yield (Bauer, 1996). This assumes that 100% of the treated effluent will be available for reuse in Puuloa, which is improbable. But the availability of reclaimed water will present permittees with a possible alternative should their wells exceed the 1,000 mg/l chloride limit. Likewise, should the 1,000 mg/l limit not be exceeded, the permittees may continue to pump and may even work out a management plan which would allow for alternating between caprock and wastewater reuse to maximize the economical use of both resources. But ultimately, based on current reclaimed water plans, total allocations for the Puuloa Aquifer System should not exceed 15 mgd. Current allocations in the Puuloa Aquifer System total 14.817.

WELL INTERFERENCE

Since there are no ground-water models (solute-transport) that can predict chloride response to pumpage at individual well sites, close monitoring of the resource and enforcement of the chloride cap is critical to protect the resource in this interim period while the City finalizes plans to fully implement its reclamation program. Exhibit 6 shows that the caprock aquifer was significantly influenced by sugarcane irrigation practices and is still in a state of flux. Currently, all interim permittees are required to submit weekly reports of pumpage, water levels, chlorides, and water temperature (unless a variance from this requirement has been approved). All permittees have been put on notice that the reporting requirement will be strictly enforced.

Although enforcement of the 1,000 mg/l chloride cap at each well site will provide adequate protection for the resource, it may not be sufficient to preclude well interference. However, not only will wastewater reuse further protect the resource, it will also help to reduce the effects of well interference that may cause individual wells to exceed the 1,000 mg/l chloride cap. Special Condition f. has been added to the existing interim permits recommended for extension and will be added to all future caprock permits to put the permittees on notice of the risk of reliance on caprock ground water and its uncertain sustainable yield.

The staff has been sending all interim permittees in Puuloa the monthly bulletin which shows all pending permit applications, which should provide the permittees sufficient notice of new proposed uses of Puuloa Caprock ground water. Permittees should review new applications and water data from other nearby wells to proactively protect their sources. Permittees are encouraged to submit comments or objections in accordance with Administrative Rule 13-171-18 (Objection to Proposed Water Use Permit). Further, the staff has been analyzing the weekly water data reports, and we are continuing to work on triggers to implement a water shortage plan. These triggers may be related to some modification of Exhibit 6. Should valid claims of well interference be raised, either by permittees or as a result of the staff’s analysis, the Commission may consider implementing a water shortage plan to address the well interference issue.

At this time, only an informal and incomplete water shortage plan exists. On May 14, 1997, the Commission approved a permit classification system for a water shortage plan for the Puuloa Aquifer System as provided under Administrative Rule 13-171-42:

" (a) The commission shall formulate a plan for implementation during periods of water shortage. As a part of the plan, the commission shall adopt a reasonable system of permit
classification according to source of water supply, method of extraction or diversion, use of water, or a combination thereof.

(b) In accordance with this chapter, the commission may impose such restrictions on one or more classes of permits as may be necessary to protect the water resources of the area from serious harm and to restore them to their previous condition.

(c) All permittees, unless exempted by the commission, shall submit a water shortage plan outlining how it will reduce its own water use in case of a shortage. Every water shortage plan shall be subject to approval or modification by the commission."

For the Puuloa Aquifer System, the Commission established the highest priority of nonpotable use as agriculture because the State’s policy is to promote agriculture, and also because agricultural correlative uses are assured through the 1978 Constitutional Amendment. The second priority in water use is golf course irrigation because of the economic impacts that may result from inadequate water supply. The lowest priority in water use is landscape irrigation and dust control.

Water shortage plans were requested from all of the users in Puuloa, with the exception of United States Fish and Wildlife Service. The requirement to submit individual water shortage plans is highlighted in the cover letter that transmits the permit and is also stated in Standard Condition 17. The staff will continue to work with users to develop their individual plans. As part of the May 14, 1997 action, the Commission has also delegated the authority to the Chairperson to approve individual water shortage plans and the regional water shortage plan for the Puuloa Aquifer System.

CHLORIDE CONCENTRATION TRENDS

The Commission staff established a caprock well monitoring network in 1993. Each month, the staff collects water level and chloride data at selected caprock wells. The staff’s analysis of the chloride trends at the individual wells and regionally is attached (Exhibit 7). The data show that the chloride concentration in the caprock water varies significantly from place-to-place and from well to well. Some of the reasons for these disparities include the subsurface geology, distance from the coast, well construction, pump capacity, and pumping schedule. Many of the sources have not exceeded the 1,000 mg/l chloride limit. The baseline data suggest that those wells that have exceeded the limit will continue to pump water exceeding 1,000 mg/l of chloride unless there is an influx of less saline water or a complete cessation of pumpage. The staff recommends that those operators with wells and/or batteries having >1,000 mg/l of chloride should apply for a variance from the established limit. Once reclaimed water is available, these wells should only be used for back-up purposes or for blending with reclaimed water to a quality of 1,000 mg/l of chloride or less.

Currently, variances from the chloride cap have been granted to Hawaii Prince Golf Club (Well Nos. 1900-02, 1901-17 to 20, 1901-03) and Pacific Tsunami Warning Center (Well No. 1900-23). In a letter dated August 7, 2000, The Estate of James Campbell (Campbell) requested that the Commission waive the salinity limit for its two nonpotable wells (Well Nos. 1905-08,10). The Commission denied the request on November 16, 2000 because Campbell was in the process of transferring the nonpotable system to the BWS and an alternative source (reclaimed water) would soon be in place. Negotiations are still ongoing for the transfer of the nonpotable water system. Chloride levels at the Campbell wells are now about 1,200 ppm. The staff is recommending that the Commission approve temporary variances from the chloride limit pending the implementation of the reclaimed water system for those users that have requested variances. Other users whose wells are close to the chloride cap may also request variances. Unless a variance is requested and approved, wells exceeding the chloride limit
must shut down. The staff's recommendation on a variance request would be made with consideration to the well's proximity to the ocean and to other wells, it's history of chloride and pumpage, the availability of alternative sources of water and possibility for conversion. The staff is recommending that future variance requests be delegated to the Chairperson for disposition.

RECOMMENDATIONS:

That the Commission:

1. Extend the interim permits shown in Exhibit 4, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former special conditions):
   a. Should an alternate permanent source of water be found, the Commission reserves the right to revoke the permit, after a hearing.
   b. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.
   c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride, unless a variance from the chloride limit has been granted.
   d. The duration of the interim permit shall be
      a) to July 1, 2006, or
      b) until treated wastewater is available and acceptable for use, or
      c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.
   e. Action on any interim permit may be initiated by the Commission or any permittee upon letter request or pursuant to §174C-57 Haw. Rev. Stat. (Modification of permit terms).
   f. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.
   g. Require adherence to the chloride sampling protocol shown in Exhibit 8 and the submittal of weekly chloride data.
   h. Require adherence to the Conservation Conditions shown in Exhibit 9.
   i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

2. Grant variances from the 1,000 mg/l chloride limit to Hawaii Prince Golf Club (Well Nos. 1900-02, 1900-17 to 20, 1901-03), Pacific Tsunami Warning Center (Well No. 1900-23), and
The Estate of James Campbell (Well Nos. 1905-08,10). The variances shall expire six (6) months after the first date of reclaimed water service delivery.

3. Delegate the authority to the Chairperson to approve future variance requests.

4. The permittees shall be notified by letter of the Commission action and extended permit duration. Re-issuance of new interim water use permits for these extended permits is unnecessary.

5. Suspend the four-year period of nonuse for the Hawaii Prince Golf Club, Coral Creek Golf Course and Barbend Point Golf Course, beginning from the first date of reclaimed water service delivery under their agreement with the Board of Water Supply. The suspension will be for the duration of these interim permits or until the agreement with Honolulu Board of Water Supply for reclaimed water service delivery ends whichever comes first. This condition shall apply to any other interim permittee that converts to reclaimed water service.

Respectfully submitted,

LINNEL T. NISHIOKA
Deputy Director

Attachment(s):
A (Standard Conditions for a Water Use Permit)

Exhibit(s):
1 (Interim Permittees and Landowners at the Source Location)
2 (Well Location Map)
3 (Standard and Special Conditions, approved October 28, 1998)
4 (Interim Permitted Uses, Puuloa and Kapolei Aquifer Systems)
5 (Graphs of Reported Pumpage and Chlorides)
6 (Chloride and Pumpage of Ewa Plantation Shallow Wells)
7 (Chloride Concentration Trends)
8 (Chloride Sampling Protocol)
9 (Conservation Conditions)
STANDARD WATER USE PERMIT CONDITIONS

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

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its July 20, 2001 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:

ATTACHMENT A
Staff Submittal

July 18, 2001

a. protect the water sources (quantity or quality);
b. meet other legal obligations including other correlative rights;
c. insure adequate conservation measures;
d. require efficiency of water uses;
e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

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

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

12. A permit may be transferred, in whole or in part, from the permittee to another, if:

a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
b. The Commission is informed of the transfer within ninety days.

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

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

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

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

ATTACHMENT A
pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.

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

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

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

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

Exhibit 1
<table>
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<tr>
<th>PERMITTEE</th>
<th>ADDRESS</th>
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<th>ZIP</th>
<th>LANDOWNER</th>
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<td>PAC DIV, NAVFAC ENG. CMD.</td>
<td>PEARL HARBOUR 96860</td>
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</table>
EWA CAPROCK INTERIM PERMITS
Special Conditions
(approved on October 22, 1998)

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

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

c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride.

d. The duration of the interim permit shall be to
   a) to July, 2001, or
   b) until treated wastewater is available and acceptable for use, or
   c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

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

f. Require adherence to the chloride sampling protocol (Attachment C) and the submittal of weekly chloride data.

g. Require adherence to the Conservation Conditions (Attachment D).
STANDARD WATER USE PERMIT CONDITIONS

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

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its October 22, 1998 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;

EXHIBIT 3
e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;

f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or

g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

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

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

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

13. A permit may be transferred, in whole or in part, from the permittee to another, if:

   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

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

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

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

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

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

18. The water use permit granted shall be an interim water use permit, pursuant to HAR § 13-167-3(6). The final determination of the water use quantity shall be made within five years.

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

20. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.
Aquifer System Water Use Permit Index

**ISLAND OF OAHU**

<table>
<thead>
<tr>
<th>WUP No</th>
<th>Approved</th>
<th>Applicant</th>
<th>Well No.</th>
<th>Well Name</th>
<th>WUP (mgd)</th>
<th>12-MAV (mgd)</th>
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<td>182</td>
<td>5/14/87</td>
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Summary for 'SYSTEM' = KAPOLEI (8 detail records)

Totalling 2.033 1.552

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Monday, May 21, 2001

EXHIBIT 4
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Summary for 'SYSTEM' = PUULOA (25 detail records)

Totalling 4.867 3.468
Hawaii Prince G.C. Combined Pumpage
(Well Nos. 1900-02, 17 to 20; 1901-03)
Haseko (Ewa) Inc. Pumpage (EP27)
Well No. 1902-01

EXHIBIT 5

Date (latest data 4/01)

Monthly pumpage, 12-MAV, WUP, Max Cl-
Campbell Estate Caprock Pumpage
Kapolei Irr. Wells 1&2 (1905-08,10)

Combined Monthly Pumpage
12-MAV
WUP
1905-08 Chloride
Gentry Pacific, Ltd. Pumpage
Sunrise Apt. Well (Well No. 2001-04)

EXHIBIT 5

monthly values  requested amount  12-MAV
Ewa By Gentry Community Association
Soda Creek III (Well No. 2001-05)

date (latest data 4/01)

0.000  0.020  0.040  0.060  0.080  0.100  0.120  0.140
pumpage (mgd)

0  200  400  600  800  1000
chloride (mg/l)

monthly values  WUP  12-MAV  Cl- (mg/l)
Palm Villa II Homeowners Association
Palm Villa II Well (Well No. 2001-08)

EXHIBIT 5
Coral Creek Golf Course Withdrawals
Well 4 (2001-13)

EXHIBIT 5

---
pumpage (mgd)  ---  12-MAV  ---  max chloride level

date (latest data 4/01)
Coral Creek Golf Course Withdrawals
Well 1 (2002-15)

EXHIBIT 5

pumpage (mgd)  12-MAV  max chloride level
Coral Creek Golf Course Withdrawals
Well 2 (2002-17)

EXHIBIT 5

pumpage (mgd)

12-MAV

max chloride level

date (latest data 4/01)
Coral Creek Golf Course Withdrawals
Lake A (2002-19)

pumpage (mgd) 12-MAV max chloride level

pumpage (mgd) 12-MAV max chloride level
Kapolei Golf Course
Well Nos. 2003-01, 02, 05 Combined

(monthly pumpage)
State HCDCH Kapolei Wells
Well Nos. 2003-04,07 Combined

EXHIBIT 5
Chloride and Pumpage of Ewa Plantation
Shallow Wells, Ewa Caprock, Oahu

Start
Basal (high Cl) irrigation

Initial caprock Cl
(average year)

Basal (low Cl) irrigation

Stop

Average Chloride Concentration (mg/l)

Average Yearly pumpage (mgd)

Year

Average monthly pumpage (mgd)

EP-24  Gentry Palm Villa 1  Kapolei Golf B

Ref: CWRM, BWS Res., & R-79
June 5, 2001

MEMORANDUM FOR THE RECORD

FROM: Glenn Bauer

SUBJECT: Chloride Concentration Trends in the Ewa Caprock Aquifer

Background

Commission staff has been collecting water samples from various wells and well batteries within the caprock aquifer from Puuloa to Malakole since 1993. Our baseline sampling effort began before the demise of Oahu Sugar Company in 1994, and was augmented by the required reporting of weekly chlorides by caprock water users.

The end of sugar cultivation on the Ewa Plain brought with it an end to the importation of low to moderate salinity basal ground water for irrigation. Prior to 1994, when drip irrigation practices were employed, the estimated return irrigation component from basal ground water was 16 mgd (Mink, 1989) with 8 mgd going to the Puuloa area and 8 mgd going to the Kapolei-Malakole area. At the same time, the plantation pumped an average of 14 mgd (Bauer, 1996) from their shallow wells. After 1994, ground-water input to the caprock included natural inflow from the basal aquifer into the caprock and direct recharge from rainfall and storm runoff. Various authors report a range of natural inflow into the caprock from the basalt. Most of these numbers were derived by numerical models or by salinity mixing model equations and are small when considered on a flux/mile basis. Estimates range from <1 mgd to 3± mgd/mile (Bauer, 1996). Long-term annual average rainfall input over the Ewa Plain has been estimated to be about 5± mgd (summary of results in Bauer, 1996). In addition, long-term annual average for storm runoff recharge over the caprock from Kaloi and Makakilo Gulches was estimated to be between 1 and 2 mgd (Mink, 1989).

In 1997 the Commission adopted a 1,000 mg/l chloride cap for individual wells developing caprock water. The reasoning behind this cap was to limit pumpage in those wells approaching the limit and to prevent a sodium build-up in the clay soils which would adversely affect the growth of certain grasses for golf courses, and to protect other users adjacent to those using higher chloride water.

Chloride Trends Since 1994 East of Fort Weaver Road

The chloride concentration in the caprock water varies significantly from place-to-place, and from well to well. Some of the reasons for these disparities include the subsurface geology, distance from the coast, well construction, pump capacity, and pumping schedule.

Generally, those pumping batteries that have long-term records, are east and south of Fort Weaver Road and Iroquois Point Road respectively, show a rising trend in
chlorides over time. This trend is partly due to irrigation practices and partly due to the lack of recharge of fresher water into the aquifer and proximity to the shoreline.

**Ewa Beach International Golf Club**

For Ewa Beach International, chlorides have risen from a low of 1,000 mg/l in late 1996 (due to recharge from a large storm on Election night) to 1,800± mg/l at the present time. CWRM staff samples Well No. 1900-21 at a 1-acre pond (Pond E). Evaporation from the pond undoubtedly affects chloride concentration. Pumpage from this source is less than 1 mgd.

**Hawaii Prince Golf Club**

Hawaii Prince Golf Club pumps water from 6 wells. Total average pumpage is slightly greater than 1 mgd. CWRM staff typically samples the wells after they have been running for several hours. Hawaii Prince Irrigation Wells 1-5 (1901-03, 1900-17-20) and EP-22 (1900-02). Chloride concentration in Hawaii Prince Wells 1 and 2 have remained relatively stable over the period of record. Well 1 remains about 1,000 mg/l, while Well 2 changed from about 1,000 mg/l in 1994 to 1,200± mg/l at the present time. Wells east of Well 2 are much more saline. The magnitude of the increase in salinity has ranged from 300 mg/l (Well 3) to 500 mg/l (Well 5 and EP-22) over the period of record.

**U. S. Fish and Wildlife Well 2101-14**

This well is north of Iroquois Point Road. Average pumpage is less than 0.5 mgd. The chloride concentration has shown an improvement since 1996 and remains stable at 1,000± mg/l.

**Chloride Trends Since 1994 West of Fort Weaver Road**

**Gentry Wells**

CWRM staff has monitored 5 of the 9 wells developed by Gentry. These wells are low capacity and are used exclusively for irrigation of the common areas within each development. Total Gentry pumpage is less than 0.5 mgd. Since 1997, chloride concentration has remained consistently between 400 and 800 mg/l, well below the 1,000 mg/l cap. The wells monitored are Palm Villa I (2001-06), Palm Villa II (2001-08), Palm Court III (2002-12, monitoring discontinued in 1997), Sunrise (2001-04), and Sun Terra (2001-05). Pump capacities for these wells range from 100-110 gpm.

**Haseko EP-27 Well (1902-01)**

CWRM staff began monitoring this source in 1994 just after the closing of Oahu Sugar. Static (non-pumping) samples were collected from the open pit near the pump house. Chlorides ranged from 800 to 900 mg/l. In 1997, Haseko began to pump this source at rates approaching 2 mgd. The average rate is about 1 mgd. Chloride
concentration remains stable at 900± mg/L. The stable nature could be that the pumping source skims the top water from the pit.

Coral Creek Golf Course

In 1998, several large pits were excavated and noted north and south of Geiger Road just east of the Honouliuli STP. These pits and drilled wells became part of the Coral Creek battery. Water from the pits is used for water features and for a back-up source (Lake Well 1, 2002-19). Coral Creek Golf Club irrigates using water from Coral Creek Well 1 (2002-15), Coral Creek Well 2 (2002-17), and Coral Creek Well 4 (2001-13). Pumpage is slightly greater than 1 mgd; however, the chloride concentration from the sources ranges between 1,000 mg/l to almost 4,000 mg/l at Well 2. According to golf course personnel, Well 4 pumps the least amount and is the most stable in terms of chloride concentration. It was also noted by golf course personnel that the longer Well 1 and 2 pumps, the saltier the water becomes. Pump capacities for these wells are high. Coral Creek 1 and 2 have 800 gpm pumps, while Coral Creek 4 has a 1,000 gpm pump.

High evaporation rate (close to 90 inches/year) in the Ewa Plain could cause the salinization of the lakes, which, in turn, could be the reason for the high chlorides localized at Well 1 and 2. However, the chloride samples taken from the Lake Well 1 show concentrations ranging from 1,000 to 1,200 mg/l. At the present time, Coral Creek's saline water does not seem to affect the Gentry sources to the east.

Chloride Trends Since 1994 in the Kapolei Region

HFDCH Kapolei Golf Course

The Kapolei Golf Course utilizes Kapolei Irrigation Wells A, B, C, D, E, and C-1 (well nos. 2003-01-05, 07). Well C-1 is a replacement well for Well C. Chlorides have been remarkably stable, hovering between 200± mg/l to 600 mg/l, with little variation or trends. It is thought that basal ground-water inflow from the Waianae aquifer in conjunction with a thin caprock is responsible for the stability of the water chemistry in this area. Variations in pumpage are seasonal, but average about 1 mgd.

Kapolei City Wells

Campbell Estates' Kapolei City Wells (1905-08, 10) supply irrigation water for Kapolei. Average daily pumpage is less than 0.5 mgd. Since 1995 chloride concentrations in both wells have been rising from 600 mg/l to 1,200-1,400 mg/l at the present time. Well 1905-08 (east well) water quality is slightly better than 1905-10. Duration of pumpage prior to sample collection probably influences the chloride concentration. However, it is evident that the overall trend is upwards.

Conclusions
Since the cessation of sugar irrigation the common chloride trend is generally a linear increase for wells that exceed the 1,000 mg/l cap. The long-term prognosis for these wells will be a continued increase in salinity. However, there are several well batteries and wells that do not fit this trend (e.g. U.S. Fish and Wildlife, Gentry, Haseko, HFDCH Kapolei), and exhibit remarkable chloride stability. The scatter of chloride data associated with Coral Creek cannot be easily explained. Bottom hole elevations are not as great as some of the Gentry Wells, yet the chlorides are much greater and the sensitivity of chloride concentration to pumpage suggest that localized upconing, in conjunction with the high pump capacities, is taking place. Moreover, the relationship of the large lakes (surface evaporation) to the wells is not clearly understood and could play a role in contributing to the pool of high chloride ground water.

As stated above, many of the sources have not exceeded the 1,000 mg/l cap. Those that have, the baseline data suggest that these wells will never pump ≥1,000 mg/l again unless there is an influx of less saline water (e.g. reuse, an increase of recharge from storms i.e. a more normal weather pattern) or a complete cessation of pumpage. In the meantime, those operators with wells and/or batteries >1,000 mg/l chloride should apply for a variance from the 1,000 mg/l cap. It should be implicitly stipulated that once reuse is available, then these wells will only be used as back-up sources or blended with reuse water to a quality of 1,000 mg/l or less.

References:


Ewa Beach International Golf Club
Pumpage and Chlorides

EXHIBIT 7
Hawaii Prince Golf Course
Pumpage and Chlorides

Month/Year

Average Monthly Pumpage (mgd)

Monthly Chloride (mg/l)

1,000 Cl Cap  EP22  HP Well 1  HP Well 2
HP Well 3  HP Well 4  HP Well 5
U. S. Fish and Wildlife Well 2101-14
Pumpage and Chlorides

Average Monthly Pumpage (mgd)

Monthly Chloride (mg/l)

Month/Year

1,000 Cl Cap
Gentry Wells
Pumpage and Chlorides

Average Monthly Pumpage (mgd)

Month/Year

1,000 Cl Cap  ● Palm Villa I  ■ Palm Villa II
■ Palm Court  ● Sun Terra  ▲ Sunrise
Coral Creek Golf Course
Pumpage and Chlorides

Average Monthly Pumpage (mgd)

Month/Year

1,000 Cl Cap  •  Lake Well 1  ■  Well 2  ▼  Well 1  x  Well 4

Monthly Chloride (mg/l)
Kapolei City Wells (Campbell Estate)
Pumpage and Chlorides

![Graph showing pumpage and chlorides over time for Well 1905-10 (West Well) and Well 1905-08 (East Well). The graph includes a 1,000 CI cap and indicates data points for each well over the years 1994-2002.]
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWA CAPROCK

1. Sample Collection

- Sampling Schedule

The sampling schedule depends upon your pump capacity:

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<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
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<td>Greater than 50</td>
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</table>

- When to Sample

Before taking a sample, allow a minimum length of time to elapse after turning on the pump. This minimum time can be read off the attached table for your well casing diameter and your pump capacity. If you sample 20 minutes after the minimum time, you should consistently sample 20 minutes after the minimum time each time you take samples.

- Sample Bottle

Use a plastic container and cap that holds a volume of about a pint. Rinse the container three times with the water to be sampled before taking the sample. Also rinse the cap with sample water.

- Labeling

On the sample bottle, affix a label that contains the following information:

Well No.
Date
Time Sampled
Elapsed Time after pump on
Sampler’s Name
Water Temperature (if available)
Pumping Rate (prior to sampling)
2. **Determination of Chloride Concentration**

- **Private Laboratories**

  If the sample is sent to a private laboratory, then prepare the water sample and label the bottle in the manner described above.

  Private laboratories will use methods that are more accurate than field methods described below.

- **Hach Kit (Drop Count Titrator)**

  Be aware of the approximate chloride concentration range in your well. Use the appropriate sample bottle for titration. **Be consistent with the end-point color change.**

  For low chloride concentrations (5-100 mg/l) each drop will equal 5 mg/l. For higher concentrations (20-400 mg/l) each drop equals 20 mg/l. Other kits for concentrations greater than 400 mg/l (500-10,000 mg/l) each drop is equal to 500 mg/l. Obviously, for water greater than 400 mg/l, a "drop-count" Hach Kit is not appropriate, and a digital titrator, described below, should be used.

- **Hach Kit (Digital Titrator)**

  A digital titrator is the appropriate method for water with greater than 400 mg/l chloride. A digital titrator using silver nitrate is accurate to within 10 mg/l for a chloride range from 10-10,000 mg/l, and for a titrator using mercuric nitrate accuracy varies from 0.1-20 mg/l for a chloride range of 10-8,000 mg/l.

  **Note:** **Be consistent with the end-point color.**

  Silver nitrate ages and needs to be replenished within the recommended guidelines of the Hach Company.

- **Other Methods**

  An ion-selective probe for chloride is available, and can measure concentration from 1.8-35,500 mg/l.
3. **Reporting Results**

- **How to Report**

The following information should be entered on the "Monthly Ground Water Use Report" form provided by the Commission on Water Resource Management:

1. Chloride concentration (mg/l) and temperature (°F) in the columns provided.

**Under “Notes” Section of the Monthly Water Use Report:**

2. Method used for chloride analysis: ________________

3. Total elapsed time before sampling: ______________

If there are any questions, please call the Commission on Water Resource Management staff at 587-0265 on Oahu or toll free from the neighbor islands 1-800-468-4644 ext. 70265.
### FIVE WELL VOLUMES PLUS 60 MINUTES MINIMUM TIME BEFORE CHLORIDE SAMPLING

<table>
<thead>
<tr>
<th>CASING DIAMETER (in.)</th>
<th>PUMP CAPACITY (gpm)</th>
<th>MINIMUM TIME (min.)</th>
</tr>
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<td>72</td>
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</table>

1 Assumes saturated well depth of 100 feet.

2 Five well volumes is a standard guideline recommended by EPA.
CONSERVATION CONDITIONS

EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

   a. Reduce the demand for non-potable water by:
      
      • Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      • Mulching planting areas with organic materials, etc., to minimize evaporation;
      • Efficiently maintaining the plants;
      • Improving land management practices to conserve water.

   b. Improve efficiency in use and reduce losses and waste of non-potable water by:
      
      • Using efficiently designed landscaping and irrigation systems;
      • Monitoring irrigation requirements and controlling usage accordingly;
      • Managing irrigation scheduling to minimize water demand;
      • Eliminating opportunities for water wastage;
      • Maintaining and improving irrigation systems as necessary.

   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

EXHIBIT 9
<table>
<thead>
<tr>
<th>SENDER:</th>
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<tbody>
<tr>
<td>Complete items 1 and/or 2 for additional service.</td>
</tr>
<tr>
<td>Complete items 3, and 4a &amp; b.</td>
</tr>
<tr>
<td>Print your name and address on the reverse of this form so the return card is yours.</td>
</tr>
<tr>
<td>Attach this form to the front of the mailpiece, or on the back if space does not permit.</td>
</tr>
<tr>
<td>Write “Return Receipt Requested” on the mailpiece below the article number.</td>
</tr>
<tr>
<td>The Return Receipt will show to whom the article was delivered and the date delivered.</td>
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</table>

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<td>Palm Villas II Association</td>
</tr>
<tr>
<td>91-1119 Mikohu St. #3</td>
</tr>
<tr>
<td>Ewa Beach HI 96706</td>
</tr>
<tr>
<td>(Well # 2001-08)</td>
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</table>

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<td>☐ Return Receipt for Merchandise</td>
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<th>6. Signature (Agent)</th>
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<th>7. Date of Delivery</th>
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<tr>
<th>8. Addressee’s Address (Only if requested and fee is paid)</th>
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<td>[Address]</td>
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Thank you for using Return.
Print your name, address and ZIP Code here.

COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. Box 621
Honolulu, Hawaii 96809

Attn: Lenore
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Palm Villas II Association
91-1119 Mikohu St., #D
Ewa Beach, HI 96706

Dear Permittee:

Notice Of Action
Extension of Interim Water Use Permits
Puuloa and Kapolei Ground Water Management Areas, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on October 22, 1998, to extend your interim water use permit, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former special conditions):

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

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

c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride.

d. The duration of the interim permit shall be to
   a) to July, 2001, or
   b) until treated wastewater is available and acceptable for use, or
   c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

e. This permit is approved under the assumption that wastewater will become available for reuse as an alternative supply source.
f. Require adherence to the chloride sampling protocol (Attachment C) and the submittal of weekly chloride data.

g. Require adherence to the Conservation Conditions (Attachment D).

Although specific action was not taken, the Commission did note that variances approved through the May 14, 1997 action are also extended.

The Commission decided that interim permittees shall be notified by letter of the Commission action and extended permit duration and that re-issuance of new interim water use permits for these extended permits is unnecessary. Attachment B shows the list of extended interim permits.

Please be advised that the Commission directed staff to strictly enforce the weekly water data reporting requirement and the requirement to submit a water shortage plan. (If you have not done so already, please submit your water shortage plan, as required under Standard Condition 17.) In addition, all interim permittees will be sent the monthly bulletin which shows all pending permit applications. Permittees are encouraged to review new applications and water data from nearby wells to proactively protect their sources.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

TIMOTHY E. JOHNS
Deputy Director

LN:ss

Attachment(s): A (Standard Conditions for a Water Use Permit)  
B (Extended Interim Water Use Permits)  
C (Chloride Sampling Protocol)  
D (Conservation Conditions)
STANDARD WATER USE PERMIT CONDITIONS

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

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its October 22, 1998 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

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

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

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

13. A permit may be transferred, in whole or in part, from the permittee to another, if:

   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

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

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

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

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

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

18. The water use permit granted shall be an interim water use permit, pursuant to HAR § 13-167-3(6). The final determination of the water use quantity shall be made within five years.

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

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

ATTACHMENT A
**Extended Interim Water Use Permits**

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<tr>
<th>Permittee</th>
<th>Well No(s.)</th>
<th>WUP No.</th>
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<td>The Estate of James Campbell</td>
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<td>State of Hawaii, Housing Finance &amp; Development Corp.</td>
<td>2003-04, 07</td>
<td>432</td>
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<td>Kapolei People's Inc.</td>
<td>2003-01, 02, 05</td>
<td>438</td>
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<tr>
<td>Hawaii Prince Golf Club</td>
<td>1900-02, 17 to 20 &amp; 1901-03</td>
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<td>City and County of Honolulu Department of Parks and Recreation</td>
<td>2001-03</td>
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ATTACHMENT B
1. Sample Collection

- Sampling Schedule

The sampling schedule depends upon your pump capacity:

<table>
<thead>
<tr>
<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
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<tbody>
<tr>
<td>Less than or equal to 50</td>
<td>Once a month</td>
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<tr>
<td>Greater than 50</td>
<td>Once a week</td>
</tr>
</tbody>
</table>

- When to Sample

Before taking a sample, allow a minimum length of time to elapse after turning on the pump. This minimum time can be read off the attached table for your well casing diameter and your pump capacity. If you sample 20 minutes after the minimum time, you should consistently sample 20 minutes after the minimum time each time you take samples.

- Sample Bottle

Use a plastic container and cap that holds a volume of about a pint. Rinse the container three times with the water to be sampled before taking the sample. Also rinse the cap with sample water.

- Labeling

On the sample bottle, affix a label that contains the following information:

- Well No.
- Date
- Time Sampled
- Elapsed Time after pump on
- Sampler's Name
- Water Temperature (if available)
- Pumping Rate (prior to sampling)

Attachment C
2. Determination of Chloride Concentration

• Private Laboratories

If the sample is sent to a private laboratory, then prepare the water sample and label the bottle in the manner described above.

Private laboratories will use methods that are more accurate than field methods described below.

• Hach Kit (Drop Count Titrator)

Be aware of the approximate chloride concentration range in your well. Use the appropriate sample bottle for titration. Be consistent with the end-point color change.

For low chloride concentrations (5-100 mg/l) each drop will equal 5 mg/l. For higher concentrations (20-400 mg/l) each drop equals 20 mg/l. Other kits for concentrations greater than 400 mg/l (500-10,000 mg/l) each drop is equal to 500 mg/l. Obviously, for water greater than 400 mg/l, a 'drop-count' Hach Kit is not appropriate, and a digital titrator, described below, should be used.

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Note: Be consistent with the end-point color. Silver nitrate ages and needs to be replenished within the recommended guidelines of the Hach Company.

• Other Methods

An ion-selective probe for chloride is available, and can measure concentration from 1.8-35,500 mg/l.
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• How to Report

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Under "Notes" Section of the Monthly Water Use Report:

2. Method used for chloride analysis:______________

3. Total elapsed time before sampling:______________

If there are any questions, please call the Commission on Water Resource Management staff at 587-0265 on Oahu or toll free from the neighbor islands 1-800-468-4644 ext. 70265.
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1 Assumes saturated well depth of 100 feet.

2 Five well volumes is a standard guideline recommended by EPA.
CONSERVATION CONDITIONS
EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

   a. Reduce the demand for non-potable water by:

      • Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      • Mulching planting areas with organic materials, etc., to minimize evaporation;
      • Efficiently maintaining the plants;
      • Improving land management practices to conserve water.

   b. Improve efficiency in use and reduce losses and waste of non-potable water by:

      • Using efficiently designed landscaping and irrigation systems;
      • Monitoring irrigation requirements and controlling usage accordingly;
      • Managing irrigation scheduling to minimize water demand;
      • Eliminating opportunities for water wastage;
      • Maintaining and improving irrigation systems as necessary.

   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

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

STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
October 22, 1998
Honolulu, Oahu

EXTENSION OF INTERIM WATER USE PERMITS
Puuloa and Kapolei Ground Water Management Areas, Oahu

PERMITEE(S):

(Well Nos. 1905-08, 10)
The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI 96707

(Well Nos. 2003-04, 07)
State of Hawaii,
Housing Finance & Development Corp.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

(Well Nos. 2003-01, 02, 05)
Kapolei People's Inc.
91-701 Farrington Hwy.
Kapolei, HI 96707

(Well Nos. 1900-02, 17 to 20 & 1901-03)
Hawaii Prince Golf Club
91-1200 Fort Weaver Rd.
Ewa Beach, HI 96706

(Well No. 2001-03)
City and County of Honolulu
Department of Parks and Recreation
650 South King Street
Honolulu, HI 96813

(Well Nos. 2001-04, 09, 10)
Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809

LANDOWNER(S):

Same

Item 12
On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer overlying the existing designated ground water management areas of the Waipahu-Waiawa, Ewa-Kunia, and Makaiwa Aquifer Systems. Due to uncertainties regarding the caprock's sustainable yield and nonpotable utility, the Commission did not adopt a sustainable yield estimate for the caprock.

On April 28, 1993, the Commission awarded temporary one-year permits for new irrigation uses of ground water in the Ewa Caprock because there were concerns regarding the future viability of the caprock as a dependable source of brackish water due to the significant loss of return irrigation recharge from sugarcane agriculture. In analyzing water availability, the Commission used guidelines for sustainable yields for the Puuloa, Kapolei, and Malakole areas (Yuen & Associates, Inc., 1989).

On July 13, 1994, the Commission extended temporary one-year permits. The duration of the extended permits was to July 12, 1995.
At the July 5, 1995 Commission meeting in Honokaa, Hawaii, the Commission extended the permits, which were now called interim permits, until such time that a formal decision could be made on Oahu.

On March 13, 1996, the Commission deferred action on existing interim permits and new applications pending a decision on the establishment of a sustainable yield for the caprock. On May 14, 1997, the Commission adopted a sustainable yield based on a sustainable capacity for individual irrigation wells at 1,000 milligrams per liter (mg/l) of chloride as an interim management plan, subject to review within two (2) years. The Commission also adopted the Puuloa, Kapolei, and Malakole Aquifer Systems in the Ewa Caprock Sector and approved pending applications for new and continued irrigation uses. The specified duration of the interim water use permits is to October, 1998 or until such time that a significant change in permitted, actual, or projected uses or water supply occurs. The October, 1998 date coincides with the possible revocation of unused (former Oahu Sugar Company) agricultural permits and also provides a milestone date to check on the progress of wastewater reuse for private caprock well owners, the availability of which was then scheduled for July, 1999.

ANALYSIS/ISSUES:

There has been no significant change in permitted, actual, or projected uses or water supply. Current interim water use permits and 12-month moving average withdrawals are shown in Exhibit 2. (Standard and Special Conditions of the interim permits are shown in Attachments A and B.) Exhibit 3 contains a complete listing of all permitted uses in the Puuloa and Kapolei Aquifer Systems. (Please note that the October 22, 1998 agenda includes three items that, if approved, will reduce the total permitted uses in Puuloa.)

PROTECTION OF THE RESOURCE

The current sustainable yield for the caprock aquifers is defined by a sustainable capacity at all irrigation wells in the Puuloa and Kapolei Aquifer Systems which prohibits individual pumpages that cause the specific well to exceed a 1,000 mg/l chloride cap. Enforcement of the chloride cap provides adequate protection for the aquifer.

The chloride cap is tied to anticipated wastewater reuse, which was planned to occur via a percolation trench to recharge the caprock aquifer with up to 13 million gallons per day (mgd) of treated effluent (Kumagai, 1996, Final Report. Recommendation for Water Reclamation, Nonpotable Water Plan for Oahu, Prepared for: Commission on Water Resource Management, State of Hawaii, and Department of Wastewater Management, City and County of Honolulu). However, the City now plans to deliver R-1 water directly to individual users. In either reuse application, the current sustainable yield method is and has been an effective means to protect the aquifer.

MAXIMIZING THE UTILITY OF THE RESOURCE(S)

Maximizing the utility of the caprock is intimately tied to wastewater reuse. As wastewater reuse comes on line, the sustainable yield of the caprock will increase, meaning more pumpage may be sustained under the 1,000 mg/l chloride limit. However, the distribution of reclaimed wastewater is uncertain, which will affect chloride distributions and total nonpotable supply. Although the City has not yet made reclaimed water available for nonpotable uses that will support their plans for urbanization of the Ewa area and the City-required dual water systems for new urban
developments, the City has indicated that private irrigation uses over the caprock may be served by reclaimed water by July, 2001. Of the projected total 13 mgd R-I water from the Honolulu Wastewater Treatment Plant, 1 mgd is needed for in-plant process water, and 2 mgd is planned for industrial uses at James Campbell Industrial Park. This leaves about 10 mgd available for irrigation needs in the region.

The City is in the process of finalizing a contract with U.S. Filters for the construction, operation, and marketing for a reclamation system. Until the contract is finalized, the City will not enter into any agreements with individual users for the purchase of the R-I water. As such, Special Condition D (Attachment B) could not be met by the users, and these users should not be penalized for this noncompliance.

Given the City's current plans, the staff estimates that the potential future supply of nonpotable water for irrigation uses on lands overlying the Puuloa Aquifer System, where the competition for nonpotable irrigation water is most severe, could be up to about 15 mgd: 10 mgd reclaimed water plus approximately 5 mgd natural sustainable yield (Bauer, 1996). This assumes that 100% of the treated effluent will be available for reuse in Puuloa, which is improbable. But the availability of reclaimed water will present permittees with a possible alternative should their wells exceed the 1,000 mg/l chloride limit. Likewise, should the 1,000 mg/l limit not be exceeded, the permittees may continue to pump and may even work out a management plan which would allow for alternating between caprock and wastewater reuse to maximize the economical use of both resources. But ultimately, based on current reclaimed water plans, total allocations should not exceed 15 mgd.

Management of the resource via a chloride cap was adopted on May 14, 1997 as an interim management plan, subject to review in two (2) years. By May, 1999 or as total allocations begin to approach the total nonpotable supply in Puuloa, the Commission may consider establishing a regional sustainable yield, which would be something less than 15 mgd for the Puuloa area, unless additional water supply (e.g., expansion of the wastewater reclamation plant) becomes available. It is uncertain whether the chloride cap would be supplanted by a regional sustainable yield number.

WELL INTERFERENCE

Since there are no ground-water models (solute-transport) which can predict chloride response to pumpage at individual well sites, close monitoring of the resource and enforcement of the chloride cap is critical to protect the resource in this interim period while the City finalizes plans to implement a reclamation program. Exhibit 6 shows that the caprock aquifer was significantly influenced by sugarcane irrigation practices and is still in a state of flux. Currently, all interim permittees are required to submit weekly reports of pumpage, water levels, chlorides, and water temperature (unless a variance from this requirement has been approved). All permittees are put on notice that the reporting requirement will be strictly enforced.

Although enforcement of the 1,000 mg/l chloride cap at each well site will provide adequate protection for the resource, it may not be sufficient to preclude well interference. However, not only will wastewater reuse further protect the resource, it will also help to reduce the effects of well interference that may cause individual wells to exceed the 1,000 mg/l chloride cap. Special Condition e. has been added to the existing interim permits recommended for extension and will be added to all future caprock permits to put the permittees on notice of the risk of reliance on caprock ground water and its uncertain sustainable yield.

The staff proposes to send all interim permittees in Puuloa the monthly bulletin which shows all pending permit applications, which should provide the permittees sufficient notice of new proposed uses of Puuloa Caprock ground water. Permittees should review new applications and water data from other nearby wells to proactively protect their sources. Permittees are encouraged to submit comments or objections in accordance with Administrative Rule 13-171-18 (Objection to Proposed
Water Use Permit). Further, the staff has been analyzing the weekly water data reports, and we are currently working on triggers to implement a water shortage plan. These triggers may be related to some modification of Exhibit 6. Should valid claims of well interference be raised, either by permittees or as a result of the staff's analysis, the Commission may consider implementing a water shortage plan to address the well interference issue.

However, at this time, only an informal and incomplete water shortage plan exists. On May 14, 1997, the Commission approved a permit classification system for a water shortage plan for the Puuloa Aquifer System as provided under Administrative Rule 13-171-42:

"(a) The commission shall formulate a plan for implementation during periods of water shortage. As a part of the plan, the commission shall adopt a reasonable system of permit classification according to source of water supply, method of extraction or diversion, use of water, or a combination thereof.

(b) In accordance with this chapter, the commission may impose such restrictions on one or more classes of permits as may be necessary to protect the water resources of the area from serious harm and to restore them to their previous condition.

(c) All permittees, unless exempted by the commission, shall submit a water shortage plan outlining how it will reduce its own water use in case of a shortage. Every water shortage plan shall be subject to approval or modification by the commission."

The highest priority of nonpotable use is agriculture because the State's policy is to promote agriculture, and also because agricultural correlative uses are assured through the 1978 Constitutional Amendment. The second priority in water use is golf course irrigation because of the economic impacts that may result from inadequate water supply. The lowest priority in water use is landscape irrigation and dust control.

The priorities assigned to each permitted use and the maximum reductions indicated in the individual users' water shortage plans are shown in the last two columns of Exhibit 7. Individual water shortage plans outline smaller initial cutbacks (i.e., 10% to 30%), however under the most severe shortage situations, Exhibit 7 shows the maximum reduction in Puuloa Aquifer System pumpage would have been at least 3.718 mgd. However, this 3.718 mgd amount is subject to change following proposed revocation actions for unused agricultural allocations and formulation and adoption of a regional shortage plan.

Water shortage plans were requested from all of the users in Puuloa, with the exception of United States Fish and Wildlife Service. The requirement to submit individual water shortage plans is highlighted in the cover letter which transmits the permit and is also stated in Standard Condition 17. Not all users have submitted water shortage plans nor returned signed permits (see Exhibit 8). The staff will continue to work with these users to develop their individual plans. As part of the May 14, 1997 action, the Commission has also delegated the authority to the Chairperson to approve individual water shortage plans and the regional water shortage plan for the Puuloa Aquifer System.

RECOMMENDATIONS:

That the Commission:

1. Extend the interim permits shown in Exhibit 2, subject to the Standard Conditions of a Water Use Permit (Attachment A) and the following Special Conditions (which replace the former special conditions):

   a. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.
b. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

c. Pumping shall cease immediately if the chloride reports show that the brackish water developed in the well exceeds 1,000 mg/l of chloride.

d. The duration of the interim permit shall be to
   a) to July, 2001, or
   b) until treated wastewater is available, acceptable, and affordable for use, or
   c) until such time that a significant change in permitted, actual, or projected uses or water supply occurs.

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

f. Require adherence to the chloride sampling protocol shown in Exhibit 4 and the submittal of weekly chloride data.

g. Require adherence to the Conservation Conditions shown in Exhibit 5.

h. In the event a water shortage is declared by the Commission, permittees shall comply with the Puuloa Water Shortage Plan adopted by the Commission.

2. The permittees shall be notified by letter of the Commission action and extended permit duration. Re-issuance of new interim water use permits for these extended permits is unnecessary.

Respectfully submitted,

TIMOTHY E. JOHNS
Deputy Director

Attachment(s):
A (Standard Conditions for a Water Use Permit)
B (Special Interim Water Use Permit Conditions)

Exhibit(s):
1 (Location Map)
2 (Current Interim Permitted Uses, Puuloa and Kapolei Aquifer Systems)
3 (Current Permitted Uses, Puuloa and Kapolei Aquifer Systems)
4 (Chloride Sampling Protocol)
5 (Conservation Conditions)
6 (Chloride and Pumpage of Ewa Plantation Shallow Wells)
7 (Partial Water Shortage Plan)
8 (Summary of Unsigned Permits and No Water Shortage Plan)
STANDARD WATER USE PERMIT CONDITIONS

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

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its October 22, 1998 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect the water sources (quantity or quality);
   b. Meet other legal obligations including other correlative rights;
   c. Insure adequate conservation measures;
   d. Require efficiency of water uses;
   e. Reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. Meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. Carry out such other necessary and proper exercise of the State’s and the Commission’s police powers under law as may be required.

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

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

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

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

13. A permit may be transferred, in whole or in part, from the permittee to another, if:

   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

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

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

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

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

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

18. The water use permit granted shall be an interim water use permit, pursuant to HAR § 13-167-3(6). The final determination of the water use quantity shall be made within five years.

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

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

ATTACHMENT A
SPECIAL INTERIM WATER USE PERMIT CONDITIONS

a. The duration of the interim permits shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use or water supply occurs.

b. Require adherence to the chloride sampling protocol shown in Exhibit 8 and the submittal of weekly chloride data.

c. Require adherence to the Conservation Conditions shown in Exhibit 12.

d. Require the following PCUG members to sign a contract within twelve (12) months with the City Department of Wastewater Management to buy reclaimed water by July 1, 1999 for the cumulative amounts specified in Exhibit 7 (Pro-Rata Share):

1) Gentry Investment Co. - Commitment to use a total of 0.430 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well No. 2002-15 and Well No. 2001-10.

2) Haseko (Ewa), Inc. - Commitment to use a total of 0.40 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well No. 1902-01.

3) Hawaii Prince Golf Club - Commitment to use a total of 0.40 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well Nos. 1900-02, 17 to 20 & 1901-03.

4) Ewa Beach International Golf Club - Commitment to use a total of 0.27 mgd of R-1 by July, 1999 for a corresponding reduction in allocation for Well Nos. 1900-21, 22 & 1959-08.

ATTACHMENT B
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7 Permits Totalling Available SY 1.796 1.050
Current Active Water Use Permits (Excluding salt water use permits) (f:/wup-wma.rpt)  October 7, 1998

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<td>2001-09</td>
<td>FORT WEAVER APT.</td>
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<td>0.009</td>
</tr>
<tr>
<td>355</td>
<td>5/14/97</td>
<td>GENTRY DEVELOPMENT CORP.</td>
<td>2001-10</td>
<td>GENTRY AREA 24</td>
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<tr>
<td>497</td>
<td>7/15/98</td>
<td>CORAL CREEK GOLF, INC.</td>
<td>2001-13</td>
<td>CORAL CREEK NO 4</td>
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<tr>
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<tr>
<td>496</td>
<td>7/15/98</td>
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<tr>
<td>496</td>
<td>7/15/98</td>
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<td>CORAL CREEK NO 3</td>
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</table>

21 Permits Totalling Available SY 4.826 1.907

EXHIBIT 2

(f:\work\database\reports\wup-wma.rpt)
**EXHIBIT 3**

Current Active Water Use Permits (Excluding salt water use permits, f:/work/database/reports/wup-wma.rpt)

<table>
<thead>
<tr>
<th>No. Approved</th>
<th>Applicant</th>
<th>Well No</th>
<th>Well Name</th>
<th>SY</th>
</tr>
</thead>
<tbody>
<tr>
<td>152</td>
<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-02</td>
<td>EP 22</td>
<td>0.900</td>
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<tr>
<td>469</td>
<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-02</td>
<td>EP 22</td>
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<td>152</td>
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<td>469</td>
<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-18</td>
<td>WELL 3</td>
<td></td>
</tr>
<tr>
<td>152</td>
<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-19</td>
<td>WELL 4</td>
<td></td>
</tr>
<tr>
<td>469</td>
<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-20</td>
<td>WELL 5</td>
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<tr>
<td>170</td>
<td>HONOLULU KOSAIDO, INC.</td>
<td>1900-21</td>
<td>PUUOA GC IRR</td>
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<td>367</td>
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<td>PUUOA DUG WELLBB</td>
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<tr>
<td>501</td>
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<td>1900-23</td>
<td>PACIFIC TSUNAMI</td>
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<tr>
<td>192</td>
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<td>EP 21</td>
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<td>U.S. NAVY</td>
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<td>GEIGER PARK</td>
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<td>ARBORS ASSOCIATION</td>
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<tr>
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<td>2001-09</td>
<td>FORT WEAVER APT.</td>
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<td>355</td>
<td>GENTRY DEVELOPMENT CO.</td>
<td>2001-10</td>
<td>GENTRY AREA 24</td>
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<tr>
<td>497</td>
<td>CORAL CREEK GOLF, INC.</td>
<td>2001-13</td>
<td>CORAL CREEK NO 4</td>
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<td>249</td>
<td>GENTRY PACIFIC, LTD.</td>
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<td>PALM COURT 3</td>
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<tr>
<td>159</td>
<td>PALM COURT ASSOCIATION</td>
<td>2002-12</td>
<td>PALM COURT 3</td>
<td>0.040</td>
</tr>
<tr>
<td>437</td>
<td>CORAL CREEK GOLF, INC.</td>
<td>2002-15</td>
<td>GENTRY G.C. IRR</td>
<td>0.690</td>
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<td>494</td>
<td>GOODFELLOWS BROS., INC.</td>
<td>2002-16</td>
<td>GOODFELLOWS CONSTR</td>
<td>0.050</td>
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<td>496</td>
<td>CORAL CREEK GOLF, INC.</td>
<td>2002-17</td>
<td>CORAL CREEK NO 2</td>
<td>0.900</td>
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<tr>
<td>496</td>
<td>CORAL CREEK GOLF, INC.</td>
<td>2002-18</td>
<td>CORAL CREEK NO 3</td>
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<tr>
<td>247</td>
<td>U.S. FISH &amp; WILDLIFE</td>
<td>2101-14</td>
<td>HONOLULI UNIT</td>
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36 Permits Totalling 17.196
Available SY

(f:/work/database/reports/wup-wma.rpt)
**Current Active Water Use Permits**

(Excluding salt water use permits)

<table>
<thead>
<tr>
<th>No. Approved</th>
<th>Applicant</th>
<th>Well No</th>
<th>Well Name</th>
<th>WUP (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>162</td>
<td>PUU MAKAKILO INC.</td>
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<td>MAKAKILO GC</td>
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<td>1904-03</td>
<td>MAKAKILO GC STBYDB</td>
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<tr>
<td>182</td>
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<td>KAPOLEI IRR 1</td>
<td>1.000</td>
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<td>182</td>
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<td>KAPOLEI IRR 2</td>
<td>0.494</td>
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<tr>
<td>438</td>
<td>KAPOLEI PEOPLE’S, INC.</td>
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<td>KAPOLEI G.COURSE A</td>
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<tr>
<td>438</td>
<td>KAPOLEI PEOPLE’S, INC.</td>
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<td>KAPOLEI G.COURSE A</td>
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<tr>
<td>432</td>
<td>STATE HFDC</td>
<td>2003-04</td>
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<td>432</td>
<td>STATE HFDC</td>
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<td>KAPOLEI G.COURSE A</td>
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<td>STATE HFDC</td>
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</table>

9 Permits Totalling 2.946

**Available SY**

**ISLAND OF OAHU**

WMA Aquifer System: KAPOLEI

Sustainable Yield = mgd

**EXHIBIT 3**

(f:/work/database/reports/wup-wma.rpt)
GUIDELINES FOR CHLORIDE CONCENTRATION SAMPLING FOR EWA CAPROCK

1. Sample Collection

   • Sampling Schedule

   The sampling schedule depends upon your pump capacity:

<table>
<thead>
<tr>
<th>Pump Capacity (gpm)</th>
<th>Sampling Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than or equal to 50</td>
<td>Once a month</td>
</tr>
<tr>
<td>Greater than 50</td>
<td>Once a week</td>
</tr>
</tbody>
</table>

   • When to Sample

   Before taking a sample, allow a minimum length of time to elapse after turning on the pump. This minimum time can be read off the attached table for your well casing diameter and your pump capacity. If you sample 20 minutes after the minimum time, you should consistently sample 20 minutes after the minimum time each time you take samples.

   • Sample Bottle

   Use a plastic container and cap that holds a volume of about a pint. Rinse the container three times with the water to be sampled before taking the sample. Also rinse the cap with sample water.

   • Labeling

   On the sample bottle, affix a label that contains the following information:

   Well No.
   Date
   Time Sampled
   Elapsed Time after pump on
   Sampler's Name
   Water Temperature (if available)
   Pumping Rate (prior to sampling)

EXHIBIT 4
2. **Determination of Chloride Concentration**

- **Private Laboratories**

  If the sample is sent to a private laboratory, then prepare the water sample and label the bottle in the manner described above.

  Private laboratories will use methods that are more accurate than field methods described below.

- **Hach Kit (Drop Count Titrator)**

  Be aware of the approximate chloride concentration range in your well. Use the appropriate sample bottle for titration. **Be consistent with the end-point color change.**

  For low chloride concentrations (5-100 mg/l) each drop will equal 5 mg/l. For higher concentrations (20-400 mg/l) each drop equals 20 mg/l. Other kits for concentrations greater than 400 mg/l (500-10,000 mg/l) each drop is equal to 500 mg/l. Obviously, for water greater than 400 mg/l, a "drop-count" Hach Kit is not appropriate, and a digital titrator, described below, should be used.

- **Hach Kit (Digital Titrator)**

  A digital titrator is the appropriate method for water with greater than 400 mg/l chloride. A digital titrator using silver nitrate is accurate to within 10 mg/l for a chloride range from 10-10,000 mg/l, and for a titrator using mercuric nitrate accuracy varies from 0.1-20 mg/l for a chloride range of 10-8,000 mg/l.

  **Note:** **Be consistent with the end-point color.** Silver nitrate ages and needs to be replenished within the recommended guidelines of the Hach Company.

- **Other Methods**

  An ion-selective probe for chloride is available, and can measure concentration from 1.8-35,500 mg/l.
3. **Reporting Results**

- **How to Report**

   The following information should be entered on the "Monthly Ground Water Use Report" form provided by the Commission on Water Resource Management:

1. Chloride concentration (mg/l) and temperature (°F) in the columns provided.

   Under "Notes" Section of the Monthly Water Use Report:

2. Method used for chloride analysis:____________________

3. Total elapsed time before sampling:____________________

If there are any questions, please call the Commission on Water Resource Management staff at 587-0265 on Oahu or toll free from the neighbor islands 1-800-468-4644 ext. 70265.
<table>
<thead>
<tr>
<th>CASING DIAMETER (in.)</th>
<th>PUMP CAPACITY (gpm)</th>
<th>MINIMUM TIME (min.)</th>
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<td>20-50</td>
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<tr>
<td>8</td>
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<tr>
<td></td>
<td>&gt;1000</td>
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</tbody>
</table>

1 Assumes saturated well depth of 100 feet.

2 Five well volumes is a standard guideline recommended by EPA.
CONSERVATION CONDITIONS
EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:
   a. Reduce the demand for non-potable water by:
      - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      - Mulching planting areas with organic materials, etc., to minimize evaporation;
      - Efficiently maintaining the plants;
      - Improving land management practices to conserve water.
   b. Improve efficiency in use and reduce losses and waste of non-potable water by:
      - Using efficiently designed landscaping and irrigation systems;
      - Monitoring irrigation requirements and controlling usage accordingly;
      - Managing irrigation scheduling to minimize water demand;
      - Eliminating opportunities for water wastage;
      - Maintaining and Improving irrigation systems as necessary.
   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

EXHIBIT 5
Chloride and Pumpage of Ewa Plantation
Shallow Wells, Ewa Caprock, Oahu

Start 1937
Basal (high Cl) Irrigation
Basal (low Cl) Irrigation Pumps 15,16

Total imported basal water from Koolau ranged < 50-70 mgd

Average monthly pumpage (mgd)

Est. average yearly pumpage (12)

Ref: CWRM, BWS Dec., R-78, & Stearns (1935, 1940)

<table>
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<th>User</th>
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<th>Recommended Allocation</th>
<th>Basis</th>
<th>Water Shortage Plan</th>
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<th>Reduction²</th>
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<td>Pre-1978 Permanent Permits</td>
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<td>Campbell</td>
<td>EP 21/2000-01</td>
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<td>Actual Use</td>
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<td>0.050</td>
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<td>Interim Permits (5-yr)</td>
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¹ 1 = Highest priority (Ag)  
² 2 = Intermediate priority (G. Course)  
³ 3 = Lowest priority (Landscape Irr, dust control)  

Maximum reduction indicated in water shortage plan
<table>
<thead>
<tr>
<th>No.</th>
<th>Approved Date</th>
<th>Applicant</th>
<th>Well No.</th>
<th>Well Name</th>
<th>Signed WUP (mgd)</th>
<th>WUP Plan</th>
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38 Permits Totaling 17.196 Available SY

EXHIBIT 8
# Current Active Water Use Permits

Excluding salt water use per (f:\work\database\reports\wup-wma.rpt) October 15, 1998

## ISLAND OF OAHU

**WMA Aquifer System:** KAPOLEI

**Sustainable Yield:** mgd

### Wup

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<tr>
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9 Permits Totalling Available SY

EXHIBIT 8
Mr. Harry Lee
Palm Villa II Association
91-1118 Mikohu St., Apt. #D
Ewa Beach, HI 96706
<table>
<thead>
<tr>
<th>SENDER:</th>
<th>I also wish to receive the following services (for an extra fee):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete items 1 and/or 2 for additional services.</td>
<td>1. [ ] Addressee's Address</td>
</tr>
<tr>
<td>Complete items 3, 4a, and 4b.</td>
<td>2. [ ] Restricted Delivery</td>
</tr>
<tr>
<td>Print your name and address on the reverse of this form so that we can return this card to you.</td>
<td>Consult postmaster for fee.</td>
</tr>
<tr>
<td>Attach this form to the front of the mailpiece, or on the back if space does not permit.</td>
<td></td>
</tr>
<tr>
<td>Write &quot;Return Receipt Requested&quot; on the mailpiece below the article number.</td>
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<tr>
<td>The Return Receipt will show to whom the article was delivered and the date delivered.</td>
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<td>P 354 448 614</td>
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<th>8. Addressee's Address (Only if requested and fee is paid)</th>
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</table>
Mr. Harry Lee
Palm Villas II Association
91-1119 Mikohu St., #D
Ewa Beach, HI 96706

Dear Mr. Lee:

Approval of Water Use Permit for Well No. 2001-08
Puuloa Ground Water Management Area, Oahu

This letter transmits your water use permit for Palm Villa II Well (Well No. 2001-08) for use of 0.048 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on May 14, 1997. As part of the Commission's approval, the following special conditions were added and are part of your permit under Standard Permit Condition 20:

**Special Conditions**

a. The duration of the interim permit shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use of water supply or water quality occurs.

b. Require adherence to the chloride sampling protocol (attached) and the submittal of weekly chloride data, as may be amended by the Commission staff.

c. Require adherence to the Conservation Conditions (attached).

Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit. If you accept these terms, please sign and return one copy of this permit to the Commission and retain a copy for your record.

You are required to keep a record of your monthly total pumpage, water level, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.

You are also required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Puuloa Ground Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

Michael D. Wilson
Chairperson

Attachments
GROUND WATER USE PERMIT
WUP NO. 168

PERMITTEE

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<th>Landowner of Source</th>
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PERMITTED SOURCE INFORMATION

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

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20. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

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

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

Applicant's Signature: ___________________________ Date: ______________________

Printed Name: ___________________________ Firm or Title: ___________________________

Please sign both copies of this permit, return one to the Commission, and retain the other for your records.

Attachment
Mr. Larry Tucker  
Palm Villas II Association  
91-1119 Mikohu St., #D  
Ewa Beach, HI 96706

Dear Mr. Tucker:

Approval of Water Use Permit for Well No. 2001-08  
Puuloa Ground Water Management Area, Oahu

This letter transmits your water use permit for Palm Villa II Well (Well No. 2001-08) for use of 0.048 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on May 14, 1997. As part of the Commission’s approval, the following special conditions were added and are part of your permit under Standard Permit Condition 20:

**Special Conditions**

a. The duration of the interim permit shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use of water supply or water quality occurs.

b. Require adherence to the chloride sampling protocol (attached) and the submittal of weekly chloride data, as may be amended by the Commission staff.

c. Require adherence to the Conservation Conditions (attached).

Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit. If you accept these terms, please sign and return one copy of this permit to the Commission and retain a copy for your record.

You are required to keep a record of your monthly total pumpage, water level, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.

You are also required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Puuloa Ground Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission’s overall Water Shortage Plan.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

Michael D. Wilson  
Chairperson

Attachments
State of Hawaii  
Department of Land and Natural Resources  
COMMISSION ON WATER RESOURCE MANAGEMENT  
Honolulu, Hawaii

GROUND WATER USE PERMIT  
WUP NO. 168

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MICHAEL D. WILSON  
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<tr>
<td>EWA BEACH, HI 96706</td>
<td>EWA BEACH, HI 96706</td>
</tr>
</tbody>
</table>

**PERMITTED SOURCE INFORMATION**

<table>
<thead>
<tr>
<th>Island</th>
<th>OAHU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Management Area</td>
<td>PUULOA</td>
</tr>
<tr>
<td>Aquifer Sector</td>
<td>EWA CAPROCK</td>
</tr>
<tr>
<td>Aquifer System</td>
<td>PUULOA</td>
</tr>
<tr>
<td>System Sustainable Yield</td>
<td>NA</td>
</tr>
<tr>
<td>Well Name</td>
<td>PALM VILLAS II</td>
</tr>
<tr>
<td>State Well No.</td>
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</tr>
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</table>

**PERMITTED USE INFORMATION**

<table>
<thead>
<tr>
<th>Reasonable beneficial use</th>
<th>LANDSCAPE &amp; ROADWAY IRRIGATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal (12 month moving ave.)</td>
<td>0.048 mgd</td>
</tr>
<tr>
<td>Chloride Cap</td>
<td>1,000 mg/l</td>
</tr>
<tr>
<td>Location of water use</td>
<td>9-1-61:13-16,25-27,34</td>
</tr>
<tr>
<td>TMK #</td>
<td>EWA BY GENTRY PROJECT</td>
</tr>
<tr>
<td>Address</td>
<td>URBAN</td>
</tr>
<tr>
<td>State land use classification</td>
<td>A-1</td>
</tr>
<tr>
<td>County zoning classification</td>
<td></td>
</tr>
</tbody>
</table>

Pursuant to Hawaii's State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the applicant is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above, subject however, to the requirements of law including but not limited to the following conditions:
1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means “the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest.” (HRS § 174C-3)

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its May 14, 1997 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;
   c. insure adequate conservation measures;
   d. require efficiency of water uses;
   e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
   f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
   g. carry out such other necessary and proper exercise of the State’s and the Commission’s police powers under law as may be required.

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

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

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

12. This permit shall be subject to the Commission’s periodic review of the PUULOA Aquifer System’s sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the PUULOA Aquifer System, or relevant modified aquifer(s), is reduced.
13. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

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

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

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

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

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

18. The water use permit granted shall be an interim water use permit, pursuant to HAR § 13-167-3(6). The final determination of the water use quantity shall be made within five years of the filing of the application.

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

20. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

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

MICHAEL D. WILSON, Chairperson
Commission on Water Resource Management

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

Applicant's Signature: _______________________________ Date: __________________

Printed Name: _______________________________ Firm or Title: _______________________________

Please sign both copies of this permit, return one to the Commission, and retain the other for your records.

Attachment
SEE EWA CAPROCK WMA

FOLDER #2 - #4
TESTIMONIES:

Mr. Jim Anthony, a party in the Hawaii Reserves, Inc. contested case hearing, testified against the staff's recommendation to delete Well No. 3554-02 and to reinstate Well No. 3654-03.

MOTION: (COX/MIIKE)

To approve staff's recommendation.

UNANIMOUSLY APPROVED.

ITEM 2.

APPLICATIONS FOR WATER USE PERMITS, REQUESTS FOR NEW AND CONTINUED NONPOTABLE URBAN USES, ALLOCATION PLAN FOR WATER USE PERMITS IN RESPONSE TO LOWER SUSTAINABLE YIELD ESTIMATE FOR THE PUULOA AREA, EWA CAPROCK GROUND WATER MANAGEMENT AREA, OAHU

The Estate of James Campbell, (Well Nos. 1905-08.10)
State of Hawaii, Housing Finance & Development Corp. (Well Nos. 2003-04.07)
Kapolei People's Inc., (Well Nos. 2003-01.02.05)
Hawaii Prince Golf Club, (Well Nos. 1900-02.17 to 20 & 1901-03)
Gentry Development Co., (Well Nos. 2001-03.04.05.09.10.11 & 2002-15)
The Arbors Association, (Well No. 2001-07)
Palm Villas II Association, (Well No. 2001-08)
Palm Court Association, (Well No. 2002-12)
Haseko (Ewa), Inc., (Well No. 1902-01)

PRESENTATION OF SUBMITTAL: Deputy Director Rae Loui

Correction on Page 4, Section B:

The current schedule for the demonstration recharge trench (5 mgd) and full application (10 mgd) is:

| Demonstration Trench Operational (5 mgd) | 12/1998 |
| Honouliuli Secondary Treatment Operational | 9/1996 |
| Testing Complete | 12/1999 |
| Complete Trench Operational (10 mgd) | 12/2001 |

STAFF RECOMMENDATION:

The staff requested that the recommendation be amended as follows:

1. Defer action on the sustainable yield for the Ewa Caprock Aquifer to the December 18, 1996 Commission meeting in order to consider the Puuloa Caprock Users Group's draft nonpotable master plan for the Puuloa area.

2. Require that the draft nonpotable master plan include each of the elements outlined in the Group's proposal, be as specific as possible (eg. annual
projections of all nonpotable supply requirements detailed by project and TMK area), encompass the entire Puuloa area and all users in Puuloa, and include a scenario complying with the proposed 5 mgd sustainable yield. The Plan shall also address the current overpumpage at Well Nos. 1902-03 & 04 and Well Nos. 2001-05 & 2001-08.

3. Extend the deadline to September 30, 1996 for the submittal of any additional data or evidence (related to ground water modelling, hydrologic data, or other) which a party wishes to have considered in setting the sustainable yield of the Ewa Caprock Aquifer.

TESTIMONY BY APPLICANT:

Mr. Jeff Dinsmore, Vice President of Gentry Homes, Ltd., submitted a written and oral testimony on behalf of the Puuloa Caprock Users Group. He stated that they were in agreement with the staff submittal, however, requested that the deadline for the submittal of any additional data for consideration of the sustainable yield be extended from September 30, 1996 until December 18, 1996.

Mr. Douglas Ing, attorney for Hawaii Prince Golf Club, stated his objections to the staff's recommendation of a 5mgd ceiling. (Note: Subsequent to Mr. Ing's testimony, the staff’s submittal was amended to specify that the draft plan shall include a scenario complying with the 5 mgd sustainable yield estimate.)

TESTIMONIES:

Mr. Tim Steinberger, of the City and County Department of Wastewater Management was available for questions from the Commission.

MOTION: (MIIKE/NOBRIGA)

To approve staff’s recommendation as amended.

UNANIMOUSLY APPROVED AS AMENDED.

The Chairperson adjourned the meeting at 3:32 p.m.

Respectfully submitted,

JANIS F. UWAINÉ
Secretary

APPROVED AS SUBMITTED:

RAE M. LOUI
Deputy Director
STAFF SUBMITTAL

for the meeting of the

COMMISSION ON WATER RESOURCE MANAGEMENT

September 11, 1996
Honolulu, Oahu

APPLICATIONS FOR WATER USE PERMITS
Requests for New and Continued Nonpotable Urban Uses

ALLOCATION PLAN FOR WATER USE PERMITS
In Response to Lower Sustainable Yield Estimate for the Puuloa Area
Ewa Caprock Ground Water Management Area, Oahu

APPLICANT(S):

(Well Nos. 1905-08,10)
The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI 96707

(Well Nos. 2003-04,07)
State of Hawaii,
Housing Finance & Development Corp.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

(Well Nos. 2003-01,02,05)
Kapolei People's Inc.
91-701 Farrington Hwy.
Kapolei, HI 96707

(Well Nos. 1900-02,17 to 20 & 1901-03)
Hawaii Prince Golf Club
91-1200 Fort Weaver Rd.
Ewa Beach, HI 96706

(Well Nos. 2001-03,04,05,09,10,11 & 2002-15)
Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809

LANDOWNER(S):

Same

Same

Same

Same

AGENDA 2
Item 2
BACKGROUND:

On September 28, 1979, the Board of Land and Natural Resources (BLNR) designated the Pearl Harbor Ground Water Control Area (Pearl Harbor GWCA; Judicial Boundaries of Ewa and Wahiawa Districts) pursuant to Chapter 177, HRS, Ground Water Use Act.

On March 22, 1985, the BLNR established subareas for the Pearl Harbor GWCA, including the Coastal Caprock Subarea.

In 1990, the Commission on Water Resource Management (Commission) adopted the Water Resources and Protection Plan (Plan). The Plan included, as required by HRS 174C-31(c), "hydrologic units and their characteristics, including the quantity and quality of available resource..." The Plan did not include the brackish Ewa Caprock Aquifer as a hydrologic unit.

In the 1988-1992 timeframe, water use permits totalling 19.524 million gallons per day (mgd) were awarded in the Ewa Caprock Aquifer mainly to existing irrigation uses (e.g. Oahu Sugar Co.). Other existing water use permits totaled 39.608 mgd for various salt water and brackish to saline water uses (chlorides > 1,000 MG/L).

On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer as a separate aquifer within the existing designated ground water management area. Due to uncertainties regarding the aquifer’s sustainable yield, the Commission did not adopt a sustainable yield estimate for the aquifer.

Since March 1993, the Commission has been awarding one-year interim permits for new uses for the Ewa Caprock Aquifer.

In May 1996, the staff completed a re-evaluation of the Ewa Caprock Aquifer sustainable yield. Based on the staff’s analysis of historic data, the staff proposed the establishment of three (3) aquifer systems within the Ewa Caprock Aquifer: Puuloa, Kapolei, and Malakole (see Exhibit
1), with sustainable yields of 5 mgd, 3 mgd, and 1 mgd, respectively, for chloride concentrations less than 1,000 MG/L.

On August 14, 1996, a public hearing was held on the proposed establishment of aquifer systems and sustainable yields for the caprock aquifer. Before the close of the public hearing, Hawaii Prince Golf Club (HPGC) submitted a written request for a contested case hearing on the proposed establishment of a 5 mgd sustainable yield for the Puuloa area. The written petition was received on August 23, 1996.

ANALYSIS/ISSUES:

Normally, the staff lists and analyzes the criteria set forth in §13-171-13 HAR which must be established by the applicant. However, there are larger issues which must be addressed before this analysis can occur. These are discussed as follows:

A. Nonpotable Water Demand Expected to Increase

The Planning Department, City and County of Honolulu, is in the process of revising the Development Plans for Ewa and Central Oahu. The draft plan shows a projected population increase from 130,526 in 1990 to 185,091 in 2020. This corresponds to a 42% increase in population for the area. A 60% increase in housing units over the same time period is projected: from 36,262 units in 1990 to 58,118 units in 2020 (for Ewa Employment and Dispersed Residential; Exhibit 2). This growth will result in an increase in water needs, both potable and nonpotable.

Although the water demand for Ewa was not available, City and County planners have testified that the 2020 demand for water for the projected growth of the Ewa, Central, Waianae, and Honolulu districts will be about another 90 mgd. This increased demand consists of 56.5 mgd for potable water needs and 33.5 mgd for nonpotable water needs. This is exclusive of agricultural water demand, which is specified in the City's plans to provide an open space buffer for the proposed urban growth in Central Oahu. Thus, the 90 mgd water demand exceeds the remaining water resources on the island (75 mgd). It is critical that alternative nonpotable sources of water be a part of Oahu's water planning in order to reduce the competition for potable water as an irrigation source. Further, these figures underscore the important role of the brackish Ewa Caprock Aquifer and of the reclaimed sewage effluent in future growth plans.

To address the expected increase in nonpotable water demand for urban uses, the Commission and the City Department of Wastewater Management retained a consultant to develop a nonpotable water master plan for Central Oahu, including the Ewa plain. The February, 1996 plan recommends construction of a demonstration recharge trench in the Ewa Caprock using reclaimed water. The staff has participated in a group consisting of representatives from the Department of Health, City Department of Wastewater Management, City Planning Department, and the Board of Water Supply to champion the use of reclaimed water and a water reclamation project for the Ewa Plain. The major issues include identification of a purveyor for the reclaimed water resource and rates/cost of the resource.

In further support of the plan for reuse on the Ewa Plain, the Commission adopted the following reclaimed water policy on March 13, 1996:

It is the policy of the Commission on Water Resource Management (Commission)
to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses.

B. Current Allocations Exceed Sustainable Yield in Puuloa

The staff’s recommendation of a sustainable yield for the Ewa Caprock Aquifer is based on historical data reflecting the aquifer’s response to natural sugarcane irrigation and current urban conditions. The lack of imported basal water by Oahu Sugar Company (OSCo) augmenting the natural sustainable yield of the caprock will affect water availability.

If the Commission were to approve the staff’s recommendation to establish three aquifer systems within the Ewa Caprock Aquifer with sustainable yields of 5 mgd for Puuloa, 3 mgd for Kapolei, and 1 mgd for Malakole, only the Puuloa area would be over-allocated. Exhibit 3 (column 5) shows the current allocations in the Puuloa area of the caprock, totalling 15.177 mgd.

However, the over-allocation problem may be only temporary because the City Department of Wastewater Management is moving forward with their plans for a demonstration recharge trench that will recharge the Puuloa area of the Ewa Caprock Aquifer with 5 mgd of R-2 effluent from the Honouliuli Wastewater Treatment Plant. This would replace some of the lost imported basal irrigation recharge from OSCo. It is expected that the demonstration recharge trench will be online by 1999. If the pilot project is successful, additional trenches will be installed to recharge the Kapolei as well as Puuloa area.

The current schedule for the demonstration recharge trench (5 mgd) and full application (13 mgd) is:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honouliuli Secondary Treatment Operational</td>
<td>12/1997</td>
</tr>
<tr>
<td>Demonstration Recharge Trench Operational (5 mgd)</td>
<td>12/1998</td>
</tr>
<tr>
<td>Testing Complete</td>
<td>12/1999</td>
</tr>
<tr>
<td>Complete Trench Operational (13 mgd)</td>
<td>12/2000</td>
</tr>
</tbody>
</table>

The current design also allows for direct use of the R-2 effluent in addition to recharging the aquifer. The City is evaluating the feasibility of constructing an R-1 treatment facility to enable less restricted uses.

C. New Water Use Permit Applications

Pending applications for the Puuloa area, shown in Exhibit 4, total 3.174 mgd. For the Kapolei area, requests total 1.796 mgd (Exhibit 5). All pending requests are for various nonpotable non-agricultural uses. On March 13, 1996, the Commission deferred action on all pending requests in the Ewa Caprock until a decision is made on the proposed establishment of a sustainable yield estimate in the Water Resources Protection Plan.
Also shown as a pending request shown in Exhibit 4 is an application for Haseko (Ewa), Inc.'s (Haseko) proposed Ewa Marina project in the Puuloa area, which is the subject of a contested case hearing. The "quantity of the use" for the marina excavation has not been established. The State Department of Transportation also has a pending water use permit application for the Barbers Point Harbor expansion in the Malakole area; action on this application has been deferred pending written notification of the reclassification of the lands from the Agricultural to Urban designation. There are no other pending requests in Malakole.

One condition that new water use permit applications must meet is that the use: "can be accommodated with the available water source..." §174C-49(a) HRS. There has been a request for a contested case hearing on the proposed sustainable yield for Puuloa. The staff does not believe that there is a right to a contested case hearing on this matter and is planning to submit the proposed Hawaii Water Plan update to the Commission for action at the Commission meeting of December 18, 1996.

D. Step-Down of Allocations to Match Sustainable Yield

The staff will submit for Commission action a proposal to step-down current allocations to match sustainable yield as well as a recommendation regarding pending new water use permit requests. We have discussed several alternatives with a self-elected Steering Committee of the users and with the Reclaimed Water Champions (Department of Health, City Department of Wastewater Management, City Planning Department, Honolulu Board of Water Supply, Commission on Water Resource Management). In response, on August 29, 1996, a written proposal (Exhibit 6) was received from the Puuloa Caprock Users Group (Group), which includes HPGC, Sogo Hawaii, Inc., Haseko, Gentry Homes, Ltd., and the Navy. The Group does not include Honolulu Board of Water Supply, City Department of Wastewater Management (DWWM), Campbell Estate, and the U.S. Fish and Wildlife Service, the latter three of which are permitted water users in the Puuloa area and are necessary partners in any usable plan.

The Group has requested 90 days to prepare and submit a draft nonpotable master plan (Plan) to the Commission, which will include a recommended plan to manage water use over a proposed two-year interim period. The proposal is very general and does not address issues important to this effort such as the current overpumpage by DWWM (Well Nos. 1902-03 & 04) and Gentry (Well No. 2001-05). Further, the Group implies that it is in possession of data not previously submitted that would be helpful to the Commission in setting the sustainable yield. Although the deadline for testimonies has passed, staff recommends allowing additional time for submittal of the information.

RECOMMENDATIONS:

The staff recommends that the Commission:

1. Defer action on the sustainable yield for the Ewa Caprock Aquifer to the December 18, 1996 Commission meeting in order to consider the Puuloa Caprock Users Group's draft nonpotable master plan for the Puuloa area.

2. Require that the draft nonpotable master plan include each of the elements outlined in the Group's proposal, be as specific as possible (eg. annual projections of all nonpotable supply requirements detailed by project and TMK area), and encompass the entire Puuloa area and all users in Puuloa. The Plan shall also address the current overpumpage at

"include a scenario complying with the proposed sustainable yield estimate."
Staff Submittal

Well Nos. 1902-03 & 04 and Well Nos. 2001-05.

3. Extend the deadline to September 30, 1996 for the submittal of any additional data or evidence (related to ground water modelling, hydrologic data, or other) which a party wishes to have considered in setting the sustainable yield of the Ewa Caprock Aquifer.

Respectfully submitted,

RAE M. LOUI
Deputy Director

Attachments
Exhibit 1 - Location Map
Exhibit 2 - Scenario Comparisons
Exhibit 3 - Ewa Caprock Permittees - Puuloa Area
Exhibit 4 - Puuloa Aquifer System
Exhibit 5 - Kapolei Aquifer System
Exhibit 6 - Puuloa Caprock Users Group Proposal

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson

D. Dinsmore: have raw data that has not previously been submitted. Request add'l time to present & analyze data, may have affect on SY estimates. Campbell was unable, and won't be in again.

D. My, D Prince: request that amendment to Recom. 2 be reconsidered (5 mgd compliance). Work in effect, be established. SY = 5 mgd. Was hoping to manage aquifer without ceiling in performance standards.

Mike: do scenarios 1 w/5 mgd, 1 w/o another.

Washdown, polymer, enhancement, mitigation. Long range projection: 2 mgd. (to come out of ve we elat.) Impacts for Barking Pt. west 13 decrease to 10 mgd.
### Scenario Comparisons

#### Central Oahu Development Plan Area

#### Change in Resident Population

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<thead>
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<th></th>
<th></th>
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<tbody>
<tr>
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<td>186,850</td>
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<td>120,529</td>
<td>184,444</td>
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<td>120,529</td>
<td>185,091</td>
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<td>Exo &amp; Central Oahu</td>
<td>120,529</td>
<td>213,802</td>
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<td>Current Trend</td>
<td>120,529</td>
<td>177,736</td>
<td>57,207</td>
<td>35</td>
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**NOTE:** Baseline forecast for 1990-2020 islandwide increase is 20%.

#### Change in Non-Construction Jobs

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<tr>
<th>Scenario</th>
<th>1990 Jobs</th>
<th>2020 Jobs</th>
<th>1990-2020 Increase</th>
<th>Percent</th>
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<tbody>
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<td>52,360</td>
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<td>127</td>
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<tr>
<td>Dispersed Development</td>
<td>23,029</td>
<td>56,904</td>
<td>33,875</td>
<td>147</td>
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<tr>
<td>Exo Employment</td>
<td>23,029</td>
<td>57,116</td>
<td>34,087</td>
<td>148</td>
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<td>23,029</td>
<td>80,208</td>
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<tr>
<td>Current Trend</td>
<td>23,029</td>
<td>54,751</td>
<td>31,722</td>
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**NOTE:** Baseline forecast for 1990-2020 islandwide increase is 49%.
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<th>(1) PERMITTER</th>
<th>(2) WELL NAME (WELL NO.)</th>
<th>(3) DATE OF APPROVAL</th>
<th>(4) TYPE OF USE</th>
<th>(5) ALLOCATION</th>
<th>(6) LATEST 12-MAY</th>
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<tr>
<td>Haseko</td>
<td>EP 27A,27B,28,29 (1902-01)</td>
<td>12/16/92</td>
<td>Irrigation (Agric.)</td>
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<td>0.000</td>
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<td>Campbell Estate</td>
<td>EP 21 (2000-01)</td>
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<td>Irrigation (Agric.)</td>
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<td>0.000</td>
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<td>U.S. Navy</td>
<td>EP 23 (2001-01)</td>
<td>12/16/92</td>
<td>Irrigation (Agric.)</td>
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<td>0.000</td>
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<td>Hawaii Prince</td>
<td>EP 22 (1900-02)</td>
<td>10/19/88</td>
<td>Irrigation (G. Course)</td>
<td>0.900</td>
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<td>EP 22 &amp; Wells 1 to 5 (1900-02, 1900-17 to 20, 1901-03)</td>
<td>7/13/94</td>
<td>Irrigation (G. Course)</td>
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<td>*Punas Homes</td>
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<td>C&amp;C DWWM</td>
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<td>Palm Court Homeowners</td>
<td>Palm Court 3 (2002-12)</td>
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<td>Irrigation (Landscape)</td>
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<td>Gentry</td>
<td>Gentry G.C. (2002-15)</td>
<td>7/13/94</td>
<td>Irrigation (Landscape)</td>
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<tr>
<td>U.S. Fish &amp; Wildlife</td>
<td>Hoosoulili Unit (2101-14)</td>
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<td><strong>TOTALS</strong></td>
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<td>15.177</td>
<td>2.836</td>
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**EXHIBIT 3**
**PUULOA AQUIFER SYSTEM**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PUULOA AQUIFER SYSTEM (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Yield Estimate</td>
<td>15.000</td>
</tr>
<tr>
<td>Less: Other Existing Permits (shown in Exhibit 3)</td>
<td><strong>-</strong></td>
</tr>
<tr>
<td>Less: Requests for New Interim Permits</td>
<td></td>
</tr>
<tr>
<td>Hawaii Prince Golf Club</td>
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</tr>
<tr>
<td>(1900-02, 17 to 20, 1901-03)</td>
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<tr>
<td>Gentry Co. (2001-03)</td>
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<tr>
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<tr>
<td>(2001-09)</td>
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<td>(2001-10)</td>
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<tr>
<td>(2002-15)</td>
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<td>Palm Villa II Assoc. (2001-08)</td>
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<td>Palm Court Assoc. (2002-12)</td>
<td>0.066</td>
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<tr>
<td>Less: New Applications</td>
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<tr>
<td>Hawaii Prince Golf Club</td>
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<tr>
<td>(1900-02, 17 to 20, 1901-03)</td>
<td>0.371</td>
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<td>Haseko (Ewa), Inc. (Ewa Marina)</td>
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<td>Available Allocation</td>
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* *Proposed marina project will result in a permanent reduction in caprock storage capacity.*
### KAPOLEI AQUIFER SYSTEM

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<thead>
<tr>
<th>ITEM</th>
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<td>Sustainable Yield Estimate</td>
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<tr>
<td>Pu‘u Makakilo (1904-02)</td>
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<td>Current Available Allocation</td>
<td>3.850</td>
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<td>Campbell Estate (1905-08,10)</td>
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<td>State HFDC (2003-04,07)</td>
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<td>Kapolei People’s Inc. (2003-01,02,05)</td>
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<td>Less: New Applications</td>
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<tr>
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<td>-0.000</td>
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<tr>
<td>Available Allocation</td>
<td>2.054</td>
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</table>

EXHIBIT 5
1. The PCUG will prepare a non-potable master plan for the Puuloa Aquifer System which will include: a projection of all non-potable supply requirements; a management plan to optimize use of non-potable resources including treated wastewater effluent and the available supply of brackish groundwater; and a compilation of hydrologic data which will provide the basis for the proposed use of non-potable resources.

2. A draft of the non-potable master plan, as a work in progress, will be submitted in 90 days. In addition to a discussion of each of the master plan topics indicated above, this draft report will also include a recommended plan to manage water use over a proposed two-year interim period. The management plan at a minimum shall include the following:

(a) An agreement among PCUG members to keep actual water use of the Puuloa Aquifer System below an amount jointly agreed to by the PCUG members and the CWRM. Actual water use shall be evaluated on a 12-month moving average basis.

(b) An agreement among the PCUG members for the pro-rata participation in wastewater reuse by all PCUG members.

(c) An agreement to allow new interim water uses by PCUG members as long as they are consistent with conditions (a) and (b) above.

3. The PCUG requests that the CWRM enter into agreements confirming that the interim 2-year period shall not be counted as part of a 4-year "use it or lose it" assessment by the CWRM.

4. The PCUG will form a steering committee to work directly with the City's Department of Wastewater Management on wastewater effluent reuse. Based on a preliminary assessment of the quantity and location of required non-potable supply, an evaluation of pipeline delivery of effluent treated to R-1 quality will be given the highest priority.

5. The PCUG believes that a more complete set of data is necessary in order to make a confident assessment of the Puuloa aquifer system's sustainable yield. PCUG members will collect and provide to the CWRM hydrologic data over and above that which is being submitted to the CWRM on a monthly basis as a requirement of its water use permits.
Hawaii Prince Golf Course

Department of Navy
(The Department of the Navy's Participation is in connection with and in support of its agricultural outlease program.)

EXHIBIT 6
OAHU DRINKING WATER PICTURE

Groundwater Sources:

Developable Yield 415 mgd
Utilized 340 mgd
Available 75 mgd
OAHU DEMAND VS. SUPPLY

2020 Projected Demand  90 mgd

(Ewa, Central Oahu, Waianae, Honolulu)

Available Supply       75 mgd

DEFICIT                -15 mgd
## OAHU 2020 DEMAND

### Forecasted Demand:

<table>
<thead>
<tr>
<th>Type</th>
<th>Demand (mgd)</th>
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</thead>
<tbody>
<tr>
<td>Potable</td>
<td>56.5</td>
</tr>
<tr>
<td>Nonpotable</td>
<td>33.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>90</strong></td>
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</table>

### Alternative Sources:

<table>
<thead>
<tr>
<th>Source</th>
<th>Demand (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater</td>
<td>75</td>
</tr>
<tr>
<td>Wastewater Effluent</td>
<td>110</td>
</tr>
<tr>
<td>Conservation</td>
<td>?</td>
</tr>
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</table>
September 11, 1996

Commission on Water Resource Management
Department of Land and Natural resources
State of Hawaii

Re: In the matter of the Allocation Plan For Water Use Permits
In Response to Lower Sustainable Yield Estimate for the Puuloa Area
Ewa Caprock Ground Water Management Area, Oahu

Chairman Wilson and members of the State Water Commission:

My name is Jeff Dinsmore. I am a Vice President of Gentry Homes, Ltd., and I am here to testify on behalf of the Puuloa Caprock Users Group on the Commission On Water Resource Management’s Staff submittal on the above mentioned subject. I previously testified at the August 14 hearing for the PCUG and requested a 90 day extension to prepare and submit a draft nonpotable water master plan for the Puuloa Caprock area.

The Puuloa Caprock Users Group is in agreement with the Staff recommendations and would like to thank them for their effort. We are confident that a mutually beneficial plan can be prepared and implemented.

We do have one change to request of the staff recommendation. We would like to request that the deadline for the submittal of any additional data for consideration of the sustainable yield be extended from September 30, 1996 until December 18, 1996.

Thank you for your time and due consideration of our request. If you have any questions, I will do my best to answer them for you.

Sincerely,
Puuloa Caprock Users Group

Jeff Dinsmore

[Signature]
HAS CUSTOM POSTAGE

TO ORDER FIRST CLASS POSTAGE

OPTIONAL SERVICES (see front)

6. Save this receipt and present it if you make inquiry.
**SENDER:**
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

<table>
<thead>
<tr>
<th>I also wish to receive the following services (for an extra fee):</th>
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</thead>
<tbody>
<tr>
<td>1. ☒ Addressee's Address</td>
</tr>
<tr>
<td>2. ☐ Restricted Delivery</td>
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</tbody>
</table>

Consult postmaster for fee.

---

3. Article Addressed to:

Mr. Bruce Gomez
Association of Apartment Owners - Palm Villa I
91-1119 Mikohu St., Apt. D
Ewa, HI 96706

(WUP NO. 158)

4a. Article Number

Z 066 768 894

4b. Service Type

☒ Registered  ☐ Insured
☐ Certified  ☐ COD
☐ Express Mail  ☐ Return Receipt for Merchandise

5. Signature (Addressee)

6. Signature (Agent)

7. Date of Delivery

8. Addressee's Address (Only if requested and fee is paid)

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UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300

Print your name, address and ZIP Code here

COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. Box 621
Honolulu, Hawaii  88809

Attn: Lenore
Mr. Bruce Gomez  
Association of Apartment Owners - Palm Villa II  
91-1119 Mikohu Street, Apt. D  
Ewa, Hawaii  96706

Dear Mr. Gomez:

Second Notice of Water Use Permit Violation  
Well No. 2001-08 (WUP No. 168)  
Ewa Caprock Ground Water Management Area, Oahu

On June 20, 1996, you were notified of the water use permit violation for overpumping Well No. 2001-08 (WUP No. 168). This notice established a July 15, 1996 deadline for your written response. As of this date, we have not received a response.

This is your second notice of water use permit violation. Be advised that the overpumpage violation will be an issue with your pending water use permit application. Be further advised that failure to comply with the terms of your permit may result in daily fines of up to $1000.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

RAE M. LOUI  
Deputy Director

LN:ss
Mr. Bruce Gomez  
Association of Apartment Owners - Palm Villa II  
91-1119 Mikohu Street, Apt. D  
Ewa, Hawaii 96706

Dear Mr. Gomez:

Notice of Water Use Permit Violation  
Well No. 2001-08 (WUP No. 168)  
Ewa Caprock Ground Water Management Area, Oahu

Reported monthly pumpage at Well No. 2001-08 show that the current twelve-month moving average withdrawal is in excess of the 0.048 mgd allocation that was approved by the Commission on Water Resource Management at its meeting of July 13, 1994.

Please provide an explanation for the overpumpage and an estimate for the length of time that you will need to come into compliance with the terms of the permit. We request that you submit a written response to this letter by July 15, 1996.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

RAE M. LOUI  
Deputy Director
Mr. Bruce Gomez
Association of Apartment Owners - Palm Villa II
91-1119 Mikohu St., Apt. D
Ewa, HI 96706

Dear Mr. Gomez:

Pump Installation Permit Application
Palm Villa II Well (Well No. 2001-08)

For your information and record, we are forwarding the review comments from the Department of Health, Safe Drinking Water Branch on the captioned application.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

LN:ss

Attachment
MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: April 15, 1996
TIME: 9:00 a.m.
PLACE: DLNR Board Room, 1st Floor
Kalanimoku Building

Chairperson Michael Wilson called the meeting of the Commission on Water Resource Management to order at 9:10 a.m.

The following were in attendance:

MEMBERS: Mr. Michael Wilson
Mr. Richard Cox
Dr. Lawrence Miike
Mr. Robert Girald
Mr. David Nobriga
Mr. Herbert Richards, Jr.

STAFF: Ms. Rae Loui
Mr. Roy Hardy
Mr. Charley Ice
Ms. Lyann Mizuno
Ms. Lenore Nakama
Ms. Janis Uwaine

COUNSEL: Mr. William Tam

OTHERS:
Douglas MacDougal
Ben Matsubara
Richard Montgomery
Kathleen Hoff
Yvonne Izu
Carol Wilcox

Dawn K. Wasson
Yukie Ohashi
Kay Muranaka
Garrick Iwamuro
Barry Usagawa
Stephen Kubota

Dr. Jim Anthony
Tom Nance
Harry Hida
Herb Lee, Jr.
Chester Lao

All written testimonies submitted at the meeting are filed in the Commission office and are available for review by interested parties. The items were not taken in the order posted on the agenda.

ITEM 1. MINUTES OF THE MARCH 13, 1996 MEETING.

MOTION: (RICHARDS/NOBRIGA)
To approve the minutes.
UNANIMOUSLY APPROVED.
TESTIMONY BY APPLICANT:

Mr. Ben Matsubara, representing Pacific Atlas, Inc., testified that they are in agreement with the staff recommendation and intend to comply with them. He further stated that the applicant accepts full responsibility for what has occurred and have undertaken steps to ensure that all of the requirements are complied with and will be updating the Commission staff in regards to their progress.

TESTIMONIES:

Ms. Carol Wilcox, testified that there should be no excuses for overlooking permits that are required.

Mr. Stephen Kubota, a Kaneohe resident, testified that he is concerned about the potential impacts on the fishpond, which he felt is valuable to Kaneohe Bay.

Mr. Herb Lee, Consultant to Pacific Atlas, Inc. and President of Waikalua Fishpond Preservation Society, which was set up due to a condition agreement between the City and the community, and Pacific Atlas, Inc. to preserve the Waikalua Fishpond as part of the SMA and PRU agreement going back to September, 1994. He testified that the Society is comprised of people from the community and recently got their preservation plan approved by the Department of Land and Natural Resources and have been in the process of implementing it since then. Part of that plan is to eradicate all of the mangrove around the pond area. They are also looking into planting native Hawaiian coastal plants around the pond as well as in the golf course area.

Mr. Ben Matsubara informed the Commission that they are currently grassing the area to prevent erosion.

Deputy Director Rae Loui suggested that the staff go to the area and report back to the Commission at its next meeting on April 19, 1996.

MOTION: (COX/GIRALD)

To defer action for 30 days and have the applicant stop all work related to the permits but allow work necessary to control the erosion.

UNANIMOUSLY APPROVED AS AMENDED.

ITEM 10. REPORT ON PERMIT VIOLATIONS, APPLICANTS FOR NEW INTERIM WATER USE PERMITS, EWA CAPROCK, GROUND WATER MANAGEMENT AREA, OAHU

PRESENTATION OF REPORT: Ms. Lenore Nakama
Staff submitted a report as requested by the Commission during the March 13, 1996 meeting.

No action was required on this item.

ITEM 10. OTHER BUSINESS

None.

ADJOURNMENT: Chairperson Wilson adjourned the meeting at 2:52 p.m.

Respectfully submitted,

JANIS F. UWAIN
Secretary

APPROVED AS SUBMITTED:

RAE M. LOUI
Deputy Director
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

April 15, 1996
Honolulu, Oahu

REPORT ON PERMIT VIOLATIONS
Applicants for New Interim Water Use Permits
Ewa Caprock Ground Water Management Area, Oahu

APPLICANT(S):

(Well Nos. 1905-08,10)
The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI  96707

(Well Nos. 2003-04,07)
The State of Hawaii,
Housing Finance & Development Corp.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI  96813

(Well Nos. 1900-02,17 to 20 & 1901-03)
Hawaii Prince Golf Club
91-1200 Fort Weaver Rd.
Ewa Beach, HI  96706

(Well Nos. 2001-03,04,05,09,10,11)
Gentry Development Co.
P.O. Box 295
Honolulu, HI  96809

(Well No. 2001-07)
The Arbors Association
91-920 La'aulu St., #1G
Ewa Beach, HI  96706

LANDOWNER(S):

Same

Same

Same

Same

Same

Same
(Well No. 2001-08)
Palm Villas II Association
91-1119 Mikohu St., #D
Ewa Beach, HI 96706

(Well No. 2002-12)
Palm Court Association
91-1019 Puanui St., #25R
Ewa Beach, HI 96706

(Well No. 1902-01)
Haseko (Ewa), Inc.
820 Mililani St., Suite 810
Honolulu, HI 96813

BACKGROUND:

On March 13, 1996, the Commission on Water Resource Management (Commission) deferred action on all pending requests to continue uses in the Ewa Caprock and directed the staff to submit a report describing permit violations in the Ewa Caprock. The Commission also directed staff to resolve the violations prior to Commission action on the requests for new interim water use permits.

A summary of the permit violations is shown in Table 1.
Table 1. Summary of Permit Violations

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<thead>
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<th>WATER USE</th>
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<td>WCR</td>
<td>ELEV</td>
<td>AS-BUILT</td>
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<tr>
<td>Hawaii Prince</td>
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<td></td>
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<td>1901-03</td>
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* Not a clear condition of the permit
** After-the-fact application for a pump installation permit received 3/13/96.

WCR Well Completion Report
ELEV Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
AS-BUILT As-built sectional drawing of the well
PUMP TEST Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other water quality data.
PCR (Permanent) Pump Installation Completion Report
AS-BUILT As-built sectional drawing of the permanent pump installation
WUR Water Use Report
OVER PUMPAGE 12-month moving average withdrawals in excess of allocation
WELL CONSTRUCTION/PUMP INSTALLATION PERMIT VIOLATIONS:

The asterisk (*) denotes items that were not clear conditions of the permit, but are needed by the staff to carry out resource assessment and analytical work. In most cases, the lack of clarity resulted from the issuance of combined well construction/pump installation permits, which did not specifically require pump completion reports and as-built sectional drawings of the pump installation. The staff has addressed this problem by developing a new procedure for combined well construction/pump installation permits applications, whereby the staff will recommend that the Commission approve the issuance of the well construction permit and delegate to the Chairperson the authority to approve the issuance of the pump installation permit upon the Commission's receipt of adequate pump test results and any other items that were required under the terms of the well construction permit.

Table 1 shows a number of wells under "Gentry Development" that have been transferred to individual homeowner's associations. However, Gentry was the entity in control of the well at the time that the construction violations occurred and thus should be responsible for seeking after-the-fact permits and/or compliance with well/pump permit conditions. A similar condition exists for wells listed under "State HFDC", where three (3) of the wells have been transferred to Kapolei Peoples, Inc.

WATER USE REPORTING:

The frequency of reporting water data for Well No. 2001-03 is inconsistent. As of April 3, 1996, the staff is not in receipt of any reports for 1996. Section 13-168-7(b) HAR requires the owner or operator of any well to file a report "...on a regular monthly (calendar or work schedule) basis to the commission on forms provided by the commission on or before the end of the month following the month for which water usage is to be reported."

At present, water data are being reported for Well No. 2001-05 on a regular basis; however, as of April 3, 1996, a report for January 1996 has not been submitted, and there are no reports for March-June 1995.

Reports for Well No. 2002-12 are inadequate, ie for the January 1996 report, the beginning of the period for which the amount is reported is unknown. In addition, when withdrawals are zero, monthly reports should still be submitted with the "Date Measurement(s) Taken" field filled in. A sample of the Commission's official report form is shown in Exhibit 1.

OVERPUMPAGE:

Table 1 also shows that withdrawals at the Hawaii Prince wells (Well Nos. 1900-02, 17 to 20 & 1901-03) and two Gentry-developed wells (Well Nos. 2001-05 and 2001-08) are in excess of the respective allocations. The graphs of reported monthly water use and computed 12-month moving averages are shown in Exhibits 2 to 4. The water use permit for Well No. 2001-08 has been transferred to Palm Villa II Homeowners Association. The current water use permittees should be held responsible for any violations related to usage and water use reporting.
An issue is whether the overpumpage should be viewed as an indication of underestimated water needs or whether enforcement action is more appropriate. The Commission has been approving interim permits for new uses pending verification of the actual quantity of water needed. Section 174C-50(g) provides "[i]n the final determination, the Commission may increase or reduce the amount initially granted the permittee".

With regard to pumpage at the Hawaii Prince wells, the extent to which the withdrawals have exceeded the allocation is not certain. Hawaii Prince has been estimating their water use on the basis of pumping times and pump capacities. The pump in EP 22 (Well No. 1900-02), Hawaii Prince's major pumping source, is a very old OSCo pump that is most likely running at less than 100% efficiency. Therefore, reported estimated pumpage is probably greater than actual pumpage. The installation of flowmeters in each of the Hawaii Prince wells was completed on February 29, 1996. A review of actual water use in relation to the allocation should be done in light of metered pumpage data.

SUMMARY/CONCLUSION:

Letters have been sent to each of the entities listed in Table 1, notifying them of their lack of compliance with permit conditions and requesting the submittal of other items and documents that are needed by the Commission but were not clear conditions of the permit. The letters establish a May 15, 1996 deadline for compliance.

The requests for continued uses will be resubmitted for Commission action once all violations have been resolved and following the public hearing to modify the Water Resources and Protection Plan to include the Ewa Caprock as a hydrologic unit and to establish a sustainable yield for the caprock aquifer system. We are planning to hold the public hearing in July 1996.

Respectfully submitted,

[Signature]

RAE M. LOUI
Deputy Director

Exhibit(s): 1 (Monthly Water Use Report Form)
2 (Graph of Monthly Water Use for Well No. 2001-05)
3 (Graph of Monthly Water Use for Well No. 2001-08)
4 (Graph of Monthly Water Use for Well Nos. 1900-02, 17 to 20 & 1901-03)

APPROVED FOR SUBMITTAL:

[Signature]

MICHAEL D. WILSON, Chairperson
INSTRUCTIONS: Please TYPE OR PRINT CLEARLY. Complete this form to report total monthly groundwater use, and, if required, other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 621, Honolulu HI 96809. For assistance, please call 587-0265 (Oahu only) or 1-800-468-4644 (neighbor islands).

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<th>Method of Measurement</th>
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Other comments or additional information:

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

EXHIBIT 4/
Ewa By Gentry Community Association
Soda Creek III (Well No. 2001-05)

EXHIBIT 2

- monthly values
- WUP
- Cl (mg/l)
- 12-MAV

pumpage (mgd)

JAN 95

date (latest data 02/96)

JAN 96

Cl (mg/l)
EXHIBIT 3

Palm Villa II Homeowners Association
Palm Villa II Well (Well No. 2001-08)

Pumpage (mg/l) vs Date (latest data 02/96)

- Monthly values
- WUP
- 12-MAV
- Cl (mg/l)
Hawaii Prince G.C. Combined Pumpage
(Well Nos. 1900-02, 17 to 20; 1901-03)

EXHIBIT 4

12-MAV
WUP
combined monthly withdrawal
Chairperson Michael Wilson called the meeting of the Commission on Water Resource Management to order at 9:15 a.m.

The following were in attendance:

**MEMBERS:**
- Mr. Michael Wilson
- Mr. Richard Cox
- Dr. Lawrence Miike
- Mr. Robert Girald
- Mr. David Nobriga
- Mr. Herbert Richards, Jr.

**STAFF:**
- Ms. Rae Loui
- Mr. Roy Hardy
- Mr. Glenn Bauer
- Mr. Charley Ice

**COUNSEL:**
- Mr. William Tam

All written testimonies submitted at the meeting are filed in the Commission office and are available for review by interested parties. The items were not taken in the order posted on the agenda.

1. **MINUTES OF THE FEBRUARY 21, 1996 MEETING**

**MOTION:** (NOBRIGAIRICHARDS)

To approve the minutes.

UNANIMOUSLY APPROVED.

2. **OLD BUSINESS/ANNOUNCEMENTS**

Deputy Director Rae Loui announced that there would be a hearing on Friday, March 15, 1996 on Maui regarding the following:

Item 1
ORDER TO SHOW CAUSE TO THE COUNTY OF MAUI WHY:

1. A WATER EMERGENCY SHOULD NOT BE DECLARED FOR THE IAO AQUIFER SYSTEM

2. THE ACTIONS NECESSARY TO MEET THE EMERGENCY SHOULD NOT BE ORDERED

3. REQUEST TO SCHEDULE A PUBLIC HEARING TO MODIFY WATER RESOURCES AND PROTECTION PLAN, SUSTAINABLE YIELD ESTIMATE FOR EWA CAPROCK AQUIFER SYSTEM

GENTRY DEVELOPMENT COMPANY, APPLICATION FOR A WATER USE PERMIT, APPLICATION FOR WELL PERMITS, GENTRY AREA 26 WELL (WELL NO. 2001-11), WELL CONSTRUCTION: 19-INCH DIAMETER, 58-FOOT DEEP WELL, PUMP INSTALLATION: 500 GPM PUMP, WATER USE: FUTURE NONPOTABLE URBAN USE FOR 0.172 MGD

APPLICATIONS FOR WATER USE PERMITS, REQUESTS TO CONTINUE NONPOTABLE URBAN USES, EWA GROUND WATER MANAGEMENT AREA, OAHU

(WELL NOS. 1905-08.10), THE ESTATE OF JAMES CAMPBELL

(WELL NOS. 2003-01.02.04.05.07), STATE OF HAWAII, HOUSING FINANCE & DEVELOPMENT CORP.

(WELL NOS. 1900-02.17 TO 20 & 1901-03), HAWAII PRINCE GOLF CLUB

(WELL NOS. 2001-03.04.05.09.10.11 & 2002-15), GENTRY DEVELOPMENT CO.

(WELL NO. 2001-07), THE ARBORS ASSOCIATION

(WELL NO. 2001-08), PALM VILLAS II ASSOCIATION

(WELL NO. 2002-12), PALM COURT ASSOCIATION

(WELL NO. 1902-01), HASEKO (EWA), INC.

PRESENTATION OF SUBMITTAL: Deputy Director Rae Loui and Glenn Bauer

STAFF'S RECOMMENDATION:

Staff requested to amend the recommendation as follows:

1. The Commission directs staff to submit the preliminary draft report for a peer review and to finalize the report in light of any review comments that may be received. The final report should include recommendations on further delineation of aquifer systems within the Ewa Caprock Aquifer and the possible adoption of a sustainable yield estimate(s).
2. The Commission authorizes staff to schedule a public hearing to modify the Water Resources and Protection Plan in accordance with HRS 174C-31(m). This hearing must be held on Oahu and must be noticed at least 90 days in advance. Permittees shall be mailed a copy of the notice.

3. The Commission directs staff to notify existing water use permittees and applicants for new water uses in the Ewa Caprock Aquifer System that the applications for continued or future use will be deferred for a period of approximately six (6) months until a decision is made on the possible establishment of a sustainable yield estimate in the Water Resources Protection Plan.

4. Direct staff to resolve violations prior to Commission action on requests for continued uses.

5. The Commission adopts the following policy statement on water reclamation: It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain and reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses.

TESTIMONIES:

James Kumagai, consultant for the Commission on Water Resource Management was available to answer questions.

Deputy Director Rae Loui stated that a report on the progress of the recharge trench would be submitted to the Commission at the next Oahu Commission meeting.

MOTION: (COX/GIRALD)

To approve staff's recommendation as amended.

UNANIMOUSLY APPROVED AS AMENDED.

Chairperson Wilson directed Deputy Director Rae Loui to send a letter informing the Ewa caprock users that there may not be enough water to go around at a certain time and to stress to the users that it is important for them to work with the City and County and also to indicate to the City and County that we are anxious to help them in working with the users. In the event that the users and the City and County cannot work together to come up with a solution, then the Commission will have to step in and institute a solution.

The Commission requested staff to submit a report on the permit violations in the Ewa Caprock.
The Commission also requested a report on current allocations and potential pumpages in the caprock.

4. PACIFIC ATLAS (HAWAII) INC., DEFERRAL–APPLICATION FOR A WATER USE PERMIT, BAY VIEW NOS. 1 TO 5 WELLS (WELL NOS. 2447-02 TO 06), TMK 4-5-30:37, FUTURE IRRIGATION USE FOR 0.208 MGD. KOOLAUPOKO GROUND WATER MANAGEMENT AREA, OAHU

PRESENTATION OF SUBMITTAL: Ms. Lyann Mizuno

Staff amended the second paragraph under the Background section of the submittal as follows:

On October 5, 1995, pump installation permit applications were received from Pacific Atlas (Hawaii), Inc. for Bay View Nos. 1 to 5 (Well Nos. 2447-02 to 06).

STAFF’S RECOMMENDATION:

Staff recommended that the Commission:

1. Defer action on the water use permit application for Bay View Nos. 1 to 5 (Well Nos. 2447-02 to 06) until the next regular meeting on Oahu.

2. Direct staff to report to the Commission on the applicant’s compliance with the well construction permit conditions, along with recommendations on the imposition of fines, if any. This report shall be submitted prior to recommendations for Commission action on the applications for the pump installation permits, the after-the-fact stream channel alteration permit, and the water use permit.

TESTIMONY BY APPLICANT:

Mr. Tom Nance, project engineer, stated that they pumped each of the wells for just two days. There is an effect on the other wells that is noticeable and in that time period they did not see any affect on the stream. He also stated that there may be one over a longer period of time, although he does not think it will happen but he is willing to run more tests. He further stated that these are very small capacity wells with a cost of around $15,000 each and a seven day pump test would double their cost. He requested that they put the permanent pumps in the wells and pump them simultaneously, which is how they would be operated, and run the aquifer test in that manner. They would pump three of the five wells over a seven day period, producing a little more than the water use permit that they are asking for and they would monitor all the wells, including the two that weren’t pumped. They would also monitor several locations on Kawa Stream and would get all the information that they would need. He further testified that the grassing begins next week. The only source of water that they have is a temporary connection to the Board of Water Supply and they received notice that they need to get off. He asked that the Commission consider allowing the permanent pumps to be installed for testing and grassing. Therefore, he requested that the Commission allow them to go ahead and
STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
March 13, 1996
Honolulu, Oahu

REQUEST TO SCHEDULE A PUBLIC HEARING
TO MODIFY WATER RESOURCES AND PROTECTION PLAN
Sustainable Yield Estimate for
Ewa Caprock Aquifer System

Gentry Development Company
APPLICATION FOR A WATER USE PERMIT
APPLICATION FOR WELL PERMITS
Gentry Area 26 Well (Well No. 2001-11)
Well Construction: 19-inch Diameter, 58-foot Deep Well
Pump Installation: 500 gpm Pump
Water Use: Future Nonpotable Urban Use for 0.172 mgd

APPLICATIONS FOR WATER USE PERMITS
Requests to Continue Nonpotable Urban Uses
Ewa Ground Water Management Area, Oahu

APPLICANT(S):
(Well Nos. 1905-08,10)
The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI 96707

(Well Nos. 2003-01,02,04,05,07)
State of Hawaii,
Housing Finance & Development Corp.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

LANDOWNER(S):
Same

Same
In 1990, the Commission on Water Resource Management (Commission) adopted the Water Resources and Protection Plan (Plan). The Plan included, as required by HRS 174C-31(c), "hydrologic units and their characteristics, including the quantity and quality of available resource...". The Plan did not include the brackish Ewa Caprock Aquifer as a hydrologic unit (Exhibit 1).

In the 1988-1992 timeframe, Ewa Caprock water use permits totalling 19.524 million gallons per day (mgd) were awarded mainly to existing irrigation uses (eg. Oahu Sugar Co.). Other existing water use permits totaled 39.608 mgd for various salt water and highly brackish to saline water uses (chlorides > 1,000 MG/L).
On March 3, 1993, the Commission officially adopted the boundary of the entire brackish Ewa Caprock Aquifer and designated the aquifer as a water management area (Exhibit 1). Due to uncertainties regarding the aquifer's sustainable yield, the Commission did not adopt a sustainable yield estimate for the aquifer.

On March 17, 1993, the Commission deferred action on pending applications for water use permits in the Ewa Caprock Aquifer to provide additional time for the public to review the proposed permits and issues related to water use permit processing.

On April 28, 1993, to satisfy the needs of new developments in the Kapolei and Puuloa areas of the caprock, applicants were awarded interim water use permits with a specified duration of one year. Special conditions were attached to each interim permit; these are shown in Exhibit 2.

On May 18, 1994, the Commission deferred action on requests for new interim permits to continue nonpotable urban uses to provide applicants with an additional thirty (30) days to comply with the data reporting requirement of the expired interim permits. In order for the Commission to track the behavior and response of aquifers in designated ground water management areas, all water use permits are conditioned on regular monthly reporting of pumpage, chlorides, water levels, and water temperatures. Water use reporting is required from all ground and surface water users statewide in accordance with §13-168-7 HAR.

On July 13, 1994, the Commission awarded new interim permits, valid for one year, for the above sources (excluding Well Nos. 2001-10 & 11). The special conditions of the new interim permits are shown in Exhibit 3.

On January 25, 1995, an interim water use permit was issued to Gentry Development Corp. for a new source to supply the Ewa by Gentry developments (Well No. 2001-10). The duration of this permit was for less than one year to be consistent with all other interim permits set to expire on July 13, 1995.

At the July 5, 1995 Commission meeting at Honokaa, Hawaii, the Commission voted to extend the duration of the interim permits that were due to expire on July 13, 1995, to allow decision-making on these requests to be made on Oahu. Requests for new water use permits to continue ground water uses after the July 12, 1995 expiration date have been received from each of the above applicants. Hawaii Prince has requested that their interim permitted use be increased by 0.371 mgd to bring their total interim allocation to 0.5 mgd.

On August 25, 1995, Gentry Development Company submitted applications for new well construction/pump installation and water use permits for Gentry Area 26 Well (Well No. 2001-11) for future nonpotable urban use for 171,600 gpd. At the January 24, 1996 Commission meeting in Wailuku, Maui, action on the water use permit application was deferred to the Commission's next regular meeting on Oahu.
On February 21, 1996, the Commission approved the staff's recommendation to again defer action on the applications for Well No. 2001-11 pending the staff's review and analysis of ground water conditions in the Ewa Caprock Aquifer.

ANALYTICAL WORK:

The Ewa Caprock Aquifer is currently undergoing a period of change in response to the large-scale modifications in land and water use as sugarcane is replaced by urban developments. There has been much effort involved in modelling the behavior of the caprock aquifer. In an effort to better understand the existing and historical data upon which assessments of Ewa Caprock Aquifer dynamics are based, the available historical data from basal and caprock wells that were used for sugarcane irrigation supply were compiled and analyzed by staff. In addition, the staff has established a monitoring network and has been collecting ground water data at Oahu Sugar Company (OSCo) and private wells since April 1994. The primary purpose of sampling is to provide baseline data that can measure changes to the caprock aquifer over time.

A preliminary draft report of this analysis is submitted herewith as Exhibit 4. The major preliminary conclusions drawn in the draft report include recommendations for:

1. A sustainable yield of less than 10 mgd in the Puuloa area and less than 5 mgd in the Kapolei area. (Exhibits 5 and 6 show the current allocations and pending requests for ground water in the Puuloa and Kapolei areas.)

2. Reduction in permitted uses, unless there is a drastic change to the inflow of ground water to the caprock.

3. Adoption of a "go slow" approach to new wells in the Puuloa region.

4. Further division of the caprock into smaller management areas.

WATER USE PERMITS:

One condition that new water use permit applications must meet is that the use: 
"can be accommodated with the available water source..." §174C-49(a) HRS. An estimate of sustainable yield is critical to this determination.

In light of the staff's recent analysis, which recommends a sustainable yield that is considerably less than current permitted uses, the Commission should defer action on new use applications pending 1) a final draft report, revised subsequent to peer review, and 2) incorporation of the Ewa Caprock Aquifer in the Water Resources and Protection Plan (in the event that the final report recommends adoption of a sustainable yield for the caprock aquifer). Pursuant to §174C-31(m), a public hearing must be held to modify the Water Resources and Protection Plan. Staff hopes to hold the public hearing by July 1996.
Possible violations are another issue with the interim water use permits in the caprock. There are possibly twenty (20) violations which range from unpermitted well construction and pump installations to noncompliance with approved permit conditions concerning all permittees to differing degrees. The staff is in the process of identifying potential violations for each well listed above and will attempt to resolve these issues with the applicants.

With regard to well construction permit conditions for wells that have been transferred to another permittee, it is unclear who should be responsible for compliance. For example, pumps have been installed in a number of the Gentry wells without an application or approval. Some of these wells have since been transferred to individual homeowner’s associations. Should the homeowner’s association be responsible for seeking an after-the-fact permit, or should the entity who was in control of the well at the time of the violation be responsible?

NON-POTABLE WATER MASTER PLAN:

The Planning Department, City and County of Honolulu, is in the process of revising the Development Plans for Ewa and Central Oahu. The draft plan shows a projected population increase from 130,526 in 1990 to 185,091 in 2020. This corresponds to a 42% increase in population for the area. A 60% increase in housing units over the same time period is projected: from 36,262 units in 1990 to 58,118 units in 2020 (for Ewa Employment and Dispersed Residential; Exhibit 7). This will result in an unquantified (as yet) but certain increase in nonpotable water needs.

To address the expected increase in nonpotable water demand for urban uses, the Commission and the City Department of Wastewater Management hired a consultant to develop a nonpotable water master plan for Central Oahu, including the Ewa plain. The plan recommends construction of a demonstration recharge trench in the Ewa Caprock using reclaimed water. There are many issues regarding the use of reclaimed water. An entity is needed to address and resolve these issues. Staff has been discussing the feasibility and potential application of the recharge trench proposed by our consultant as a means by which to ensure the future viability of the nonpotable Ewa Caprock Aquifer with key personnel from the Department of Health, City Department of Wastewater Management, City Planning Department, and the Board of Water Supply. The consensus is that a water reclamation program should move forward, and the recharge trench is a good first step.

It is recommended that the Commission adopt a reclaimed water policy statement, which specifically addresses only the Ewa Caprock, but may include other areas in the future. The policy statement should recognize reclaimed water as a valuable water resource. A policy statement is also needed to address the concerns of the Department of Health regarding contamination of potable water resources. Specific language is suggested in the recommendation section below.
RECOMMENDATIONS:

The staff recommends the following:

1. The Commission directs staff to submit the preliminary draft report for a peer review and to finalize the report in light of any review comments that may be received. The final report should include recommendations on further delineation of aquifer systems within the Ewa Caprock Aquifer and the possible adoption of a sustainable yield estimate(s).

2. The Commission authorizes staff to schedule a public hearing to modify the Water Resources and Protection Plan in accordance with HRS 174C-31(m). This hearing must be held on Oahu and must be noticed at least 90 days in advance. Permittees shall be mailed a copy of the notice.

3. The Commission directs staff to notify existing water use permittees and applicants for new water uses in the Ewa Caprock Aquifer System that the applications for continued or future use will be deferred for a period of approximately six (6) months until a decision is made on the possible establishment of a sustainable yield estimate in the Water Resources Protection Plan.

4. Direct staff to resolve violations prior to Commission action on requests for continued uses.
5. The Commission adopts the following policy statement on water reclamation:

It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses.

Respectfully submitted,

W. Ray Hardy

RAE M. LOUI
Deputy Director

Attachments

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Special Conditions
Ewa Caprock Temporary Water Use Permits

1. The temporary permits shall be valid for one (1) year from its approval date (April 28, 1994).

2. Quantities of allocations for each applicant are those calculated in Exhibit 3 for 1993 under the additional required allocation column. The pending applications which have no new or negative additional requirements are denied.

3. Each applicant's allocation shall be for the cumulative withdrawals from the corresponding well sources specified by each applicant in Exhibit 2, except for Gentry Pacific's well sources. Staff will be working with Gentry to associate water use permits for each well with each project individually within their total required allocation as shown in Exhibit 3.

4. Each applicant's allocation shall be used only for the corresponding uses specified by each applicant in Exhibit 3.

5. Within one (1) year, the applicants shall jointly submit a plan for the conversion to an alternative non-potable source other than the Ewa Caprock Aquifer. This plan shall include the applicant's intentions of funding the actual development of the alternative non-potable source.

6. Within sixty (60) days after approval, each applicant shall submit a water conservation plan or program according to the conditions in Attachment C.

7. The applicants shall continue to actively participate in the continuing development of the Ewa Caprock Regional Plan and its two main components which shall be coordinated by the Commission on Water Resource Management.

8. The applicants must actively participate in generating more information to show the utility of the caprock source in the absence of OSCo. recharge irrigation over the caprock and the complete absence of OSCo. irrigation in the Pearl Harbor area.

9. Temporary permits shall not be renewed if any of the above is not provided or followed.
CONSERVATION CONDITIONS
EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:
   
a. Reduce the demand for non-potable water by:
      • Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      • Mulching planting areas with organic materials, etc., to minimize evaporation;
      • Efficiently maintaining the plants;
      • Improving land management practices to conserve water.

   b. Improve efficiency in use and reduce losses and waste of non-potable water by:
      • Using efficiently designed landscaping and irrigation systems;
      • Monitoring irrigation requirements and controlling usage accordingly;
      • Managing irrigation scheduling to minimize water demand;
      • Eliminating opportunities for water wastage;
      • Maintaining and improving irrigation systems as necessary.

   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

EXHIBIT 2
5. Require applicants cooperate with the Commission's initiative in the development of the Nonpotable Water Master Plan for Central and Leeward Oahu.

6. Require that all temporary permits be subject to the standard conditions of a water use permit listed in Attachment B and the Conservation conditions listed in Attachment C.

CONSERVATION CONDITIONS

EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

a. Reduce the demand for non-potable water by:
   - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
   - Mulching planting areas with organic materials, etc., to minimize evaporation;
   - Efficiently maintaining the plants;
   - Improving land management practices to conserve water.

b. Improve efficiency in use and reduce losses and waste of non-potable water by:
   - Using efficiently designed landscaping and irrigation systems;
   - Monitoring irrigation requirements and controlling usage accordingly;
   - Managing irrigation scheduling to minimize water demand;
   - Eliminating opportunities for water wastage;
   - Maintaining and improving irrigation systems as necessary.

c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

EXHIBIT 3
Description of the Caprock Aquifer

The Ewa Plain caprock is a thick wedge of interbedded marine and terrestrial sediments that were deposited on the flanks of the Koolau and Waianae volcanoes during sea level changes and isostatic subsidence of Oahu during the Pleistocene ice ages. At the coast this sequence is greater than 1,000 feet thick (Stearns and Chamberlain, 1967). Inland, the sediments thin and pinch out against weathered lava flows.

The primary caprock aquifer is the highly permeable upper coralline limestone layer (referred to as "Limestone Aquifer 1" in Report R-79). The limestone layer continues offshore, but inland contacts alluvial sediments (Mink, 1989). Ground water within the aquifer is unconfined with a water level only several feet above sea level. The general ground water gradient is toward the coast.

Below this limestone layer, and found throughout the Ewa Plain, is a ubiquitous brown clay layer that acts as a bottom (aquiclude) to the coral aquifer. The clay layer is deeper at the coast than inland. Therefore, near the coast the brackish ground water floats on saline water as a Ghyben-Herzberg lens, but inland the brown clay truncates the salt water. Below the clay are other coral, sand, and mud deposits that contain very saline water. All plantation caprock wells and all new wells exploit the upper limestone aquifer. Alluvial ground water may be available in the Honouliuli area. However, developing alluvial water is not as easy as from coral due to the generally lower permeability of alluvium.

Prior to sugar cultivation, the caprock received a steady flux of ground water from natural leakage from the Koolau and Waianae basal aquifers, intermittent recharge from rainfall, and from occasional large storms which allowed dry streams, such as Kaloi Gulch, to flow to the Ewa Plain. The amount of leakage into the mauka caprock boundary is dependent upon the height of the water table in the basalt. When the first artesian well was drilled near Honouliuli in 1879 ground water rose to an estimated height of 32 feet msl (Cox, 1981, p. 55). West of Honouliuli the original ground water level in the Waianae aquifer would have been about 10 feet less (Mink, 1980, p.37). The demise of sugar recharge into the caprock aquifer is similar to pre sugar days, except that the amount of natural leakage is much less due to the reduction of water levels in the basal aquifers.

Because of Ewa Plain's land use history, CWRM Report R-79 (Mink, 1989) divided the caprock into five broad areas: 1) Honouliuli; 2) Puuloa; 3) Kapolei; 4) BPNAS; and 5) Malakole. Honouliuli and Kapolei areas essentially overlie alluvium, while Puuloa, BPNAS, and Malakole areas are composed essentially of
coral limestone. However, for convenience of management, Honouliuli-Puuloa is considered to be a single region as are Kapolei-BPNAS and Malakole. Though in essence, the upper aquifers are hydraulically connected, and there may be only a weak connection between this aquifer and the lower ones.

History of Ewa Caprock Aquifer Development

The Ewa Plain has been irrigated with ground water since 1890. By 1930, Ewa Plantation had drilled 70 artesian basal wells (clustered as pumping batteries) through the Ewa Plain caprock sediments to irrigate cane lands makai of Farrington Highway (Stearns and Vaksvik, 1935). From 1930-35, five shallow wells (EP Pumps 20-24) were dug into the Ewa caprock to produce more irrigation water. All of them penetrated a shallow coral aquifer and were capable of producing large quantities of irrigation water. Later, other caprock sources were brought on line (EP Pumps 26,27,28,29; EP Pump 30; and EP Pump 31). The accompanying map shows the location of Ewa Plantation basal and caprock pumps.

When the shallow caprock wells were constructed, they pumped brackish ground water that originated primarily from basal return irrigation water. Consequently, the caprock water mixed with the artesian basal water already irrigating the region.

Figures 1-3 illustrate the chloride and pumpage history of the Ewa Plantation’s basal sources. Pumpage includes total draft from the Koolau Aquifer (excluding EP Pump 10-12), and well battery pumpage. For convenience, water quality from the various pump batteries are shown separately. Figure 1 presents the most saline of the sources. EP Pumps 1 and 9 probably applied all of its water in the vicinity of Ewa Mill and near the first caprock sources. These batteries had deep wells that were drilled into the upper transition zone. To improve quality some were plugged back with cement, but all were abandoned and sealed by 1950. Figures 2 and 3 shows the marginal quality and potable quality sources respectively.

The freshest source, EP Pump 15,16, was recommended by Stearns (Stearns and Vaksvik, 1935, p. 460) as a way to freshen up the limestone aquifer. He noted that chloride concentrations in the basal sources had approached high levels and that pumpage from the new caprock wells would increase chloride concentrations in the coral aquifer by recirculating irrigation water. Evapotranspiration by sugar cane concentrated the salts in the return water. Construction of EP Pump 15,16 began in 1937 and it was put on-line to irrigate cane fields around 1939 or 1940.

Figure 4 shows initial (first 10 years) conditions in the caprock when the shallow wells were first constructed. Average yearly pumpage was about 11 mgd, while seasonal variations ranged from less than 5 mgd to more than 15 mgd. Water quality varied slightly with pumpage and with the seasonal variation of applied
basal water. Though Stearns mentioned (1935, p. 460) that much of the applied basal water had chlorides as high as 700± mg/l (and higher), Figure 4 shows that the caprock sources range between 700± mg/l to 1,000± mg/l.

Figure 5 presents the history of pumpage and chlorides for all caprock sources utilized by Ewa Plantation and Oahu Sugar Company (OSCo). Unfortunately there are missing monthly pumpage data between 1940 and 1963. The estimated average of 12 mgd is from CWRM Report R-79 (Mink, 1989). The graph does show a significant rise in chlorides for all caprock sources during the 1940's. Until the 1970's the average imported amount of Koolau basal water was 60-70 mgd. After 1981, the average amount dropped to less than 50 mgd.

CWRM Report R-88 entitled, Drought in Hawaii, indicates that the period from 1940-1954 was dry, and that "drought" was reported to be moderate to extreme. Though the data do not overlap, increased pumpage from artesian, and probably the caprock wells, contributed to the rise in chloride concentration around 1947 as seen in Figure 5. After EP Pumps 1 and 9 were abandoned and sealed, fresher basal water was used to irrigate Ewa cane lands. The result was a wholesale freshening of the caprock aquifer from the mid 1950's to the mid 1970's.

The rise in caprock chloride concentration beginning in the mid 1970's was due to several factors: 1) an increase in caprock well pumpage from 20 mgd to 30 mgd; 2) continued use of marginal quality basal water on lands near Ewa Mill and Fort Weaver Road; 3) several "extreme drought" periods throughout the 1970's reported in R-88; and 4) switching from furrow-irrigated cane to drip-irrigated cane in the mid 1970's to early 1980's (Hugh Morita, personal communication, 1996).

When OSCo took over from Ewa Plantation around 1970, they may have operated the irrigation system differently. Hugh Morita (personal communication, 1996) said that EP Pumps 3 and 7 supplied water to Field 57, which is mauka of EP Pump 23. From here the water split, some was piped to the EP 23 distribution system and the remainder was sent towards Ewa Mill. All of this water irrigated fields growing over the coral aquifer. EP Pumps 4 and 6 sent water west to a ditch system that runs at elevation 120± feet msl. EP Pump 5 supplied water to a ditch at elevation 160± feet msl. EP Pump 2 and Pumps 15 and 16 supplied water to cane in the Honouliuli area. All of this water irrigated fields growing on the alluvium. EP Pump 8 was for domestic use only.

Examination of Figures 2 and 3 will provide approximate 50-50 mixes of artesian water. For example during the last 15 years, Pumps 3 and 7 give a 50-50 mix of 500 mg/l chloride, while Pumps 4 and 6 show a mix of about 400 mg/l. The actual mix would be weighted to the pump which supplies the greatest proportion of water.
Report R-79 utilized a single cell mixing model to calculate ground water flows and caprock water chloride concentrations. The model calculated a steady-state inflow of return water and natural leakage for 1930 at 15 mgd. For the drip irrigation period between 1982-87 the model still assumes a 15 mgd inflow of ground water with a quality of 550 mg/l. The model calculated a steady-state mix of 1226 mg/l for water pumped from the caprock aquifer. Mink (1989) estimates that 4 mgd of the 15 mgd was the due to natural leakage, and 11 mgd was return irrigation water.

Since the late 1980's, Ewa Plain land use changes occurred rapidly as many cane fields were replaced by golf courses and housing developments. Consequently, the amount and location of applied irrigation water changed considerably. By November 1994 all irrigation to Ewa Plain cane fields had ceased and all OSCo caprock sources stopped pumping (except EP Pump 22). This action reduced the average 1994 pumpage from the caprock aquifer in the Puuloa area from 17 mgd to 3 mgd, and a portion of irrigation water ceased returning to the caprock aquifer.

**Periods of Chloride Equilibrium**

Examination of Figure 5 shows that only two periods of relative chloride stability exist in the record. The first is from 1930 to about 1940, and the second is from 1952 to approximately 1970. These intervals represent periods of stable pumping, acreage, and irrigation methods. The chloride quality of the mixture of the applied basal water (Figures 1-3) was relatively stable during the early 1930's, and again between 1952 to 1970. Chlorides in the caprock wells rose in the early 1940's when water quality in EP Pumps 1 and 9 worsened.

All other periods in the record that show rising (1940-1949; 1975-present) or falling (1950-1952) chloride values are during times of non-equilibrium when a major change took place such as caprock pumpage, irrigation method, acreage, or quality of applied basal water.

It is interesting to note from Figure 5 that even after sugar ceased, and total pumpage reduced to less than 5 mgd, some wells continued to exhibit rising chlorides. Any ground-water flow or solute transport model constructed should calibrate to the two equilibrium periods outlined above.

**Estimated Sustainable Yield of the Ewa Plain**

Report R-79 provided sustainable yield estimates for the Ewa Plain caprock aquifer. Unlike the methodology used to calculate sustainable yield for large basaltic aquifer systems (State Water Resource Protection Plan, Vol. II, 1992), the sustainable yield estimate for the caprock is based on an optimal amount of pumpage to achieve an acceptable water quality for irrigation (< 1,000 mg/l chloride). Essentially, sustainable yield for the caprock aquifer is defined as "net pumpage" or the difference between
total pumpage and the return irrigation component plus natural leakage.

During the plantation time, water quality was a function of cane acreage, caprock pumpage, irrigation method (furrow or drip), and basal water quality. Assuming that natural leakage is constant, changes in the irrigation method and acreage changed net pumpage or sustainable yield. Since the upper limestone aquifer is a result of a 100 years of irrigation, past land use changes and irrigation methods have altered the sustainable yield several times. Return basal irrigation water and natural basal leakage inflow from the Honouliuli alluvium into the limestone aquifer contributed to recharge. The table below summarizes these changes as presented in R-79 and Figure 5 for the Puuloa area.

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Caprock Pumpage (mgd)</th>
<th>Caprock Chloride (mg/l)</th>
<th>Irri. Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930-1940</td>
<td>11</td>
<td>700-1050</td>
<td>Furrow</td>
<td>Equilibrium condition 2500 acres of cane</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sealing EP Pumps 1&amp;9</td>
</tr>
<tr>
<td>1970-1980</td>
<td>22</td>
<td>600-800</td>
<td>Furrow Drip</td>
<td>Non-equilibrium conditions EP Pumps 20,21,22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>increasing chlorides</td>
</tr>
<tr>
<td>1980-1989</td>
<td>21</td>
<td>900-1000</td>
<td>Drip</td>
<td>Non-equilibrium conditions</td>
</tr>
<tr>
<td>1989-1994</td>
<td>14</td>
<td>1000-1400</td>
<td>Drip</td>
<td>Non-equilibrium conditions Reduced acreage</td>
</tr>
</tbody>
</table>

Report R-79 estimates (p. 41) that fields irrigated by Koolau or Waianae basal sources return 53 percent of the applied water if furrow irrigation methods are employed or 41 percent if drip methods are used (using water balance coefficients applied in CWRM Report R-78, 1988). For caprock sources 49 percent is returned for furrow, whereas only 29 percent is returned for drip. Using 1981 and 1986 (mentioned in R-79 as predominately furrow and drip years respectively) to compare differences for return water quantities over the entire region, the report estimates that 32 mgd of basal water and 15.3 mgd of caprock water was return irrigation in 1981, while 16 mgd basal and 5.5 mgd caprock was return water in 1986. Net pumpage in 1981 was 15.7 mgd, while in 1986 it was 13.5 mgd (R-79, p. 43).
From the above analysis of the return component, R-79 (p. 48) estimated the sustainable yield for the three areas. Sustainable yield is maintaining chlorides at "less than 1,000 mg/l for current [as of 1989] and anticipated land use conditions". "Future" means when sugar operations cease, our present condition, and when there is no significant amount of return irrigation water. Below is the table presented in R-79 (p. 48).

<table>
<thead>
<tr>
<th>Area</th>
<th>Current (mgd)</th>
<th>Future (mgd)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honouliuli-Puuloa</td>
<td>10-15</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Kapolei-BPNAS</td>
<td>5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Malakole</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

¹The present time

Presently the Puuloa Sector caprock aquifer is in a state of non-equilibrium. All imported basal water has ceased. Though pumpage from private wells averages between 2-3 mgd, a very small fraction of that amount returns as recharge. Recirculation of the same water and salt build-up in the soil can only be alleviated by direct infusion of fresh water. This infusion comes from sporadic large winter storms and from an unknown amount of leakage from the basal aquifer. The estimated recharge by rainfall over the Puuloa Sector is 2 mgd (R-79, p. 42).

Leakage estimates for the range from 1-1.5 mgd/mile (CDM Report, 1993) to 5 mgd/mile as used in the Ewa Plain strip model (Bolke and Bauer, in prep.). Over the two mile boundary, the inflow estimates range from 3-10 mgd. The R-79 single-cell mixing model estimated 15 mgd inflow from Honouliuli into Puuloa, but of that amount natural leakage was estimated to be 4 mgd.

Eyre (1987, p. 12) estimated a net of 30 mgd leaking into the caprock (Kapolei area) from the Waianae basal lens during the plantation era (after removing plantation pumpage), and 33 mgd for pre-development (pre 1879) time (8 mgd of rainfall and 25 mgd natural ground-water flow from Schofield). The hydrologic budget was based on work by Giambelluca (1986) and employed by Eyre to solve a mixing-cell model that determined the effects of drip irrigation to water quality in the basal aquifer.

Changes to Sustainable Yield

The caprock aquifer is currently undergoing a period of change. It will take an unknown amount of time for a new equilibrium to set in. One and a half years have elapsed since the cessation of both sugar and the infusion of basal irrigation that resulted. Ground water (residual cane irrigation water +
storm recharge + natural leakage + minor irrigation return water) is slowly moving through the coral aquifer. Hydrologic properties of the aquifer will govern how long it takes to change to a new steady-state.

As stated above, estimated sustainable yield for the caprock was based on a net pumpage that supported a particular water quality. Net pumpage now does not include a large return irrigation component, but may include an increase in natural leakage due to reduction of 60+ mgd of plantation pumpage and attendant changes in the basal water level. Therefore, a new sustainable yield that would maintain irrigation quality water must be much less than previously assigned. For the Honouliuli-Puuloa area, estimates for natural leakage and rain recharge could be as high as 12 mgd or as low as 5 mgd. A good estimate for caprock recharge was lost when sugar cultivation ceased.

Golf course irrigation is different than drip irrigation for cane since it is less intensive and is concentrated over a small area. Giambelluca (1991, p. 43) estimates that recharge attributed to park irrigation is about 6 percent of recharge from drip-irrigated cane fields. Golf courses may be somewhat greater. For natural areas Giambelluca’s water balance puts recharge at 16 percent of drip irrigation.

The Commission granted a current allocated use of 19 mgd for the caprock aquifer. If everyone with a permitted use pumped their allocated amount, the aquifer would quickly salt up and become unusable for irrigation. Every user would have to cease or drastically reduce pumping and wait for natural leakage or for some kind of artificial recharge to improve water quality. From Figure 5, nonuse of EP Pump 27,28 after 1994 drastically reduced the chloride concentration at that source. Later, Figures 6-8 will show a movement of fresher water into the area surrounding EP Pumps 27,28.

Due to the profound changes in land and water use, the Commission should tread slowly until there is a better idea of the natural changes occurring within the aquifer. The new sustainable yield for the Puuloa area will be less than 10 mgd, perhaps close to 5 mgd. Constant monitoring of pumpages and chloride data will provide a refined estimate. As will be discussed below, we know that low capacity wells in Puuloa Sector have maintained relatively stable or improving water quality, whereas large capacity plantation wells appear to cause localized up-coning and increasing chlorides.

Analysis of Caprock Aquifer Since 1994

Anticipating the cessation of sugar and the accompanying widespread land and water use changes, the CWRM staff have regularly sampled OSCo and private wells since April 1994. Chloride samples and specific conductance measurements are collected from about 20 wells on a monthly to six week schedule,
and over a single day. Most of the wells are located in the Puuloa Sector, three wells are in the Kapolei Sector, and two wells are in the Malakole Sector. Since the program began, several wells were dropped and others added depending upon access or reliability of the measurement. The primary purpose of sampling is to provide baseline data that can measure changes to the caprock aquifer with time.

Figures 6, 7 and 8 are computer-drawn isochlor (lines representing equal chloride concentration) maps based on chloride data collected from wells in June 1994, September 1995, and February 1996. The isochlor lines only relate chloride data between the wells from which they were collected. In June 1994 sugar was still being cultivated in the vicinity of EP Pump 23. Figures 7 and 8 represents land and water use conditions as they are today. Recharge by rainfall and natural leakage will lower chloride concentrations and cause a shift of the isochlor lines. What is apparent when comparing Figures 6 with 7 and 8 is the worsening water quality around EP Pump 22, and freshening taking place west and southeast of Kapolei Golf Course. The EP Pump 22 situation may be a result of pumping and irrigation practices at Hawaii Prince Golf Course, whereas changes in water quality west of Kapolei Golf Course are probably natural.

Generally, the data collected since 1994 support an estimated sustainable yield that is less than 10 mgd for the Puuloa area (current pumpage averages 2-3 mgd). As will be shown later, individual wells equipped with small capacity pumps, show either a reduction or stabilization of chlorides, while EP Pump 22, fitted with a large capacity pump, shows a continuing rise in chlorides. Figures 6-8 provide a "animated" view of the changes now occurring.

In the Kapolei-BPNAS Sector, the majority of the pumpage is from the Kapolei Golf Course. Chlorides at the golf course are stable, and may be a result of basal ground-water leakage from the Waianae aquifer. The sustainable yield estimated by Mink (R-79, 1989) was less than 5 mgd. Present usage is about 1.1 mgd. A large portion of this aquifer is located under BPNAS where no pumpage occurs. Leakage from the Waianae basal aquifer is no longer 30 mgd estimated by Eyre (1987) but some lesser quantity. This amount would be natural ground-flux (estimated 33 mgd) minus total pumpage in Ewa-Kunia Aquifer System (present average about 9 mgd) or about 22 mgd.

R-79 estimated the Malakole area sustainable yield to be less than one mgd after sugar irrigation. Most of the usage is industrial. The upper aquifer supplies some water that is in excess of 1,000 mg/l. Pumpage from this sector is over 12 mgd. Some of the pumpage is from a lower coral aquifer in the caprock.

Honouliuli-Puuloa Area

Since the demise of OSCo the greatest aquifer changes will
occur in the Puuloa Sector. Present pumpage for the area averages 2.8 mgd. About 1.5 mgd of the present pumpage is east of Fort Weaver Road at the Hawaii Prince Golf Course and Ewa International Golf Club. Gentry Development Company irrigation wells and the Honouliuli Sewage Treatment Plant wells make up the remainder with small capacity wells.

Figures 9, 9a, 10, 10a, 11, and 11a focus on chloride as related to pumpage and land use changes since 1992 at Hawaii Prince Golf Course. Six wells supply the course with water. HPGC wells 1, 2, and EP Pump 22 (wells 1901-03, 1900-17, and 1900-02 respectively) are located about 500 feet, 1,000 feet, and 2,000 east of Fort Weaver Road respectively. Water quality at HPGC wells 1 and 2 appears to be improving over time, whereas at EP Pump 22 the opposite is occurring. EP Pump 22 pumps about four times the amount of water produced from each of the other wells. Though not shown, water quality at the HPGC wells near EP Pump 22 are affected by the high pumpage, suggesting possible upconing. Evaporation from the large reservoir ponds prior to irrigation will increase the chlorides of the applied water. Pan evaporation in Ewa is about 85 inches/year (R-79, p. 43). Salt can build up in the soil, only to be flushed back into the aquifer after a storm. The wells closer to Fort Weaver Road may also be affected more by storm recharge because of improving quality.

Currently, there is a request to increase the usage at EP Pump 22. From the data presented in Figures 11 and 11a, an increase in pumpage is not warranted since chlorides are already in excess of what the grass can tolerate and exceeds the 1000 mg/l associated with sustainable yield. Greater pumpage at this well could adversely affect their other sources by increasing the chloride mixture of the irrigation water applied to the west end of the course, as well as exacerbate the localized up-coning on the east side. Ewa International Golf Club, located south and down gradient of Hawaii Prince, could also be detrimentally affected.

Figures 12, 12a, 13, 13a, 14, and 14a illustrate chloride and pumping trends at three Gentry sources. Palm Villa 1 (2001-06), and Palm Court (2002-12) show a steady chloride decline since 1994. Palm Villa 2 (2001-08) averaged about 800 mg/l since 1994, but had declined from 1,200 mg/l from a sample collected in 1993.

Gentry Development is proposing two new wells and water use permits in Puuloa. Because of the small pump capacities proposed for these wells, the likelihood that they would detrimentally affect the aquifer or neighboring wells is simply unknown. What will occur will be a reduction of ground-water flux equal to amount of pumpage.

Figures 15 and 15a show an unusual phenomena at the Honouliuli Sewage Treatment Plant (STP). Wells 1902-03 and 04
are about 20 feet apart, both drilled to a bottom elevation of -15 feet msl. Chloride concentrations are typically 50-200 mg/l apart, with water quality ranging between 500 and 700 mg/l chloride. General trend shows that chlorides have increased in Well 1902-03 but have remained stable in Well 1902-04. The difference in water quality must be due to some geologic control, such as a crack or solution cavity within the coral aquifer.

As stated above, water levels within the caprock are do not enter into estimating sustainable yield. Water levels can fluctuate as much as 0.5 feet during the day due to the tidal signal. During 1957-58 water levels were collected in EP Pumps 21-24. Figure 16 shows that instantaneous water levels varied during the two years of measurement. Water levels dropped to a low of 1.3 in January 1958. The strike began in February 1958 and lasted two months. Even though irrigation ceased, water levels were increasing when the first measurements were done after the strike. Report R-88 indicates that years these years had average to slightly above average rainfall. Static water levels in January 1957 were about 2.5 feet msl. The highest water level during the entire time appears to be near EP Pump 22 and could indicate mounding of irrigation water at that site, since wells west and north appear to be "down-gradient".

Figure 17 plots 1995 water level data collected by Tom Nance at EP Pump 24 with daily rainfall at Ewa Mill and Honolulu Observatory at Ewa Beach. There does not seem to any correlation between storm events and rising water levels. In fact, several high water level periods are during the driest part of the year. When Nance (personal communication, 1996) compared EP Pump 24 water levels with ocean tidal data he found a very close correlation. Tides could account for large water level changes observed in Figure 16. Storm events seem to have a greater impact on water quality than water levels.

Unknown factors make it difficult to compare water levels presented in Figure 16 to Figure 17. What is known, however, irrigation water was applied to fields by the furrow method in the 1950’s, with water levels changing by a foot over a year. EP Pump 24 water levels collected by Nance represent a time of localized and limited irrigation and average about 1.7± feet msl.

Kapolei-BPNAS Sector

Present water use in this sector averages about 1.1 mgd. Most of the pumpage occurs at the Kapolei (HFDC) Golf Course. Of the six wells drilled, five are pumping. Water quality has stayed relatively constant. Figures 18 and 18a present pumpage and chloride data for Well B (2003-02). Average chloride is 450 mg/l. Increased leakage from the basal aquifer is thought to be the reason for the constancy of the chloride data.

Other wells in the sector include the Kapolei Campbell wells 1905-08 and 1905-10. The primary source, 1905-08, pumps about
0.150 mgd with chlorides averaging 500 mg/l. The Desalt Plant wells are presently off line. Its caprock source, Well 1905-09, averaged about 700 mg/l. The Desalt Plant wells can almost be placed in the Malakole Sector.

Water quality underlying Barbers Point Naval Air Station is unknown. Pumpage from the mauka Kapolei Golf Course wells and the Kapolei Campbell wells will affect ground water quality and its availability when BPNAS is turned over to the State.

Malakole Sector

Pumpage from the Malakole Sector is presently about 12.6 mgd. The estimated sustainable yield for 1,000 mg/l water is less than 1 mgd. Of the total quantity pumped, 2.6 mgd from is brackish water developed by Kalaeloa Partners (wells 1805-03-09). Specific conductivity of the water developed by them average about 10,000 umhos which is equivalent to a chloride concentration of over 3,000 mg/l. The additional 9.6 mgd is essentially highly brackish and saline used for wash down, cooling and other industrial purposes.

CWRM personnel sample the Hawaii Raceway Park well (1905-01). This well is used infrequently for dust control. Chlorides ranged between 1,100 mg/l in June 1993 to 580 mg/l in October 1995. Most of the samples collected hover around 870 mg/l.

If the Commission wants to preserve the 1,000 mg/l water for other than industrial purposes, then the Malakole Sector should be divided. Total pumpage for new wells mauka of Hawaii Raceway Park could be managed at less than 1 mgd, whereas industrial wells in Campbell Industrial Park can be allowed to continue at present rates.

Refinement of Data and Future Projects

Water quality and pumpage data collected by CWRM personnel and by water users will be continually updated by graphs and isochlor maps. More sampling points need to be added to the CWRM network. Three or four test holes should be drilled within or near BPNAS. Though water level do not appear to be related to water quality, a network of small diameter water level wells should be drilled throughout the Ewa Plain.

Bolke and Bauer (in prep.) began a ground water model using SUTRA. The model was calibrated to a period (late 1980's) that was not in equilibrium. Additional work should be done to calibrate the model to the two stable periods outlined above. Additional modelling work combined with caprock monitor wells need to address the changes in natural leakage that are now occurring from both the Waianae and Koolau aquifer.

Conclusions and Recommendations
Several major conclusions can be drawn from the above discussion:

1. Sustainable yield for the caprock aquifer assumes that total pumpage within a sector will maintain a chloride concentration of 1,000± mg/l.

2. The caprock aquifer, especially the Honouliuli-Puuloa area, has not reached an equilibrium since cessation of cane irrigation in 1994. To achieve and maintain a good irrigation quality water will require a change in the sustainable yield to a value less of than 10 mgd, and less than 5 mgd in the Kapolei-BPNAS area. The historical record of the caprock aquifer argues for a reduction of permitted uses, unless there is a drastic change to the inflow of ground water.

3. In light of 2. above, the Commission should adopt a "go slow" approach to new wells in the Puuloa region. Small irrigation wells appear not to presently cause problems; however, cumulative effects could occur. At the present time we do not have enough data regarding the natural post-OSCo changes that are occurring within the limestone aquifer. The isochlor maps do show a continuing change throughout the Ewa Plain.

4. The Malakole area is pumping much higher than the sustainable yield of less than 1 mgd estimated in R-79. This sector should be divided into two. Sustainable yield for Campbell Industrial Park is meaningless when water for industrial purposes is used. However, there should be some limit, because heavy pumpage could affect ground water underlying BPNAS. Mauka of Campbell Industrial Park, pumpage should be limited to less than 1 mgd.

5. Future modelling efforts should use calibration "targets" of equilibrium periods of 1930-1940 and from 1952-1965.

6. Separation of the Ewa caprock aquifer into three broad management areas has merit. These broad regions can be subdivided into smaller areas that require special management. Perhaps the concept of "sustainable capacity", the amount of water developed from a well or a battery of wells (such as Hawaii Prince Golf Course) that will allow stabilization of chlorides, should be more fully developed and used by the Commission for special management of smaller areas.
REFERENCES

Board of Water Supply, unpublished data files.


Most Saline EP Basal Sources
Chlorides and Pumpage

Ewa Plantation Pumps 1 and 9 supplied the most saline water. They were located near Ewa Mill.

Combined Pumps 1 & 9 pumpage (mgd)

Wells sealed

- Ewa Pump 1
- Ewa Pump 9 (Well A)
- Ewa Pump 9 (Wells B,C,D)
- Ewa Pump 9 (Wells E,F)
- Ewa Pump 9 (Wells G,H)

FIGURE 1
Marginal EP Basal Sources
Chlorides and Pumpage

Ewa Plantation Pumps 3, 4, 5, & 6 supplied marginal quality water.

Combined Pumps 3, 4, 5, & 6 pumpage (mgd)

FIGURE 2
- Ewa Pump 3 - Ewa Pump 4 - Ewa Pump 5 - Ewa Pump 6
Marginal to Potable EP Basal Sources
Chlorides and Pumpage

Ewa Plantation Pumps
2, 7, 8, 15 & 16 supplied marginal quality to potable irrigation water.

FIGURE 3
- Ewa Pump 2  - Ewa Pump 7  - Ewa Pump 8  - Ewa Pumps 15, 16
Chloride and Pumpage of Ewa Plantation
Shallow Wells, Ewa Caprock, Oahu

Start 1937

Basal (low CI) irrigation
Pumps 15, 16

Total imported basal water from Koolau ranged < 50-70 mgd

Average monthly pumpage (mgd)

Average yearly pumpage (12 mgd)

STOP 1994

Ref: CWRM, BWS files, R-79, & Stearns (1935, 1940)

FIGURE 5


Average Pumpage (mgd)

Supplemental Graphs
Isochorl Map of Ewa Caprock Aquifer
June 1994
Isoleth Map of Ewa Caprock Aquifer
September 1995
Chloride and Pumpage of HPGC Well 1
Ewa Caprock, Oahu

FIGURE 9

HPGC 1 (Qave = 0.148 mgd)
Chloride and Pumpage of HPGC Well 1
Ewa Caprock, Oahu

Total caprock average monthly pumpage (mgd)
Basal (low Cl) irrigation
OSCo caprock pumpage ceased
Total Hawaii Prince pumpage
Well 1 pumpage

FIGURE 9a
HPGC 1 (Qave = .148 mgd)

Ref. CWRM, BWS files, & R-79
Chloride and Pumpage of HPGC Well 2
Ewa Caprock, Oahu

FIGURE 10

- Basal (low Cl) irrigation
- OSCo caprock pumpage ceased
- Total Hawaii Prince pumpage
- Total caprock average monthly pumpage (mgd)
- Well 2 pumpage
- Stop
- HPGC 2 (Qave=0.160 mgd)

Ref: CWRM, BWS file •• & R-79
Chloride and Pumpage of HPGC Well 2
Ewa Caprock, Oahu

Total caprock average monthly pumpage (mgd)
Basal (low Cl) irrigation
OSCo caprock pumpage ceased
Total Hawaii Prince pumpage
Well 2 pumpage

FIGURE 10a

HPGC 2 (Qave=0.160 mgd)

Ref: CWRM, BWS files, & R-79
Chloride and Pumpage of HPGC Well EP22
Ewa Caprock, Oahu

FIGURE 11

EP-22 (Qave=1.021 mgd)
Chloride and Pumpage of HPGC Well EP22
Ewa Caprock, Oahu

Total caprock average monthly pumpage (mgd)

Basal (low Cl) irrigation

OSCo caprock pumpage ceased

Total Hawaii Prince pumpage

Well EP-22 pumpage

FIGURE 11a

- EP-22 (Qave=1.021 mgd)
FIGURE 12

Chloride and Pumpage of Ewa Gentry Wells, Ewa Caprock, Oahu

- Basal (low Cl) irrigation
- Total caprock average monthly pumpage (mgd)
- Gentry Palm Villa 1 (Qave=0.019 mgd)
- Oscro caprock pumpage ceased
- Palm Villa 1 pumpage
- Total Ewa Gentry pumpage

Ref: CWRM, BWS files, & R-79
Chloride and Pumpage of Ewa
Gentry Wells, Ewa Caprock, Oahu

Total caprock average monthly
pumpage (mgd)

Basal (low Cl) irrigation

OSCo caprock pumpage ceased

Total Ewa Gentry pumpage
Palm Villa 1 pumpage

Year

Chloride Concentration (mg/l)

Average Pumpage (mgd)

FIGURE 12a

* Gentry Palm Villa 1 (Qave=0.019 mgd)
Chloride and Pumpage of Ewa
Gentry Wells, Ewa Caprock, Oahu

FIGURE 13
- Gentry Palm Court (Qave = 0.025 mgd)
Chloride and Pumpage of Ewa Gentry Wells, Ewa Caprock, Oahu

Figure 13a

- Gentry Palm Court (Qave = .025 mgd)
Chloride and Pumpage of Ewa Gentry Wells, Ewa Caprock, Oahu

- Basal (low Cl) irrigation
- OSCo caprock pumpage ceased
- Total caprock average monthly pumpage (mgd)
- Palm Villa 2 pumpage
- Total Ewa Gentry pumpage

FIGURE 14

Gentry Palm Villa 2 (Qave=0.031 mgd)
Chloride and Pumpage of Ewa
Gentry Wells, Ewa Caprock, Oahu

Total caprock average monthly pumpage (mgd)
Basal (low Cl) irrigation
OSCo caprock pumpage ceased

Total Ewa Gentry pumpage
Palm Villa 2 pumpage

Gentry Palm Villa 2 (Qave=0.031 mgd)

FIGURE 14a

Ref: CWRM, BWS files, & R-79
Chloride and Pumpage of Honouliuli STP Wells, Ewa Caprock, Oahu

FIGURE 15

- Honouliuli STP 1902-03  - Honouliuli STP 1902-04 (Qave=0.654 mgd)

Ref: CWRM, BWS files, & R-79
Chloride and Pumpage of Honouliuli STP Wells, Ewa Caprock, Oahu

FIGURE 15a

* Honouliuli STP 1902-03  ▼ Honouliuli STP 1902-04 (Qave=0.654 mgd)

Ref: CHRM, BWS files, & R-79
Monthly Water Level Measurements
Ewa Plantation Caprock Wells

FIGURE 16
Water Level @ EP-24 & Daily Rainfall
Ewa Caprock, Ewa, Oahu

FIGURE 17


No data available between days 212-251

Missing data: daily rainfall at Honolulu Observatory

Ref. Tom Nance, water level data
Chloride and Pumpage of HFDC Golf Course Well B, Ewa Caprock, Oahu

![Graph showing chloride concentration and pumpage over time.](image)

**FIGURE 18**

- HFDC B (Qave=0.270 mgd)

Legend:
- Basal (low Cl) irrigation
- Total caprock average monthly pumpage (mgd)
- HFDC Well B pumpage
- Total HFDC-Kapolei Golf Course pumpage
- Oscap caprock pumpage ceased

Ref: CWRM, BWS files, & R-79
Chloride and Pumpage of HFDC Golf Course Well B, Ewa Caprock, Oahu

FIGURE 18a

* HFDC B (Qave=0.270 mgd)
**PUUOLA AQUIFER SYSTEM**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PUUOLA AQUIFER SYSTEM (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Yield Estimate</td>
<td>15.000</td>
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<tr>
<td>Less: Other Existing Permits (shown in Exhibit 8)</td>
<td>17.170</td>
</tr>
<tr>
<td>Current Available Allocation</td>
<td>-2.170</td>
</tr>
<tr>
<td>Less: Expired Interim Permits</td>
<td></td>
</tr>
<tr>
<td>Hawaii Prince Golf Club</td>
<td></td>
</tr>
<tr>
<td>(1900-02, 17 to 20, 1901-03)</td>
<td>0.129</td>
</tr>
<tr>
<td>Gentry Co.</td>
<td></td>
</tr>
<tr>
<td>(2001-03)</td>
<td>0.030</td>
</tr>
<tr>
<td>(2001-04)</td>
<td>0.040</td>
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<tr>
<td>(2001-05)</td>
<td>0.020</td>
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<tr>
<td>(2001-09)</td>
<td>0.023</td>
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<td>(2001-10)</td>
<td>0.022</td>
</tr>
<tr>
<td>(2002-15)</td>
<td>0.130</td>
</tr>
<tr>
<td>Haseko (Ewa), Inc. (1902-01)</td>
<td>1.500</td>
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<tr>
<td>Arbors Assoc. (2001-07)</td>
<td>0.063</td>
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<tr>
<td>Palm Villa II Assoc. (2001-08)</td>
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<td>Palm Court Assoc. (2002-12)</td>
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<td>Less: Pending Applications</td>
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<tr>
<td>Haseko (Ewa), Inc. (Ewa Marina)</td>
<td>*</td>
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<tr>
<td>Available Allocation -4.784</td>
<td></td>
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</tbody>
</table>

* Proposed marina project will result in a permanent reduction in caprock storage capacity.

**EXHIBIT 5**
### KAPOLEI AQUIFER SYSTEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>KAPOLEI AQUIFER SYSTEM (mgd)</th>
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<tbody>
<tr>
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<td>Pu’u Makakilo (1904-02)</td>
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<td>Campbell Estate (1905-08,10)</td>
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<tr>
<td>State HFDC (2003-01,02,04,05,07)</td>
<td>1.494</td>
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<td>Less: Pending Applications</td>
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<td>(none)</td>
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Central Oahu Projected Increase
In Population

<table>
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<tr>
<th></th>
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<tbody>
<tr>
<td>Intensive Ewa</td>
<td>130,526</td>
<td>168,950</td>
<td>38,424</td>
<td>29</td>
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<td>Dispersed Development</td>
<td>130,526</td>
<td>184,444</td>
<td>53,918</td>
<td>41</td>
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<td>Ewa Employment</td>
<td>130,526</td>
<td>185,091</td>
<td>54,565</td>
<td>42</td>
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<td>Ewa &amp; Central Oahu Urban Centers</td>
<td>130,526</td>
<td>213,802</td>
<td>83,276</td>
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<tr>
<td>Current Trend</td>
<td>130,526</td>
<td>177,738</td>
<td>47,212</td>
<td>38</td>
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</table>

NOTE: Baseline forecast for 1990-2020 Islandwide increase is 28%.

Central Oahu Projected Increase
In Housing Units

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<th></th>
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<th></th>
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<tr>
<td>Intensive Ewa</td>
<td>36,262</td>
<td>53,240</td>
<td>16,978</td>
<td>47</td>
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<td>Dispersed Development</td>
<td>36,262</td>
<td>57,907</td>
<td>21,645</td>
<td>60</td>
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<tr>
<td>Ewa Employment</td>
<td>36,262</td>
<td>58,118</td>
<td>21,856</td>
<td>60</td>
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<tr>
<td>Ewa &amp; Central Oahu Urban Centers</td>
<td>36,262</td>
<td>68,085</td>
<td>31,823</td>
<td>88</td>
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<tr>
<td>Current Trend</td>
<td>36,262</td>
<td>55,726</td>
<td>19,464</td>
<td>54</td>
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</table>

NOTE: Baseline forecast for 1990-2020 Islandwide increase is 42%.

Central Oahu Projected Increase
In Civilian Non-Construction Jobs

<table>
<thead>
<tr>
<th>Development Scenario</th>
<th>1990 Jobs</th>
<th>2020 Jobs</th>
<th>1990-2020 Increase Number</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Intensive Ewa</td>
<td>23,029</td>
<td>52,384</td>
<td>29,355</td>
<td>127</td>
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<td>Dispersed Development</td>
<td>23,029</td>
<td>56,904</td>
<td>33,875</td>
<td>147</td>
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<tr>
<td>Ewa Employment</td>
<td>23,029</td>
<td>57,116</td>
<td>34,087</td>
<td>148</td>
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<tr>
<td>Ewa &amp; Central Oahu Urban Centers</td>
<td>23,029</td>
<td>69,384</td>
<td>46,356</td>
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<tr>
<td>Current Trend</td>
<td>23,029</td>
<td>54,751</td>
<td>31,722</td>
<td>138</td>
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</table>

NOTE: Baseline forecast for 1990-2020 Islandwide increase is 49%.

Change in Resident Population
Central Oahu Development Plan Sub-Areas (1990-2020)

Change in Non-Construction Jobs
Central Oahu Development Plan Sub-Areas (1990-2020)
### Water Use Permit Index Report

**Aquifer System:** PUULOA

<table>
<thead>
<tr>
<th>WUP NO</th>
<th>APPLICANT</th>
<th>WELL NO.</th>
<th>WELL NAME</th>
<th>APPROVAL</th>
<th>mgd</th>
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<tr>
<td></td>
<td>GENTRY DEVELOPMENT CORP.</td>
<td>2001-02</td>
<td>EWA GENTRY</td>
<td>09/27/1985</td>
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<td>PALM VILLA I ASSOCIATION</td>
<td>2001-06</td>
<td>PALM VILLA 1</td>
<td>09/13/1989</td>
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<td>HAWAII PRINCE GOLF CLUB</td>
<td>1900-02</td>
<td>EP 22</td>
<td>10/19/1988</td>
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<td>1900-16</td>
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<td>SOGO HAWAII, INC.</td>
<td>1900-21</td>
<td>PUULOA GC IRR</td>
<td>02/13/1991</td>
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<td>OAHU SUGAR CO., LTD.</td>
<td>1900-01</td>
<td>EP 20</td>
<td>12/16/1992</td>
<td>1.550</td>
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<td>OAHU SUGAR CO., LTD.</td>
<td>1901-01</td>
<td>EP 24</td>
<td>12/16/1992</td>
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<td>OAHU SUGAR CO., LTD.</td>
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<td>EP 30</td>
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<td>C&amp;C OF HONOLULU DWWM</td>
<td>1902-03</td>
<td>HONOLIULI STP 1</td>
<td>03/15/1990</td>
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<td>PUULOA HOMES, LTD.</td>
<td>1959-08</td>
<td>PUULOA DUG WELL A</td>
<td>04/18/1990</td>
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<td>PUULOA HOMES, LTD.</td>
<td>1900-22</td>
<td>PUULOA DUG WELL B</td>
<td>04/18/1990</td>
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<td>GENTRY PACIFIC, LTD.</td>
<td>2001-03</td>
<td>GEIGER PARK</td>
<td>11/29/1991</td>
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<td>GENTRY PACIFIC, LTD.</td>
<td>2002-12</td>
<td>PALM COURT 3</td>
<td>11/29/1991</td>
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<td>U.S. FISH &amp; WILDLIFE</td>
<td>2101-14</td>
<td>HONOLIULI UNIT</td>
<td>10/27/1993</td>
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<td>1902-04</td>
<td>HONOLIULI STP 2</td>
<td>12/08/1993</td>
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</tbody>
</table>

18 Permits Totaling 17.170

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**EXHIBIT 8**
PUBLIC NOTICE

Applications for Water Use Permits
Ewa Caprock Groundwater Management Area, Oahu

The following applications for new interim water use permits for the Ewa Caprock Aquifer have been received and are hereby made public in accordance with Department of Land and Natural Resources Administrative Rules 13-171, "Designation and Regulation of Water Management Areas." Each of the applicants below have been awarded interim water use permits for durations of one year or less, which will expire on July 12, 1995.

Haseko Well No. 1 (Well No. 1902-01)
Applicant: Haseko (Ewa), Inc.
820 Mililani St., Ste. 810
Honolulu, HI 96813
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Haseko Well No. 1 (Well No. 1902-01) at Oahu Sugar Co. Field 088, Ewa, Oahu, Tax Map Key 9-1-12:5
Quantity Requested: 1,500,000 gallons per day.
Water Use: Golf course, roadway, and maintenance irrigation
Place of Water Use: Ewa Marina development, Ewa, Oahu, TMKs 9-1-12:5,6,7

Geiger Park (2001-03)
Applicant: Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Geiger Park (Well No. 2001-03), located near intersection of Geiger and Ft. Weaver Rds., Ewa, Oahu, TMK 9-1-16:35
Quantity Requested: 30,000 gallons per day.
Water Use: Irrigation for 10-acre park
Place of Water Use: Ewa by Gentry development, Ewa, Oahu, TMK 9-1-16:35

Sunrise Apts. (2001-04)
Applicant: Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Sunrise Apts. (Well No. 2001-04), Ewa by Gentry construction site, Ewa, Oahu, TMK 9-1-61:8
Quantity Requested: 40,000 gallons per day.
Water Use: Landscape irrigation
Place of Water Use: Ewa by Gentry development, Ewa, Oahu, TMKs 9-1-61:7,41-50
Soda Creek III (2001-05)
Applicant: Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Soda Creek III (Well No. 2001-05), Ewa by Gentry development, Ewa, Oahu, TMK 9-1-70:132
Quantity Requested: 20,000 gallons per day.
Water Use: Landscape and roadway irrigation
Place of Water Use: Ewa by Gentry development, Ewa, Oahu, TMKs 9-1-70:132

Ft. Weaver Apts. (2001-09)
Applicant: Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Ft. Weaver Apts. (Well No. 2001-09), Ewa by Gentry development, Ewa, Oahu, TMK 9-1-61:2
Quantity Requested: 23,400 gallons per day.
Water Use: Landscape and roadway irrigation
Place of Water Use: Ewa by Gentry development, Ewa, Oahu, TMKs 9-1-61:2,9

Gentry Golf Course (2003-06)
Applicant: Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Gentry Golf Course (Well No. 2003-06), Ewa by Gentry development, Ewa, Oahu, TMK 9-1-61:2
Quantity Requested: 130,200 gallons per day.
Water Use: Landscape irrigation
Place of Water Use: Ewa by Gentry development, Ewa, Oahu, TMKs 9-1-61:Lots 2 & 54

Gentry Area 24 (2001-10)
Applicant: Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Gentry Area 24 (Well No. 2001-10), Ewa by Gentry development, Ewa, Oahu, TMK 9-1-10:17
Quantity Requested: 22,100 gallons per day.
Water Use: Landscape and roadway irrigation
Place of Water Use: Ewa by Gentry development, TMKs 9-1-10:17
EP 22 & Wells 1 to 5 (1900-02, 17 to 20 & 1901-03)
Applicant: Hawaii Prince Golf Club
91-1200 Ft. Weaver Rd.
Ewa Beach, HI 96706
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: EP 22 & Wells 1 to 5 (1900-02, 17 to 20 & 1901-03), Hawaii Prince Golf Club, Ewa, Oahu, TMKs 9-1-10:6,7
Quantity Requested: 500,000 gallons per day.
Water Use: Golf course irrigation
Place of Water Use: Hawaii Prince Club, Ewa, Oahu, TMK 9-1-10:6

Arbors (2001-07)
Applicant: The Arbors Homeowners Association
91-920 La’aulu St., #1G
Ewa Beach, HI 96706
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Arbors (2001-07), The Arbors, Ewa by Gentry, Ewa, Oahu, TMK 9-1-61:32
Quantity Requested: 63,000 gallons per day.
Water Use: Landscape irrigation
Place of Water Use: The Arbors, Ewa by Gentry, Ewa, Oahu, TMK 9-1-61:28,32,36-39

Palm Villa II (2001-08)
Applicant: Palm Villas II Association
91-1119 Mikohu St., #D
Ewa Beach, HI 96706
Date Completed Application Received: May 10, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Palm Villa II (2001-08), Palm Villas II, Ewa by Gentry, Ewa, Oahu, TMK 9-1-61:27
Quantity Requested: 48,000 gallons per day.
Water Use: Landscape irrigation
Place of Water Use: Palm Villas II, Ewa by Gentry, Ewa, Oahu, TMKs 9-1-61:13-15,25-27,34

Palm Court (2002-12)
Applicant: Palm Court Homeowners Association
91-1019 Puaniu St., #25R
Ewa Beach, HI 96706
Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Palm Court (2002-12), Palm Court, Ewa by Gentry, Ewa, Oahu, TMK 9-1-61:22
Quantity Requested: 66,000 gallons per day.
Water Use: Landscape irrigation
Place of Water Use: Palm Court, Ewa by Gentry, Ewa, Oahu, TMKs 9-1-61:17-23
Kapolei Irr (1905-08 & 10)
Applicant: The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI 96707

Date Completed Application Received: May 22, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Kapolei Irr (1905-08 & 10), Kapolei City development, TMK 9-1-16:01
Quantity Requested: 302,000 gallons per day.
Water Use: Nonpotable urban uses
Place of Water Use: City of Kapolei, Kapolei Business Park, Kapolei Regional Park, Oahu

Kapolei Irr A,B,C-1,D,E (2003-01,02,04,05,07)
Applicant: State of Hawaii
Housing Finance and Development Corp. Blvd.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

Date Completed Application Received: May 23, 1995
Aquifer: Ewa Caprock Aquifer System, Oahu
Water Source: Kapolei Irr A,B,C-1,D,E (2003-01,02,04,05,2003-07), Kapolei Golf Course, TMK 9-1-16:25
Quantity Requested: 1,494,000 gallons per day.
Water Use: Golf course and urban irrigation
Place of Water Use: Kapolei Golf Course and Villages of Kapolei, Oahu

Written objections or comments on the above applications may be filed by any person who has property interest in any land within the Ewa Caprock Groundwater Management Area, any person who will be directly and immediately affected by the proposed water use(s), or any other interested person. Written objections shall: (1) state property or other interest in the matter (provide TMK information); (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; and (3) state all grounds for objections to the proposed permit. Written objections must be received by June 22, 1995. Objections must be sent to 1) the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809 and 2) the applicant(s) at the above address(es).

COMMISSION ON WATER RESOURCE MANAGEMENT

EDWIN T. SAKODA for

MICHAEL D. WILSON
Chairperson

Dated: __/5/95

July 5, 1995

Honorable Michael D. Wilson, Chairperson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
State of Hawaii  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Water Use Permit (WUP) Applications  
Ewa Caprock Groundwater Management Area, Oahu

Attached for your information are comments by the Board of Water Supply on the notice of applications for water use permits for the Ewa Caprock Groundwater Management Area. Comments by the Planning Department were forwarded earlier in a letter dated June 22, 1995, a copy which is attached.

Should you have any questions, please call Randolph Hara at 523-4483.

Sincerely,

[Signature]

CHERYL D. SOON  
Chief Planning Officer

CDS:lh

Attachments

cc: Honorable Jeremy Harris, Mayor  
(Mayor’s Control No. 23037)
June 29, 1995

TO:      CHERYL D. SOON, CHIEF PLANNING OFFICER
          PLANNING DEPARTMENT
FROM:    RAYMOND H. SATO, MANAGER AND CHIEF ENGINEER
          BOARD OF WATER SUPPLY
SUBJECT: STATE WATER COMMISSION'S LETTER DATED MAY 30, 1995 TO
          MAYOR JEREMY HARRIS ON THE NOTICE OF APPLICATIONS FOR
          WATER USE PERMITS, EWA CAPROCK GROUNDWATER MANAGEMENT
          AREA, OAHU

We have no objections to the applications for permits for groundwater from the Ewa Caprock Aquifer.

If you have any questions, please contact Herbert H. Minakami at 527-6183.
June 22, 1995

Honorable Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Water Use Permit (WUP) Applications
Ewa Caprock Groundwater Management Area, Oahu

This is in response to your memorandum dated May 30, 1995. We have reviewed the subject applications for non-potable water in the Ewa Caprock Aquifer for irrigation uses and provide the comments below for your consideration.

- Ewa by Gentry - 265,700 gpd; Hawaii Prince Golf Club - 500,000 gpd;
  Arbors - 63,000 gpd; Palm Villas II - 48,000 gpd; Palm Court - 66,000 gpd;
  Estate of James Campbell (Kapolei) - 302,000 gpd

The projects are shown on the Ewa Development Plan Land Use Map (DPLUM). Therefore, we have no objections to these temporary water use permit requests.

- Kapolei Golf Course and Villages of Kapolei - 1,494,000 gpd

The area identified within the HFDC request is designated Agriculture on the Ewa DPLUM. Although the proposed and existing uses are not consistent with this designation, the projects does have Act 15 exemption from County planning and zoning regulations. Therefore, we have no objections to HFDC request.
Honorable Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
June 22, 1995
Page 2

Ewa Marina - 1.5 mgd

The Ewa Marina (Haseko (Ewa), Inc.) development is shown on the Ewa DPLUM. However, the allocation of water for the Ewa Marina project may be premature at this time. Use of the water will not be needed until several approvals are granted. The Haseko Corporation is in ongoing discussion regarding drainage and the permits for the marina construction are part of a Commission on Water Resource Management contested case hearing.

Construction of the project including subdivision, grading and building permits will be delayed until these issues are resolved. We are unable to provide an estimate of when the project would be ready for an allocation. Please be clear that this comment regarding timing in no way is in opposition to development of Ewa Marina. The project should not be penalized from future allocations of water to implement the Ewa Development Plan.

Please be advised that the City is preparing a policy regarding reuse of Honouliuli Sewage Treatment Plant effluent within the Ewa plains area. When this effluent is available for public use, we recommend that the Commission require non-potable water users to use the treated effluent to meet their non-potable water needs.

Should you have any questions, please call Eugene Takahashi at 527-6022.

Sincerely,

Cheryl D. Soon
Chief Planning Officer

CDS: js

cc: The Honorable Jeremy Harris, Mayor
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 821
HONOLULU, HAWAII 96808

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

July 5, 1995
Honokaa, Hawaii

EXTENSION – Interim Water Use Permits
Ewa Caprock Ground Water Management Area, Oahu

Applicant:

(Well Nos. 1905-08,10)
The Estate of James Campbell
1001 Kamokila Blvd.
Kapolei, HI 96707

(Well Nos. 2003-01,02,04,05,07)
State of Hawaii,
Housing Finance & Development Corp.
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

(Well Nos. 1900-02,17 to 20 & 1901-03)
Hawaii Prince Golf Club
91-1200 Fort Weaver Rd.
Ewa Beach, HI 96706

(Well Nos. 2001-03,04,05,09,10 & 2003-06)
Gentry Development Co.
P.O. Box 295
Honolulu, HI 96809

(Well No. 2001-07)
The Arbors Association
91-920 La’aulu St., #1G
Ewa Beach, HI 96706

Landowner:

Same
Staff Submittal

(Well No. 2001-08)
Palm Villas II Association
91-1119 Mikohu St., #D
Ewa Beach, HI 96706

(Well No. 2002-12)
Palm Court Association
91-1019 Puanui St., #25R
Ewa Beach, HI 96706

(Well No. 1902-01)
Haseko (Ewa), Inc.
820 Mililani St., Suite 810
Honolulu, HI 96813

Background:

At the July 13, 1994 and January 25, 1995 meetings of the Commission on Water Resource Management (Commission), interim water use permits for durations of one year or less were approved for the above groundwater sources for various nonpotable uses at new developments in Ewa, Oahu. These permits are due to expire on July 12, 1995.

Expiration dates are being specified for water use permits in the Ewa Caprock because there are uncertainties regarding the present sustainable yield of the Ewa Caprock Aquifer and the impacts of land use changes on future water availability.

Requests for new water use permits to continue current groundwater uses after the July 12, 1995 expiration date have been received from each of the applicants.

RECOMMENDATION:

Staff recommends that the Commission extend the duration of the present water use permits until such time that a decision is made at a meeting on Oahu.

Respectfully submitted,

RAE M. LOUI
Deputy Director

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
Minutes
Commission on Water Resource Management
July 5, 1995

Unanimously approved. (Nobriga/Girald)

ITEM 6  PARKER RANCH, APPLICATION FOR A STREAM CHANNEL ALTERATION PERMIT, CONSTRUCTION OF A WATERLINE CROSSING, WAIKOLOA AND WAIKOLOA IKI STREAMS, KAMUELA, HAWAII (TMK 6-5-01:01 AND 21)

STAFF PRESENTATION:  David Higa

Unanimously approved. (Nobriga/Cox)

ITEM 8  EXTENSION - INTERIM WATER USE PERMITS, EWA CAPROCK GROUND WATER MANAGEMENT AREA, OAHU

STAFF PRESENTATION:  Roy Hardy

Unanimously approved. (Nobriga/Cox)

ITEM 9  STATUS REPORT ON AFTER-THE-FACT STREAM CHANNEL ALTERATION AND STREAM DIVERSION WORKS PERMITS AND PETITION TO AMEND THE INTERIM INSTREAM FLOW STANDARD, HIILAWA AND LALAKEA STREAMS, HONOKAA, HAWAII (TMK 4-8-03:06)

STAFF PRESENTATION:  David Higa

The following persons gave oral and written testimonies:

Mr. Peter Simmons, Bishop Estate  Ms. Catherine Allen
Mr. Paul Matsuo, Dept. of Agriculture  Ms. Clara Lakakalia
Mr. Patrick Gardner,  Mr. Abraham Kamakawiuuole
  Legal Aid Society of Hawaii  Mr. Christopher Rathburn
Mr. Lawrence Miller  Ms. Brenda Machado Lee
Mr. Jeffrey Quin  Mr. Jim Cain
Mr. Robert Shioji  Mr. Burt Kauhi
Mr. Ben Mahilum  Mr. Karl Foytik
Mr. Kakalau  Mr. Kia Fronda

Chairperson Wilson stated that the purpose of this item was to get input from the community. A decision will be made at a later date.
Honorable Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Water Use Permit (WUP) Applications
Ewa Caprock Groundwater Management Area, Oahu

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The Ewa Marina (Haseko (Ewa), Inc.) development is shown on the Ewa DPLUM. However, the allocation of water for the Ewa Marina project may be premature at this time. Use of the water will not be needed until several approvals are granted. The Haseko Corporation is in ongoing discussion regarding drainage and the permits for the marina construction are part of a Commission on Water Resource Management contested case hearing.

Construction of the project including subdivision, grading and building permits will be delayed until these issues are resolved. We are unable to provide an estimate of when the project would be ready for an allocation. Please be clear that this comment regarding timing in no way is in opposition to development of Ewa Marina. The project should not be penalized from future allocations of water to implement the Ewa Development Plan.

Please be advised that the City is preparing a policy regarding reuse of Honouliuli Sewage Treatment Plant effluent within the Ewa plains area. When this effluent is available for public use, we recommend that the Commission require non-potable water users to use the treated effluent to meet their non-potable water needs.

Should you have any questions, please call Eugene Takahashi at 527-6022.

Sincerely,

CHERYL D. SOON
Chief Planning Officer

CDS:js

cc: The Honorable Jeremy Harris, Mayor
Mr. Michael D. Wilson, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Your Letter of May 30, 1995 on the Ewa Caprock Groundwater Use Permit Applications

Thank you for the opportunity to comment on these applications for permits for groundwater from the Ewa Caprock Aquifer. We have no objections to the permits and return the cover memo marked accordingly.

If you have any questions, please contact Herbert H. Minakami at 527-6183.

Very truly yours,

______________________________
RAYMOND H. SATO
Manager and Chief Engineer

Attachment

Pure Water... man's greatest need - use it wisely
MEMORANDUM

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

FROM: Don Hibbard, Administrator  
Historic Preservation Division

SUBJECT: Application for Water Use Permit, Ewa Caprock Ground Water Management Area, O‘ahu for Well Nos. 1900-02, 17-20; 1901-03; 1902-01; 1905-08,10; 2001-03,05,07-10; 2002-12; 2003-01-07 Honouliuli, ‘Ewa, Oahu  

Thank you for the opportunity to review this project. The applicants propose to use water from existing sources. Since an approved permit will not authorize any ground disturbing activities we believe that there will be "no effect" on historic sites.

EJ:jk
To: The Honorable Michael Wilson, Chairperson
Commission on Water Resource Management

From: Dr. Bruce Anderson
Deputy Director, Environmental Health

Subject: Water Use Permit Applications

Ewa Caprock Groundwater Management
Aiea, Oahu
TMK: 9-1-12: 05

Thank you for allowing us to review and comment on the subject applications contained in your memorandum dated May 30, 1995.

We have no objections to the use of the Ewa Caprock groundwater for irrigation purposes in the Ewa Management Area. However, there are plans to provide treated wastewater effluent for non-potable purposes in the immediate area of the Ewa Caprock Aquifer. The Department of Health recommends that Water Use Permit from this aquifer be granted only if no other alternative source is available, and only until the effluent is available to the applicant. Once the effluent becomes available, we recommend that the applicant be given a reasonable time to connect to the effluent water system, then the Water Use Permit, should be withdrawn. Provisions to include the proper infrastructure to implement these conditions should be required as part of any new construction plans.

All reuse plans must conform to applicable provisions of the Department of Health’s "Guidelines for the Treatment and Use of Reclaimed Water." We reserve the right to review the detailed plans for conformance to these guidelines and to the Hawaii Administrative Rules, Chapter 11-62.

Should you have any questions, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4294.

c: WWB
Mr. Michael D. Wilson
Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Wilson:

Subject: Applications for Water Use Permits - Ewa Caprock Groundwater Management Area, Oahu (Public Notice)

We have reviewed the subject document received with your memorandum dated May 30, 1995, and have the following comments to offer:

1. The following TMKs are located within the State Land Use Urban District:

   9-1-10: 17
   9-1-12: 5, 6, 7
   9-1-16: 1, 35
   9-1-70: 132

2. TMKs 9-1-10: 6 and 7 are located within the State Land Use Agricultural District.

3. According to current TMK records, TMK 9-1-61: 9 has been transferred to TMK 9-1-69: 4, which is located within the State Land Use Agricultural District.

4. TMK 9-1-16: 25 is located within the State Land Use Urban and Agricultural Districts. We would like to note that LUC Docket No. A94-708/Office of State Planning, State of Hawaii, which proposes the reclassification of portions of this parcel from the State Land Use Agricultural District to the Urban District, is tentatively scheduled for action on July 27 & 28, 1995.
5. The following areas are predominantly located within the State Land Use Urban District, however, portions of these areas may also be located within the State Land Use Agricultural District:

A) City of Kapolei
B) Kapolei Business Park
C) Kapolei Regional Park
D) Kapolei Golf Course
E) Villages of Kapolei

We have no other comments to offer at this time.

We have enclosed your cover memorandum as requested.

Should you have any questions, please feel free to call me or Kathy Yonamine at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:KY:th

enc.
Transmitted for your review and comment is a copy of the public notice for water use permit applications in the Ewa Caprock Aquifer. The applicants were previously awarded interim water use permits for durations of one year or less, which will expire on July 12, 1995. The requests are for new water use permits to continue current or immediate nonpotable uses in the Ewa Caprock Groundwater Management Area. Public notice of the water use permit applications will be published in the Honolulu Star Bulletin issues of June 3, 1995 and June 7, 1995.

We would appreciate your review of the proposed nonpotable uses for any conflicts or inconsistencies with the programs, plans, and objectives specific to your organization or department only. Please return this cover memo form by June 22, 1995.

If you have any questions regarding these applications, please contact Lenore Nakama at 587-0218.

Attachment(s)

Response:

- We have no comments
- We have no objections
- Comments attached
- Additional information requested
- Extended review period requested

Contact person: Kathy Yonamine
Phone: 587-3822

Signed: [Signature]
Date: 6/05/95
TO: Other Interested Parties

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

SUBJECT: Request for Comments
Water Use Permit Applications
Ewa Caprock Groundwater Management Area, Oahu

Transmitted for your review and comment is a copy of the public notice for water use permit applications in the Ewa Caprock Aquifer. The applicants were previously awarded interim water use permits for durations of one year or less, which will expire on July 12, 1995. The requests are for new water use permits to continue current or immediate nonpotable uses in the Ewa Caprock Groundwater Management Area. Public notice of the water use permit applications will be published in the Honolulu Star Bulletin issues of June 3, 1995 and June 7, 1995.

We would appreciate your review of the proposed nonpotable uses for any conflicts or interferences with the programs, plans, and objectives of the organization or agency that you represent. Written objections should be made in accordance with Section 13-171-18 of our Administrative Rules and must be filed by the June 22, 1995 deadline.

If you have any questions regarding these applications, please contact Lenore Nakama at 587-0218.

LN:ss
Attachment(s)

Response:
( ) We have no comments
( ) We have no objections
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

Contact person: ________________________________ Phone: ________________________________
Signed: ________________________________ Date: ________________________________
TO:  
Mr. Kali Watson, Chairperson  
Department of Hawaiian Home Lands  
Dr. Lawrence Miike, Director  
Department of Health  
Mr. Clayton H. W. Hee, Chairperson  
Office of Hawaiian Affairs  
Ms. Esther Ueda, Executive Officer  
Land Use Commission  
Mr. Raymond Sato, Manager & Chief Engineer  
Honolulu Board of Water Supply  
Mr. Patrick Onishi, Director  
Department of Land Utilization  
Mrs. Cheryl D. Soon, Chief Planning Officer  
Planning Department

FROM:  
Michael D. Wilson, Chairperson  
Commission on Water Resource Management

SUBJECT:  
Water Use Permit Applications  
Ewa Caprock Groundwater Management Area, Oahu

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Attachment(s)

Response:

We have no comments  
We have no objections  
Comments attached  
Additional information requested  
Extended review period requested

Contact person:  
Phone:  
Signed:  
Date:
TO: Mr. Kali Watson, Chairperson  
               Department of Hawaiian Home Lands  
               Dr. Lawrence Miike, Director  
               Department of Health  
               Mr. Clayton H. W. Hee, Chairperson  
               Office of Hawaiian Affairs  
               Ms. Esther Ueda, Executive Officer  
               Land Use Commission  
               Mr. Raymond Sato, Manager & Chief Engineer  
               Honolulu Board of Water Supply  
               Mr. Patrick Onishi, Director  
               Department of Land Utilization  
               Mrs. Cheryl D. Soon, Chief Planning Officer  
               Planning Department

FROM: Michael D. Wilson, Chairperson  
               Commission on Water Resource Management

SUBJECT: Water Use Permit Applications  
               Ewa Caprock Groundwater Management Area, Oahu

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If you have any questions regarding these applications, please contact Lenore Nakama at 587-0218.

Attachment(s)

Response:  
( ) We have no comments  
( ) We have no objections  
( ) Comments attached  
( ) Additional information requested  
( ) Extended review period requested

Contact person: June Haraguchi  
Phone: 586-4337

Signed: Art Bauckham  
Date: 6/16/95
To: The Honorable Michael Wilson, Chairperson Commission on Water Resource Management

From: Dr. Bruce Anderson Deputy Director, Environmental Health

Subject: Water Use Permit Applications

Ewa Caprock Groundwater Management Aiea, Oahu
TMK: 9-1-12: 05

Thank you for allowing us to review and comment on the subject applications contained in your memorandum dated May 30, 1995.

We have no objections to the use of the Ewa Caprock groundwater for irrigation purposes in the Ewa Management Area. However, there are plans to provide treated wastewater effluent for non-potable purposes in the immediate area of the Ewa Caprock Aquifer. The Department of Health recommends that Water Use Permit from this aquifer be granted only if no other alternative source is available, and only until the effluent is available to the applicant. Once the effluent becomes available, we recommend that the applicant be given a reasonable time to connect to the effluent water system, then the Water Use Permit, should be withdrawn. Provisions to include the proper infrastructure to implement these conditions should be required as part of any new construction plans.

All reuse plans must conform to applicable provisions of the Department of Health's "Guidelines for the Treatment and Use of Reclaimed Water." We reserve the right to review the detailed plans for conformance to these guidelines and to the Hawaii Administrative Rules, Chapter 11-62.

Should you have any questions, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4294.

c: WWB
TO:          Mr. Kali Watson, Chairperson
            Department of Hawaiian Home Lands
            Dr. Lawrence Miike, Director
            Department of Health
            Mr. Clayton H. W. Hee, Chairperson
            Office of Hawaiian Affairs
            Ms. Esther Ueda, Executive Officer
            Land Use Commission
            Mr. Raymond Sato, Manager & Chief Engineer
            Honolulu Board of Water Supply
            Mr. Patrick Onishi, Director
            Department of Land Utilization
            Mrs. Cheryl D. Soon, Chief Planning Officer
            Planning Department

FROM:        Michael D. Wilson, Chairperson
            Commission on Water Resource Management

SUBJECT:   Water Use Permit Applications
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permits for durations of one year or less, which will expire on July 12, 1995. The requests are for
new water use permits to continue current or immediate nonpotable uses in the Ewa Caprock
Groundwater Management Area. Public notice of the water use permit applications will be published

We would appreciate your review of the proposed nonpotable uses for any conflicts or
inconsistencies with the programs, plans, and objectives specific to your organization or department
only. Please return this cover memo form by June 22, 1995.

If you have any questions regarding these applications, please contact Lenore Nakama at
587-0218.

Attachment(s)
Response:

We have no comments
We have no objections
Comments attached
Additional information requested
Extended review period requested

Contact person:  Herbert H. Minakami
Phone:  527-6183

Signed:  RAYMOND H. SATO
          Manager and Chief Engineer

Date:  06/11/95
TO:  
Mr. Kali Watson, Chairperson  
Department of Hawaiian Home Lands  

Dr. Lawrence Miike, Director  
Department of Health  

Mr. Clayton H. W. Hee, Chairperson  
Office of Hawaiian Affairs  

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Response:  

We have no comments  
We have no objections  
Comments attached  
Additional information requested  
Extended review period requested  

Contact person:  
Luis A. Monière  
Phone: 594-1935  

Signed:  
Date: 06/23/95
TO: Aquatic Resources
Forestry and Wildlife/Natural Area Reserve System
Historic Preservation
Land Management
Office of Conservation and Environmental Affairs
State Parks
Water and Land Development

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

SUBJECT: Request for Comments
Water Use Permit Applications
Ewa Caprock Groundwater Management Area, Oahu

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LN:ss
Attachment(s)

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( ) Additional information requested
( ) Extended review period requested

Contact person: ___________________________ Phone: __________________

Signed: ________________________________ Date: __________________
State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Commission on Water Resource Management
Honolulu, Hawaii
MAY 30 1995

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

SUBJECT: Request for Comments
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LN: ss
Attachment(s)

Response:
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( ) We have no objections
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

Contact person: Lenore Nakama
Phone: 587-0290

Signed: [Signature]
Date: 6/14/95
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Response:

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( ) We have no objections
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

Contact person: Phone: 587-0110

Signed: Date: 6-2-95
TO: Aquatic Resources
Forestry and Wildlife/Natural Area Reserve System
Historic Preservation
Land Management
Office of Conservation and Environmental Affairs
State Parks
Water and Land Development

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

SUBJECT: Request for Comments
Water Use Permit Applications
Ewa Caprock Groundwater Management Area, Oahu

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Response: 6/7/95
(✓) We have no comments
(✓) We have no objections
( ) Comments attached
( ) Additional information requested
( ) Extended review period requested

DOFAW HAS NO COMMENTS OR OBJECTIONS TO THE PROPOSED REQUEST.

Contact person: Administrator
Phone: 587-0166

April 1995

Signed: ________________________ Date: __________
Transmitted for your review and comment is a copy of the public notice for water use permit applications in the Ewa Caprock Aquifer. The applicants were previously awarded interim water use permits for durations of one year or less, which will expire on July 12, 1995. The requests are for new water use permits to continue current or immediate nonpotable uses in the Ewa Caprock Groundwater Management Area. Public notice of the water use permit applications will be published in the Honolulu Star Bulletin issues of June 3, 1995 and June 7, 1995.

We would appreciate your review of the proposed nonpotable uses for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please return this cover memo form by June 22, 1995.

If you have any questions regarding these applications, please contact Lenore Nakama at 587-0218.
TO: Aquatic Resources  
Forestry and Wildlife/Natural Area Reserve System  
Historic Preservation  
Land Management  
Office of Conservation and Environmental Affairs  
State Parks  
Water and Land Development  

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

SUBJECT: Request for Comments  
Water Use Permit Applications  
Ewa Caprock Groundwater Management Area, Oahu  

Transmitted for your review and comment is a copy of the public notice for water use permit applications in the Ewa Caprock Aquifer. The applicants were previously awarded interim water use permits for durations of one year or less, which will expire on July 12, 1995. The requests are for new water use permits to continue current or immediate nonpotable uses in the Ewa Caprock Groundwater Management Area. Public notice of the water use permit applications will be published in the Honolulu Star Bulletin issues of June 3, 1995 and June 7, 1995.

We would appreciate your review of the proposed nonpotable uses for any conflicts or inconsistencies with the programs, plans, and objectives specific to your division only. Please return this cover memo form by June 22, 1995.

If you have any questions regarding these applications, please contact Lenore Nakama at 587-0218.

LN:ss  
Attachment(s)  

Response:  
( ) We have no comments  
( ) We have no objections  
( ) Comments attached  
( ) Additional information requested  
( ) Extended review period requested  

Contact person: MANABU TAGOMORI  
Phone:  

Signed:  
Date: 6/3
Honorable Jeremy Harris, Mayor  
City & County of Honolulu  
City Hall  
Honolulu, HI 96813

Dear Mayor Harris:

Notice of Applications for Water Use Permits  
Ewa Caprock Groundwater Management Area, Oahu

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-171-17(a), we are sending you a copy of the public notice for water use permit applications for the Ewa Caprock Groundwater Management Area, which will be published in the Honolulu Star Bulletin.

These requests are for new water use permits to continue current or immediate nonpotable uses at new developments in Ewa, Oahu. The applicants were previously awarded interim water use permits for durations of one year or less, which will expire on July 12, 1995.

In addition, Section 13-171-13(b), of our Administrative Rules, states:

"Within sixty days after receipt of notice of a permit application, the county shall inform the commission if the proposed use is inconsistent with the county land use plans and policies."

We would appreciate receiving your comments, within the next sixty (60) days, on whether these proposed nonpotable uses are consistent with county plans and policies.

Aloha,

MICHAEL D. WILSON

Enclosures
May 9, 1995

State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809
Attn: Rae M. Loui, Deputy Director
Re: Palm Villa II Well (Well # 2001-08)

Dear Rae,

We are in receipt of your letter dated May 5, 1995 regarding the above referenced well.

Please be informed that it is our intent to continue use of the well in the same manner and usage as in the past.

Please call me with any questions.

Yours truly,

Marcie L. Schell
Property Manager
Chaney Brooks and Company
for: Palm Villas II AOAO

cc: Office file
Mr. Randolph K. Ouye  
Gentry Homes, Ltd.  
560 N. Nimitz Hwy.  
Honolulu, HI 96817  

Dear Mr. Ouye:

Thank you for your letter of February 7, 1995 regarding the transfer of ownership of the well and pump for Palm Villa II Well (Well No. 2001-08) to the Palm Villa II Association.

This is to inform you that a transfer of the water use permit for Well No. 2001-08 from Gentry Homes, Ltd. to Palm Villa II Association has been made pursuant to HRS 174C-59.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]
RAE M. LOUI  
Deputy Director

LN:ss

c: Mr. Larry Tucker, Palm Villa II Association
Mr. Larry Tucker
Palm Villas II Association
91-1119 Mikohu St., #D
Ewa Beach, HI 96706

Dear Mr. Tucker:

Notice of Water Use Permit Expiration
Palm Villa II Well (Well No. 2001-08)
Ewa Caprock Groundwater Management Area, Oahu

On July 13, 1994, the Commission on Water Resource Management (Commission) approved a water use permit for one-year interim use of 0.048 million gallons per day of brackish groundwater for Well No. 2001-08 for irrigation supply for Palm Villas II. This water use permit is due to expire on July 12, 1995.

If you require continued use of this water after the July 12, 1995 expiration date, please confirm this in writing by May 22, 1995. Please indicate any modifications to the present allocation or any other permit term that should be made at this time. All proposed modifications should be fully described and supported.

All timely requests for new or continued use(s) of Ewa Caprock groundwater will be submitted for Commission action, tentatively, at the meeting of June 14, 1995. Failure to respond by the May 22, 1995 date will create a presumption of abandonment of the use beginning July 13, 1995. If you wish to revive the use after July 13, 1995, you must apply for a permit pursuant to §13-171-12 Hawaii Administrative Rules.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

LN:ss
February 7, 1995

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

Dear Mr. Wilson:

Transfer of Ownership for  
Ewa by Gentry, Palm Villa II Well (State No. 2001-08)

Gentry Development Company is the current owner of Well 2001-08 in Ewa by Gentry. Gentry drilled and outfitted the well to irrigate common areas for the Palm Villa II project. We have completed the pump installation and have transferred ownership of the well and its pump to the Association of Apartment Owners of Palm Villa II. Enclosed is a copy of the executed agreement which documents the ownership and transfer. The contact person for the Palm Villa II Association is Larry Tucker, Resident Manager. The effective date of the transfer is November 18, 1994.

If you have any questions regarding this matter, please do not hesitate to call me at 599-5558.

Sincerely,

GENTRY HOMES, LTD.

[Signature]

Randolph K. Ouye,  
Vice President

RKO:sacm

/wellxfer-wewa
TO: STATE OF HAWAII
   Commission on Water Resource Management
   Department of Land and Natural Resources
   P. O. Box 621
   Honolulu, Hawaii 96809

ATTENTION: Ms. Rae Loui

RE: JOB NO. Ewa by Gentry, Palm Villa II

WE ARE SENDING YOU □ ATTACHED □ UNDER SEPARATE COVER VIA ______________
THF FOLLOWING ITEMS

□ SHOP DRAWINGS □ PRINTS □ SAMPLES □ SPECIFICATION □ COPY OF LETTER □ CHANGE ORDER □ CONTRACT
□ Other ____________________________

<table>
<thead>
<tr>
<th>COPIES</th>
<th>DATE</th>
<th>NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 each</td>
<td>11/18/94</td>
<td>#2001-08</td>
<td>Palm Villa II Non-Potable Irrigation System Turnover Agreement (executed; copy)</td>
</tr>
</tbody>
</table>

THESE ARE TRANSMITTED AS CHECKED BELOW

□ FOR APPROVAL □ APPROVED AS SUBMITTED □ RESUBMIT ___________ COPIES FOR APPROVAL
□ FOR YOUR USE □ APPROVED AS NOTED □ SUBMIT ___________ COPIES FOR DISTRIBUTION
□ AS REQUESTED □ RETURNED FOR CORRECTIONS □ RETURN ___________ CORRECTED PRINTS
□ FOR REVIEW & COMMENT □ FOR BIDS DUE ___________ □ PRINTS RETURNED AFTER LOAN TO US

REMARKS

For your use.

SIGNED: Jon M. Young, Site Construction Mgr.

560 N. Nimitz Hwy. Honolulu, Hawaii 96817 • P.O. Box 295 Honolulu, Hawaii 96809 • Telephone (808) 599-5558 Fax (808) 523-7832
NON-POTABLE IRRIGATION SYSTEM TURNOVER AGREEMENT

This agreement is made and executed this 18th day of November 1994, by and between GENTRY HOMES, LTD, hereinafter called the "Developer", ROSCOE MOSS HAWAII, INC., hereinafter called the "Contractor", and Association of Apartment Owners of Palm Villas II, hereinafter called the "Association".

RECITALS:

A. The Developer has installed a non-potable well system for the use by the Association as an irrigation system water source for landscaping requirements within the Association premises. The non-potable well system consists of the following:

   The well, well vault, well pump and related piping and controls, which will be provided to the Association by the Developer.

B. The Contractor has been retained to provide materials, equipment and labor necessary to install the system. The Developer, Contractor, and Association mutually agree to the following terms to be effective at the time of acceptance of the non-potable well by the Association.

AGREEMENT:

1. The Developer shall provide an Operation and Maintenance Manual to the Association. By signing this agreement, the Association acknowledges receipt of the Manual. The Manual shall include a description of the pump operation, record drawings, and manufacturer’s product information.

2. The Developer shall pay for the first year of maintenance ("Maintenance Period"), and all maintenance shall be performed by the Contractor during the Maintenance Period. It is understood the start of said Maintenance Period is from the date of acceptance of the system by the Developer. The date of the Developer's acceptance of the system shall be the 1st day of November 1994, which may or may not coincide with the date of this Agreement. Terms of maintenance during the Maintenance Period are described below.

3. As a requirement of the Temporary Water Use Permit obtained from the State Water Commission for use of the well, a Monthly Water Use Report must be submitted to the State Water Commission. The Developer shall train an Association representative designated by the Board of Directors to prepare the Monthly Ground Water Use Report to the State Water Commission. The Developer shall provide the initial test equipment needed to gather the required information for said report. This equipment shall include a HACH kit to determine chloride concentration, a thermometer to determine water temperature, and a well sounder to determine well water level. A procedure for completing and submitting the report is included as part of the Manual.

4. The Developer shall formally notify and obtain approval from the State Water Commission for the transfer of the Well Construction, Pump Installation and Temporary Water Use Permits to the Association.

5. The Contractor shall maintain the system at least quarterly during the Maintenance Period. Maintenance of the system shall include all labor, materials and equipment necessary to make repairs needed due to normal and reasonable use of the system. The Contractor, as part of the maintenance agreement, shall perform, at a minimum, quarterly maintenance checks. These maintenance checks shall include lubricating valves; cleaning strainers and solenoid; flushing the diaphragm seal; recording pressures, amperages and run times. Monitoring system performance includes conducting complete electrical check of the VFD and control electronics; and checking the pressure transducer for full scale output. Twice yearly, the maintenance check should also include monitoring system performance with a data recorder. The Contractor shall submit quarterly written reports of its findings both to the Developer and Association.
6. The Contractor agrees to purchase computerized test equipment required to perform said monitoring of system performance, and shall retain ownership of said equipment.

7. For equipment covered by the manufacturer's limited warranty, the limited warranty shall include the replacement of damaged equipment if the Association and Contractor mutually agree that the damage was not due to abnormal and/or unreasonable use.

Items covered by the manufacturer's warranty are:

A) The first three months from the date of this Agreement: The AGM Current Trip;

B) The first six months from the date of this Agreement: the T-Hydronics Pressure Transducer; and

C) The first year from the date of this Agreement: Magnetek VFD and Line Reactor, General Electric Micro PLC, Franklin Motor, M&G Diaphragm Seal, and the Flowmatic Check Valve and Solenoid Control Valve.

Items such as the pressure reducing valve, butterfly/gate/ball valves and MCC components have been used for a period of time prior to this Agreement. These items are not covered by a manufacturer's warranty, shall be maintained covered by the Contractor during the Maintenance Period.

8. The Association shall perform general maintenance of the inside of the well vault as necessary to keep the inside of the vault clean and free of debris including, but not limited to, cleaning the floor of the well vault, clearing and keeping the sump clear of debris, and cleaning the piping and related appurtenances.

9. The Association shall perform general maintenance of the exterior of the well vault including, but not limited to, keeping the top of the vault clean and free of dirt, debris and vegetation and ensuring that water from the irrigation system is directed away from the vault. Maintenance shall also include measures to prevent dirt and other debris from falling into the well vault.

10. The Association shall accept the Well Construction, Pump Installation and Temporary Water Use Permits and all conditions set forth in said documents, including future requirements as may be imposed by the State Water Commission. The State Water Commission's current major requirements are performing monthly tests and readings, submitting these finding on the appropriate form to the State Water Commission, and keeping the water use within the limits of the permit as noted in paragraph 3 above.

11. The Association shall keep maintenance logs, such as a repair/maintenance log and a potable water use log. Said logs are for use by the Association.

12. The Association shall be responsible for the costs of repairs due to abnormal and/or unreasonable use during the Maintenance Period. The terms abnormal and unreasonable cannot be defined in exact terms, and therefore shall be negotiated between the Association and the Contractor. The Developer shall not be responsible for any repair costs beyond the date of this Agreement.

13. The Association is responsible for all maintenance beyond the Maintenance Period. The Association shall negotiate the terms of the maintenance contract and may or may not continue their relationship with the Contractor.

14. The Association is responsible for all costs for electrical power required to run the well pump and controls, and for the cost of potable water used as a back-up system to the non-potable well.

15. The Association shall be responsible for renewing the Temporary Water Use Permit with the State Water Commission.

16. The Developer makes no guarantees or assurances regarding the quantity or quality of water pumped from the well. Furthermore, the Association understands that due to natural ground water conditions
beyond the Developer's control, the ground water aquifer from which the well pumps may dry up or quality of water may deteriorate to make it unusable in the future. The Association may be required to work with the State Water Commission on the implementation of an alternative water source plan.

17. MANDATORY MEDIATION AND ARBITRATION OF DISPUTES. If any dispute arises between Developer, Contractor and/or the Association, arising out of or relating the non-potable well system or this Agreement, the parties agree that prior to engaging in arbitration, they will make good faith efforts to reach a settlement of their dispute by negotiation, and then by mediation under the Mediation Rules of the American Arbitration Association. If the parties are unable to settle their dispute, then any unresolved dispute arising out of this Agreement or relating to the non-potable well system shall be resolved by arbitration before a single arbitrator administered by the American Arbitration Association in accordance with its Commercial Arbitration Rules, and judgment upon the arbitrator's award may be entered in any court having jurisdiction thereof. If both parties agree, the person serving as mediator may also serve as arbitrator for the dispute. Each party shall be responsible for the administrative fees incurred by that party, and the arbitrator's and mediator's compensation shall be shared equally by the parties. The prevailing party, if any, shall be entitled to an award of reasonable attorney's fees, and the arbitrator shall be the sole judge in determining the reasonableness of attorney's fees to be awarded and in determining which party is the prevailing party. the parties, the American Arbitration Association, and the mediator and arbitrator shall keep the content and results of any mediation or arbitration confidential.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the day and year first above written.

Developer:
Gentry Homes, Ltd.

By: Randolph K. Ouye
It's Vice President

Contractor:
Roscoe Moss Hawaii, Inc.

By: ____________
Its Vice President

Association:
Association of Apartment Owners of Palm Villas II

By: ____________
Its President

Non-potable Well Turnover Agreement
OPERATION BRANCH
Commission on Water Resource Management

FROM: Uluk
DATE: 1.19.99
FILE IN: ______________

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<th>INIT:</th>
<th>PLEASE:</th>
<th>REMARKS:</th>
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<td>Y. SHIROMA</td>
<td>See Me</td>
<td>REDA WATER SAMPLES</td>
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<tr>
<td></td>
<td>F. Ching</td>
<td>Call</td>
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<tr>
<td></td>
<td>R. Jinnai</td>
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<td>M. Ohye</td>
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<td></td>
<td>I. Kunimura</td>
<td>Investigate &amp; Report</td>
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<td>S. Swanson</td>
<td>Draft Reply</td>
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<td>K. Yoda</td>
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<td>Joel</td>
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<td>R. LOUI</td>
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<td>E. SAKODA</td>
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</tr>
<tr>
<td></td>
<td>E. HIRANO</td>
<td>Information</td>
<td></td>
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</table>

FOR YOUR:

① Approval
② Signature
③ Information
**PUULOA AQUIFER SYSTEM**

<table>
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<tr>
<th>Description</th>
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<td>Estimated Sustainable Yield</td>
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<td>Expired Temporary Permits</td>
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<td>Requested Uses</td>
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<td>TOTAL</td>
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(all information taken from table 1)

Total allocations exceed the estimated sustainable yield of the Puuloa aquifer, given this situation it would seem impossible to meet criteria #1 - Whether the water use requested can be accommodated with the available water source. All requests cannot be accommodated by the available water source. On these grounds alone the water use permits should be denied. We are disappointed that the staff has not commented about the potential effects of pumpage exceeding sustainable yield and/or has included other factors mitigating those concerns. We need more information about which uses can and cannot be accommodated.

Furthermore, staff states, "because no objections have been submitted, staff finds that the conditions for a water use permit [the seven criteria] have been met." see p.6. The Water Code is clear, it is the applicant that must establish that all criteria for obtaining a permit are met. A permit cannot be granted on the basis of other agencies not filing objections with the Commission. In addition to considering other agency recommendations, it is the Commission that must determine based on the information presented to it by the applicant and staff recommendation whether to issue a permit.

The Water Commission is mandated to preserve, protect and manage Hawaii's precious water resource. Proper management of the resource is dependent on applying fair and just standards to all water allocation decisions. Those standards are clearly listed in H.R.S. 174C-49 and H.A.R. 13-171-13 and must be complied with as a matter of law.

**Item 4** Oahu County Club, Well Modification and Water Use Permit Applications, OCC Irrigation Well (Well No. 2050-01)

Again, because no objections have been filed by other agencies this is held to mean that all criteria for a permit have been met. A permit cannot be issued unless the applicant has established that all criteria has been met.
Aloha, and thank you for the opportunity to present testimony to the Commission concerning Agenda #1, items 3, 4, 5, 6, 7, 9 and 11. I'm Toni Nissen with the Native Hawaiian Advisory Council.

Item 3 Applications for Water Use Permits and Well Construction/Pump Installation Permits, Ewa Caprock Ground Water Management Area, Oahu

NHAC BELIEVES THAT THE CRITERIA USED TO ISSUE WATER USE PERMITS DOES NOT COMPLY WITH THE STATE WATER CODE OR ADMINISTRATIVE RULES. FURTHER, NO WATER USE PERMITS SHOULD BE ISSUED FROM THE EWA CAPROCK GROUND WATER MANAGEMENT AREA DRAWING FROM THE PUULOA AQUIFER SYSTEM BECAUSE IT IS OVER ALLOCATED.

In order to obtain a water use permit an applicant shall establish that the proposed use of water meets seven listed criteria. H.R.S. 174C-49(a), H.A.R. 13-171-13(a). These seven items are:

1. Can be accommodated with the available water source;
2. Is a reasonable-beneficial use as defined in section 174C-3;
3. Will not interfere with any existing legal use of water;
4. Is consistent with the public interest;
5. Is consistent with state and county general plans and land use designations;
6. Is consistent with county land use plans and policies; and
7. Will not interfere with the rights of the department of Hawaiian home lands as provided in section 221 of the Hawaiian Homes Commission Act.

In the submittals prepared by Commission staff, two tables outline the sustainable yield for the Puuloa and Kapolei aquifer systems. In table 1, it shows existing water uses and requested water uses. In combination these uses exceed the sustainable yield of the Puuloa aquifer.
June 8, 1994

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

Re: Temporary Water Use Permits; Ewa Caprock Ground Water Management Area, Oahu; Ewa By Gentry

Dear Mr. Ahue:

This letter is in response to the Commission’s May 18, 1994 deferral of action on our request to renew temporary water use permits for the Ewa Caprock Aquifer, and the May 26, 1994 letter from Commission staff requesting substantially the same information. At the Commission meeting and in the letter, staff identified areas that needed supplemental information. They are:

1. Our water shortage plan;

2. Data from caprock wells generated by Gentry not previously submitted;

3. Updated annual non-potable demand projections for the four-year period through 1997;

4. Updated status of Geiger Apartment well and Soda Creek III well (Well Nos. 2001-04 and -05), with time estimate for actual use of sources.

5. Water level and chloride data collected to date, with explanation for any missing data.

We understand that our renewal request has been tentatively scheduled for the July 13, 1994 meeting of the Commission.
Included in this letter and its enclosures is information intended to answer the informational needs of the Commission and its staff:

**Water Shortage Plan**

If the Commission declares a water shortage in the Ewa Caprock Groundwater Management Area requiring a reduction in pumpage from our wells, Gentry has one short-term — and several long-term — options. Each individual irrigation system has a back-up connection to the Board of Water Supply's potable system. In the short term, irrigation supply would be provided through this connection. However, BWS would not accept this as a permanent solution. Long-term options available to us are discussed in our alternate Non-Potable Source Plan, previously submitted: Honouliuli Wastewater Treatment Plant effluent; Waiahole Ditch; and basalt aquifer wells. Within the Ewa By Gentry-East project, we are sizing pipelines to accommodate all of these possibilities.

**Caprock Data Generation and Participation**

We feel that the pumpage and chloride levels that we have submitted monthly provide the best record of the caprock's viability; however, we have generated other information and it has been previously submitted. Three small diameter observation holes have been drilled through the upper limestone layer into the underlying calcareous mud. Locations of these holes are shown on Figure 1. Due to excavation for drainage and other purposes, the borehole located next to Kaloi Gulch and labeled "Gentry GC" no longer exists. However, development has not yet closed the boreholes labeled "FGE 1" and "FGE 2," which are on the east side of Ft. Weaver Road. Table 2 is a compilation of the elevation and dimensions of all three boreholes. Respective salinity profiles through their water columns are shown on Figure 2 (these were previously included in our alternate Non-Potable Source Plan). Recently recorded water levels in FGE 1 are reproduced as Figure 3.

We have not been approached by your staff to participate in a regional data gathering effort or monitoring network, but are certainly willing to do so. Access to any of our wells or boreholes can be arranged at any time on reasonable notice. If a program is put into place, we will be pleased to cooperate in the joint effort. Since the water level recorder is still operating in FGE 1 borehole, any data gathering from it should be coordinated with our consultant.

**Updated Four-year Non-Potable Water Use Projections**

Table 1 contains our updated Non-Potable Water Use Projections for the four-year period through 1997. It includes present uses and all projects requiring non-potable supply that we expect to develop within the next four years.
Updated Status of Geiger Apartment Well and Soda Creek III Well

Wells have been drilled for both projects. Pumps have been ordered and are expected to be installed and in operation in three to five weeks.

Water Levels

Air lines were installed in all of the operating wells within Ewa By Gentry. None were hooked up to recorders because the water level requirement was not then understood. Thus, no water level information has yet been generated. We are in the process of converting these air lines to one-inch sounding tubes as an easier way to obtain water level data, particularly since the operation and maintenance responsibilities for each well have been or will eventually be turned over to the homeowner associations that they serve. The first sounding tube has just been installed in the Arbors well. Its water level readings will be provided starting with the next monthly report. Sounding tubes will be installed in the other wells as each is converted to a variable frequency drive. We anticipate completion of these sequentially over the next three to four months. This will enable water levels to be measured and reported on a monthly basis.

It is hoped that the foregoing will be satisfactory to the Commission and its staff. Please feel free to contact me (599-8372), Randy Ouye (599-8285), or our consultant, Tom Nance (537-1141), if additional information is required.

Sincerely,

Barry Edwards
Project Director - Ewa By Gentry
Gentry Homes

Enclosures

cc: Ms. Rae Loui (w/encl)
Mr. Randy Ouye (w/encl)
Mr. Tom Nance (w/encl)
Table 2
Compilation of Data on the Three Observation Holes in Ewa by Gentry

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<th>FGE2</th>
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<td>31</td>
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<td>105</td>
<td>130</td>
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<td>(-)79</td>
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<td>6</td>
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<td>1.2 to 1.5</td>
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<tr>
<td>Present Status</td>
<td>Lost to Construction</td>
<td>2-Inch PVC Casing to the Bottom</td>
<td>2-Inch PVC Casing Removed; Lower 15 Feet of Hole Lost</td>
</tr>
</tbody>
</table>

Notes:
1. All three boreholes were drilled by Fewell Geotechnical Engineering. Gentry GC was done in August 1992. FGE 1 and 2 were done in July 1993.
2. An elevation benchmark was not established for the Gentry GC borehole. Its elevation is estimated by the depth to groundwater.
Abandoned Airfield

Figure 1
Observation Holes in Ewa by Gentry
Notes: 1. Locations of the 2-inch observation holes are shown on Figure 1. All penetrate through the top limestone layer into the mud aquiclude below.

2. The Gentry GC profile was made on September 5, 1992.

3. The FGE1 and FGE2 profiles were made on December 1, 1993.

Figure 2
Salinity Profiles of Observation Holes in Ewa by Gentry
Figure 3
Recorded Water Level in FGE 1
April 12 to May 14, 1994
## CONDITIONS OF TEMPORARY CAPROCK PERMITS

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Monthly Reports</th>
<th>Water Shortage Plan</th>
<th>Data Generation &amp; Participation</th>
<th>Conservation Plan</th>
<th>Ewa Caprock Regional Plan</th>
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<tr>
<td></td>
<td>Pumpage</td>
<td>Water Level</td>
<td>Chlorides</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>DHCD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Campbell Estate</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Gentry Hawaii, Ltd.</td>
<td>Yes</td>
<td>No</td>
<td>Yes*</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>State HFDC</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Hawaii Prince</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

* Not in use
Yes* Intermittent
Mr. Ronald M. Uemura  
Gentry Development Company  
P.O. Box 295  
Honolulu, Hawaii 96809

Dear Mr. Uemura:

Temporary Water Use Permit  
Ewa Caprock Ground Water Management Area, Oahu

At the May 18, 1994 meeting of the Commission on Water Resource Management (Commission), the Commission deferred action on requests to renew expired temporary water use permits for the Ewa Caprock Aquifer and granted applicants an additional thirty (30) days to satisfy the conditions for temporary permit renewal. Usages awarded by the expired temporary permit may be continued for sixty (60) days.

We understand that you are requesting continued use of your sources at the allocations previously granted in the expired temporary permits. To support your request, the following should be provided by June 17, 1994:

1. A water shortage plan.

2. Any and all data from caprock wells that have been generated by your firm and that have not previously been submitted to the Commission. If there are no additional data, then you must submit a written statement that, to the best of your knowledge, all well data generated by your firm have been provided to the Commission and that no additional well data have been generated to date.

3. Updated annual nonpotable demand projections for the 4-year period, 1994 through 1997. If there have been no changes or updates since April 1993, you must submit a written statement to that effect.

4. An update on the status of the Geiger Apt. Well and Soda Creek III Well (Well Nos. 2001-04 & 05) and an time estimate for actual use of these sources.
5. Any water level and chloride data that have been collected to date. If no water level data have been collected, then please provide a statement to that effect and state your reasons for your inability to collect such data. If all available chloride data have been provided to the Commission, then please provide a statement to that effect and briefly describe your measurement interval. Regular reports of monthly water levels and chloride data was a standard condition of your expired temporary permit.

Your renewal request has been tentatively scheduled for the July 13, 1994 Commission meeting. If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

LN:fc
ROLL CALL
Chairperson Ahue called the meeting of the Commission on Water Resource Management to order at 9:14 a.m.

The following were in attendance:

MEMBERS: Mr. Keith Ahue
Mr. Richard Cox
Mr. J. Douglas Ing
Dr. John L. Lewin
Mr. Robert Nakata
Mr. Robert Girald

STAFF: Ms. Rae Loui
Mr. Edwin Sakoda
Mr. David Higa
Ms. Sallie Edmunds
Ms. Lenore Nakama
Ms. Sharon Kokubun

COUNSEL: Mr. William Tam

OTHERS:
Martha Black Jolie Yee Barry Ching
Toni Bissen Dave Martin Chester Lao
Karen Piltz Lawana Mendes Donna Goth
Tom Nance George Hiu Paul Reppun
John Reppun Charlie Reppun George Hudes
Carol Wilcox Charley Ice Donna Wong
Rochelle Shim Jan Takamine Scott Izuka
Oswald Stender Andy Yuen Marjorie Ziegler
Meredith Ching Garret Hew Alan Murakami
William Devick Guy Fujimura Peter Adler

All written testimonies submitted at the meeting are filed in the Commission office and are available for review by interested parties.

Chairperson Ahue introduced Mr. Robert Girald from ILWU-Kauai, the new Commissioner replacing Mr. Fujimura.

AGENDA 1
ITEM 1 MINUTES OF THE APRIL 14, 1994 MEETING

Unanimously approved (Cox/Ing).

ITEM 2 NEW BUSINESS/ANNOUNCEMENTS

Ms. Loui announced the creation of a new task force to provide recommendations to the Commission on recommendations from the Code Review Commission. The task force will be chaired by Mr. Cox and other members are Robert Nakata, Michael Chun, and William Paty.
Chairperson and Members
Commission on Water Resource Management

May 18, 1994

ITEM 3
DEFERRAL - EXTENSION OF TEMPORARY WATER USE PERMITS, WELL CONSTRUCTION/ PUMP INSTALLATION AND WATER USE PERMIT APPLICATIONS, EWA CAPROCK GROUND WATER MANAGEMENT AREA, OAHU

Campbell Estate - (1905-08)
State of Hawaii, Housing Finance & Development Corp. - (2003-01 to 05)
Hawaii Prince Golf Club - (1900-02, 17 to 20, 1901-03)
Gentry Pacific, Ltd. - (2001-03, 07, 08, & 2002-12)
Gentry Development Co. - (2001-04 & 05, 2001-09)
City and County of Honolulu, Dept. of Housing & Community Development - (2002-13 & 2102-23)

Mr. Ing asked to be excused from participating on this item since his law firm represents one of the applicants.

Ms. Nakama said that currently there is no established network for collecting data to assess the current/future trends in the water availability but monitoring will be started shortly. Staff had anticipated that the applicants would on their own initiative collect additional data that would go into models that are being developed which would help to better understand the resource. To date, none of the applicants have generated additional data.

Ms. Nakama also corrected the last recommendation to read as "7" instead of another "6".

Mr. Cox expressed concern on:

1) Lack of data which he and Dr. Lewin had requested last year as part of the condition.

2) Missing information on the chlorides in the water data submitted.

Ms. Donna Goth of Campbell Estate explained that the data generation and participation was not possible because the wells are currently under construction, including the monitoring well. They are expected to be completed at the end of this year and as soon as data are generated, they will be submitted. In regards to the up-dated four-year projections, they do not anticipate an increase over their current allocation.

Mr. Tom Nance, representing Gentry, Ltd., submitted testimony (see file). He stated that the deferral was a surprise since monthly water reports (although the water levels were not submitted, that could be done), alternate source plan, conservation plan, and up-dated four-year projections have been submitted.

Mr. Nance requested that the 30-day period for submittal of information be extended to a 60-day period. Ms. Loui said that staff needs time to analyze data before the submittals are finalized and presented for Commission action. Mr. Cox agreed that the 30-day period should be kept.

Mr. Cox asked what would be done in regards to the water shortage plan. Ms. Nakama stated that staff would be approaching users for the information.

Unanimously approved 1) with the understanding that the applicants will cooperate with staff to get more information on the resource and 2) with the correction of the numbering in the conditions (Nakata/Cox).
April 11, 1994

Via Fax and Hand Delivery

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

Attention: Rae M. Loui, Deputy Director

Re: Temporary Water Use Permits, Ewa By Gentry Wells, Ewa Caprock Aquifer:
Geiger Park Well, 2001-03; Golf Villa I Well, 2001-07; Palm Villa 2 Well, 2001-08; Palm Court 3 Well, 2002-12; Geiger Apartment Well, 2001-04; Soda Creek III Well, 2001-05

Dear Ms. Loui:

Thank you for your letter of March 29, 1994, describing the status of the temporary water use permits and the Ewa Caprock Regional Plan development.

Attached is the Ewa By Gentry water conservation plan that has been in effect during the term of the temporary permits at issue.

We apologize for not having submitted a copy to the staff earlier.

We plan to continue use of the existing sources for the permitted wells at the same allocations described in the permits. We would appreciate your consideration of all these use permits for the one-year extension request that you anticipate making to the Commission at its tentatively scheduled April 27, 1994 meeting.

If you have any need of further information, or have any questions, please contact me. My telephone number is 599-8372.

Sincerely,

Barry Edwards
Project Director - Ewa By Gentry
Gentry Homes, Ltd.

Enclosure

cc: Ms. Lenore Nakama (w/enc)
April 8, 1994

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

Attention: Rae M. Loui, Deputy Director

Re: EWA BY GENTRY WATER CONSERVATION PLAN

Dear Ms. Loui:

The following program has been implemented with regard to water conservation and we feel this program is in compliance with the DLNR requirements for the water use permit:

1. The use of drought and salt tolerant trees, shrubs and groundcovers has been and will continue to be incorporated into all projects at Ewa by Gentry. In our continuing efforts to improve and adjust our landscaping for drought and salt tolerance, we have introduced Seashore Paspalum Grass for lawn areas and increased our utilization of coral, gravel and rock in lieu of groundcover planting, during the past year.

2. Irrigation systems are designed specifically to conform with non-potable water source pump requirements.

3. Irrigation controller schedules are adjusted during rainy periods to conserve water.

4. Broken irrigation pipes and equipment are promptly repaired to insure that water is not wasted. Irrigation heads, valves and controllers are routinely adjusted to maximize irrigation efficiency.

5. Installation of pop-up irrigation heads is utilized to reduce damage to exposed irrigation equipment and resulting water loss.

6. Irrigation submeters are being installed on specific irrigation zones downstream of primary irrigation water meters to improve irrigation monitoring and evaluation.
7. A landscape committee was formed to ensure continuity and compliance with water conservation requirements, and to improve design, installation and maintenance of landscaping, irrigation systems and non-potable wells.

8. A Landscape Booklet was developed which is distributed to all buyers at Ewa by Gentry. This guide stresses the importance of utilizing drought tolerant planting in combination with efficient irrigation, provides information on suitable drought tolerant plants and introduces homeowners to xeriscape as well as basic landscape design and installation concepts to insure successful landscaping.

This program has been extremely successful in our continuing efforts to minimize water usage and improve the Ewa by Gentry Community.

If you have any questions or concerns, please contact us.

Sincerely,

BROWNIE & LEE

Richard C. Brownlie, ASLA
Principal

RCB/sy
Mr. Ronald M. Uemura  
Gentry Development Company  
P.O. Box 295  
Honolulu, Hawaii 96809

Dear Mr. Uemura:

Notice of Expiration  
Temporary Water Use Permit  
Ewa Caprock Ground Water Management Area, Oahu

On April 28, 1993, the Commission on Water Resource Management (Commission) granted you temporary water use permits for the following Ewa by Gentry wells located in the Ewa Caprock Aquifer:

- Geiger Park Well (Well No. 2001-03)  
- Golf Villa 1 Well (Well No. 2001-07)  
- Palm Villa 2 Well (Well No. 2001-08)  
- Palm Court 3 Well (Well No. 2002-12)

Two additional temporary water use permits were approved by the Commission on October 27, 1993 for the proposed Geiger Apartment Well (Well No. 2001-04) and Soda Creek III Well (Well No. 2001-05). Your temporary water use permits for these six sources are due to expire on April 28, 1994.

It had been anticipated that the Ewa Caprock Regional Plan would be developed during this interim one-year period. As you may recall, the Ewa Caprock Regional Plan was to provide the following:

1. Updated land use zoning, acreage, and type of land use for projected yearly authorized planned non-potable water demands to 1996; and

2. Guidance for the production of alternative non-potable sources to supplement, replace, or enhance the caprock source in the absence of sugarcane irrigation return flow.
At this time, it is apparent that additional time will be required for full development and implementation of this plan. To address the existing non-potable needs of temporary permittees in the Ewa Caprock Aquifer, the Commission staff plans to submit a request for a one-year extension of the temporary permits at the Commission meeting tentatively scheduled for April 27, 1994.

As such, please notify the Commission in writing by April 15, 1994 if your plans for the following one-year period include continued use of your existing sources. If any modification in your present allocation is needed, please indicate a new amount and provide justification based on zoning, acreage, and type of land use in accordance with Commission policy. Failure to respond by the indicated deadline will create a presumption of abandonment of the use beginning April 29, 1994. If you desire to revive the use, you must apply for a permit under section 13-171-12.

We have attached a copy of the standard conditions and special conditions of your temporary water use permit. Thank you for reporting monthly chloride and use information for each of your four existing wells. We note that you have submitted a revised non-potable alternate source plan for Ewa by Gentry on March 4, 1994 in compliance with the conditions of your temporary permits. However, our records show that you have not submitted a water conservation plan by the July 28, 1993 deadline, which is also a requirement under the terms of your current permits. Any request for an extension of your temporary water use permits will be conditioned on the submittal of a plan for water conservation. Lastly, please submit any additional data that you may have regarding the current and/or projected water situation of the Ewa Caprock Aquifer.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

LN:ky
Attachments
Special Conditions
Ewa Caprock Temporary Water Use Permits

1. The temporary permits shall be valid for one (1) year from its approval date (April 28, 1994).

2. Quantities of allocations for each applicant are those calculated in Exhibit 3 for 1993 under the additional required allocation column. The pending applications which have no new or negative additional requirements are denied.

3. Each applicant’s allocation shall be for the cumulative withdrawals from the corresponding well sources specified by each applicant in Exhibit 2, except for Gentry Pacific’s well sources. Staff will be working with Gentry to associate water use permits for each well with each project individually within their total required allocation as shown in Exhibit 3.

4. Each applicant’s allocation shall be used only for the corresponding uses specified by each applicant in Exhibit 3.

5. Within one (1) year, the applicants shall jointly submit a plan for the conversion to an alternative non-potable source other than the Ewa Caprock Aquifer. This plan shall include the applicant’s intentions of funding the actual development of the alternative non-potable source.

6. Within sixty (60) days after approval, each applicant shall submit a water conservation plan or program according to the conditions in Attachment C.

7. The applicants shall continue to actively participate in the continuing development of the Ewa Caprock Regional Plan and its two main components which shall be coordinated by the Commission on Water Resource Management.

8. The applicants must actively participate in generating more information to show the utility of the caprock source in the absence of OSCo. recharge irrigation over the caprock and the complete absence of OSCo. irrigation in the Pearl Harbor area.

9. Temporary permits shall not be renewed if any of the above is not provided or followed.

ATTACHMENT A
STANDARD WATER USE PERMIT CONDITIONS

1. The ground water described in the water use permit may only be taken from the location described, used for the reasonable-beneficial use described, and at the location described above and in the attachments. "Reasonable-beneficial use" means the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is not wasteful and is both reasonable and consistent with the state and county land use plans and the public interest. (HAR §13-171-2).

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

3. The water use must at all times meet the requirements set forth in HAR §13-171-13 which means that it:
   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in section §13-171-2;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with state and county general plans and land use designations;
   f. Is consistent with county land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act.

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

5. The water use permit is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

6. The water use permit application and staff submittal approved by the Commission at its March 17, 1993 meeting are incorporated into the permit by reference.

7. Any modification of the permit terms, conditions, or uses can only be made with the express written consent of the Commission on Water Resource Management.

8. The water use permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect water sources in quantity, quality, or both;
   b. Meet other legal obligations including other correlative rights;
   c. Insure adequate conservation measures;
   d. Require efficiency of water uses;
   e. Meet reserved water requirements for future uses, provided that all legal existing uses of water as of June 1987, shall be protected;
   f. Meet legal obligations to the Department of Hawaiian Homes, if applicable; or
   g. Carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

9. An approved flowmeter(s) must be installed to measure withdrawals and a monthly record of withdrawals, water-levels, salinity, and temperature must be kept and reported to the Commission on a monthly basis in accordance the Commission's September 16, 1992 action exempting this quantity of use from reporting requirements;

10. The water use permit shall be subject to the Commission's periodic review of the applicable aquifer's sustainable yield. The amount of ground water use authorized by the permit may be reduced by the Commission if the sustainable yield of the Ewa Caprock Aquifer, or relevant modified aquifer, is reduced;

11. The water use permit may not be transferred or the use rights granted by this permit sold or in any other way alienated. Pursuant to HAR §13-171-25 and the requirements of Chapter 174C, the Commission has the authority to allow the transfer of the permit and the use rights granted by the permit in a manner consistent with HAR §13-171-25. Any such transfer shall only occur with the Commission's prior express written approval. Any sale, assignment, lease, alienation, or other transfer of any interest in this permit shall be void.

12. The use(s) authorized by law and by the water use permit do not constitute ownership rights.

13. The permittee shall request modification of the permit when necessary to comply with all applicable laws, rules, and ordinances which will affect the permittee's water use.

14. The permittee shall prepare and submit a water shortage plan within 30 days of issuance of the permit to assist the Commission in fulfilling HAR §13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Ewa Caprock Ground Water Management Area.

15. The water use permit granted shall be an interim water use permit, as allowed under HAR §13-171-21. The final determination of the water use quantity shall be made within five years of the filing of the application to continue the existing use.

16. The water use permit shall be issued only after AG review.

ATTACHMENT B
CONSERVATION CONDITIONS
EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

   a. Reduce the demand for non-potable water by:
      - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
      - Mulching planting areas with organic materials, etc., to minimize evaporation;
      - Efficiently maintaining the plants;
      - Improving land management practices to conserve water.

   b. Improve efficiency in use and reduce losses and waste of non-potable water by:
      - Using efficiently designed landscaping and irrigation systems;
      - Monitoring irrigation requirements and controlling usage accordingly;
      - Managing irrigation scheduling to minimize water demand;
      - Eliminating opportunities for water wastage;
      - Maintaining and improving irrigation systems as necessary.

   c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.
Ms. Rae M. Loui  
Deputy Director  
State of Hawaii  
Department of Land and Natural Resources  
Commission on Water Resource Management  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Ms. Loui:

Subject: **Ewa Caprock Water Management Area**

Further to your letter dated June 10, 1993, Gentry Development Company is willing to continue to participate in the development of the Ewa Caprock Regional Plan to seek alternative sources of non-potable water in the event that the caprock aquifer's salinity rises above irrigation quality levels.

If groundwater salinities in the Ewa by Gentry development area are not acceptable, the Gentry Companies will cooperate with government agencies and other developers in the City and County of Honolulu to utilize alternative water sources, including reclaimed water from the Honouliuli Wastewater Treatment Plant. We will continue to keep the Commission advised of any updates to our water shortage plan as we work with the City on the formulation of our plans.

We will continue to cooperate with your efforts to resolve this important issue.

Sincerely yours,

GENTRY HAWAII, LTD.

[Signature]

Norman H. Dyer,  
President

ND:scm

Attachment: Letter from R. Loui dated June 10, 1993

/wtrmgmt-ewa
Chairperson and Members
Commission on Water Resource Management
State of Hawaii
Honolulu, Hawaii

Gentlemen:

RESUBMITTAL
Applications for Water Use Permits
Ewa Caprock Ground Water Management Area, Ewa, Oahu

Applicants

Refer to Exhibit 2 for the listing of the pending applicants in the Ewa Caprock.

Background

The Commission was originally presented this submittal on March 17, 1993 but deferred action on it to afford further review by the applicants and general public.

The Ewa Caprock Aquifer, formerly under Chapter 177, HRS, was officially adopted by the Commission under 174C on March 3, 1993 without any official sustainable yield estimate. Existing applicants have had pending water permit applications prior to this official adoption. Specific information regarding the source, use, notification, objections, and field investigation(s) are described in Attachment A and the attached exhibits.

Analysis & Issues

State and County general plans and policies have directed urban development to the Ewa area and that a dual water system serve the potable and non-potable water demands for this development. It was anticipated that the Ewa Caprock Aquifer was to be the major non-potable source for the non-potable needs of various developments. However, the Ewa Caprock is an aquifer in transition and may only be a temporary alternative source of water for irrigation. The reasons for this are as follows:

1. Ewa Caprock Aquifer is presently a reliable brackish source suitable for irrigation mainly because of imported recharge due to past and present irrigation practices of Oahu Sugar Co. (OSCo.)

2. As sugarcane production overlying the aquifer is replaced by urban development this man-made source’s salinity throughout the aquifer will increase due to decreasing imported recharge. Chloride concentrations may increase to pre-sugarcane levels which would make it less reliable and probably unsuitable for most types of irrigation.

3. The future of OSCO is uncertain but is vital for the importation of recharge to the caprock aquifer. Additionally, OSCO's past irrigation practices have increased basal sustainable yields in Pearl Harbor which, in turn, may have increased leakage into the caprock from the basal aquifers. Should OSCO go out of business in 1995 the caprock will definitely be impacted.

4. There are plans for creating the Ewa Marina which would cut into the caprock and may affect the salinity levels in other areas of the caprock. Trench testing and computer modelling studies have yet to determine or quantify the marina impacts thus, the future of this marina and its impacts are uncertain.
5. Hydrologic studies to date by Mink & Nance have estimated that the potential sustainable yield for useful brackish water in the absence of OSCo. may be less than 10 mgd in the Puuloa area, less than 5 mgd in the Kapolei area, and less than 1 mgd in the Malakole area of the caprock (Exhibit 1). There are no firmer estimates than these although staff is working with the applicants to produce an updated computer model which can help to better determine the caprock’s overall sustainable yield behavior.

6. To date, no firm alternative recharge solution has been finalized to replace the anticipated loss of OSCo. recharge.

The applications pending (Exhibit 2) reflect the immediate non-potable needs of urban development in the Ewa area. Obviously, this will increased non-potable water demands from the Ewa Caprock Aquifer above current pumpages which include OSCo.’s needs.

The pending water use permit applications listed in Exhibit 2 have exceeded the normal application processing deadlines because: 1) there is uncertainty regarding the caprock’s immediate and long-term viability and sustainable yield; and 2) total pending requests (6,340 mgd) combined with existing allocations (19,604 mgd) exceed the unofficial estimates. The Commission had taken the cautious position of deferring these applications until there are further assurances of the protection and optimum development of the caprock aquifer.

On October 14, 1992, the Commission took action to provide the State Housing Finance and Development Corp. with temporary permits, valid until January 1993, for dust control and project start-up needs. Although temporary permits are not defined by the Code or Rules they are useful in this situation. In one respect, temporary water use permits are analogous to interim water use permits good for only a limited time as is provided by §13-171-20(b). Although interim permits were meant for verification of existing users staff feels that they serve a valid basis for protecting the resource while temporarily providing for immediate needs.

In the meantime, staff has been working closely with the applicants, other developers in the Ewa area, Department of Health, and the City & County of Honolulu to produce the Ewa Caprock Regional Plan! This plan provides the following:

1. Updating the land use zoning, acres, and type of land use to project yearly authorized planned non-potable water demands to 1996; and

2. Guidance for the production of alternative non-potable sources to supplement, replace, or enhance the caprock source in anticipation of sugarcane recharge disappearing.

Exhibits 3 & 4 summarize the first part of the Ewa Caprock Regional Plan by analyzing the existing applicants, and others, in regards to land use and projected non-potable water needs. Exhibit 3 shows the updated projected demands of the pending applicants for the year 1993. The updated zoning and acreage information has been supplied by the applicants and verified by staff. However, projections calculations made by the applicants were varied and lacked consistency in the gpd/acre figures. Since these applicants are competing users for ground water from an aquifer under sustainable yield transition, staff has revised the gallons per day per acre (gpd/acre) figures for type of land use to be fair, consistent, and to accommodate all the applicants while considering protection of the aquifer. Gpd/acre figures used by the staff were assessed by staff through Hawaii Water System Standards 1985, county consumption guidelines, discussions with other government agencies for dust control, and existing water use report information on golf courses in the Ewa Area (see Exhibit 5). The staff considers these estimates reasonable, consistent, and fair to all users in the Ewa Caprock area at this time.

Chairperson and Members
Commission on Water Resource Management
April 28, 1993
The second part of the Ewa Caprock Regional Plan has been to find and develop a feasible alternative non-potable source to provide an immediate backup to the caprock source when sugarcane cultivation over the Ewa Plain ceases and/or when OSCo. completely stops cultivating sugarcane. Through ongoing round table meetings and correspondence, the most promising alternative source at this time is to treat approximately 13 mgd of Honouruil wastewater to Class A quality requirements which would allow the direct application of such reuse water on irrigated land and or by reinjection. The City & County is preparing a request for proposal to construct and operate a tertiary treatment process to treat the wastewater to Class A quality. The distribution systems seriously being considered to deliver this water to users and provide recharge to the caprock are: 1) the caprock aquifer through reinjection wells, 2) the caprock aquifer through percolation basins, and 3) direct piping distribution system. Reinjection would be the most desirable distribution solution given the land area constraints but may require substantial time for DOH to approve. Percolation basin recharge is tentatively being promoted by DOH as a more immediate solution but this may require significant land area. Direct distribution is desirable because it can more effectively control and measure consumption although this alternative will most likely be the most expensive delivery system.

From the first portion of the Ewa Caprock Regional Plan, staff has updated information from the March 17, 1992 submittal and has concluded that the reasonable total additional required allocations for the next year is 2.556 mgd (See Exhibit 3, p.2). If approved, this additional allocation would bring the overall total allocations in the Ewa Caprock to 22.160 mgd. This would exceed the unofficial sustainable yield limit (16 to 21 mgd) under present field conditions by 1.160 to 6.160 mgd. The apparent overallocation 'average' would be 3.660 mgd but, again, no sustainable yield has been officially adopted by the Commission.

If the Commission were to allocate to the applicants according to Exhibit 3, there are two (2) additional issues that provide the Commission and the caprock aquifer with a certain degree of protection and may remedy the apparent overallocation problem. First, the existing water use permit for the Makakilo Golf Course is not a real demand upon the Caprock Aquifer. The reason for this is that Well No. 1904-02, is presently not pumped because under the conditions of the previous application the brackish water was to be desalinized. No desalinization mechanism is in place at this time, therefore it is unlikely that the well will be pumped anytime soon. Additionally, staff has found that the operating entity which applied for the permit applicant no longer exists. No transfer of permit has been requested of or submitted to the Commission. This permit may be revoked by the Commission if the source is not used by March 15, 1994, but would not preclude the Commission from seeking an earlier revocation of the permit with the consent of the permittee. The second item which provides some cushion to the Commission is the fact that the largest user of caprock water, OSCo., underpumps their caprock allocations by 4.164 mgd. Combined, these two non-utilized allocations amount to approximately 5.314 mgd. This amount of unused caprock water is in excess of the average apparent overallocation of 3.660 mgd. It would be reasonable to say that the aquifer is not endangered under current field conditions for the next, or possibly more, year(s) until land use drastically changes.

Although staff is continually updating the Ewa Caprock Regional Plan through meetings and correspondence, there are very real immediate needs which require non-potable water for construction, dust control, and the economic feasibility of affordable housing. Staff feels that these issues are in the interest of the public and that temporary permits are necessary to address these issues. As a requirement of obtaining a temporary permit the applicant must commit to the Ewa Caprock Regional Plan by participating in, abiding by, and contributing to the Ewa Caprock Regional Plan components of updating projected demands and the development of an alternative non-potable source.

RECOMMENDATION

That the Commission approve the issuance of temporary water use permits to the pending applicants listed in Exhibit 2 subject to the standard conditions listed in
Chairperson and Members
Commission on Water Resource Management
April 28, 1993

Attachment B and the following special conditions:

1. The temporary permits shall be valid for one (1) year from its approval date (April 28, 1994).

2. Quantities of allocations for each applicant are those calculated in Exhibit 3 for 1993 under the additional required allocation column. The pending applications which have no new or negative additional requirements are denied.

3. Each applicant's allocation shall be for the cumulative withdrawals from the corresponding well sources specified by each applicant in Exhibit 2.

4. Each applicant's allocation shall be used only for the corresponding uses specified by each applicant in Exhibit 3.

5. Within one (1) year the applicants shall submit a plan for the conversion to an alternative non-potable source other than the Ewa Caprock Aquifer. This plan shall include the applicants' intentions of funding the actual development of the alternative non-potable source.

6. Within sixty (60) days after approval, each applicant shall submit a water conservation plan or program according to the conditions in Attachment C.

7. The applicants shall continue to actively participate in the continuing development of the Ewa Caprock Regional Plan and its two main components.

8. The applicants must actively participate in generating more information to show the utility of the caprock source in the absence of OSCo. recharge irrigation over the caprock and the complete absence of OSCo. irrigation in the Pearl Harbor area.

9. Temporary permits shall not be renewed if any of the above is not provided or followed.

Additionally, staff recommends that the Commission direct the staff to provide a warning notice to each existing caprock user advising them of expected cutbacks since OSCo. irrigated acreage over the caprock is expected to decrease in the near future. Details of this warning will be worked out by staff.

Respectfully submitted,

 Rae M. Loui
Deputy Director

APPROVED FOR SUBMITTAL:

Keith W. Ahue, Chairperson
WATER USE PERMIT DETAILED INFORMATION

Source Information

AQUIFER: See Exhibit 3
WELLS: See Exhibit 1 & 2

Use Information See Exhibit 3 to 5

Public Notices See Exhibit 2

Objections

There were no objections filed by any person who has property interest in any land within the hydrologic unit of the source of water supply or any person who will be directly and immediately affected by the proposed water use. Other objections to the application were submitted by:

Objector Objection
NHAC General process of water use permit applications. No specific objections to this application.

Field Investigation

All sources have been field investigated and verified.

ATTACHMENT A
STANDARD WATER USE PERMIT CONDITIONS

1. The ground water described in the water use permit may only be taken from the location described, used for the reasonable-beneficial use described, and at the location described above and in the attachments. "Reasonable-beneficial use" means the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is not wasteful and is both reasonable and consistent with the state and county land use plans and the public interest. (HAR §13-171-2).

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

3. The water use must at all times meet the requirements set forth in HAR §13-171-13 which means that it:
   a. Can be accommodated with the available water source;
   b. Is a reasonable-beneficial use as defined in section §13-171-2;
   c. Will not interfere with any existing legal use of water;
   d. Is consistent with the public interest;
   e. Is consistent with state and county general plans and land use designations;
   f. Is consistent with county land use plans and policies; and
   g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act.

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

5. The water use permit is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.

6. The water use permit application and staff submittal approved by the Commission at its March 17, 1993 meeting are incorporated into the permit by reference.

7. Any modification of the permit terms, conditions, or uses can only be made with the express written consent of the Commission on Water Resource Management.

8. The water use permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect water sources in quantity, quality, or both;
   b. Meet other legal obligations including other correlative rights;
   c. Insure adequate conservation measures;
   d. Require efficiency of water uses;
   e. Meet reserved water requirements for future uses, provided that all legal existing uses of water as of June 1987, shall be protected;
   f. Meet legal obligations to the Department of Hawaiian Homes, if applicable; or
   g. Carry out such other necessary and proper exercise of the State’s and the Commissions’s police powers under law as may be required.

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

9. An approved flowmeter(s) must be installed to measure withdrawals and a monthly record of withdrawals, water-levels, salinity, and temperature need not must be kept and reported to the Commission on a monthly basis in accordance the Commission's September 16, 1992 action exempting this quantity of use from reporting requirements;

10. The water use permit shall be subject to the Commission's periodic review of the applicable aquifer's sustainable yield. The amount of ground water use authorized by the permit may be reduced by the Commission if the sustainable yield of the Ewa Caprock Aquifer, or relevant modified aquifer, is reduced;

11. The water use permit may not be transferred or the use rights granted by this permit sold or in any other way alienated. Pursuant to HAR §13-171-25 and the requirements of Chapter 174C, the Commission has the authority to allow the transfer of the permit and the use rights granted by the permit in a manner consistent with HAR §13-171-25. Any such transfer shall only occur with the Commission's prior express written approval. Any sale, assignment, lease, alienation, or other transfer of any interest in this permit shall be void.

12. The use(s) authorized by law and by the water use permit do not constitute ownership rights.

13. The permittee shall request modification of the permit when necessary to comply with all applicable laws, rules, and ordinances which will affect the permittee's water use.

14. The permittee shall prepare and submit a water shortage plan within 30 days of issuance of the permit to assist the Commission in fulfilling HAR §13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Ewa Caprock Ground Water Management Area.

15. The water use permit granted shall be an interim water use permit, as allowed under HAR §13-171-21. The final determination of the water use quantity shall be made within five years of the filing of the application to continue the existing use.

16. The water use permit shall be issued only after AG review.

ATTACHMENT B
CONSERVATION CONDITIONS
EWA CAPROCK WATER USE PERMITS

1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.

2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:

a. Reduce the demand for non-potable water by:
   - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
   - Mulching planting areas with organic materials, etc., to minimize evaporation;
   - Efficiently maintaining the plants;
   - Improving land management practices to conserve water.

b. Improve efficiency in use and reduce losses and waste of non-potable water by:
   - Using efficiently designed landscaping and irrigation systems;
   - Monitoring irrigation requirements and controlling usage accordingly;
   - Managing irrigation scheduling to minimize water demand;
   - Eliminating opportunities for water wastage;
   - Maintaining and improving irrigation systems as necessary.

c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.

3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).

4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.

ATTACHMENT C
### ISLAND OF OAHU

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6 Applications Totaling 3.200

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13 Applications Totaling 3.140

* More detailed use information is found in Exhibit 3

- More detailed use information is found in Exhibit 3

OVERALL, THERE ARE 19 APPLICATIONS TOTALING 6.340

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Exhibit 3
PUULOA CAPROCK AREA

DEVELOPER PROJECT ZONING CODE ACRES GPD/AC 1993 PROJECTED AVG USE (GPD) EXISTING PERMITS (MGD) ADDITIONAL REQUIRED ALLOCATION (MGD)
C&C DHCD Ewa Villages-Golf Course AG-1,R-5 206.00 4,000 824,000
C&C DHCD Ewa Villages-Commercial R-5 4.00 3,000 0
C&C DHCD Ewa Villages-Greensbelt R-5 6.70 3,000 20,100
C&C DHCD Ewa Mahiko-Regional Park R-5,A-1 26.50 3,000 73,500
C&C DHCD Ewa Villages-Multifamily R-5,A-1 15.00 3,000 0
C&C DHCD Ewa Villages-Village Green R-5,A-1 3.50 3,000 0
C&C DHCD Ewa North/South Road AG-1 9.50 3,000 0
C&C DHCD West Loch Village AG-1 3.60 3,000 10,200

Subtotal C&C DHCD 272.60 927,800 0.000 0.928

Gentry Development Ewa By Gentry-Entry A-1 5.00 3,000 15,000 3,000 5
Gentry Development Ewa By Gentry-Area 11 R5,A1,P2 10.00 3,000 30,000 45,000 1
Gentry Development Ewa By Gentry-Area 1A A-1 15.00 3,000 45,000 NA
Gentry Development Ewa By Gentry-Area 3 A-1 21.00 3,000 65,000
Gentry Development Ewa By Gentry-Area 4 A-1 16.00 3,000 48,000
Gentry Development Ewa By Gentry-Area 1C A-1 22.00 3,000 66,000

Subtotal Gentry Development 89.00 267,000 0.160 0.107

Prince Hawaii Prince Hawaii Prince Golf Club R5,AG2 234.00 4,000 936,000 0.900 0.036
Sogo Hawaii Ewa Beach Int'l Golf Course 130.00 4,000 520,000 0.700 -0.180 5

Subtotal Prince Hawaii 725.60 2,650,800 1.760 0.891

PUULOA CAPROCK AREA SUBTOTAL 1635.17 4,315,750 1.760 2.556

PUULOA CAPROCK AREA YIELD TOTAL SUSTAINABLE EXISTING REQUIRED ALLOCATION REMAINDER
KAPOLEI 5 1.150 1.165 1.000 2.165
MALAKOLE 1 0.000 0.000 0.000
PUULOA 10-15 18.045 0.891 " 4.345

TOTAL 16-21 19.604 -3.556 " 1.600

" not including saltwater use
** 16.194 mgd permitted to Oahu Sugar, to be cutback to 12.030 mgd in 1995.

notes: 1) Current 1.5 mgd temporary use permit to expire in 1993.
2) 0.08 mgd formerly permitted to Aloha State Corp.
3) 0.08 mgd formerly permitted to Gentry Development Co.
4) 0.90 mgd formerly permitted to The Myers Corp.
5) 0.60 mgd formerly permitted to Puuloa Homes, and
0.10 mgd formerly permitted to Sogo, Hawaii Inc.
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<tr>
<th>DEVELOPER</th>
<th>PROJECT</th>
<th>1994 PROJECTED AVG USE (GPD)</th>
<th>1995 PROJECTED AVG USE (GPD)</th>
<th>1996 PROJECTED AVG USE (GPD)</th>
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State of Hawaii
Department of Land and Natural Resources
COMMISSION ON WATER RESOURCE MANAGEMENT

EWA CAPROCK REGIONAL PLAN
NON-POTABLE WATER DEMAND FORECAST
FUTURE DEMANDS (1994-1996)

KAPOLEI CAPROCK AREA SUBTOTAL
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<th>DEVELOPER</th>
<th>PROJECT</th>
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Exhibit 4
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Exhibit A
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<td>0</td>
<td>270,000</td>
<td>270,000</td>
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<tr>
<td>State DOT</td>
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<td>0</td>
<td>290,000</td>
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<td></td>
<td>Subtotal State DOT</td>
<td>0</td>
<td>560,000</td>
<td>560,000</td>
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<tr>
<td>Hawaii Prince</td>
<td>Hawaii Prince Golf Club</td>
<td>1,200,000</td>
<td>1,200,000</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Oahu Sugar</td>
<td>Sugar Cane Irrigation</td>
<td>16,190,000</td>
<td>12,030,000</td>
<td>12,030,000</td>
</tr>
<tr>
<td>Sogo Hawaii</td>
<td>Ewa Beach Int'l Golf Course</td>
<td>800,000</td>
<td>800,000</td>
<td>800,000</td>
</tr>
<tr>
<td>C&amp;C DPW</td>
<td>Honoulu I WTP</td>
<td>250,000</td>
<td>260,000</td>
<td>270,000</td>
</tr>
<tr>
<td>State HFDC</td>
<td>HFDC-100 Acre Parcel</td>
<td>50,000</td>
<td>80,000</td>
<td>100,000</td>
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<tr>
<td></td>
<td>Subtotal Maui Caprock Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maui Caprock Area SUBTOTAL</td>
<td>21,197,591</td>
<td>18,208,001</td>
<td>21,215,520</td>
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<tr>
<td>TOTAL Caprock Demand</td>
<td></td>
<td>25,102,377</td>
<td>22,069,787</td>
<td>25,289,806</td>
</tr>
</tbody>
</table>

**Exhibit 4**

- **Total 1994 Projected Demand**: 25.102 mgd
- **Total 1993 Projected Demand**: 22.172 mgd
- **Additional Required**: 2.930 mgd

*not including salt water use.*
<table>
<thead>
<tr>
<th>DEVELOPER</th>
<th>GOLF COURSE</th>
<th>HOLES</th>
<th>ACRES</th>
<th>AVERAGE USE (GPD)</th>
<th>GPD/AC</th>
<th>FIRST REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii Prince</td>
<td>Hawaii Prince</td>
<td>27</td>
<td>234</td>
<td>1,628,061</td>
<td>6,958</td>
<td>07/92</td>
</tr>
<tr>
<td>Makakilo Golf Corp.</td>
<td>Makakilo</td>
<td>18</td>
<td>232</td>
<td>1,150,000</td>
<td>4,957</td>
<td>estimated</td>
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<tr>
<td>Sogo Hawaii</td>
<td>Ewa Beach Int'l</td>
<td>18</td>
<td>130</td>
<td>570,354</td>
<td>4,387</td>
<td>12/90</td>
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<tr>
<td>C&amp;C DHCD</td>
<td>West Loch</td>
<td>18</td>
<td>180</td>
<td>761,711</td>
<td>4,232</td>
<td>10/91 *</td>
</tr>
<tr>
<td>U.S. Navy</td>
<td>NAS Barbers Point</td>
<td>90</td>
<td></td>
<td>320,000</td>
<td>3,556</td>
<td>estimated</td>
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<tr>
<td>West Beach Estates</td>
<td>Ko Olina</td>
<td>18</td>
<td>169</td>
<td>508,570</td>
<td>3,009</td>
<td>01/88 **</td>
</tr>
</tbody>
</table>

* Reporting began about halfway through the growing period and, the usage includes sprinkling of areas not on the course.

** From pumpage data up till 04/92.
I've indicated the project-by-project quantities for the Handy Projects, their two existing permits. The entry area and Area 1b (Palm Villa) are specific to those separate projects and not transferrable to others within Five by Handy. Ownership transfers are not the same and there are no interconnecting between systems.

The four other areas -- Areas 11, 3, 4, and 6 -- are also stand-alone systems without interconnections. They need to be dealt with as separate entities, each of which will be owned by different owner/resident associations.

If you have any problems with any of these, please give me a call.

[Signature]

Tom
## Punaluʻa Caprock Area

### Developers and Projects

<table>
<thead>
<tr>
<th>Developer</th>
<th>Project</th>
<th>Zoning Code</th>
<th>Acres</th>
<th>GPD/AC</th>
<th>1993 Projected Use (GPD)</th>
<th>Existing Permits (MGD)</th>
<th>Additional Required Allocation (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC DRCD</td>
<td>Ewa Village-Golf Course</td>
<td>AG-1, R-5</td>
<td>206.00</td>
<td>4,000</td>
<td>834,000</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>Ewa Village-Commercial</td>
<td>R-5</td>
<td>4.00</td>
<td>3,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>Ewa Village-Greenbelt</td>
<td>R-5</td>
<td>4.70</td>
<td>3,000</td>
<td>20,100</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>Ewa Kahiko-Regional Park</td>
<td>R-5, A-1</td>
<td>24.50</td>
<td>3,000</td>
<td>72,500</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>Ewa Village-Multifamily</td>
<td>R-1, R-5</td>
<td>15.00</td>
<td>3,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>Ewa Village-Village Green</td>
<td>R-5, A-1</td>
<td>3.50</td>
<td>3,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>Ewa North/South Road</td>
<td>AG-1</td>
<td>9.50</td>
<td>3,000</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>CCC DRCD</td>
<td>West Loch Village</td>
<td>AG-1</td>
<td>3.40</td>
<td>3,000</td>
<td>10,200</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td>272.60</td>
<td></td>
<td>827,800</td>
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<td>0.008 0.022</td>
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### Gentry Development

<table>
<thead>
<tr>
<th>Developer</th>
<th>Project</th>
<th>Zoning Code</th>
<th>Acres</th>
<th>GPD/AC</th>
<th>1993 Projected Use (GPD)</th>
<th>Existing Permits (MGD)</th>
<th>Additional Required Allocation (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentry Development</td>
<td>Ewa By Gentry-Entry</td>
<td>A-1</td>
<td>5.00</td>
<td>3,000</td>
<td>15,800</td>
<td>0</td>
<td>0.005 2</td>
</tr>
<tr>
<td>Gentry Development</td>
<td>Ewa By Gentry-Area IA</td>
<td>R5, A1, P2</td>
<td>10.00</td>
<td>3,000</td>
<td>30,800</td>
<td>0</td>
<td>0.009 3</td>
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<tr>
<td>Gentry Development</td>
<td>Ewa By Gentry-Area IA</td>
<td>A-1</td>
<td>15.00</td>
<td>3,000</td>
<td>45,900</td>
<td>0</td>
<td>0.009 3</td>
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<tr>
<td>Gentry Development</td>
<td>Ewa By Gentry-Area 3</td>
<td>A-1</td>
<td>21.00</td>
<td>3,000</td>
<td>65,900</td>
<td>0</td>
<td>0.009 3</td>
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<tr>
<td>Gentry Development</td>
<td>Ewa By Gentry-Area 4</td>
<td>A-1</td>
<td>16.50</td>
<td>3,000</td>
<td>48,600</td>
<td>0</td>
<td>0.009 3</td>
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<tr>
<td>Gentry Development</td>
<td>Ewa By Gentry-Area 4</td>
<td>A-1</td>
<td>22.00</td>
<td>3,000</td>
<td>66,800</td>
<td>0</td>
<td>0.009 3</td>
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</table>

**Gentry Development Subtotal**

<table>
<thead>
<tr>
<th>Project</th>
<th>Acres</th>
<th>GPD/AC</th>
<th>1993 Projected Use (GPD)</th>
<th>Existing Permits (MGD)</th>
<th>Additional Required Allocation (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewa By Gentry-Area IA</td>
<td>69.00</td>
<td>207,800</td>
<td>0.106</td>
<td>0.107</td>
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</table>

**Punaluʻa Caprock Area Subtotal**

<table>
<thead>
<tr>
<th>Project</th>
<th>Acres</th>
<th>GPD/AC</th>
<th>1993 Projected Use (GPD)</th>
<th>Existing Permits (MGD)</th>
<th>Additional Required Allocation (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewa By Gentry-Area IA</td>
<td>69.00</td>
<td>207,800</td>
<td>0.106</td>
<td>0.107</td>
<td></td>
</tr>
</tbody>
</table>

### Other Information

- **Total Sustained Yield**
  - Kapolei: 1.765
  - Malakole: 0.800
  - Pualoa: 2.650

- **Total Production**
  - 16.21

- **Total Existing Permits**
  - 10.65

- **Additional Required Allocation**
  - 2.556

- **Remainder**
  - -1.160

- **Notes**:
  2. 0.08 mgd formerly permitted to Ala A State Corp.
  3. 0.08 mgd formerly permitted to Gentry Development Co.
  4. 0.90 mgd formerly permitted to The Myers Corp.
  5. 0.60 mgd formerly permitted to Puualoa Homes, and
  0.10 mgd formerly permitted to So-go, Hawaii Inc.

- **Puualoa Total**
  - (Capital Gentry Amount) = 1.071 MGD

**Exhibit 3**
# Pump Data Information

Confirmed by Bill Moore 1/14/93

<table>
<thead>
<tr>
<th>Well #</th>
<th>Use</th>
<th>Parent Name</th>
<th>GPM</th>
<th>HP</th>
<th>Volt</th>
<th>Ph</th>
<th>TDH</th>
<th>Date Installed</th>
</tr>
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<tbody>
<tr>
<td>2001-06</td>
<td>Yes</td>
<td>Palm Villa I</td>
<td>100</td>
<td>10</td>
<td>230</td>
<td>1φ</td>
<td>243</td>
<td>Sept 89</td>
</tr>
<tr>
<td>2002-12</td>
<td></td>
<td>Palm Court 3</td>
<td>105</td>
<td>5</td>
<td>230</td>
<td>1φ</td>
<td>130</td>
<td>Apr 92</td>
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<tr>
<td>2001-03</td>
<td>Temp Use</td>
<td>Geiger Park</td>
<td>80</td>
<td>7½</td>
<td>480</td>
<td>3φ</td>
<td>200</td>
<td>Aug 92</td>
</tr>
<tr>
<td>2001-08</td>
<td>Temp Use</td>
<td>Palm Villa II</td>
<td>120</td>
<td>7½</td>
<td>230</td>
<td>1φ</td>
<td>140</td>
<td>Pump In No Elec.</td>
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<tr>
<td>2001-07</td>
<td>Temp Use</td>
<td>Arbors</td>
<td>100</td>
<td>7½</td>
<td>208</td>
<td>3φ</td>
<td>180</td>
<td>RMC not started yet</td>
</tr>
</tbody>
</table>

*Note: GPM = Gallons Per Minute, HP = Horsepower, Volt = Voltage, Ph = Phase, TDH = Total Dynamic Head*
April 2, 1993

HAND DELIVERY

Ms. Rae Loui
Commission on Water Resource Management
Department of Land and Natural Resources
Kalanikou Building, Room 227
1151 Punchbowl Street
Honolulu, Hawaii 96809

Re: Applications for Water Use Permits in the Ewa Caprock Groundwater Management Area

Dear Ms. Loui:

We have reviewed your March 17, 1993 submittal to the Commission on Water Resource Management and would like to offer the following comments and suggestions. We definitely agree that irrigation return flow from Oahu Sugar Company (OSCo) fields is a significant contribution to the Caprock Aquifer's recharge. However, several characterizations in the Analysis and Issues section of the submittal are overstated and may be misleading:

1. The submittal states that the aquifer is a reliable irrigation source only because of OSCo's "... imported recharge." In the process of calibrating the Ewa Caprock computer model, very careful salt balance analyses were done for several significantly different OSCo cultivation periods. These calculations clearly show that substantial natural leakage from the Koolau basalt aquifer into the caprock must occur for OSCo's wells to have been as successful as they have been. Chlorides in an Ewa By Gentry observation hole and in Well N of WRRC's Honouliuli study identify at least one major area where this leakage is occurring. The salt balance calculations indicate that the leakage is on the order of nine to 10 MGD. This contribution to aquifer recharge is essentially independent of OSCo's activities and it will remain as the primary source of recharge in the post-OSCo period. Because of this, caprock wells in specifically advantageous locations will continue to produce irrigation quality water.
Item 2

The submittal repeats a common perception that salinity in the caprock was much higher in the "pre-sugarcane" period. In fact, caprock water quality data is only available since the early 1930's, some 40 years after the start of sugarcane cultivation. We don't actually know what the caprock quality was prior to sugarcane's beginning in the 1890's. However, we do know that from at least the 1930's -- the start of data collection -- through the late 1940's, water drawn from the basalt aquifer by the Ewa Mill wells (EP 9, State No. 2002-01 to -08, and -10) was responsible for the high salinity in all of OSCo's downstream caprock aquifer wells. The Ewa Mill well water, which had chlorides in the 1500 to 2000 MGL range, was used for furrow irrigation over approximately 1000 acres around and upstream of these caprock wells. In the two years following the end of the use of the Ewa Mill wells in 1946, OSCo's caprock wells steadily freshened. Thereafter, their quality remained relatively stable for several decades. In the 1980's, following OSCO's conversion to drip and reduction of basalt water import, salinity rose to their present levels.

Because we feel that existing and proposed wells, in and around the Ewa By Gentry project area, will be satisfactorily sustained by Koolau aquifer leakage after OSCo ceases operation, we would like to modify special condition No. 5 on page 4 of your submittal to read as follows:

5. Within one year, the applicant shall submit a contingency plan to convert to an alternative non-potable source if rising salinity in his permitted Ewa Caprock well makes it unsuitable for irrigation use.

We would like the opportunity to discuss this proposed modification of Special Condition 5 and the other information provided in this letter at your convenience. Thank you for your attention to this matter. I look forward to hearing from you.

Sincerely,

Barry Edwards
Vice President - Ewa By Gentry
Gentry Hawaii, Ltd.
1993 March 17

TESTIMONY TO THE STATE OF HAWAI’I COMMISSION ON WATER RESOURCE MANAGEMENT

Item 2. Maui DWS Wells

Well Locations and Descriptions:

1. When were original pumps installed?
2. How long have they been operating?
3. How do existing uses over these periods of operation compare with proposed uses (mgd)?
4. How do static heads and chlorides over these periods of operation compare with initial heads and chlorides?

Analysis:

1. What hydrologic units are the wells located in?
2. What are the sustainable yields and existing, planned, and proposed/projected uses in these units?

Item 3. Maka Ridge and Haena Wells

Well Locations and Descriptions:

1. When were original pumps installed?
2. How long have they been operating?
3. How do existing uses over these periods of operation compare with proposed uses (mgd)? Neither are tabulated in the submitted descriptions.
4. How do static heads and chlorides over these periods of operation compare with initial heads and chlorides?

Analysis:

1. What hydrologic units are the wells located in?
2. What are the sustainable yields and existing, planned, and proposed/projected uses in these units?

Item 4. Stanhope Farms Well

Background

Did the applicant file a declaration of water use and registration of water source as required in 1988-1989? If so, what water use
(gpd) was declared at that time, and what was water level and chloride concentration?

Analysis & Issues

What has been the "impact on existing wells over the past 24 years"? Is this indicative of the "intermediate to long-range impacts to wells downgradient" that "may" occur? (The concern has been brought to the Commission's attention recently.)

"Concern over the approval of new water use permits in newly designated water management areas when existing uses have not yet applied" is not precisely the issue of concern. (The concern is that all currently unpermitted uses, both existing and proposed, in all water management areas be evaluated equally and concurrently with regard to their "reasonable and beneficial use," competition with existing and future legal uses, and other relevant criteria)

In this particular case, the concern is that the allocation of available water in Mokuleia be comprehensively evaluated against permit applications on a regular schedule, not on a first-come, first-serve basis, and that reservations to Hawaiian Home Lands and allocations to the County be settled before any other evaluations commence.

WATER USE PERMIT DETAILED INFORMATION

Source Information

Additional lines in this table should show:

AQUIFER:
1. Reservations to Hawaiian Home Lands
2. Allocation to County
3. Scheduled of permit application windows and evaluation periods

WELL:
1. Changes in extraction rates, water levels, and chlorides over periods of operation.

Nearby Surrounding Wells and Other Registered Ground Water Use

Field verification of 14 out of 152 declared uses does not seem to be sufficient for estimating existing ground water use, and reveals nothing about surface water uses that might also be affected. What do required monthly water use reports reveal about existing use? How many of the 152 declared groundwater uses submit monthly water use reports as required? When will field verification be completed? What information base was used to derive Oahu Water Management Plan estimates? The "Current 12-Month Moving Average withdrawal?" How can the reduction in estimated existing use between 1990 (Oahu Water Management Plan) and 1993 ("Current Average Withdrawal") be explained? Rainfall?

Public Notice:
Was direct notice of the application mailed to all declared water users in the hydrologic unit (all categories)? If not, why not?

Objections:

Without serving direct notice to potential objectors (such as all declared water users), and without field verification of declared uses, "the best of staff's knowledge" about objectors is almost no knowledge at all. Furthermore, potential objectors are not afforded required due process and opportunity to file their objections.

Field Investigation

If the water source and existing use was investigated on November 12, 1991, why is "Reported Water Usage" (Use Information) listed as "NA"?

Item 5: Minami Wells

Analysis & Issues

The fact that BWS turned over their wells to the cemetery does not indicate "that the aquifer in this area is actually a non-potable source." It only means that BWS has chosen not to operate it as municipal source because of the possibility that it may become non-potable due to overlying land uses. Water quality data is needed to conclusively indicate that the aquifer is a non-potable source. The actions of BWS unfortunately point out the persistent difficulties in effectively coordinating land and water use planning.

What has been the "Impact to other wells ... over the past four (4) years"?

The past three years have been dry. The recommended 150,000 gpd for 100 acres works out to 1500 gallons per acre per day (gad), which is equal to or greater than the diversified agriculture irrigation requirement in similar areas. The recommended allocation may be excessive and deserves closer scrutiny.

WATER USE PERMIT DETAILED INFORMATION

Source Information

Additional lines in this table should show:

AQUIFER:
1. Reservations to Hawaiian Home Lands
2. Allocation to County
3. Scheduled of permit application windows and evaluation periods

WELL:
1. Changes in extraction rates, water levels, and chlorides over
periods of operation

Nearby Surrounding Wells and Other Registered Ground Water Use

Field verification of 7 out of 43 declared uses does not seem to be sufficient for estimating existing ground water use, and reveals nothing about surface water uses that might also be affected. What do required monthly water use reports reveal about existing use? How many of the 43 declared groundwater uses submit monthly water use reports as required? When will field verification be completed? What information base was used to derive Oahu Water Management Plan estimates? What is the "Current 12-Month Moving Average Withdrawal" from the wells and the aquifer?

Public Notice:

Was direct notice of the application mailed to all declared water users in the hydrologic unit (all categories)? If not, why not?

Objections:

Without serving direct notice to potential objectors (such as all declared water users), and without field verification of declared uses, potential objectors are not afforded required due process and opportunity to file their objections.

Field Investigation

If the water source and existing use was investigated on July 20, 1990 and November 12, 1992, why isn't water usage, water levels, and chlorides from those dates reported in the "Detailed Information"?

NHAC remains concerned that all currently unpermitted uses, both existing and proposed, in all water management areas be evaluated equally and concurrently with regard to their "reasonable and beneficial use," competition with existing and future legal uses, and other relevant criteria. In this particular case, the concern is that the allocation of available water be comprehensively evaluated against permit applications on a regular schedule, not on a first-come, first-serve basis, and that reservations to Hawaiian Home Lands and allocations to the County be settled before any other evaluations commence.

Analysis and Issues

2. We should not assume that sugarcane production overlying the aquifer will only be replaced by urban development. There is great potential and opportunity for replacing sugarcane production with other agricultural practices that provide higher quality return water than that currently provided by sugarcane production.
We should also recognize that more brackish caprock water may be desirable for certain replacement agricultural uses and other alternative lands uses, such as aquaculture, wetland farming, and wetland bioremediation/waste treatment.

3. The future of OSCo. is not the sole criteria for the vitality of importing recharge and leakage to the caprock aquifer. Other vehicles for importing recharge and leakage exist and must be brought into the discussion.

Why is 1995 chosen as the potential date for OSCo. closing?

4. What is the Commission's current position with regard to its regulatory power over activities which "cut into the caprock?" We believe such activity should be considered groundwater extraction requiring well construction and water use permits. This is supported by the Water Code definition of "well."

5. These hydrologic studies estimate yield in the absence of recharge and leakage now provided by OSCo. operations, not in the absence of OSCo. itself.

6. NHAC would like to join the effort to develop and finalize firm alternative water source and recharge solutions. We also feel that, because of changing land use conditions in Ewa and the potential for return of federal lands as reparations to Native Hawaiians, the Ewa Caprock Regional Plan should continue to be revised with greater participation by the Hawaiian Homes Commission, Office of Hawaiian Affairs, and Hawaiian community concerns.

Item 7. Makalii Wells

RECOMMENDATION

NHAC concurs with the staff recommendation.

It is distressing that the submittal fails to report the litigation initiated by Koolau Ag' against the Commission. NHAC has on several occasions asked the deputy to publish this information in the monthly bulletin, along with announcement of any other litigation or contested case requests. It is imperative that the public be made aware of all legal actions impacting its Water Commission, so that these public judicial proceedings can be tracked and evaluated by concerned water users and public interests. While the Commission need not reveal the particulars of the case, it should regularly publicize docket numbers and schedules for upcoming judicial proceedings in local and national arenas.

Mahalo

David L. Martin, Vice-President
MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: March 17, 1993
TIME: 9:00 a.m.
PLACE: DLNR Board Room
Kalanimoku Building
Honolulu, Hawaii

ROLL CALL
Acting Chairperson Cox called the meeting of the Commission on Water Resource Management to order at 9:24 a.m.

The following were in attendance:

MEMBERS: Mr. Richard Cox
Mr. Robert Nakata
Mr. Guy Fujimura
Mr. J. Douglas Ing
Dr. John Lewin

STAFF: Ms. Rae Loui
Mr. Edwin Sakoda
Mr. Dave Higa
Mr. Glenn Bauer
Mr. Roy Hardy
Ms. Julianna Zhang
Ms. Lyann Mizuno
Ms. Sharon Kokubun

OTHERS:
Joyce Brown
Lenore Nakama
Ed Bolke
Gary Lee
Joe Nose
Nelson Lee
Ron Uemura
Samuel Keala
Andrew Miyasato
George Yuen
Angela Fong
Marjorie Ziegler
Donna Goth
James Honke
Warren Iwasa
Sean Hoolihan

Dave Martin
Lawana Mendes
Brendan Harley
Journ Yee
Philip Lowe
Barry Edwards
Stephen Thomas
Edsel Yamada
Charley Ice
John Chang
Lola Mench
Jim Anthony
Alan Suwa
Karen Piltz
Martha Black

All written testimonies submitted at the meeting are filed in the Commission office and are available for review by interested parties. Some items were taken out of sequence to accommodate requests by the applicants or interested parties.
ITEM 1

MINUTES OF THE MARCH 3, 1993 MEETING

Clarification was made by Commissioner Ing with respect to Item 7. The motion was not to approve the staff's recommendation as amended but to adopt the proposed North, Central, Pearl Harbor, and Honolulu ground water management sectors as shown on Exhibit 2 and including the individual systems shown within those sectors. Mr. Ing explained that the last two sentences of the recommendation were not meant to be a part of the motion. Also, the numbers shown on Exhibit 2, with respect to North, Central, Pearl Harbor, and Honolulu sectors were meant to be included.

Unanimously approved as amended (Nakata/Ing).

ITEM 2

MAUI DEPARTMENT OF WATER SUPPLY APPLICATIONS FOR PUMP INSTALLATION PERMITS, WAKIU A. MOKUHAU 2. AND WAIIPUKA 2 WELLS, MAUI

Staff recommendation was unanimously approved (Ing/Nakata).

ITEM 3

KAUAI DEPARTMENT OF WATER APPLICATIONS FOR PUMP INSTALLATION PERMITS, MAKA RIDGE AND HÄENA WELLS, KAUAI

Mr. Sakoda added that for Items 2 and 3, because these are county municipal wells, an air line and accurate elevation will be required when the pumps are set so water levels can be tracked.

Acting Chairperson Cox asked about the chloride history in the area because the pump capacity is being increased. Although there are no problems with the chlorides, Mr. Sakoda emphasized they need to keep track of the water level so that it does not go down below the pump bowls for Haena and Maka Ridge wells.

Mr. Nakata asked if there was any data on the actual capacities and pumpage. Mr. Sakoda replied that although they did have the capacities, he was not sure if they had good data on the pumpage. Mr. Bauer added that the county does not have meters on the wells. The County estimates pumpage based on customer usage. A meter will be required as a condition of this permit.

Mr. Martin presented testimony (see Commission file) that his questions were similar for Items 2 and 3. He felt that if some of those questions were incorporated into the submittals it would be easier to review. Mr. Cox commented that Mr. Martin had some good questions/comments and asked staff to review his testimony and determine whether or not the format should be changed.

Staff recommendation was unanimously approved (Nakata/Ing).

ITEM 4

STANHOPE FARMS APPLICATION FOR A WATER USE PERMIT, STANHOPE FARMS WELL (WELL NO. 3308-02) MOKULEIA GROUND WATER MANAGEMENT AREA, WAIALUA, OAHU

Acting Chairperson Cox asked if this application was for an existing use and whether or not the applicant registered his use. Mr. Hardy replied that it was an existing use that was registered by the applicant.

Mr. Martin said the issue of permitting and the procedural approach being taken in ground water management areas has been of concern to NHAC (see testimony in file). The concerns were: comprehensive evaluation of water use permits, reservations to Hawaiian Home Lands, and allocations to the County.
Dr. Lewin stated that although Mr. Martin's comments are well taken, he assumed staff recommendation was made because the use is relatively small compared to the relatively large amount of water available for use. Mr. Hardy agreed with Dr. Lewin. He stated that this area is an existing water management area as opposed to a new water management area.

Unanimously approved as submitted (Lewin/Nakata).

In regards to Mr. Martin's comments on reasonable beneficial use, Mr. Ing mentioned that under existing uses in Rule 13-171-14, there is a section that states:

"whether the existing use is a reasonable beneficial use and is allowable under common law shall be determined by the Commission after a hearing"

He asked if this was something that needed to be determined by the Commission in connection with this application. If so, he recommended that the language be added to the recommendation. Discussion followed on the amount of water being requested and its uses. It was decided that staff would consult with Mr. Tam on the question of whether or not Rule 13-171-14(b) should be added to the recommendation in regards to reasonable beneficial use

Approved subject to review by the Attorney General’s office regarding review Rule 13-171-14(b) on reasonable and beneficial use and how it applies to this application (Nakata/Ing).

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**ITEM 5**

RESUBMITTAL, MINAMI GROUP (USA), INC. APPLICATION FOR A WATER USE PERMIT, MINAMI 1 & 2 WELLS (WELL NOS. 2347-02 & 03), KOOLAUPOKO GROUND WATER MANAGEMENT AREA, KANEHOE, OAHU

Mr. Nakata excused himself from action on this application since he sits on the Board of the Minami Foundation. Dr. Lewin stated he had to give testimony at the Legislature and since Mr. Fujimura had not arrived yet, suggested a recess be called. It was decided that discussion would be held on this application until a quorum was present for action.

Mr. Hardy reviewed updated information for this application. Mr. Hardy mentioned that representatives from DHHL and BWS were available to answer questions from the Commission.

Charley Ice from DHHL agreed that they did not have specific objections to the project and that they provided comments to the effect that many of the applications that are circulated for review do not include pertinent facts that might help them evaluate the application. In this case, it was not clear if the application was for a present use or a proposed new use. Although reluctant to suggest proper procedure because they are a sister agency, DHHL favored the idea of looking at all of the competing uses within a designated area.

Mr. Ing recalled that from information at the last meeting that the applicant was actually using the water from the well prior to the designation. Therefore, while it is a very recent use, the claim is very likely to be that it was an existing use.

Mr. Ice stated that their staff has been working with Commission staff to recommend mechanisms by which the Commission could reserve water for Hawaiian Home lands.

Mr. Hardy added that staff has been trying to develop an easier process by which other agencies and interested parties could respond more quickly.
Mr. Alwyn Morisako representing BWS stated that they are not looking at this area for any source development, therefore they did not have any objections to the permit request.

Acting Chairperson Cox asked if BWS was not interested because it is a high-level aquifer in the alluvium. Mr. Morisako said that was correct, also it was a small source of perched water which they felt they could not develop.

A recess was called at 10:12 a.m. and reconvened at 10:40 a.m.

Mr. Sean Hoolihan, golf course superintendent, reviewed the project.

Dr. Lewin requested that the DOH golf course conditions be added to the permit. Mr. Sakoda explained that those conditions are added for all wells for proposed new golf courses but since this was an existing golf course it was not added. Mr. Cox stated that it could be added.

Unanimously approved with the added DOH conditions for golf courses (Lewin/Fujimura).

APPYICATIONS FOR WATER USE PERMITS, EWA CAPROCK GROUND WATER MANAGEMENT AREA, EWA, OAHU

A. STAFF UPDATE

Ms. Loui stated that the documentation of the caprock model developed by Tom Nance and Tony McNulty for a group of developers (Haseko, Campbell Estate, Gentry, and HFDC) was given to staff for review. The model was reviewed by staff, USGS, Dan Lum of Water Resource Associates, and Chester Lao of BWS. Mr. Ed Bolke of USGS, a retired USGS ground water modeling expert, is with the Commission staff on an inter-agency loan program with USGS.

Mr. Bolke gave an overview of what he thought of the model and what the Commission needs to do to use a model for decision-making in the caprock area. His written comments are attached. Further discussion followed regarding the model.

Ms. Loui explained that staff's intent was to have Mr. Bolke develop a new model or to assist with the Ewa Marina's proposal to develop models of the caprock. In discussions with the Ewa Marina group it was brought up that there would be difficulty in ascertaining the local effect without developing a model of the region. Mr. Glenn Bauer reviewed staff's opinion of the proposed marina's effects on the aquifer.

Messrs. Nelson Lee introduced Alan Suwa (also from Haseko) and Dr. Brendan Harley of Camp Dresser McKee (CDM) from Boston. Mr. Lee explained that Haseko's efforts to build the marina in that area have encouraged them to extensively examine the caprock. As a result, there is better understanding today than there was several years ago. Dr. Harley has met with the Commission staff to examine what Haseko could do to go forward and the mitigation necessary should the marina impact surrounding land uses and the future of the caprock as a resource. They are aware that there are concerns and initiated efforts first with the Nance model to examine what is going on. External reviews have shown that there are a number of shortcomings and realize that more extensive efforts will be necessary to quantify what is going on. Mr. Lee proposed the new model be done with agency input so when the process is completed they would have something that would address everyone's concerns as well as accomplishing Haseko's objective to obtain a permit.
Dr. Harley commented on developing similar models for large scale water management planning in California, the East Coast, Long Island, and Florida. In regards to the Commission's question on time frame, there are two distinct time frames:

1) local modeling around the marina area and its fine tuning (approximately six months)
2) regional modeling - two-dimensional not adequate and needs to be changed to a three-dimensional model (minimum of two years: one year to do the first draft and another year to fine tune the model and then it needs to be tested)

Mr. Lee added that the model will be used as a management tool. He wanted assurance in regards to what the objective would be, how the model would be used, and who the model would belong to/who would administer it.

In regards to reclaimed water, Ms. Loui stated staff would like to encourage participation in a reclaimed water plan. Meetings have been held with the Ewa developers and the city. She introduced Mr. James Honke from the Waste Water Management Division from the City. The City's agreement to issue an RFP for the second waste water treatment facility in the Ewa area propelled the plan. She understood that facility would treat 13 mgd by 1996 and that a private concern would receive the primary treated effluent and then market the treated water for direct reuse.

Mr. Honke presented the concerns of the city:

1) If a high level of treatment for reuse is provided, there is no mechanism for them to recover the cost from the ultimate users.
2) If a plan to inject sewage effluent into the aquifer is approved, there are nutrients in the sewage that can impact coastal waters if the sewage effluent is not balanced with the amount that is pumped.
3) It is not known what level of treatment is needed since the guidelines that are being developed for reuse are still not finalized.
4) If there is no market for the reuse they would prefer not to treat the effluent for reuse because of the cost factor.

The present daily flow from Honouliuli is 25 mgd. The City is planning to construct a 15 mgd capacity reuse plant and is currently designing a secondary process plant. They have not yet started on the design of subsequent treatment that would be required to get to reuse quality. Mr. Honke stated they are developing an RFP to see if a private entity would be willing to undertake construction of a reuse facility, water reclamation facility, and distribution system. For a private entity to come forward would depend on the available markets. The markets are determined by what other sources of water are available. Mr. Honke stated that all these factors need to be tied together before a well thought out plan can be developed.

Dr. Lewin stated that issues brought up by Mr. Honke were not so much concerns, but choices. In regards to the cost of secondary treatment to taxpayer vs. developers, Dr. Lewin stated that the Commission has the ability to transfer those costs to developers. The Commission can require people who develop golf courses or who have large expansive lands that need to be irrigated to use secondary treated water. Therefore, a market is being created. To bring water from the windward side to Ewa at a tremendous cost is "short-term thinking, not long-term thinking". Secondary treatment is not something that is an option but will be
required more and more. Dr. Lewin stated that this is a very complex issue that requires thinking in a broad rather than narrow sense and that the water needs of the entire island should be looked at to understand how the Commission’s decisions will proceed.

Mr. Honke commented that the Wastewater Branch has actively been discussing reuse to see if markets could be developed. The Commission’s issuing temporary permits was an indication that markets would be available. If permanent permits were to be issued there would be no markets.

B. ACTION

Mr. Hardy presented the staff submittal for Commission action.

Mr. Barry Edwards of Gentry Hawaii requested that action be deferred on the staff’s recommendations because of the far ranging procedure being proposed. He stated he only received the submittal for review the day before the meeting and it was not enough time for review.

Ms. Donna Goth, Director of Development for the Estate of James Campbell, commented that they filed for use of non-potable water supply in 1991. Subsequent to the application they proceeded with their development and was concerned because the development will need the water allocation. Ms. Goth described their development and water needs. Ms. Goth stated that Campbell Estate needs 300,000 gpd not 171,000 gpd. This is for the planned vegetation which is more lush than the xeriscape or desert type of vegetation.

Mr. Martin expressed concerns that more comprehensive public discussions were needed before any action is taken on the staff’s recommendations. He felt the Ewa Caprock Regional Plan should continue to be revised with greater participation by the DHHL, Office of Hawaiian Affairs, and the Hawaiian community because of the changing land use conditions in Ewa and the potential for return of federal lands as reparations to the Native Hawaiians.

Mr. Nakata said as water availability becomes a more pressing issue, it becomes "incumbent on the DHHL and OHA to become more active in this process". If they do not, he felt it was a dereliction of their duty.

Ms. Lola Mench representing the Sierra Club and Kahaluu Neighborhood Board, questioned the issue of temporary permits because of numerous questions that still need to be answered. She felt it may be a threat to Windward Oahu waters.

Mr. Ing asked to be excused from acting on this application because his law firm represents one of the parties.

Dr. Lewin recommended that action be deferred until the April 28th meeting. Unanimously approved (Lewin/Nakata).

Mr. Fujimura suggested that those persons suggesting other approaches come up with more concrete ideas.

ITEM 7

KOOLAU AGRICULTURAL CO., LTD. APPLICATION FOR A WATER USE PERMIT, MAKALI I, II, & III WELLS (WELL NOS. 3452-02, 3453-12 & 13), KAHANA GROUND WATER MANAGEMENT AREA, WINDWARD OAHU

Acting Chairperson Cox stated that there would be no quorum and asked if the interested parties would like to present testimony for information only or wait until the April 18th meeting. Testifiers agreed to wait until the next meeting.
Dr. Anthony requested this application be placed second on the agenda after the confirmation of the minutes.

Mr. Gary Lee representing Koolau Agricultural Co. stated that they were ready to proceed but would reserve their comments.

Action deferred until the April 28th meeting due to a lack of quorum.

ADJOURNMENT

The meeting was adjourned at 1:04 p.m.

Respectfully submitted,

SHARON S. KOKUBUN, Secretary

Attachment

APPROVED AS SUBMITTED:

RAE M. LOUI, Deputy Director
DECLARANT (FILE REF.): GENTRY PACIFIC

DATE: January 7, 1993

PRESENT: Reggie Vadez (Gentry), M. Ohye

LOCATION:

SOURCE(S): Well 2001-08 Palm Villa II (Brackish Caprock Source)

USE(S): UNUSED - Future Landscape Irrigation

FIELD NOTES:

LOCATION - SOURCE: TMK 9-1-61:27  Well 2001-08 Palm Villa II is located at the end of Mikohu st. in the Palm Villa II development which is .4 of a mile west from the intersection of Ft. Weaver Road and Kolowaka st.. Mikohu st. is on the makai side of Kolowaka st. and well situated at the front left corner outside of the community swimming pool. GPS Latitude 21 20 30.4  Longitude 158 01 57.2


SOURCE: Well 2001-08 is a shallow caprock well constructed in March 1991. The total depth is 60 ft. and well is cased with a 12 inch diameter PVC pipe. At time of inspection well was not fitted with any pump and is not being used.

NOTE: Irrigation system will be turned over to the Palm Villa II Community Association.


* - Temporary use approved 11-29-91, in service for irrigation.
FIELD INSPECTION INFORMATION CHECKLIST  
(Ver 4/3/91)  
PART I: USE OF WATER  
Declarant's File Reference: GENTRY PACIFIC  
1. Tax Map Key where the water is used: ______________. Does the declarant own this land? _____ If not, who does? ___________________  
2. What is the water used for? _____ LANDSCAPE IRRIGATION  
If for irrigation, how many acres are being irrigated by crop type? ___________________  
If for livestock, how many and what kind? ________________  
If for drinking, at how many houses? _______ by how many people? ___________________  
3. Is the quantity of water use being measured? _____ If yes, document the location of the measurement point and method of measurement; also get use records if these were not submitted previously.  
4. If this person takes from a multi-user pipe or ditch system:  
How is the water taken from the system? ___________________  
What is the capacity for taking (gpm)? ___________________  
How often is it taken (used)? ___________________  
PART II: WATER SOURCE  
Source #: 2001-08 Name: PALM VILLA  
1. Where does the water come from / what kind of source is this? DRILLED WEL  
Types of sources include:  
1) Wells (drilled, dug, tunnel)  
2) Diversions (ditch, pipe, pump, or livestock from a stream, spring, swamp, pond)  
3) Multi-source systems. (Declared use cannot be traced to a single well or diversion)  
NOTE: If a multi-user system: take from pipe or ditch (need to determine whether this is a multi-source or single-source system before the data can be input to the computer)  
4) Instream (i.e., crops planted along water edge)  
2. Show the source location on maps, determine latitude and longitude, and document the nature of source development by measurements, sketches, and photographs. How is the water taken? ___________________  
What is the capacity for taking (gpm)? __________ Pump ______________  
How often is it taken (used)? ___________________  
3. Tax Map Key at the source: 9 - 1 - 61: 27. Determine declarant's relation to source. Does the declarant:  
1) Operate and maintain the source? _____ If not, who does? ___________________  
2) Own the land at the source? _____ If not, who does? ___________________  
3) Use the water from this source? _____ If not, who does? ___________________  
4) Own the land where the water is being used? _____  
5) None of the above? _____ If so, why did they file? ___________________  
4. Does any one else also use water from this source? ____ If yes, is their use included in this user's declaration? ____ Who are the other users? Did they file? ___________________  

VERIFIED BY: __________ DATE: 1-1-93
February 16, 1993

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

Dear Ms. Loui:

Subject: Updated Information on Water Use Permit Applications

Pursuant to your request of February 4, 1993, we submit the attached additional information to support our applications for Well Nos. 2001-03, 2001-07, 2001-08 and 2002-12.

We understand that you will be taking these applications before the Commission tomorrow for action. We would appreciate your recommendation for approval.

Please feel free to call me if I can be of further service.

Very truly yours,

GENTRY HAWAII, LTD.

Ronald M. Uemura, PE
Vice President - Engineering
# EWA BY GENTRY - STATUS OF NON-POTABLE WELLS

**DATE:** FEBRUARY 12, 1993

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**Notes:**

- TEMPORARY LONG TERM PUMPING USE - EXPIRES 5/29/92; MUST APPLY FOR PERMANENT USE.
- **APPROVAL GOOD FOR ONLY 2 YEARS.**
- **X** - CANNOT ACCOUNT FOR DATE.
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Applications for the following water use permits have been received and are hereby made public in accordance with Department of Land and Natural Resources Administrative Rules 13-171, "Designation and Regulation of Water Management Areas."

1. **EWA-GENTRY CAPROCK WELL (Well No. 2001-03)**

   **APPLICANT:** Gentry Pacific, Ltd.
   P.O. Box 295
   Honolulu, Hawaii 96809
   **Date Application Received:** April 29, 1991
   **Source of Water Supply:** Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
   **Location of Well:** Ewa Beach, Oahu, at Tax Map Key: 9-1-12:34.
   **Quantity Requested:** 50,000 gallons per day.
   **Proposed Water Use:** Irrigation
   **Place of Water Use:** 10-acre park near Geiger and Fort Weaver Roads

2. **PALM COURT IRRIGATION WELL (Well No. 2002-12)**

   **APPLICANT:** Gentry Pacific, Ltd.
   P.O. Box 295
   Honolulu, Hawaii 96809
   **Date Application Received:** June 10, 1991
   **Source of Water Supply:** Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
   **Location of Well:** Ewa Beach, Oahu, at Tax Map Key: 9-1-12:1.
   **Quantity Requested:** 80,000 gallons per day.
   **Proposed Water Use:** Landscape irrigation
   **Place of Water Use:** Palm Court Project

3. **PALM VILLA 2 IRRIGATION WELL (Well No. 2001-08)**

   **APPLICANT:** Gentry Pacific, Ltd.
   P.O. Box 295
   Honolulu, Hawaii 96809
   **Date Application Received:** June 10, 1991
   **Source of Water Supply:** Honouliuli-Puuloa Sector, Caprock Aquifer, Pearl Harbor Water Management Area.
   **Location of Well:** Ewa Beach, Oahu, at Tax Map Key: 9-1-12:33.
   **Quantity Requested:** 80,000 gallons per day.
   **Proposed Water Use:** Landscape irrigation
   **Place of Water Use:** Palm Villa 2 Project
GENTRY DEVELOPMENT COMPANY
P. O. BOX 295
HONOLULU, HI 96809

June 04, 1991

PAY

TO THE ORDER OF

Department of Land and Natural Resources
Palm Court (2002-12)
Palm Villa 2 (2001-08)
Golf Villa 1 (2001-07)

DOLLARS $75.00

GENTRY DEVELOPMENT COMPANY

[Signature]

[Signature]
APPLICATION FOR WATER USE PERMIT

GROUNDWATER or SURFACE WATER 5-22-91 054-34

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water Resource Management, Department of Land and Natural Resources, State of Hawaii. Applications 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 548-1543, Hydrology/Geology Section for assistance.

1. WATER MANAGEMENT AREA

2. (a) WELL/DIVERSION OWNER:
   Firm Name: Gentry Pacific, Ltd.
   Contact Person: Ronald Uemura
   Address: P. O. Box 295, Honolulu, HI 96809

   (b) LANDOWNER:
   Firm Name: Gentry Pacific, Ltd.
   Contact Person: Ronald Uemura
   Address: P. O. Box 295, Honolulu, HI 96809

3. SOURCE TYPE:
   ☐ Spring ☐ Stream ☐ Dike-confined ☐ Basal
   ☐ Perched ☐ Caprock

4. SOURCE NAME AND NUMBER
   Well No. 2001-08

5. SOURCE LOCATION:
   Island: Oahu
   Tax Map Key: 9-1-12:33

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

6. LOCATION OF PROPOSED WATER USE (if different from #5)
   Same as #5

7. QUANTITY OF WATER REQUESTED 80,000 gallons per day

8. QUALITY OF WATER REQUESTED (check appropriate box)
   ☐ Fresh ☐ Brackish ☐ Salt ☐ Potable ☐ Non-Potable

9. PROPOSED USE
   ☐ Municipal (including hotels, stores, etc) ☐ Military
   ☐ Domestic (individual, noncommercial water sys.) ☐ Industrial
   ☐ Irrigation (specify) ☐ Landscaping for Multi-Family ☐ Other (specify)

   @ Palm Villa 2 Project

10. DESCRIBE ANY POTENTIAL RESTRICTIONS ON USE (i.e., instream standards, seasonal variations)
    No Restriction

11. PROPOSED TIME OF WATER WITHDRAWAL OR DIVERSION
    9:00 pm to 4:00 am (Indicate hours of operation)

12. PROPOSED METHOD OF TAKING THE WATER
    ☐ Artesian Flow ☐ Diverted Flow ☐ Centrifugal Pump
    ☐ Submersible Pump ☐ Vertical Turbine Pump

13. NO. OF RESIDENTIAL OR COMMERCIAL UNITS TO BE SERVED (specify) N/A

14. TOTAL ACRES PROPOSED FOR IRRIGATION N/A Type of Crop

15. REMARKS, EXPLANATIONS (See Back Side)

   (If more space is needed, continue on back side)

Owner (print) Gentry Development Co.
Signature
Date

Landowner (print) Gentry Development Co.
Signature
Date

For Official Use Only:
Date Received
Hydrologic Unit
Date Accepted
Diversion Works No.
State Well No.
15. REMARKS, EXPLANATIONS:

The Honolulu Board of Water Supply has required installation of a dual water system for the Ewa by Gentry project. This well, drilled earlier this year by Roscoe Moss Company, will be outfitted with a 10 horsepower, 130 GPM submersible pump. It will be operated by electric timer to irrigate the landscaping of Palm Villa 2, a multi-family project within Ewa by Gentry. A number of other brackish, caprock wells will provide irrigation water to other areas of Ewa by Gentry.
CORRECTED LOCATIONS OF THE EWAL BY CENTER WELLS
WATER USE PERMIT NO. 787

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

Permit Information

| Water User: | Palm Villa II Association 91-1119 Mikohu St. #28D Ewa Beach, HI 96706 |
| Landowner of Source: | Palm Villa II Association 91-1119 Mikohu St. #28D Ewa Beach, HI 96706 |
| Permitted Withdrawal Rate: | 0.048 mgd (Based upon a 12-month moving average) |
| Water Management Area: | Puuloa |
| Island: | Oahu |
| Aquifer Sector/System: | Ewa Caprock/Puuloa |
| System Sustainable Yield: | 1000 mg/l |
| Water Type: | Brackish |
| Original CWRM Date: | July 12th, 2006 |
| Standard Conditions: | 1-19 |
| Special Conditions: | 1-2, 38, 40-44 |

Water Source

| State Well Number(s): | 2001-08 |
| Well Name: | Palm Villa #2 |
| Water Source TMK Number(s): | 1st Division, 9-1-061:027 |
| State Land Use Classification(s): | Urban |
| County Zoning Classification(s): | A-1 |
| Geographical Coordinates: | Latitude 21° 20' 19" North  Longitude 158° 01' 48.1" West |

End Use

| End Use TMK Number(s): | 1st Division, 9-1-061:013 thru 016, 025 thru 027, 034 |
| State Land Use Classification(s): | Urban |
| County Zoning Classification(s): | A-1 |
Beneficial Use Explanation: Irrigation for 16 acres of Palm Villas 2

Background Information

There are no consistent monthly water use records on file for State Well No. 2001-08. Although water use was reported sporadically in the past, there have been no reports made to the Commission since the beginning of 2005. Reference the permit file for additional information on reporting history.

Water Use Permit 787 was approved during the June 23rd, 1997 Commission on Water Resource Management meeting. Standard conditions 1-19 and special conditions 1-2, 38, & 40-44 are the governing conditions for this water use permit. A complete list of all standard and special conditions is given in the final summary report to the Legislature for this 20-year Water Use Permit Review.

Field Investigation Information

Contact: Linda Pacolba ( Resident Manager)
Site Address: 91-1119 Mikohu St. #28D
Ewa Beach, HI 96706

Brown and Caldwell conducted a field investigation on May 8th, 2008 from 12:00 p.m. until 1:30 p.m. with Mr. Ross Nashiro – Office Manager, Resident Manager. The permittee contact given on the survey form, Ms. Linda Pacolba, was scheduled to show the well, but was not available. During this time, type of water usage was verified, GPS coordinates of well head(s) were recorded, flow meter installation and functionality were documented, and property TMK information was verified. The wellhead, its related appurtenances, and water usage area were visually inspected to assess compliance with permit conditions. Visual inspection of water loss/waste was limited to outdoor areas within the usage boundary. Reference the TMK and GIS maps in the permit file for a visual representation of the site.

Summary of Findings for Water Use Permit No. 787

State Well No. 2001-08 is located on TMK parcel 9-1-061:027 at 21° 20’ 19’ N, 158° 01’ 48.1” W, with a real time accuracy of ±18 feet. Currently, water is being drawn from the well, metered, and sent into two pressure tanks located at the well site. From the tanks, water is sent to common areas across TMK parcels 9-1-061: 013 to 016, 025 to 027, and 034 for irrigation purposes. A control system located in a nearby maintenance building initiates the system on a
regular schedule. Reference the Appendix for photographs of the previously describe system components.

The following are a list of standard condition(s) that the permittee is found to be in non-compliance with:

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

After inspection, it was found that although State Well No. 2001-08 has a system flowmeter installed, there are no monthly water use reports being sent to the Commission. The permittee has advised that they would like to begin submitting reports to establish permit compliance and have expressed interest in working with the Commission to do so.

Based upon visual inspection of the system, all components appear to be in full working order. Mr. Nashiro did not demonstrate functionality of an installed flowmeter and pump due to his inexperience with the control panel. He advised that the system is automated and that it turns on at night. The permittee provided access to the site grounds where no wasting of water or water loss was observed. Visual inspection also confirmed that water use was within the permitted TMK boundaries.

Recommendations

- Address the following discrepancies between the Commission’s electronic database and actual field investigation findings:
  - Change permittee contact to Linda Pacozra at (808) 561-6757 (palmvilla001@hawaii.rr.com)
- Address violation of Standard Condition (10) regarding non-reporting of water use.
20-Year Water Use Permit Review
Water Use Permit No. 787

APPENDIX

Field Investigation Photographs
Figure 3 – Flowmeter

Figure 4 – Typical end use area
Figure 5 – Pump & Flowmeter Control Panel
Standard Conditions List

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20. Standard Condition 16 is waived for saltwater wells.

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

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

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

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

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

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

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

28. The applicant shall follow the agreed monitoring plan.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

66. WUP No. <Insert #> is revoked

67. Standard Condition 17 is waived.

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

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

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

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

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

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

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

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

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

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

78. Standard Condition 9 is waived.

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

80. Standard Condition 10 is waived.

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

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

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

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

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

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

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

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

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

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

92. Standard Condition 7 shall not apply.

93. Standard Condition 22 shall not apply.

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

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

96. HECO 1 mgd for industrial use

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

98. BWS 1 mgd for municipal use.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

119. Standard Conditions 10 & 18 shall not apply.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

143. Proposed other uses will be considered at a later date.
Water Use Permit Survey
(please complete one survey form for each WUP)

WUP Number: 187
Well Number(s): 2001-09

Contact Information (of the person who will be present at site visit):
Name: Lina Pascual (President Manager)
Phone (for phone interview): (808) 833-6787 Fax: (808) 833-0421
Email: palmville@hawaii.rr.com
Best time to reach for phone interview: 10am-12pm

Property Information (of the water use/well location):
Address: 91-1119 Kikino St. #28 D
City: Ewa Beach Zip: 96706
Well Location TMK (list all if multiple wells present): 91-1-12-24, 91-1-12-33, 91-1-12-13, 91-1-12-26, 91-1-12-34

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

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

Is a flow meter installed and working properly? [ ] Yes [ ] No
If no, please explain:

Do you submit monthly water use reports to the State? [ ] Yes [ ] No
If no, please explain:

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

Option #1 Date (M-D): 10/30/08 Time: 9:00 am [ ] 12:00 pm [ ] 3:00 pm [ ]

Once this survey is returned, a Brown and Caldwell representative will be contacting you to conduct a phone interview and finalize the exact date and time of your field investigation. Please fax/mail completed surveys by March 5th, 2008 and direct any questions related to this survey to Mr. Milo Smith of Brown and Caldwell at:

1099 Ala Moana Blvd., Suite #2400 Honolulu, HI 96813
Tel: (808) 203-2661 Fax: (808) 533-0226
mcsmit@browncauld.com

For Official Use Only
Received: 3/5/08 Information Updated: 3/21/08 Phone Interview Complete: 5/6/08
Notes/Comments:
Phone Interview

WUP Number: __767__  Well Number(s): _2001-08_

Contact Name: __Linda Pacokea__  Phone Number: _561 - 6757_

Attempt #1:  Date/Time: _3/21/08 (3:05)_  Result: _Left Message_

Well Location TMK(s): _9-1-061:25_

Water Use TMK(s): _9-1-061:13 to 016, 025-27, 034_

Water Source Address: _91119 Mikohu St., R 28D_

City: __Ewa Beach__  Zip Code: _96706_

Currently using water source?  Yes ☑  No ☐

Notes/Comments: _irrigation / sprinklers_

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

Notes/Comments: _Automated system_

How long have you been using this water source?: _1991_

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

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

If no, explain: ___________________________

Scheduled field investigation day/time: _May 8th 12:00_

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

Comments To Make:

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

Interviewed By: __M.S. PT__  Date: _5/1/08_  Time: _10:00 AM_
# Field Investigation Checklist

**WUP Number:** 767  
**Well Number(s):** 2001-08

## Water Source

**Well Location TMK(s):** 9-1-061: 027

**Well Head GPS Coordinates:**
- **Latitude:** 21° 20' 19" N
- **Longitude:** 158° 01' 48.1" W

**Well Type:**

**Currently using water source?**
- Yes [x]
- No [ ]

**Is there a flow meter installed?**
- Yes [x]
- No [ ]

**Is the flow meter operational?**
- Yes [x]
- No [ ]

**Notes/Comments:**

- Office Manager was not capable of turning on system

## Water Use

**Water Use TMK(s):** 9-1-061: 13 + 016 / 25-27, 034

**What is the water being used for?**

**Is the water being used within the permitted boundaries?**
- Yes [x]
- No [x]

**Is there any observed wasting of water or water loss?**
- Yes [ ]
- No [x]

**Are the permit conditions being complied with?**
- Yes [ ]
- No [x]

**Notes/Comments:**

## Other

**Photographs of:**
- Water Source [x]
- Water Meter [x]
- Usage Area [x]
- Pump/Motor [x]

**General Notes/Comments:**

---

**Investigated By:** [Signature]  
**Date:** 3/8/08  
**Time:** 12:00
Well ID: 3-2001-008  
Well Name: Palm Villa 2  
WUP MGD: 0.048  
Beginning: 6/1/2003  
Ending: 7/31/2007

12 Month Moving Average

- MGD
- MAV12
- WUP

Wednesday, September 12, 2007
August 3, 2006

Ref: ewa caprock wup conversion. act

Dear Water Use Permittee:

Hawaii Prince Golf Club/Hawaii Prince Hotel Waikiki Corp., Well Nos. 1900-02, 1900-17 to 20, 1901-03, WUP No. 469, 0.301 mgd, TMK 9-1-10:6
Haseko (Ewa), Inc., Well Nos. 1901-06, 1902-01, 1902-09 to 11, WUP No. 650, 3.300 mgd, TMK 9-1-12:5
Department of Parks and Recreation, Well No. 2001-03, WUP No. 167, 0.030 mgd, TMK 9-1-61:35
Palm Court Association, Well No. 2002-12, WUP No. 169, 0.040 mgd, TMK 9-1-61:22
Palm Villa II Association, Well No. 2001-08, WUP No. 168, 0.048 mgd, TMK 9-1-61:27
Arbors Association, Well No. 2001-07, WUP No. 171, 0.063 mgd, TMK 9-1-61:32
U.S. Fish & Wildlife, Well No. 2101-14, WUP No. 247, 0.216 mgd, TMK 9-1-17:12
Gentry Development Co., Well No. 2001-04, WUP No. 302, 0.040 mgd, TMK 9-1-61:7
Gentry Development Co., Well No. 2001-09, WUP No. 344, 0.023 mgd, TMK 9-1-61:2
Ewa by Gentry Community Association, Well No. 2001-05, WUP No. 450, 0.066 mgd, TMK 9-1-70:132
Gentry Homes, Ltd., Well No. 2001-12, WUP No. 504, 0.249 mgd, TMK 9-1-102:31
Gentry Homes, Ltd., Well No. 1901-05, WUP No. 505, 0.056 mgd, TMK 9-1-69:8
U.S. DOC/NOAA/NWS, Well No. 1900-23, WUP No. 501, 0.023 mgd, TMK 9-1-1:1
Coral Creek Golf, Inc., Well No. 2002-17, WUP No. 577, 0.498 mgd, TMK 9-1-69:10
Coral Creek Golf, Inc., Well No. 2001-13, WUP No. 578, 0.800 mgd, TMK 9-1-69:10
Coral Creek Golf, Inc., Well Nos. 2001-14, 2002-15,17,19, WUP No. 579, 0.892 mgd, TMK 9-1-69:10&11, 9-1-61:54
AOAO Suncrest/The Shores/Lombard Way/Avalon, Well No. 2001-10, WUP No. 629, 0.022 mgd, TMK 9-1-10:17
State Housing Community Development Corporation of Hawaii, Well Nos. 2003-04,07, WUP No. 432, 0.494 mgd, TMK 9-1-16:25
State Housing Community Development Corporation of Hawaii, Well Nos. 2003-08, WUP No. 520, 0.237 mgd, TMK 9-1-16:108
Kapolei People's Inc., Well Nos. 2003-01,02,05, WUP No. 438, 1.000 mgd, TMK 9-1-16:25
Honolulu Board of Water Supply, Well Nos. 1905-08,10, WUP No. 740, 0.302 mgd, TMK 9-1-16:1

Conversion of Interim Water Use Permits for New Irrigation Uses to Permanent Water Use Permits Puuloa and Kapolei Ground Water Management Areas, Oahu

This letter serves as your official notice of action by the Commission on Water Resource Management (Commission) on the subject water use permits.
By a unanimous vote at their meeting on July 12, 2006, the Commission corrected the error of approving and issuing interim permits for new irrigation uses in the Puuloa and Kapolei Ground Water Management Areas of the Ewa Caprock Aquifer Sector Area by converting the subject interim water use permits to permanent water use permits. All terms and conditions of the permits shall remain unchanged, except for Special Condition d., which is deleted.

The Commission ruled that permittees shall be notified by letter of the Commission's action to convert these water use permits from interim to permanent and the deletion of Special Condition d. The Commission further ruled that re-issuance of these water use permits is not necessary.

Please be advised that a compliance review will be initiated shortly as required under §174C-56 Hawaii Revised Statutes. We recommend that you carefully review the conditions of your permit and ensure that you are in compliance with all Standard and Special Conditions.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

DEAN A. NAKANO
Acting Deputy Director

LYN:ss
STANDARD WATER USE PERMIT CONDITIONS

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

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its July 18, 2001 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. protect the water sources (quantity or quality);
   b. meet other legal obligations including other correlative rights;

EXHIBIT 3
c. insure adequate conservation measures;
d. require efficiency of water uses;
e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

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

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

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

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

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

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

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

EXHIBIT 3
16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the [Puuloa or Kapolei] Ground-Water Management Area.

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

18. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

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

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

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

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

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

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

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

g. Require adherence to the chloride sampling protocol shown in Attachment B and the submittal of weekly chloride data. The authority to approve variances from the weekly reporting requirement is delegated to the Chairperson.

h. Require adherence to the Conservation Conditions shown in Attachment C.

i. In the event a water shortage is declared by the Commission, permittees in the Puuloa Aquifer System shall comply with the Puuloa Water Shortage Plan adopted by the Commission.
Mr. Larry Tucker  
Palm Villas II Association  
91-1119 Mikohu St., #D  
Ewa Beach, HI 96706  

Dear Mr. Tucker:

Approval of Water Use Permit for Well No. 2001-08  
Puuloa Ground Water Management Area, Oahu

This letter transmits your water use permit for Palm Villa II Well (Well No. 2001-08) for use of 0.048 million gallons per day (mgd) of water on a 12-month moving average basis that was approved by the Commission on Water Resource Management (Commission) on May 14, 1997. As part of the Commission's approval, the following special conditions were added and are part of your permit under Standard Permit Condition 20:

Special Conditions

a. The duration of the interim permit shall be to October, 1998 or until such time that a significant change in permitted, actual, or projected use of water supply or water quality occurs.

b. Require adherence to the chloride sampling protocol (attached) and the submittal of weekly chloride data, as may be amended by the Commission staff.

c. Require adherence to the Conservation Conditions (attached).

Enclosed with this letter of approval are the following:

1. Your water use permit
2. Your official monthly water use report form

Please be sure to read the conditions of your approved permit. If you accept these terms, please sign and return one copy of this permit to the Commission and retain a copy for your record.

You are required to keep a record of your monthly total pumpage, water level, and water temperature. This information must be submitted to the Commission on a regular monthly basis using the enclosed water use report form. You should make copies of the enclosed report form as needed.

You are also required to submit a water shortage plan to the Commission within thirty (30) days of the issuance date of this permit. Your water shortage plan simply identifies what you are willing to do should the Commission declare a water shortage situation in the Puuloa Ground Water Management Area and can be as short as a one page letter. In a water shortage situation, the Commission may require temporary reductions in pumpage from all sources. The Commission is required, by law, to formulate a plan to implement such area-wide reductions, which should accommodate, include, and be consistent with your plans. Therefore, your help, by submitting your water shortage plan, is greatly needed in formulating the Commission's overall Water Shortage Plan.

If you have any questions, please call the Commission staff at 587-0218.

Aloha,

MICHAEL D. WILSON  
Chairperson

Attachments
## GROUND WATER USE PERMIT

**WUP NO. 168**

### PERMITTEE

<table>
<thead>
<tr>
<th>Applicant/Water User</th>
<th>Landowner of Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>PALM VILLAS II ASSOCIATION</td>
<td>PALM VILLAS II ASSOCIATION</td>
</tr>
<tr>
<td>Address 91-1119 MIKOHU ST., #D EWA BEACH, HI 96706</td>
<td>Address 91-1119 MIKOHU ST., #D EWA BEACH, HI 96706</td>
</tr>
</tbody>
</table>

### PERMITTED SOURCE INFORMATION

| Island | OAHU |
| Water Management Area | PUULOA |
| Aquifer Sector | EWA CAPROCK |
| Aquifer System | PUULOA |
| System Sustainable Yield | NA |
| Well Name | PALM VILLAS II |
| State Well No. | 2001-08 |

### PERMITTED USE INFORMATION

| Reasonable beneficial use | LANDSCAPE & ROADWAY IRRIGATION |
| Withdrawal (12 month moving ave.) | 0.048 mgd |
| Chloride Cap | 1,000 mg/l |
| Location of water use |
| TMK # | 9-1-61:13-16,25-27,34 |
| Address | EWA BY GENTRY PROJECT |
| State land use classification | URBAN |
| County zoning classification | A-1 |

Pursuant to Hawaii’s State Constitution, Article XI, Section 7, Hawaii Revised Statutes, Chapter 174C; Hawaii Administrative Rules, Chapters 13-167 through 13-171; and Hawaii decisional law and custom, the applicant is hereby authorized to use ground water from the sources and in the amount and from and upon the locations described above; subject however, to the requirements of law including but not limited to the following conditions:
1. The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)

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

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

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

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

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

7. The water use permit application and submittal, as amended, approved by the Commission at its May 14, 1997 meeting are incorporated into this permit by reference.

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

9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
   a. Protect the water resources (quantity or quality); 
   b. Meet other legal obligations including other correlative rights; 
   c. Insure adequate conservation measures; 
   d. Require efficiency of water uses; 
   e. Reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected; 
   f. Meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or 
   g. Carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

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

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

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

12. This permit shall be subject to the Commission's periodic review of the PUULOA Aquifer System's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the PUULOA Aquifer System, or relevant modified aquifer(s), is reduced.
13. A permit may be transferred, in whole or in part, from the permittee to another, if:
   a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
   b. The Commission is informed of the transfer within ninety days.

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

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

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

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

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

18. The water use permit granted shall be an interim water use permit, pursuant to HAR § 13-167-3(6). The final determination of the water use quantity shall be made within five years of the filing of the application.

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

20. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

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

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

Applicant's Signature: __________________________ Date: ________________

Printed Name: __________________________ Firm or Title: __________________________

Please sign both copies of this permit, return one to the Commission, and retain the other for your records.

Attachment
Pump Replacement for Well No. 2001-08 (survey to regulation memo)

1. **Pump Tests Check**

   **D. England** *(initial)*  
   - Current Well Transmissivity in database? **Yes**  
   - Current Well Specific Capacity in database? **No**  
   - Step-Drawdown Test: **NO Test Data Available**  
     - followed WCPI Stds
     - analysis attached
     - proposed pump cap o.k.
   - Aquifer Pump Test:
     - followed WCPI Stds
     - T & S analysis attached
     - AquiferTest used
     - Cooper-Jacob.xls used
     - PumpingCooper-JacobRECOVERY.xls used
     - <50 gpm no test required
   - Well Interference:
     - estimated Steady-State drawdown at 1-mile radius is ft.
     - analysis attached
     - Theis.xls used
   - Stream Surface Water Impacted: 
     - If yes, identify most probable stream

2. **Pump Installation Check**  
   - **Mitch Ohye** *(initial)*
   - data complete
   - followed Special Cond & Elev.
   - well database updated

3. **Charley/Lenore/Ryan** *(initial)* take action based on above analysis

   **ATTACHMENTS FOR ACCEPTANCE:**
   - 1WCR2 ACCEPTANCE LETTER
   - 2PUMP INST. COMPLETION CERTIFICATE
   - 3METER INSTALL. REPORT (IF NECESSARY)
   - 4WUR FORM (if necessary)

4. **Roy** *(initial)* check(Entered PICC accept date into database)

5. **Susan Hoagbin** *(initial)* finalize

   **Charley/Lenore/Ryan File**
July 19, 2007

Mr. Howard Akagi
Water Resources International, Inc.
1100 Alakea Street, Suite 2900
Honolulu, HI 96813

Dear Mr. Akagi:

Well Completion Report Part II for Well No. 2001-08

We received your Well Completion Report Part II for the Palm Villas II (Well No. 2001-08) on May 14, 2007 and acknowledge that it is complete.

This completes your obligations under the pump installation permit. A certificate of pump installation completion will be issued to the well operator/landowner and you will receive a copy. The certificate transfers responsibility of all aspects of well usage and maintenance from you to the well operator/landowner.

This completes your obligations with the Commission under the pump installation permit and transfers remaining outstanding issues to the well owner/landowner. For your information, a certificate of pump installation completion will be issued to the well operator/landowner once the meter is installed. No pumping for purposes other than well testing in accordance with the Hawaii Well Construction and Pump Installation Standards is allowed until the certificate of pump installation is issued to the well operator/landowner.

If you have any questions, please contact Lenore Nakama of the Commission staff at 587-0218.

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

LN:ss

c: Linda Pacolba, Palm Villas II
Ms. Linda Pacolba  
Palm Villas II  
91-1119 Mikou St.  
Ewa Beach, HI 96706  

Dear Ms. Pacolba:

Certificate of Pump Installation Completion for Well No. 2001-08

We are pleased to inform you that the Pump Installation work permitted for the Palm Villas II Well (Well No. 2001-08) is complete and acceptable. This certificate of pump installation completion allows you to commence pumping your well for reasonable & beneficial water use.

To protect Hawaii’s natural ground water resources for the benefit of all, the following requirements apply to the use of your well:

1. If the well is not in use it must be properly capped.

2. If the well is to be abandoned then the landowner must cause a licensed contractor to apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

3. In the event that the well operator and/or landowner changes, the Commission shall be notified of the change prior to the change, and all forms shall be transferred to the new owner.

4. In the event the benchmark in the concrete base of the well is altered in any way, an updated elevation survey (page 5 of the Well Completion Report Part I) shall be submitted to the Commission. The Well Completion Report Part I can be obtained by contacting staff or at www.hawaii.gov/dlnr/cwrm/forms.htm.

5. Your approved pump has a capacity of 120 gpm at a head of 168 ft. In the future, pump replacements of equal or lesser capacity will not require an additional permit from the Commission, but will require the submission of a Well Completion Report Part II by the licensed pump installer. If the pump replacement is greater than the existing pump, you will need to apply for a new pump installation permit.
6. The landowner shall cause the well operator to maintain the installed meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a **monthly basis**, on forms provided by the Chairperson (attached), in accordance with §13-168-7, HAR.

7. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. The authorization to drill a well and/or install a pump shall not constitute a determination of correlative water rights. The landowner and well operator are notified that the quantity of water taken from the well and/or the pump capacity could be reduced by the Commission in the future.

8. In the event that your installed pump is less than 70 gallons per minute, and no elevation survey has been completed, you may be required to do one in the future.

Because groundwater in Hawaii is a public trust, and adverse effects at one well may affect other water resources, any violation of the above conditions, or any other provision of the Hawaii Administrative Rules, may be subject to fines of up to $5,000/day. The Commission needs your help and asks that you to do your part in utilizing this shared resource. We prefer to work with you in meeting the goal of protecting our ground water resources together.

If you have any questions, please contact Lenore Nakama of the Commission staff at 587-0218 or toll-free at 974-4000 (Hawaii), 274-3141 (Kauai), 984-2400 (Maui), or 1-800-468-4644 (Lanai & Molokai).

Sincerely,

KEN C. KAWAHARA, P.E.
Deputy Director

LN:ss
Encl: Water Use Report Forms

c: Mr. Howard Akagi, Water Resources International, Inc.
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

WELL COMPLETION REPORT - PART II

Instructions: Please print in ink or type and send completed report (with attachments, if applicable) to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may not accept incomplete reports. This form shall be submitted within 60 days of the completion of work. For assistance, please consult the Hawaii Well Construction and Pump Installation Standards or contact the Regulation Branch at 887-0225. For updates to this form or additional information, please visit our website at http://www.hawaii.gov/dlnr/cwrm/

1. State Well No.: 2001-08  
   Well Name: Palm Villas II  
   Island: Oahu

2. Address: 91-1119 Mikohu Street  
   Tax Map Key: 9-1-61:27


5. PERMANENT PUMP INFORMATION

<table>
<thead>
<tr>
<th>Pump Type, Make, Serial No.</th>
<th>Gould pump 5RW4HC 4STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Capacity, gpm at head of, ft.</td>
<td>120, 168</td>
</tr>
<tr>
<td>Motor Type, H.P., Voltage, rpm</td>
<td>Franklin 7 1/2 HR 240 Volts 3500 RPM</td>
</tr>
</tbody>
</table>

Pump Type (check one):
- [ ] Deep Well Turbine
- [X] Submersible
- [ ] Rotary
- [ ] Rotary-Displacement
- [ ] Rotary-Gear
- [ ] Centrifugal
- [ ] Reciprocating
- [ ] Impulse

6. Method of flow measurement:
- [ ] Flowmeter w/ totalizer
- [ ] Other, explain and attach schematic

7. Fill in the as-built section on the other side of this sheet.

8. Attach the rating curve for the installed pump.

9. Attach photograph of well clearly showing the benchmark on the concrete pad, the well head, and the method of flow measurement.

10. Well Owner Company: Palm Villas II  
    Contact: Linda Pacolba  
    Address: 91-1119 Mikohu Street, Ewa Beach, HI 96706  
    Phone: (808) 683-0421  
    Fax: (808) 683-0421

11. Land Owner Company: Palm Villas II  
    Contact: Linda Pacolba  
    Address: 91-1119 Mikohu Street, Ewa Beach, HI 96706  
    Phone: (808) 683-0421  
    Fax: (808) 683-0421

12. Remarks

---

C-57/C-57a/A Lic. No. AC 5058  
Signature: [Signature]  
Date: May 14, 2007
7. AS-BUILT PUMP SECTION (Please attach as-built if different from diagram provided below)

Bench mark elevation surveyed to nearest 0.01 ft. = 31.46 ft. mean sea level

Elevation of top of chase tube = 31.49 ft. mean sea level

Pump intake depth = 52.8 ft. (referenced to bench mark)

Chase tube depth = 16.96 ft. (referenced to bench mark)

If airline installed, bottom of airline elevation = 48.3 ft. mean sea level

M-2001-08 PALM VILLA II
**Hydraulic Data**
- Flow (gpm): 120
- Pump Head (ft): 122.2
- TDH (ft): 165.0
- Speed (rpm): 3500
- Fluid: Water
- Temperature (F): 60
- Viscosity: 1.105
- Spec.Grav: 1

**Pump Data**
- Size: 5RWAHC
- Stages: 4

**Miscellaneous**
- Thrust At Design (lb): 214
- Thrust At Shutoff (lb): 306
- Min Water Level (in): 480

**Weight**
- Pump (lb): 542
- Motor (lb): 110
- Total (lb): 652

**Motor Data**
- Model: S31971
- Make: Franklin
- HP: 7.5
- RPM: 3600
- Type: SUB
- Efficiency: 76.0
- Nominal Dia: 6"
### Overall Pump Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size and Model:</td>
<td>5RWAHC</td>
</tr>
<tr>
<td>Capacity, GPM:</td>
<td>120</td>
</tr>
<tr>
<td>Total Pump Length, In.:</td>
<td>626.4</td>
</tr>
<tr>
<td>Pump Type:</td>
<td>Submersible</td>
</tr>
<tr>
<td>Pump K-Factor:</td>
<td>1.3</td>
</tr>
</tbody>
</table>

### Bowl Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Bowl Length, In.:</td>
<td>26.56</td>
</tr>
<tr>
<td>Bowl Shaft Dia, In.:</td>
<td>1.00</td>
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</tbody>
</table>

### Column Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Diameter, In:</td>
<td>3</td>
</tr>
<tr>
<td>Wall Thickness, In:</td>
<td>0.216</td>
</tr>
</tbody>
</table>

### HorsePower Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowl HP At Design, Hp.:</td>
<td>6.81</td>
</tr>
</tbody>
</table>

### Head Data

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Column Load, Lb.:</td>
<td>153.6</td>
</tr>
<tr>
<td>Column Elongation, In.:</td>
<td>0.00</td>
</tr>
<tr>
<td>Head Loss, Ft.:</td>
<td>0.34</td>
</tr>
<tr>
<td>Total Loss, Ft.:</td>
<td>2.85</td>
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</tbody>
</table>

### Other Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Thrust, Lb.:</td>
<td>214.5</td>
</tr>
<tr>
<td>Thrust at Shutoff, Lb.:</td>
<td>306</td>
</tr>
<tr>
<td>Shutoff Lateral, In.:</td>
<td>0.13</td>
</tr>
<tr>
<td>Suction Pressure, psi:</td>
<td>0.0</td>
</tr>
<tr>
<td>Thrust Load Loss, Hp.:</td>
<td>0.00</td>
</tr>
<tr>
<td>Motor HorsePower, Hp.:</td>
<td>7.5</td>
</tr>
<tr>
<td>Design NPSH, Ft.:</td>
<td>10.8</td>
</tr>
<tr>
<td>Actual Head above Grade, Ft.:</td>
<td>122.15</td>
</tr>
<tr>
<td>Shutoff Disc Pressure, psi:</td>
<td>85.2</td>
</tr>
</tbody>
</table>

### Efficiency Data (Efficiencies estimated not guaranteed)

<table>
<thead>
<tr>
<th>Parameter</th>
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</thead>
<tbody>
<tr>
<td>Bowl Efficiency:</td>
<td>73.50</td>
</tr>
<tr>
<td>Motor Efficiency:</td>
<td>76.00</td>
</tr>
<tr>
<td>Pump Efficiency:</td>
<td>72.23</td>
</tr>
<tr>
<td>Overall Efficiency:</td>
<td>54.90</td>
</tr>
<tr>
<td>KWH/1000 gallons:</td>
<td>0.94</td>
</tr>
</tbody>
</table>

### Component Weights

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowl Weight, Lbs.:</td>
<td>88</td>
</tr>
<tr>
<td>Head Weight, Lbs.:</td>
<td>90</td>
</tr>
<tr>
<td>Motor Weight, Lbs.:</td>
<td>110</td>
</tr>
</tbody>
</table>

### HYDRAULIC ANALYSIS

- **VIS-WF**
- **4 Stage 3x5RWAHC**

### Additional Notes

- **KWH/I000 gallons:** 54.90
- **Total Pump Weight, Lbs.:** 652
- **Version:** 3.56P
- **Customer:** Water Resources International
- **Date:** 05-02-2007
## PERFORMANCE TEST RESULTS

**CUSTOMER:** GLOBAL PUMPS  
**P.O. NUMBER:** E28229  
**PROJECT:** 15085  
**S.O. NUMBER:** 526204  
**DATE:** 03/14/07

### CONDITIONS

| PUMP NUM: | 1 | SP. GR: | 1.00 | BOWL TDH: | 160.0  
| ---------- | ---- | ------- | ------- | ----------  
| PUMP TYPE: | VAS | VISC. SSU: | 32 | PUMP TDH: | 0.0  
| PUMP MODEL: | 5RWAHC | WATER TEMP:F | 76 | REQ GPM: | 120  
| STAGES: | 4 | WITNESSED: | N | MAX GPM: | 150  
| IMP. MATL.: | 1203 | MOTOR SER. #: | 03-2840 | EFFICIENCY:% | 73.5  
| 1ST IMP. DIA: | 3.69 | 1ST IMP. QTY: | 4 | TEST RPM: | 3450  
| 2ND IMP. DIA: | 0.00 | 2ND IMP. QTY: | 0 | TEST MOTOR: | 7.5 HP  
| CUST RPM: | 3500 |  
| CUST HP: | 8 | TESTED BY: | JESSE GARZA | CURVE RPM: | 3500 |

### READINGS DURING TEST

<table>
<thead>
<tr>
<th>POINTS</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>
| PSI | 103.8 | 99.1 | 94.4 | 86.3 | 67.2 | 48.3 | 39.3  
| DISCH. FT. | 238.76 | 228.92 | 218.06 | 198.35 | 185.23 | 111.67 | 90.78  
| ELEV. FT. | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00  
| VEL. FT. | 0.00 | 0.00 | 0.01 | 0.04 | 0.08 | 0.14 | 0.19 | 0.22  
| PIPE FRIC. | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.03 | 0.03 | 0.04  
| TORQUE | 5.99 | 6.45 | 8.48 | 10.25 | 11.32 | 11.48 | 11.47  
| INPUT KW | 4.00 | 4.30 | 5.40 | 6.40 | 7.00 | 7.10 | 7.10  
| VIBRATION | 0.00 | 0.00 |  

### TEST DATA RECORDED AT TEST RPM

| RPM | 3526 | 3520 | 3494 | 3467 | 3452 | 3449 | 3449  
| GPm | 0 | 25 | 60 | 89 | 118 | 138 | 148  
| TDH-FEET | 244.8 | 233.9 | 223.1 | 204.4 | 160.4 | 116.8 | 96.0  
| PUMP HP | 4.0 | 4.3 | 6.5 | 6.8 | 7.4 | 7.5 | 7.5  
| PUMP EFF | 0.0 | 34.3 | 60.0 | 68.0 | 64.4 | 54.0 | 47.8  

### TEST DATA CONVERTED TO CUSTOMER RPM

| RPM | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 3500  
| GPm | 0 | 25 | 60 | 90 | 120 | 140 | 150  
| TDH-FEET | 241.2 | 231.3 | 223.9 | 208.3 | 164.9 | 120.3 | 98.9  
| PUMP HP | 3.9 | 4.3 | 5.7 | 7.0 | 7.8 | 7.9 | 7.9  
| PUMP EFF | 0.0 | 34.3 | 68.0 | 68.0 | 64.4 | 54.0 | 47.8  

**Certified Test Results**  
**By: Dr. [Signature]  
Title: ENGINEER  
Date: March 14, 2007**

EN.003 Rev.3 1/2007
Customer: GLOBAL PUMPS
SO: 526204
Model: 5RWAHC
Pump No: 1
Stages: 4
1st Imp Dia: 3.69 in
2nd Imp Dia: N/A
Speed: 3500 RPM

Certified Test Results
By: Don Hols
Title: ENGINEER
Date: March 14, 2007
LETTER OF TRANSMITTAL

Date: May 8, 2007

TO: Commission on Water Resource Management

ATTN: Mitch Oye

LADIES AND GENTLEMEN:

WE ARE SENDING YOU □ Attached □ Under separate cover via ______________ the following items:

☐ Shop Drawings  ☐ Prints  ☐ Plans  ☐ Samples  ☐ Specifications

☐ Copy of letter  ☐ Change order  ☐ Other ______________________

<table>
<thead>
<tr>
<th>COPIES</th>
<th>DATE</th>
<th>NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/14/07</td>
<td>1 pg.</td>
<td>Well Completion Report – Part II Pump Installation for Palm Villas II</td>
</tr>
<tr>
<td>1</td>
<td>5/21/07</td>
<td>2 pgs.</td>
<td>Photo</td>
</tr>
<tr>
<td>1</td>
<td>3/14/07</td>
<td>2 pgs.</td>
<td>Dimensional Outline and Hydraulic Analysis</td>
</tr>
<tr>
<td>1</td>
<td>3/14/07</td>
<td>2 pgs.</td>
<td>ITT Corporation – Goulds Pumps – Turbine Operation Performance Test Results</td>
</tr>
</tbody>
</table>

THESE ARE TRANSMITTED as checked below:

☐ For approval  ☐ Approved as submitted  ☐ Resubmit _____ copies for approval

☒ For your use  ☐ Approved as noted  ☐ Submit _____ copies for distribution

☐ As requested  ☐ Returned for corrections  ☐ Return _____ corrected prints

☐ For review and comment ☐ ______________________

REMARKS

COPY TO WRI Job File  SIGNED
WRI Accounting Dept.  Howard T. Akagi

If enclosures are not as noted, kindly notify us.
## WELL COMPLETION REPORT - PART II

### Pump Installation

**Instructions:** Please print in ink or type and send completed report (with attachments, if applicable) to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may not accept incomplete reports. This form shall be submitted within 60 days of the completion of work.

For assistance, please consult the Hawaii Well Construction and Pump Installation Standards or call the Regulation Branch at 587-0225. For updates to this form or additional information, please visit our website at [http://www.state.hi.us/dlnr/cwrm/](http://www.state.hi.us/dlnr/cwrm/).

### 1. State Well No.: 2001-08
- **Well Name:** Palm Villa II
- **Island:** Oahu

### 2. Address: 91-1119 Mikohu Street
- **Tax Map Key:** 9-1-61:27


### 4. Date Pump Installed: 09/29/04

### 5. PERMANENT PUMP INFORMATION

- **Pump Type, Make, Serial No.:** Floway, 6JKH, 9 stage, S/N: 56083-1-1
- **Rated Capacity:** 120 gpm at head of: 140 ft
- **Motor Type, H.P., Voltage, rpm:** 1760 RPM
- **Type of flow meter:** existing which measures in existing

- **Pump type (check one):**
  - [x] Deep Well Turbine
  - [ ] Rotary
  - [ ] Propeller
  - [ ] Submersible
  - [ ] Rotary-Displacement
  - [ ] Reciprocating
  - [ ] Centrifugal
  - [ ] Rotary-Gear
  - [ ] Impulse

### 6. Method of flow measurement:

- [ ] Flowmeter
- [ ] Manufacturer
- [ ] Existing
- [ ] Make
- [ ] Size

- [ ] Weir
- [ ] Open Pipe
- [ ] Orifice*
- [ ] Other*, explain below

*attach schematic

### 7. Fill in the as-built section on the other side of this sheet.

### 8. Other remarks/comments:

- **Pump Remarks:**

---

**Water Resources**

**Pump Installation Contractor (print):** Water Resources International, Inc.  C-57/C-57a/A Lic. No. AC 5058

**Signature:** Howard T. Akagi, Vice President  
**Date:** 09/29/2004

**Permittee (print):** Palm Villas II

**Signature:**  
**Date:** 10-4-04
9. **AS-BUILT PUMP SECTION** *(Please attach as-built if different from diagram provided below)*

- Bench mark elevation surveyed to nearest 0.01 ft. = 30.50 ft. mean sea level
- Top of slab = 30.60'
- Elev. of top of chase tube = 31.60 ft. mean sea level
- Pump intake depth = 52.7" ft. (referenced to bench mark)
- Chase tube depth = 48 ft. (referenced to bench mark)
- If air line installed, bottom of air line elevation = 48 ft. mean sea level
SPECIAL FEATURES:
1. 40505 LINE SHAFT
2. 40505 COUPLING
3. GALVANIZED STRAINER

COATING:
- Column pipe OD, barrel assembly exterior will be wire brushed and solvent cleaned per SSPC-SP-6.
- Color=Red Oxide.
- The hand exterior will be wire brushed and solvent cleaned per SSPC-SP-6.
- "Carboline Corboramic 3359" will be applied in ONE coat to 1 mil @ $2.50/SD.
- Color=Marble Blue.

TESTING:
- Hydrostatic testing: None.
- Performance testing: None.

DISCH. FLANGE
- 1250: F.F. ANS. FLG.
- 3.00 DIA. BOLT CIRCLE
- 1.00 DIA. BOLT HOLE

PUMPAGE
- FLUID: WATER
- TEMPERATURE: 1250
- PRESSURE: 1250

MATERIALS
- COL. PIPE: A53-CR
- SHAFT: A582-4UI
- DISCH. HEAD: A404-J10
- BOWL: A53-415S
- SHAFT: 316SS
- IMPELLER: 316SS
- MOTOR: 172 HP

NOTES:
1. ALL DIMENSIONS IN INCHES
2. DRAWING SCALE = 1:12
3. DO NOT SCALE DRAWING DIMENSIONS
4. NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED

OUTLINE DRAWING
- DRAWN BY: ABD
- DATE: 7/28/04
- DRAWING NUMBER: 5608301COD
Mr. Randolph K. Ouye  
Gentry Homes, Ltd.  
560 N. Nimitz Hwy.  
Honolulu, HI 96817

Dear Mr. Ouye:

Thank you for submitting the various items and documents required under the well construction and pump installation permit conditions for Well Nos. 2001-04, 05, 07, 08, 09 & 2002-12.

However, we note the pumping tests for Well Nos. 2001-04 & 2001-05 were not conducted according to our Aquifer (Pump) Test Procedure because the use of an airline was too coarse to measure drawdowns to 0.01 feet accuracy. Please provide a written explanation for this within thirty (30) days from the date of this letter.

With regard to Well No. 2001-03, we understand that this well was completed under the well construction permit that was issued by the Commission on March 23, 1989 (attached). As such, please provide the following items that were to be submitted to the Commission within thirty (30) days after completion of the well:

1. Well completion report (Part I - Well Construction)
2. Ground elevation (referenced to mean sea level) survey by a Hawaii-licensed surveyor.
3. Complete pumping test record (including time, pumping rate, drawdown, chloride content, and water quality data).

Please submit the above items for Well No. 2001-03 within thirty (30) days from the date of this letter. Be advised that failure to comply with the terms of your permit(s) may result in daily fines of up to $1000 per violation.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

RAE M. LOUI  
Deputy Director

LN: ss  
Attachment(s)
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources

WELL COMPLETION REPORT

3-1-96
95-19

Instructions: Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96806. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 867-0226.

1. STATE WELL NO. 2001-08
   WELL NAME Palm Villa II
   ISLAND Oahu

2. LOCATION: Address See Well Location
   Tax Map Key 9-1-61:27

3. DRILLING OR PUMP INSTALLATION CONTRACTOR Roscoe Moss Hawaii, Inc.

4. CONTRACTOR’S C-57 LICENSE NUMBER: C-16437

5. NAME OF DRILLER WHO PERFORMED WORK

6. TYPE OF RIG/CONSTRUCTION

7. DATE OF WELL DRILLING COMPLETION 3-1-96

8. GROUND ELEVATION (msl) 60.5 ft.
   Top of Drilling Platform (msl) 60.5 ft.
   Height of Drilling Platform above Ground surface 35.94 ft. (Top of Vault)

9. DRILLER’S LOG:

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Water Level</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Water Level</th>
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10. TOTAL DEPTH OF WELL BELOW GROUND 60.5 ft.

11. HOLE SIZE:

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<tr>
<th>Diameter (in.)</th>
<th>from</th>
<th>to</th>
<th>Diameter (in.)</th>
<th>from</th>
<th>to</th>
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12. CASING INSTALLED:

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13. ANNULUS:

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</table>

14. INITIAL WATER LEVEL ft. below ground. Date and time of measurement ____________

15. INITIAL CHLORIDE ppm Date and time of sampling ____________

16. INITIAL TEMPERATURE °F Date and time of sampling ____________

17. DATE OF PUMP INSTALLATION May 1993

18. PUMP INSTALLATION: Submersible Crown
   Pump Type, Make, Serial No. #5HC-125, 5 Stage
   Capacity 120 gpm
   Motor type, H.P., Voltage, rpm Submersible Electric, 7.5 HP, 230 Volts, 3450 RPM
   Depth of Pump Intake Setting 55.34 ft. below ground, which elevation is -19.4 ft.
   Depth of bottom of airline 52.44 ft. below ground, which elevation is -16.5 ft.
   Pumping Head is 140 ft.

19. PUMPING TESTS:

<table>
<thead>
<tr>
<th>Date</th>
<th>Start water level ft. below R.P.</th>
<th>Start water level ft. below R.P.</th>
<th>End water level ft. below R.P.</th>
<th>End water level ft. below R.P.</th>
</tr>
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<tbody>
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Remarks:

Contractor (print) Roscoe Moss Hawaii, Inc.
Title PROJECT MGP
Signature

For Driller’s Use: Job Name
For Official Use: Well No. 2001-08
Job No.
Latitude 21 20 30
Longitude 158 01 57
9. (cont’d) DRILLER’S LOG (cont’d):

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks, Dates</th>
<th>Water Level (ft.)</th>
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19. (cont’d) PUMPING TESTS (cont’d):

<table>
<thead>
<tr>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Draw-down (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp. ‘F</th>
</tr>
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Remarks (cont’d):

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________
August 8, 1996

State of Hawaii
Dept of Land and Natural Resources
Commission on Water Resource Mgmt
P.O. Box 621
Honolulu, HI 96809

Attn: Rae M. Loui, Deputy Director

Ref: State Well 2003-01, Kapolei Well A and State Well 2001-08, Palm Villa II

Per your letter dated August 6, 1996, we have made the necessary corrections as requested on the completion report for State Well 2003-01 and completed the well completion report submitted for State Well 2001-08.

Included for your information is a copy of the installers report dated 3/24/93. There were three or more reports prepared for this customer, apparently there was a mix-up in the transposing of the data.

If you have any questions, please call me at 682-5554.

Sincerely,

Bill Moore
Vice President

Encl
Mr. Bill Moore  
Roscoe Moss Hawaii, Inc.  
91-259A Olai St.  
Kapolei, HI 96707  

Dear Mr. Moore:  

Well Completion Reports for Permanent Pump Installation  

We received a well completion report for the permanent pump installation for Well No. 2003-01, showing the depth of pump intake setting is 92 ft. 4 in. and the bottom of the hole is only 85 ft. Please clarify this discrepancy by correcting the error on the well completion report (original enclosed) and return the report to our office.

Additionally, the well completion report for the permanent pump installation for Well No. 2001-08 does not show the date of the pump installation. Please complete the report (original enclosed) by filling in the date of the pump installation and return the report to our office.

By our certified letter of June 21, 1996, you have been notified that well and pump contractors are responsible for filing well completion reports pursuant to §13-168-13 within thirty (30) days after completion of the work. As such, we request that you return the corrected/completed forms to our office within fifteen (15) days from the date of this letter.

If you have any questions, please contact Roy Hardy at 587-0274.

Sincerely,

[Signature]

RAE M. LOUI  
Deputy Director

LN:ss  
Enclosures
Mr. Bruce Gomez  
Association of Apartment Owners - Palm Villa II  
91-1119 Mikohu Street, Apt. D  
Ewa, Hawaii 96706  

Dear Mr. Gomez:

After-the-Fact Pump Installation Permit  
Palm Villa II (Well No. 2001-08)

Enclosed are two (2) copies of your approved Pump Installation Permit for the captioned well(s). As part of the Commission’s approval, the following special conditions were added and are part of your permit under Standard Permit Condition 10:

**Special Conditions**

A. This irrigation system shall be isolated from any potable water system. Any hosebibbs connected to this irrigation system shall have signs indicating "non potable water, do not drink". Should this irrigation system be connected to a potable water system, an approved backflow preventor shall be installed.

B. Standard Condition 5 is waived.

Please sign the permit copies and return one for our files. Also, copies of the well completion report and your water use report forms are enclosed for your use.

If you have any questions, please call Rae M. Loui, Deputy Director, at 587-0214.

Aloha,

M. Wilson  
Chairperson

Enclosures
AFTER-THE-FACT PUMP INSTALLATION PERMIT

Palm Villa II Well, Well No. 2001-08

In accordance with Department of Land and Natural Resources, Commission on Water Resource Management's Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", this document permits the pump installation for Palm Villa II Well (Well No. 2001-08) at Ewa, Oahu, TMK 9-1-61:27, subject to the following conditions:

STANDARD PERMIT CONDITIONS

1. The Commission on Water Resource Management, P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences.
2. The pump installation permit shall be for installation of a 120 gpm capacity, or less, pump in the well.
3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Commission (attached).
4. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to pump water from a well shall not constitute a determination of cumulative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.
5. The applicant shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Commission within thirty (30) days after completion of work.
6. The applicant shall comply with all applicable laws, rules, and ordinances.
7. The pump installation permit application and staff submittal approved by the Commission at its July 17, 1996 meeting are incorporated into the permit by reference.
8. The permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The work proposed in the well construction permit application shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.
9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the applicant must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.
10. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: July 17, 1996
Expiration Date: July 17, 1998

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

Applicant's Signature: ___________________________ Date: ______________

Printed Name: ___________________________ Firm or Title: ___________________________

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

Attachment cc: USGS
Department of Health/ Safe Drinking Water & Wastewater Branches
Honolulu Board of Water Supply
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 821
HONOLULU, HAWAII 96809

STAFF SUBMITTAL
for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT
July 17, 1996
Honolulu, Oahu

Association of Apartment Owners - Palm Villa II
AFTER-THE-FACT APPLICATION FOR A PUMP INSTALLATION PERMIT
Palm Villa II Well (Well No. 2001-08)
Pump Installation: 120 gpm Capacity Pump
TMK 9-1-61:27 Ewa, Oahu

APPLICANT:
Association of Apartment Owners -
Palm Villa II
91-1119 Mikohu Street, #D
Ewa, Hawaii 96706

LANDOWNER:
Same

DESCRIPTION:
Location: (See Exhibit 1)
Dimensions: (See Exhibit 2)

BACKGROUND:

On July 19, 1990, an application for well construction permit was received from Gentry-Pacific, Ltd. (Gentry).

On August 16, 1990, the Commission staff sent a copy of the application to various state and county agencies with a request for review comments on a well construction and pump installation permit application.

On November 8, 1990, a well construction permit for this source was issued to Gentry. Condition 2 of the well construction permit specified:

"This permit shall be for construction and testing only. No permanent pump may be installed and no water used from the well without the necessary pump installation and water use permits from the Commission."

On June 5, 1991, Gentry submitted an application for a water use permit.
On August 19, 1992, the Commission approved a policy allowing combined well construction and pump installation permit applications on a case-by-case basis, provided that certain conditions were met (Exhibit 3). Also approved in that same policy statement was the requirement for approval of a water use permit prior to approval of well construction applications and pump installation applications in designated water management areas.

On March 17, 1993, the Commission deferred action on the water use permit application until the April 28, 1993 meeting.

On April 28, 1993, the Commission approved the issuance of an interim water use permit for a specified duration of one (1) year.

On February 13, 1995, the Commission received notification from Gentry of the transfer of the ownership of the well and its pump to the Association of Apartment Owners of Palm Villa II (Palm Villa II). Following the expiration of the one-year interim permit, Palm Villa II requested and received approval for a new interim permit to continue the use. The duration of this permit has been extended until a decision is made on a sustainable yield for the Ewa Caprock Aquifer. At present, there is a pending request by Palm Villa II for a new interim permit.

At the March 13, 1996 meeting, the Commission deferred action on the water use permit request and directed the staff to resolve violations prior to Commission action on requests for continued uses. This after-the-fact application for pump installation is being made pursuant to the Commission's directive.

WATER AVAILABILITY:

Puuloa Area of the Ewa Caprock Sector
Estimated Sustainable Yield: 5 mgd
Current Area Withdrawal (12-MAV as of March 1996): 2.111 mgd

ISSUES/ANALYSIS:

Agency Review: The application was published in the Commission's Water Resource Bulletin in June, 1996. Review letters were sent to the Department of Health's Safe Drinking Water and Wastewater Branches. No objections or concerns were raised regarding this particular application; however, the Safe Drinking Water Branch commented on a similar application. DOH concerns regarding possible cross connection problems are addressed by Special Condition A.

Staff Review: The application is for an after-the-fact permit for the installation of a 120 gpm capacity pump. The source is allocated 0.048 mgd of brackish caprock ground water for irrigation supply for common area landscaping at a multi-family project within the Ewa by Gentry development. No increase in the allocation is being requested.

The record indicates that the installation of a pump without a permit may have been inadvertent. During the 1990-92 timeframe, the Commission was grappling with the sequencing of well-related permits in water management areas. The issue was the potential
Staff Submittal

July 17, 1996

for a reliance argument by a developer who was granted approval to construct a well and subsequently denied a water use permit. It wasn't until August 1992 that a policy was formalized (Exhibit 3). However, the procedure was evolving, as evidenced by the staff's request for review comments on a combined well construction/pump installation permit application in August 1990. This led the applicant to believe that there was a pending pump installation permit application that was being deferred pending approval of a water use permit. Because of the confusion that occurred as a policy was being formulated, staff feels that the violation was not willful. Gentry has complied with the conditions for the well construction and pump installation permit.

RECOMMENDATION:

Staff recommends that the Commission approve an after-the-fact pump installation permit for a 120 gpm capacity pump in Palm Villa II Well (Well No. 2001-08), subject to the standard conditions in Attachment A, and the following special condition:

A. This irrigation system shall be isolated from any potable water system. Any hosebibbs connected to this irrigation system shall have signs indicating "non potable water, do not drink". Should this irrigation system be connected to a potable water system, an approved backflow preventor shall be installed.

B. Standard Condition 5 is waived.

Respectfully submitted,

W. Rayfield

for RAE M. LOUI
Deputy Director

Attachment(s): A (Standard Conditions)

Exhibit(s): 1 (Location Map)
2 (Well Dimensions)
3 (CWRM August 1992 Policy)

APPROVED FOR SUBMITTAL:

MICHAEL D. WILSON, Chairperson
STANDARD PUMP INSTALLATION PERMIT CONDITIONS

1. The Commission on Water Resource Management shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences.

2. The pump installation permit shall be for installation of a 120 gpm capacity, or less, pump in the well.

3. The permittee shall provide and maintain an approved meter or other appropriate means for measuring and reporting withdrawals and water levels, and appropriate devices or means for measuring chlorides and temperature. These data shall be measured monthly and reported to the Commission on a monthly basis, on forms provided by the Commission (attached).

4. The proposed use shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to pump water from a well shall not constitute a determination of correlative water rights. The permittee is notified and by this provision understands that the quantity of water taken from the well could be reduced by the Commission in the future. This permit is not a commitment that the pump capacity permitted here or even some lesser amount is guaranteed in the future.

5. The applicant shall complete and submit as-built drawings and Part II - (Permanent) Pump Installation Report of the Well Completion Report (attached) to the Commission within thirty (30) days after completion of work.

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

7. The pump installation permit application and staff submittal approved by the Commission at its July 17, 1996 meeting are incorporated into the permit by reference.

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

9. If the well is not to be used it must be properly capped. If the well is to be abandoned then the applicant must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

ATTACHMENT A
## Monthly Ground Water Use Report for

**Association of Apartment Owners - Palm Villa II**  
91-1119 Mikohu St., #D  
Ewa, HI 96706

**Month of ________, 19__**

**Date Measurement(s) Taken**  
__/__/ (Month / Day / Year)

---

### INSTRUCTIONS:

Please TYPE OR PRINT CLEARLY. Complete this form to report total monthly ground water use, and, if required, other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 821, Honolulu HI 96809. For assistance, please call 597-0265 (Oahu only) or 1-800-468-4644 (neighbor islands).

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Well Name</th>
<th>Quantity Pumped (gallons)</th>
<th>Method of Measurement</th>
<th>Chloride (mg/l)</th>
<th>Temp. (°F)</th>
<th>Water Level (ft. above sea)</th>
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</table>

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**Other comments or additional information:**

---

Submitted by (print) ______________________  Title ______________________

Signature ______________________  Date ______________________
ASSOCIATION OF APARTMENT OWNERS - PALM VILLA II
91-1119 MIKOHU ST., #D
EWA, HI 96706

Month of __________, 19__

INSTRUCTIONS: Please TYPE OR PRINT CLEARLY. Complete this form to report total monthly ground water use and other information from each of your well sources. Mail to: Commission on Water Resource Management, P.O. Box 621, Honolulu HI 96809. For assistance, please call 587-0285 (Oahu only) or 1-800-488-4844 (neighbor islands).

<table>
<thead>
<tr>
<th>State Well No.</th>
<th>Well Name</th>
<th>Quantity Delivered (gallons)</th>
<th>Type of Use*</th>
<th>Field No(s)</th>
<th>Acres Irrigated</th>
<th>Crop Type</th>
<th>Method of Measurement**</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-08</td>
<td>PALM VILLA II</td>
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</tbody>
</table>

* Use of water code:

AQ: Aquaculture  A: Agriculture non-irrigation use (livestock, cane wash, etc.)
C: Commercial   I: Industrial-manufacturing, construction, etc.
D: Domestic     H: Hydroelectric power generation - indicate KWH of power generated
ID: Irrigation - Drip F: Fuel power generation - cooling
IF: Irrigation - Furrow
IS: Irrigation - Sprinkle

** For estimated values use code:
P: Power consumption
T: Total time of operation
D: Comparison with past data
X: Other means - (indicate method)

Other comments or additional information:

Submitted by (print) ____________________________  Title ____________________________
Signature ____________________________  Date ____________________________
## WELL COMPLETION REPORT

### PART I. WELL CONSTRUCTION REPORT

1. **State Well No.**: 2001-08  
   **Well Name**: PALM VILLA II  
   **Island**: OAHU
2. **Location/Address**: EWA BY GENTRY, OAHU  
   **Tax Map Key**: 9-1-61;27

### Depths (ft.)

<table>
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<tr>
<th>Rock Description, Water Level, Dates, etc.</th>
<th>Rock Description, Water Level, Dates, etc.</th>
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<td>10 to 15</td>
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<td>15 to 20</td>
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<td>20 to 25</td>
<td>20 to 25</td>
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</tbody>
</table>

(If more space is needed, continue on back.)

3. **Drilling Company**:  

4. **Name of driller who performed work**:  

5. **Type of rig/construction**:  

6. **Date(s) Well Construction and pump tests (if any) completed**:  

7. **GROUND ELEVATION** (referenced to mean sea level, msl):  
   **Well Bench Mark (description/location)**:  
   **Elevation (msl)**:  

8. **DRILLER'S LOG**: Please attach geologic log (if available or if required by permit)

9. **Total depth of well below ground**: ft.

10. **Hole size**: inch dia. from ft. to ft. below ground  
    inch dia. from ft. to ft. below ground  
    inch dia. from ft. to ft. below ground

11. **Casing installed**:  
    **Casing Material/Slot Size**:  
    **Annulus**: Grouted from ft. below ground to ft. below ground  
    **Gravel packed from ft. below ground to ft. below ground

12. **Initial water level**: ft. below ground.  
    **Date and time of measurement**:  
    **Initial chloride**: ppm  
    **Date and time of sampling**:  
    **Initial temperature**: °F  
    **Date and time of measurement**:  

13. **PUMPING TESTS**: Reference Point (R.P.) used: which elevation is ft.  
    **Step-Drawdown Test Date**  
    **Start water level** ft. below R.P.  
    **End water level** ft. below R.P.

14. **Long-term Aquifer Test Date**  
    **Start water level** ft. below R.P.  
    **End water level** ft. below R.P.

15. **Aquifer Pump Test Procedures data & graphs (1/9/96 LTAT Form)** attached?  
    **Yes**  
    **No

16. **As-built drawings attached**:  
    **Yes**  
    **No

17. **Other remarks/comments**: (On back of this form)

---

**Well Drilling Contractor (print)**  
**C-57 Lic. No.**  
**Signature**  
**Date**  

**Surveyor (print)**  
**Lic. No.**  
**Signature**  
**Date**  

**Applicant (print)**  
**Signature**  
**Date**
PART II. (PERMANENT) PUMP INSTALLATION REPORT

20. Pump Installation Company: ____________________________

21. Name of person performing work: ____________________________

22. Date Pump Installation Completed: ____________________________

23. PUMP INSTALLATION:
   Pump Type, Make, Serial No.: ____________________________
   Capacity: __________ gpm
   Motor type, H.P., Voltage, rpm: ____________________________
   Depth of Pump Intake Setting __________ ft. below __________, which elevation is __________ ft.
   Depth to bottom of airline __________ ft. below __________, which elevation is __________ ft.
   Pumping Head is __________ ft. Type of flow meter: __________ which measures in __________

24. As-built drawings attached? ___ Yes ___ No

25. Other remarks/comments: (See below)

Pump Installation Contractor (print) ____________________________ C-57 Lic. No. ____________________________

Signature ____________________________ Date ____________________________

Applicant (print) ____________________________

Signature ____________________________ Date ____________________________

8.(cont'd) DRILLER'S LOG (cont'd):

<table>
<thead>
<tr>
<th>Water Level Dates</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks,</th>
<th>Water Level Dates</th>
<th>Depth (ft.)</th>
<th>Rock Description, Remarks,</th>
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</tbody>
</table>

19. & 25. Remarks:

__________________________
__________________________
__________________________
__________________________
__________________________
__________________________
9. PROPOSED WELL SECTION

Elevation at top of casing: 31.54 ft., msl

Cement Grout: 16.1 ft.

Rock Packing: 39.1 ft.

Hole Diameter: 16 in.

Total Depth: 55.2 ft.

Bottom of Vault:
Ground Elevation: 30.6 ft., msl

Solid Casing:
Material: PVC Sch. 80
Length: 36.14 ft.
Diameter: 12 in.
Wall thickness: 0.687 in.

Casing: □ Perforated  □ Screen
Material: PVC Sch. 80
Length: 20 ft.
Diameter: 12 in.
Wall thickness: 0.687 in.
Openings: __________ sq. in./L.F.

Open Hole:
Length: 0 ft.
Diameter: __________ in.
Combined Well Construction & Pump Installation Permits and Water Use Permits Prior to Well Construction and Pump Installation Permits

The following considerations shall be used by the Commission staff in evaluating and processing well construction and pump installation permit applications for action by the Commission. These are considerations only; each request will be considered on a case-by-case basis.

COMBINED WELL CONSTRUCTION/PUMP INSTALLATION PERMITS MAY BE ALLOWED WHEN:

1. There is no evidence that it will affect other existing and proposed wells.

2. It is in an area where the hydrology and water quality is known or where the sustainable yield is substantially more than existing and proposed withdrawals.

3. The request is for backup wells in areas where the hydrology and water quality is known.

4. The request is for small capacity wells such as wells drilled for domestic/household uses, small irrigation wells, etc.

5. In water management areas, a water use permit has already been obtained and it is evident that the well will not affect other existing and proposed wells.

IN DESIGNATED WATER MANAGEMENT AREAS, UNLESS THE APPLICANT CAN PROVIDE CLEAR AND CONVINCING EVIDENCE TO THE CONTRARY, WATER USE PERMITS SHALL BE OBTAINED PRIOR TO APPROVAL OF WELL CONSTRUCTION APPLICATIONS AND PUMP INSTALLATION APPLICATIONS.

Approved by Commission on Water Resource Management at the meeting held on August 19, 1992

WILLIAM W. PATY
Chairperson

DATE

Exhibit 3
To: Lenore Nakama, DLNR, Commission on Water Resource Management

From: William Wong, P.E., Chief Safe Drinking Water Branch

Subject: PUMP INSTALLATION PERMIT APPLICATIONS

May 31, 1996

Thank you for the opportunity to review and comment on the Pump Installation Permit Applications for:

1) Palm Villa II Well (No. 2001-08)
2) Palm Court Well (No. 2002-12)

Please be sure that the owner of the irrigation well is aware of possible cross connection problems. This irrigation system shall be isolated from any potable water system. Any hosebibbs connected to this irrigation system shall have signs indicating "non potable water, do not drink." Should this irrigation system be connected to a potable water system, an approved backflow preventor shall be installed.

If you have any questions, please call me at 586-4258.

WW:la

Enclosures
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P. O. BOX 621
HONOLULU, HAWAII 96809
MAY 22 1996

TO: Honorable Lawrence Miike, Director
    Department of Health
    Attention: Dennis Tulang, Wastewater Branch
              William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson
      Commission on Water Resource Management

SUBJECT: Application for a Pump Installation Permit for
         Palm Villa II Well (Well No. 2001-08)

Transmitted for your review and comment is a copy of a pump installation permit application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by June 14, 1996.

Please find a map, attached, to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Lenore Nakama at 587-0218.

LN: ss
Attachment(s)

RESPONSE: ( ) We have no comments
            ( ) Comments attached

Contact Person: William Wong, P.E., Chief
                Safe Drinking Water Branch

Phone: 586-4258

Signed: William Wong
Date: 5/31/96
TO: Honorable Lawrence Miike, Director
    Department of Health
    Attention: Dennis Tulang, Wastewater Branch
              William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson
      Commission on Water Resource Management

SUBJECT: Application for a Pump Installation Permit for
         Palm Villa II Well (Well No. 2001-08)

Transmitted for your review and comment is a copy of a pump installation permit application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by June 14, 1996.

Please find a map, attached, to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Lenore Nakama at 587-0218.

Contact Person:  Lori N. Kajiwara  Phone: 586-4294
Signed:  Lori N. Kajiwara  Date:  5/30/96
Mr. Bruce Gomez
Association of Apartment Owners - Palm Villa II
91-1119 Mikohu St., Apt. D
Ewa, HI 96706

Dear Mr. Gomez:

After-The-Fact Application for a Pump Installation Permit
Palm Villa II Well (Well No. 2001-08)

We accepted your after-the-fact application for a pump installation permit on May 10, 1996, and hereby acknowledge that it is complete. You can expect your application to be processed for action within ninety (90) days from that acceptance date.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

RAE M. LOUI
Deputy Director

LN:ss

# 17 OF WLR
DATE OF PUMP INSTALL.
TO: Honorable Lawrence Miike, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch

FROM: Michael D. Wilson, Chairperson  
Commission on Water Resources Management

SUBJECT: Application for a Pump Installation Permit for  
Palm Villa II Well (Well No. 2001-08)

Transmitted for your review and comment is a copy of a pump installation permit application.

We would appreciate your comments on the captioned application for any conflicts or inconsistencies with the programs, plans, and objectives specific to your department. Please respond by returning this cover memo form by June 14, 1996.

Please find a map, attached, to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Lenore Nakama at 587-0218.

LN:ss  
Attachment(s)

RESPONSE: ( ) We have no comments  
( ) Comments attached

Contact Person: __________________________ Phone: _______________________

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

Attention: Ms. Lenore Nakama

Dear Ms. Loui:

Pump Installation Permit Applications For
Palm Villa II, Palm Court, and the Arbors Wells
(Well Nos. 2001-08, 2002-12, and 2001-07)

Enclosed are Pump Installation permits for Palm Villa II, Palm Court, and the Arbors Wells. They have been signed by Bill Moore of Roscoe Moss Hawaii, Inc. to complete the applications. If you have any questions, please call me a call.

Sincerely,

[Signature]

Tom Nance

Enclosures
APPLICATION FOR PERMIT:

1. APPLICANT: (circle primary contact a, b, or c)
   Primary Fax ________________________
   (a) WELL OWNER: Association of Apt.
   Owners - Palm Villa II
   Firm Name ________________________
   Contact Person ____________________ Ph. 683-0421
   Address 91-1119 Mikohu Street, Apt. D
   Ewa, Hawaii 96706
   (b) LANDOWNER: Association of Apartment
   Owners - Palm Villa II
   Firm Name ________________________
   Contact Person ____________________ Ph. 683-0421
   Address 91-1119 Mikohu Street, Apt. D
   Ewa, Hawaii 96706
   (c) CONTRACTOR
   Firm Name ________________________ Ph. 682-5554
   Contractor's C-57 License No. C-16437
   Contact Person ____________________
   Address 91-259-A Olai Street Kapolei, Hawaii 96707

2. WELL LOCATION/NAME: Palm Villa II Well No. 2001-08
   Island Oahu
   Address Palm Villa II, Kolowaka Drive, Ewa, Oahu
   Text Map Key 9-1-61:27
   (Attach a USGS map, scale 1"=2000', and a properly tax map showing well location referenced to established property boundaries.)

3. (a) PROPOSED WORK:
   - Drill New Well
   - Modify Existing Well
   - Abandon/Seal
   - Install New Pump
   - Modify Pump
   - Replace Pump
   * Be sure to complete and submit well abandonment report upon completion of work.

(b) WELL TYPE:
   - Dug
   - Bored
   - Driven
   - Drilled
   - Radial

Is this well a part of a battery of wells? □ Yes □ No

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

4. PROPOSED PUMP INFORMATION:
   Rated Pump Capacity: 120 gallons per minute
   Motor: 7.5 HP
   - Deep Well Turbine
   - Rotary
   - Submersible
   - Impulse
   - Centrifugal
   - Propeller
   - Rotary-Displacement
   - Reciprocating
   - Rotary-Gear

If Pump Replacement, Existing Pump Capacity: 48,000 gallons per minute

5. PROPOSED USE:
   - Municipal (including hotels, stores, etc.)
   - Military
   - Domestic (individual, noncommercial water sys.)
   - Industrial
   - Irrigation (crop)
   - Landscaping
   - Other (explain)

6. (a) PROPOSED AMOUNT OF WITHDRAWAL: 48,000 gallons per day
      (b) METHOD OF FLOW MEASUREMENT: Flow-meter

7. PENDING ACTIONS:
   - CDUA 
   - SMA 
   - EIS 
   - EA 
   - NONE 
   - Other (explain)

8. REMARKS, EXPLANATIONS:

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 30 days after the completion date of the permitted work; 3) monthly water use data shall be submitted to the Commission; 4) such approval shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Association of Apt. Owners - Association of Apt. Owners -
Well Owner: Palm Villa II Landowner: Palm Villa II

Signature ________________________ Signature ________________________
Date 3/1/96 Date 3/1/96

For Official Use Only:
Date Received ________________________ Date Accepted ________________________
Field Checked By ________________________ Date ________________________
Longitude ________________________ Latitude ________________________
Aquifer System Name 2001-08 State Well No.

11/06/95 WSM Form
9. PROPOSED WELL SECTION

Elevation at top of casing 31.54 ft., msl.

Cement Grout: 16.1 ft.

Rock Packing: 39.1 ft.

Hole Diameter: 16 in.

Total Depth: 55.2 ft.

Bottom of Vault
Ground Elevation: 30.6 ft., msl

Solid Casing:
PVC Sch. 80

Material: PVC Sch. 80
Length: 36.14 ft.
Diameter: 12 in.
Wall thickness: 0.687 in.

Casing: Perforated

Material: PVC Sch. 80
Length: 20 ft.
Diameter: 12 in.
Wall thickness: 0.687 in.
Openings: sq. in./ft.

Open Hole:
Length: 0 ft.
Diameter: in.

*Approximate elevation at time of filing application. Ground elevation above mean sea level (msl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.
Mr. Tom Nance  
680 Ala Moana Blvd., Suite 406  
Honolulu, HI 96813  

Dear Mr. Nance:  

After-the-Fact Applications for Pump Installation Permits  
Palm Villa II Well, Palm Court Well, and Arbors Well  
(Well Nos. 2001-08, 2002-12 and 2001-07)  

We acknowledge receipt, on April 11, 1996, of the subject applications.  

We have reviewed the applications and find that they are incomplete. As such, we are returning the original applications to you. Please obtain the contractor's signature to complete the applications.  

We note that the applications show the current well owners, Association of Apt. Owners - Palm Villa II, Palm Court, and Arbors, as the applicants and landowners, although Gentry Development Company was the well owner at the time that the violations occurred. Because the Water Code and Administrative Rules are silent with regard to after-the-fact applications where landowners have changed, we will accept the applications for Gentry Development Company.  

If you have any questions, please contact Lenore Nakama at 587-0218.  

Sincerely,  

RAE M. LOUI  
Deputy Director  

LN:ss  

Attachments  

c: Mr. Randolph Ouye, Gentry Development Co.  
Mr. Bruce Gomez  
Mr. Rico Galarza  
Mr. Ben Hicks
PAY * * Seventy-five and 00/100 * *

DOLLARS $ 75.00

TO

THE ORDER OF Department of Land and Natural Resources

April 10, 1996

Filing Fees: Pump Installation Permit Applications For:
- Palm Villa II (State No. 2001-08)
- Palm Court (State No. 2002-12)
- Arbors (State No. 2001-07)

$75.00

DEPARTMENT OF LAND AND NATURAL RESOURCES

NAME/DESCRIPTION (WANG INPUT)
Tom Nance Water Resource Engineering

REMARKS:
LINE (1) PIP for Well No. 2001-08 (Palm Villa II)
LINE (2) 2002-12 (Palm Court)
LINE (3) 2001-07 (Arbors)
LINE (4)
Mr. Randolph K. Ouye
Gentry Homes, Ltd.
560 N. Nimitz Hwy.
Honolulu, HI 96817

Dear Mr. Ouye:

At the March 13, 1996 meeting of the Commission on Water Resource Management (Commission), the Commission requested a report on permit violations in the Ewa Caprock Aquifer. Please find attached a copy of the staff's April 15, 1996 submittal, including a summary table of well construction and/or pump installation permit violations.

The "X" on the attached summary table indicates items or documents that are required under the terms of the permits. The "**" denotes items that were not clear conditions of the permits, but are needed by the Commission staff to carry out resource assessment and analytical work.

To be clear, listed below are the specific items and documents that are needed for each of your wells:

1. Well No. 2001-03
   a. After-the-fact well construction permit application
   b. After-the-fact pump installation permit application
   c. Monthly Water Use Reports (see discussion in Staff Submittal)

2. Well No. 2001-04
   a. Part II, Well Completion Report (attached)
   b. As-built sectional drawing of the pump

3. Well No. 2001-05
   a. Part II, Well Completion Report (attached)
   b. As-built sectional drawing of the pump
   c. Monthly Water Use Reports (see discussion in Staff Submittal)

4. Well No. 2001-07
   a. After-the-fact pump installation permit application
   b. As-built sectional drawing of the well
5. Well No. 2001-08  
a. After-the-fact pump installation permit application  
b. As-built sectional drawing of the well

6. Well No. 2001-09  
a. Elevation (referenced to mean sea level) survey by a Hawaii-licensed surveyor  
b. Part II, Well Completion Report (attached)  
c. As-built sectional drawing of the pump

7. Well No. 2002-12  
a. After-the-fact pump installation permit application

If you have already submitted one or more of the items requested above, please disregard the request for that particular item.

We request that the above items and documents be submitted no later than May 15, 1996. Be aware that you may be considered in willful violation and subject to fines imposed by the Commission if we do not receive the items required under the terms of your permits by the May 15, 1996 deadline.

If you have any questions, please contact Lenore Nakama at 587-0218.

Sincerely,

[Signature]

RAE M. LOUI
Deputy Director

LN:ss

Attachments
**WELL COMPLETION REPORT**

**State of Hawaii**

**COMMISSION ON WATER RESOURCE MANAGEMENT**
Department of Land and Natural Resources

3-1-96

95-19

**Instructions:** Please print or type and submit completed report within 30 days after well completion to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96803. An as-built drawing of the well and chemical analysis should also be submitted. For assistance call the Commission Regulation Branch at 587-0225.

1. **STATE WELL NO.** 2001-08  
   **WELL NAME** Palm Villa II  
   **ISLAND** Oahu

2. **LOCATION:** Address See Well Location  
   **Tax Map Key** 9-1-61:27

3. **DRILLING OR PUMP INSTALLATION CONTRACTOR** Roscoe Moss Hawaii, Inc.

4. **CONTRACTOR'S C-57 LICENSE NUMBER** C-16437

5. **NAME OF DRILLER WHO PERFORMED WORK**

6. **TYPE OF RIG/CONSTRUCTION**

7. **DATE OF WELL DRILLING COMPLETION**

8. **GROUND ELEVATION (msl) ft.**  
   Top of Drilling Platform (msl) ft.  
   Height of Drilling Platform above Ground surface ft.  
   Bench Mark and Method Used to Determine Ground Elevation 35.94 ft. (Top of Vault)

9. **DRILLER'S LOG:**

10. **TOTAL DEPTH OF WELL BELOW GROUND** 60.5 ft.

11. **HOLE SIZE:** 16 in. dia. from 0 ft. to 60.5 ft. below ground

12. **CASING INSTALLED:** 12 in. I.D. x 0.687 in. wall solid section to 40.5 ft. below ground  
   12 in. I.D. x 0.687 in. wall perforated section to 60.5 ft. below ground  
   **Type of Perforation** Slotted

13. **ANNULUS:** Grouted from 5.3 ft. below ground to 20.5 ft. below ground  
   Gravel packed from 20.5 ft. below ground to 60.5 ft. below ground

14. **INITIAL WATER LEVEL** ft. below ground. Date and time of measurement

15. **INITIAL CHLORIDE** ppm Date and time of sampling

16. **INITIAL TEMPERATURE** °F Date and time of sampling

17. **DATE OF PUMP INSTALLATION** MAY 6, 1996

18. **PUMP INSTALLATION:** Submersible Crown  
   **Pump Type, Make, Serial No.** #5HC-125, 5 Stage  
   **Capacity** 120 gpm  
   **Motor type, H.P., Voltage, rpm** Submersible Electric, 7.5 HP, 230 Volts, 3450 RPM  
   **Depth of Pump Intake Setting** 55.34 ft. below ground, which elevation is -19.4 ft.  
   **Depth of bottom of airline** 52.44 ft. below ground, which elevation is -16.5 ft.

19. **PUMPING TESTS:**

   **Reference Point (R.P.) used:**
   **which elevation is** ft.

   **Date**  
   **Start water level** ft. below R.P.  
   **Start water level** ft. below R.P.
   **End water level** ft. below R.P.  
   **End water level** ft. below R.P.
   **Depth of well** ft. below R.P.  
   **Depth of well** ft. below R.P.

   **Elapsed Time (hours)**  
   **Rate (gpm)**  
   **Draw-down (ft.)**  
   **Temp. **°F  
   **Elapsed Time (hours)**  
   **Rate (gpm)**  
   **Draw-down (ft.)**  
   **Temp. **°F

   **Remarks:** X PER TEL. CONV. W/ PAUL WANKE OF ROSCOE MOSS CO.

   (If more space is needed, continue on back.)

**Contractor (print)** Roscoe Moss Hawaii, Inc.

**Signature**

**Date** March 5, 1996

---

**For Driller's Use:**

Job Name  
Job No.

---

**For Official Use:**

Wall No. 2001-08  
Longitude 158 01 57  
Latitude 21 20 30

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

Dear Ms. Loui:

Well Completion Reports and  
Pump Installation Permit Applications  
For Palm Villa II, Palm Court and Arbors  
(State Nos. 2001-08, 2002-12, and 2001-07)

On behalf of Gentry Development Co., I am pleased to submit the accompanying Well Completion Reports, Pump Installation Permit Applications, and filing fees for the Palm Villa II, Palm Court, and Arbors wells (State Nos. 2001-08, 2002-12, and 2001-07).

If you have any questions or need additional information, please call Randy Ouye (599-8225) or me. Thank you for your attention to this matter.

Sincerely,

Tom Nance

cc: Randy Ouye - Gentry Development Co.

Enclosures
APPLICATION FOR PERMIT

□ Well Construction or □ Pump Installation

1. APPLICANT: (circle primary contact a, b, or c) Primary Fax: ____________________________
   (a) WELL OWNER: Association of Apt. Owners - Palm Villa II
      Firm Name ____________________________
      Contact Person ____________________ Ph: 683-0421
      Address 91-1119 Mikohu Street, Apt. D
      Ewa, Hawaii 96706
   (b) LANDOWNER: Association of Apartment Owners - Palm Villa II
      Firm Name ____________________________
      Contact Person ____________________ Ph: 683-0421
      Address 91-1119 Mikohu Street, Apt. D
      Ewa, Hawaii 96706
   (c) CONTRACTOR: Roscoe Moss Hawaii, Inc. Ph: 682-5554
      Contractor's C-16 License No. C-16437
      Address 91-259-A Olai Street
      Kapolei, Hawaii 96707

2. WELL LOCATION/NAME: Palm Villa II Well No. 2001-08 Island Oahu
   Address Palm Villa II, Kolowaka Drive, Ewa, Oahu
   Tax Map Key 9-1-61:27

3. (a) PROPOSED WORK: □ Drill New Well □ Deepen □ Install New Pump
      □ Modify Existing Well □ Redrill □ Modify Pump
      □ Abandon/Seal * □ Replace Pump
      * Be sure to complete and submit well abandonment report upon completion of work.
   (b) WELL TYPE: □ Dug □ Bored □ Driven □ Drilled □ Radial
      Is this well a part of a battery of wells? □ Yes □ No
      (Briefly describe and fill in the diagram on the back of this form.)

4. PROPOSED PUMP INFORMATION: Rated Pump Capacity: 120 gallons per minute
   Pump Type: □ Deep Well Turbine □ Electric, rated horsepower: 7.5 HP
   □ Submersible □ Diesel
   □ Centrifugal □ Gas
   If Pump Replacement, Existing Pump Capacities:
      gallons per minute

5. PROPOSED USE: □ Municipal (including hotels, stores, etc.) □ Military
      □ Domestic (individual, noncommercial water systems) □ Industrial
      □ Irrigation (crop) □ Landscaping □ Other (explain)
      □ Other (explain)

6. (a) PROPOSED AMOUNT OF WITHDRAWAL: 48,000 gallons per day
   (b) METHOD OF FLOW MEASUREMENT: □ Flow-meter □ Open-pipe
      □ Orifice Plate □ Weir

7. PENDING ACTIONS: □ CDUA □ SMA □ EIS □ EA □ NONE □ Other (explain)
   Completion Date:

8. REMARKS, EXPLANATIONS:

   (If more space is needed, continue on back)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 30 days after the completion date of the permitted work; 3) monthly water use data shall be submitted to the Commission; 4) such approval shall not constitute a determination of correlative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

Well Owner: Association of Apt. Owners - Palm Villa II
Signature: ____________________________
Date: 5/1/96

Landowner: Association of Apt. Owners - Palm Villa II
Signature: ____________________________
Date: 5/1/96

Contractor: ________________
Signature: ____________________________
Date: ____________________________

For Official Use Only:
Date Received
Date Accepted
Field Checked By
Date

Longitude
Latitude

State Well No.: 2001-08

Aqaur System Name: Palm Villa II
Elevation at top of casing: 31.54 ft., msl.

Cement Group: 16.1 ft.

Rock Packing: 39.1 ft.

Hole Diameter: 16 in.

Total Depth: 55.2 ft.

9. PROPOSED WELL SECTION

Bottom of Vault
Ground Elevation: 30.6 ft., msl

Casing:
- Material: PVC Sch. 80
- Length: 36.14 ft.
- Diameter: 12 in.
- Wall Thickness: 0.687 in.

Solid Casing:
- Material: PVC Sch. 80
- Length: 20 ft.
- Diameter: 12 in.
- Wall Thickness: 0.687 in.

Openings: sq. in. A.F.

Open Hole:
- Length: 0 ft.
- Diameter: in.

*Approximate elevation at time of filing application. Ground elevation above mean sea level (msl) by a surveyor licensed by the State must be submitted at start of construction. Final elevations of well components shall be submitted in the well completion/well abandonment reports.
PORTION OF
EW A QUADRANGLE
HAWAI I-HONO LULU CO.
ISLAND OF OAHU
7.5 MINUTE SERIES (TOPOGRAPHIC)
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PORTION OF
PEARL HARBOR QUADRANGLE
COPY
PROJECT TITLE  EWA CAPROCK GROUNDWATER QUALITY SURVEY

WELL DESCRIPTION:
Well Name: Palm Villa 2 (Palm Court)
Well I.D. No.: 3-2001-08
Well Location: Lat. 21° 20' 30" N
                     Long. 158° 01' 58" W
Well Owner: Gentry - Pacific
Contact Person: Reggie Valdez
Type: Irrigation
Flow 80,000 gpd
Remarks: ____________________________

WELL CONSTRUCTION:
Casing Stick Up (A) _______ ft.
Ground Elevation (B) 35 ft.
Diameter of Boring (C) 16 in.
Total Depth of Boring (D) 60 ft.
Grouted Interval (E) 20 ft.
Filter-Pack Interval (F) _______ ft.

Msrd Dpth to Wtr Tbl/ Approx Elev/ Elev Per DLNR Indx (G) 1.9 ft.

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<tr>
<th></th>
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JOURNAL OF SAMPLE COLLECTIONS:
Date: February 11, 1993
Time: 11:30 a.m.
Person: JT, NU
Weather: Fair
Remarks: Sampled at well head

Date: February 24, 1993
Time: 10:25 a.m.
Person: JT, JR, CH, NU
Weather: Fair
Remarks: Sampled at well head; used copper tubing to collect sample
## ANALYTICAL PARAMETERS

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<th>Unit</th>
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<td>Specific Conductance</td>
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<td>Hardness</td>
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<td>Temperature</td>
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<tr>
<td>Dissolved Oxygen</td>
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<td>Total Residual Chlorine</td>
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<td>Ammonia (N)</td>
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<td>Total Organic Carbon</td>
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<td>Biochemical Oxygen Demand-5 Day</td>
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<td>Chemical Oxygen Demand</td>
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<tr>
<td>Total Coliform</td>
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<td>TNTC (b)</td>
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<tr>
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<td>(ppb)</td>
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<tr>
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<td>Trichloroethylene</td>
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<td>cis-1,2-Dichloroethene</td>
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<td>o-Xylene</td>
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<tr>
<td>Chloroethane</td>
<td>(ppb)</td>
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<td>&lt;0.3</td>
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</table>

(a) - Fecal Positive
(b) - Fecal Negative
(c) - Sample Holding Time Exceeded
(d) - Lost in Extraction

TNTC - Too Numerous To Count
NF - None Found
<table>
<thead>
<tr>
<th>Date of Sample Collection</th>
<th>02/11/93</th>
<th>02/24/93</th>
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<tbody>
<tr>
<td><strong>ANALYTICAL PARAMETERS</strong></td>
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<tr>
<td>Methylene Chloride (ppb)</td>
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<td>Chloroform (ppb)</td>
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<td>Bromodichloromethane (ppb)</td>
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<td>Dibromomethane (ppb)</td>
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<td>cis-1,3-Dichloropropene (ppb)</td>
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<td>1,1,2-Trichloroethane (ppb)</td>
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<td>4-Chlorotoluene (ppb)</td>
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<td>1,3-Dichlorobenzene (ppb)</td>
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<td>1,2,4-Trichlorobenzene (ppb)</td>
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<td>1,2-Dibromo-3-Chloropropane (ppb)</td>
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</table>

(a) - Fecal Positive
(b) - Fecal Negative
(c) - Sample Holding Time Exceeded
(d) - Lost in Extraction

TNTC - Too Numerous To Count
NF - None Found

DRAFT
## Palm Villa 2 (Palm Court)

### Date of Sample Collection
- **02/11/93**
- **02/24/93**

<table>
<thead>
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<th>ANALYTICAL PARAMETERS</th>
<th>02/11/93</th>
<th>02/24/93</th>
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<tbody>
<tr>
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<tr>
<td>Aldicarb Sulfone</td>
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<tr>
<td>Aldicarb Sulfoxide</td>
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<td>&lt;1.0</td>
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<td>Oxamyl</td>
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<td>&lt;1.0</td>
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<td>Endrin</td>
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<td>Methoxychlor</td>
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<td>Atrazine</td>
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<td>Simazine</td>
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<td>Hexazinone</td>
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<tr>
<td>Mevinphos</td>
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</tbody>
</table>

(a) - Fecal Positive  
(b) - Fecal Negative  
(c) - Sample Holding Time Exceeded  
(d) - Lost in Extraction

TNTC - Too Numerous To Count  
NF - None Found

**DRAFT**
November 21, 1994

Gentry Homes, Ltd.
560 N. Nimitz Highway, Second Floor
Honolulu, HI 96817

Attn: Mr. Jon Young, P. E.

Gentlemen:

On Friday, November 18, 1994 we completed the elevation survey of six (6) wells within the Ewa by Gentry Development at Honouliuli, Ewa, Oahu, Hawaii.

The origin of the benchmark for this project is the City and County Street Monument at the intersection of Farrington Highway and Makakilo Drive. The elevation being 115.79 msl. This datum has been used by Tom Nance, Water Resources Engineering for their studies of the Ewa Plain. We used a supplemental benchmark set by our firm during the original study for the Estate of James Campbell. Said benchmark is a "¶" cut on the Waianae/makai end of the bridge south of the Ewa Municipal Golf Course on Fort Weaver Road.

The survey was run using a Wild NA3000 precise level with digital readout. The error of our run over 6 miles was 0.01 feet.

The results are as follows:

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<thead>
<tr>
<th>Description</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplemental benchmarks, &quot;¶&quot; cut on curb</td>
<td>29.07 msl</td>
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<tr>
<td>fronting guard shack on Fort Weaver at Kolowaka</td>
<td></td>
</tr>
<tr>
<td>Sun Terr well (State No. 2001-05)</td>
<td></td>
</tr>
<tr>
<td>&quot;¶&quot; top of vault</td>
<td>36.12 msl</td>
</tr>
<tr>
<td>top of sounding tube</td>
<td>31.99 msl</td>
</tr>
<tr>
<td>Sunrise Well (State No. 2001-04)</td>
<td></td>
</tr>
<tr>
<td>&quot;¶&quot; top of vault</td>
<td>38.14 msl</td>
</tr>
<tr>
<td>top of sounding tube</td>
<td>34.06 msl</td>
</tr>
</tbody>
</table>
### Description

**Arbors Well (State No. 2001-07)**
- "口" top of vault
- top of sounding tube

---

**Palm Villa I. Well (State No. 2001-06)**
- "口" top of vault
- top of sounding tube

---

**Palm Villa II Well (State No. 2001-08)**
- "口" top of vault
- top of sounding tube

---

**Palm Court Well (State No. 2002-12)**
- "口" top of vault
- top of sounding tube

### Elevation

<table>
<thead>
<tr>
<th>Description</th>
<th>Elevation</th>
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<tbody>
<tr>
<td>Arbors Well</td>
<td>33.29 msl</td>
</tr>
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<td>top of vault</td>
<td>28.93 msl</td>
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<tr>
<td>Palm Villa I. Well</td>
<td>40.45 msl</td>
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<tr>
<td>&quot;口&quot; top of vault</td>
<td>37.43 msl</td>
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<td>top of sounding tube</td>
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</tr>
<tr>
<td>Palm Villa II Well</td>
<td>35.94 msl</td>
</tr>
<tr>
<td>&quot;口&quot; top of vault</td>
<td>31.96 msl</td>
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<tr>
<td>top of sounding tube</td>
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<tr>
<td>Palm Court Well</td>
<td>40.11 msl</td>
</tr>
<tr>
<td>&quot;口&quot; top of vault</td>
<td>35.89 mls</td>
</tr>
<tr>
<td>top of sounding tube</td>
<td></td>
</tr>
</tbody>
</table>

Please call, should you have any questions on this matter.

Very truly yours,

WALTER P. THOMPSON, INC.

[Signature]

James R. Thompson
President
DIVISION OF WATER RESOURCE MANAGEMENT

TO: M. TAGOMORI

PLEASE:

See Me

Take Action By

Route to Your Branch

Review & Comment

Draft Reply

Acknowledge Receipt

Xerox copies

File

Mail

For Information

REMARKS:

Do not process until you have received all of my signatures.

Proposed locations + actual locations differ somewhat.

Have all these shown on my map all needs
CORRECTED LOCATIONS
OF THE
EWA BY CENTRY WELLS
<table>
<thead>
<tr>
<th>FROM:</th>
<th>DATE:</th>
<th>FILE IN:</th>
<th>TO:</th>
<th>INITIAL:</th>
<th>PLEASE:</th>
<th>REMARKS:</th>
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<td>M. TAGOMORI</td>
<td>See Me</td>
<td>Need order of drilling from</td>
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<td>D. Lum</td>
<td>Take Action By</td>
<td>Funnels or Dance</td>
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<td>G. Matsumoto</td>
<td>Route to Your Branch</td>
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<td>G. Akita</td>
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<td>T. Nakama</td>
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<td>T. Nakama</td>
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</tbody>
</table>


A. OWNER: Gentry

B. GENERAL LOCATION: Ewa

C. DRILLING COMPANY: Roscoe Moss Company

D. TYPE OF RIG: Cable Tool. DRILLING COMPLETED: 04/089. DRILLER'S REPORT.

E. ELEVATION, msl: Top of drilling platform: 31.1 ft. Bench mark and method used to determine height of drilling platform above ground surface: 9 ft. elevation.

F. HOLE SIZE: 16 inch dia. to 52.1 ft. below drilling platform.

G. CASING INSTALLED: 12. in. I.D. x .312 in. wall solid section to 32.1 ft. below drilling platform.

H. ANNULUS: Grouted 20 ft. to 25 ft. below drilling platform. Gravel packed 25 ft. to 52 ft. below drilling platform.

I. PERMANENT PUMP INSTALLATION:

- Pump type, make, serial no.: Capacity: g.p.m.
- Motor type, H.P., voltage, r.p.m.
- Depth of pump intake setting: ft. below which elevation is: ft.
- Depth of bottom of airline: ft. below which elevation is: ft.

J. INITIAL WATER LEVEL: 30.1 ft. below drilling platform. Date of measurement: 04/06/89.

K. INITIAL CHLORIDE: ppm, total depth of well: 52.1 ft. below drilling platform.

L. PUMPING TESTS:

<table>
<thead>
<tr>
<th>Start water level</th>
<th>Rate (gpm)</th>
<th>Drawdown (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.1 ft. below R. P.</td>
<td>52.1 ft. below R. P.</td>
<td>30.1 ft. below R. P.</td>
<td>52.1 ft. below R. P.</td>
<td>0 ft.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Elapsed Time</th>
<th>Rate (gpm)</th>
<th>Drawdown (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 to 9:10</td>
<td>250</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:10 to 9:30</td>
<td>350</td>
<td>0</td>
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<tr>
<td>9:30 to 10:00</td>
<td>450</td>
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<tr>
<td>10:00 to 10:30</td>
<td>550</td>
<td>0</td>
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<tr>
<td>10:30 to 11:00</td>
<td>700</td>
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M. DRILLER'S LOG:

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</tr>
</thead>
<tbody>
<tr>
<td>0 to 4</td>
<td>Red Top Soil</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
<tr>
<td>4 to 8</td>
<td>Red Coral</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
<tr>
<td>8 to 17</td>
<td>Tan Coral</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
<tr>
<td>17 to 52</td>
<td>White Coral Medium hard</td>
<td>to</td>
<td>to</td>
<td>to</td>
<td>to</td>
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<td>to</td>
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</tbody>
</table>

N. REMARKS:

INSTRUCTIONS: Send three (3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 353, Honolulu, Hawaii 96809.

Date of report: June 15, 1989

Person filing report: L.H. Runnels

A. OWNER: Gentry
   WELL NAME: #2

B. GENERAL LOCATION: Ewa

C. DRILLING COMPANY: ROSE CO. MOSS COMPANY

D. TYPE OF RIG: Cable Tool
   DRILLING COMPLETED: 04/06/89

E. ELEVATION, msl: Top of drilling platform: 31 ft.
   Height of drilling platform above ground surface: 0 ft.
   Bench mark and method used to determine elevation:

F. HOLE SIZE: 16 inch dia. to 52 ft. below drilling platform.

G. CASING INSTALLED: 1.12 in. I.D. x 312 in. wall section to 32 ft. below drilling platform.
   Type of perforation: Louver

H. ANNULUS: Grouted 0 ft. to 25 ft. below drilling platform.

Gravel packed 25 ft. to 52 ft. below drilling platform.

I. PERMANENT PUMP INSTALLATION:
   - Pump type, make, serial no.
   - Motor type, H.P., voltage, r.p.m.
   - Depth of pump intake setting: 52 ft. below
   - Depth of bottom of airline: 52 ft. below which elevation is

HYDROLOGY

J. INITIAL WATER LEVEL: 30 ft. below drilling platform. Date of measurement: 04/06/89

K. INITIAL CHLORIDE: ppm, total depth of well 52 ft. below drilling platform

L. PUMPING TESTS:
   - Reference point (R.P.) used: which elevation is
   - Date: 04/14/89
   - Start water level 30 ft. below R. P.
   - End water level 30 ft. below R. P.
   - Depth of well 52 ft. below R. P.
   - Elapsed Time (hours) Rate (gpm) Drawdown (ft.) Temp. (F)
     8:45 to 9:10 250 0 325
     9:10 to 9:30 350 0
     9:30 to 9:50 500 0
     9:50 to 10:00 700 0
     10:00 to 10:00 0
     10:00 to 10:00 0
     10:00 to 10:00 0
     10:00 to 10:00 0
     10:00 to 10:00 0

M. DRILLER'S LOG:
   - 0 to 4 Red Top Soil
   - 4 to 8 Red Coral
   - 8 to 17 Tan Coral
   - 17 to 52 White Coral Medium hard

N. REMARKS:

INSTRUCTIONS: Send three(3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P.O. Box 373, Honolulu, Hawaii 96809.


FOR OFFICIAL USE

Latitude

Longitude

Well No.
**DESCRIPTION**

Date of report: **June 15, 1989**
Person filing report: **L.H. Runnels**

A. OWNER: **Gentry**  
B. GENERAL LOCATION: **Ewa**
C. DRILLING COMPANY: **ROSCOE MOSS COMPANY**
D. TYPE OF RIG: **Cable Tool**  
DRILLING COMPLETED: **04/06/89**

**ELEVATION, msl:** Top of drilling platform: **31** ft.  
Bench mark and method used to determine height of drilling platform above ground surface: *

**DEPTH OF BOTTOM OF HOLE SIZE:**  
12 in. I.D. x .312 in. wall solid section to **32** ft. below drilling platform.  
12 in. I.D. x .312 in. wall perforated section to **52** ft. below drilling platform.

**HYDROLOGY**

J. INITIAL WATER LEVEL: **30** ft. below drilling platform. Date of measurement: **04/06/89**
K. INITIAL CHLORIDE: ppm, total depth of well **52** ft. below drilling platform

<table>
<thead>
<tr>
<th>Date (R.P.) used:</th>
<th>which elevation is</th>
<th>ft.</th>
<th>Date</th>
<th>ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>04/14/89</strong></td>
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</tr>
<tr>
<td>Start water level</td>
<td>30</td>
<td>ft.</td>
<td>below R.P.</td>
<td>ft.</td>
</tr>
<tr>
<td>End water level</td>
<td>30</td>
<td>ft.</td>
<td>below R.P.</td>
<td>ft.</td>
</tr>
<tr>
<td>Depth of well</td>
<td>52</td>
<td>ft.</td>
<td>below R.P.</td>
<td>ft.</td>
</tr>
</tbody>
</table>

**PUMPING TESTS:**

<table>
<thead>
<tr>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Drawdown (ft.)</th>
<th>Temp. (°F)</th>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Drawdown (ft.)</th>
<th>Temp. (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 to 9:10</td>
<td>250</td>
<td>0</td>
<td>429</td>
<td>8:45 to 9:10</td>
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<td>9:10 to 9:30</td>
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<td>9:50 to 10:00</td>
<td>700</td>
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<td>429</td>
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**SUBSURFACE FORMATION**

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<tr>
<td>0 to 4</td>
<td>Red Top Soil</td>
<td></td>
<td>to</td>
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<tr>
<td>4 to 8</td>
<td>Red Coral</td>
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</tr>
<tr>
<td>8 to 17</td>
<td>Tan Coral</td>
<td></td>
<td>to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 to 52</td>
<td>White Coral Medium hard</td>
<td></td>
<td>to</td>
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</tbody>
</table>

**FOR DRILLER'S USE**

Job Name: **Job Name**
Job No: **Job No.**

**INSTRUCTIONS:** Send three(3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 373, Honolulu, Hawaii 96829.


**FOR OFFICIAL USE**

Latitude: **Latitude**
Longitude: **Longitude**
Well No: **Well No.**
**DESCRIPTION**

Date of report: June 15, 1989
Person filing report: J. H. Runnels

| A. OWNER: Gentry | WELL NAME: #3 |
| B. GENERAL LOCATION: Ewa |
| C. DRILLING COMPANY: Roscoe Moss Company |
| D. TYPE OF RIG: Cable Tool |
| E. ELEVATION, msl: Top of drilling platform 39.82 ft. |

**HYDROLOGY**

J. INITIAL WATER LEVEL: 37.4 ft. below drilling platform. Date of measurement: 05/01/89

K. INITIAL CHLORIDE: ppm, total depth of well ft. below drilling platform

**M. DRILLER'S LOG:**

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
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</thead>
<tbody>
<tr>
<td>0 - 5</td>
<td>Fill Material</td>
<td>to</td>
<td>to</td>
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<tr>
<td>5 - 25</td>
<td>Dark Brown Soil</td>
<td>to</td>
<td>to</td>
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<tr>
<td>25 - 54</td>
<td>Tan Hard Coral</td>
<td>to</td>
<td>to</td>
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<tr>
<td>54 - 60</td>
<td>Medium Hard White Coral</td>
<td>to</td>
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**FOR DRILLER'S USE**

Job Name: 
Job No.: 

**FOR OFFICIAL USE**

Latitude: 
Longitude: 
Well No.: 


**INSTRUCTIONS:** Send three (3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 373, Honolulu, Hawaii 96809.
Date of report: June 15, 1989

Person filing report: L.H. Runnels

E. ELEVATION, msl: Top of drilling platform 39.82 ft. Bench mark and method used to determine
Height of drilling platform above ground surface 0 ft. elevation:

F. HOLE SIZE: 16 inch dia. to 60 ft. below drilling platform.

G. CASING INSTALLED: 12 in. I.D. x .312 in. wall solid section to 40 ft. below drilling platform.
12 in. I.D. x .312 in. wall perforated section to 60 ft. below drilling platform.

H. ANNULUS: Grouted 0 ft. to 35 ft. below drilling platform.
Gravel packed 35 ft. to 60 ft. below drilling platform.

I. PERMANENT PUMP INSTALLATION:
- Pump type, make, serial no. Capacity g.p.m.
- Motor type, H.P., voltage, r.p.m.
- Depth of pump intake setting ft. below which elevation is ft.
- Depth of bottom of airline ft. below which elevation is ft.

J. INITIAL WATER LEVEL 37.4 ft. below drilling platform. Date of measurement.

K. INITIAL CHLORIDE: ppm, total depth of well ft. below drilling platform

L. PUMPING TESTS:
Date: 05/01/89
Start water level 37.4 ft. below R. P.
End water level 37.4 ft. below R. P.
Depth of well 60 ft. below R. P.

Elapted Time (hours) Rate Drawdown (ft) Cl. Temp. Elapsed Time (hours) Rate Drawdown (ft) Cl. Temp.
8:45 to 9:45 350 3 9:45 to 1:45 700 15 1:45 to 4:45 500 5

M. DRILLER’S LOG:

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
<th>Water Level, ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5</td>
<td>Fill Material</td>
<td></td>
<td>to</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>5 to 25</td>
<td>Dark Brown Soil</td>
<td></td>
<td>to</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>25 to 54</td>
<td>Tan Hard Coral</td>
<td></td>
<td>to</td>
<td>to</td>
<td></td>
</tr>
<tr>
<td>54 to 60</td>
<td>Medium Hard White Coral</td>
<td></td>
<td>to</td>
<td>to</td>
<td></td>
</tr>
</tbody>
</table>

N. REMARKS:

INSTRUCTIONS: Send three(3) copies to: Manager-Chief Engineer, Division of Water and Land Development, P. O. Box 313, Honolulu, Hawaii 96809.

### DESCRIPTION

Date of report: June 15, 1989  
Person filing report: L.H. RUNNELLS

**A. OWNER**: Gentry  
**WELL NAME**: 3

**B. GENERAL LOCATION**: Ewa

**C. DRILLING COMPANY**: Roscoe Moss Company

**D. TYPE OF RIG**: Cable Tool  
**DRILLING COMPLETED** month year: 05 / 89

**E. ELEVATION, msl**: Top of drilling platform: 39.82 ft.  
Height of drilling platform above ground surface: to ft. elevation:...

**F. HOLE SIZE**:  
- 16 in. dia. to 60 ft. below drilling platform.
- 312 in. I.D. x 312 in. wall solid to 40 ft. below drilling platform.
- 312 in. I.D. x in. wall perforated to ft. below drilling platform.

**G. CASING INSTALLED**:  
- Type of perforation: Louver
- 35 ft. to 60 ft. below drilling platform.

**H. ANNULUS**: Grouted 35 ft. to 60 ft. below drilling platform.

**I. PERMANENT PUMP INSTALLATION**:  
- Pump type, make, serial no.:Capacity g.p.m.
- Motor type, H.P., voltage, r.p.m.
- Depth of pump intake setting ft. below which elevation is ft.
- Depth of bottom of airline ft. below which elevation is ft.

### HYDROLOGY

Date of report: 05/01/89  
**J. INITIAL WATER LEVEL**: 37.4 ft. below drilling platform.

**K. INITIAL CHLORIDE**: ppm, total depth of well ft. below drilling platform

**L. PUMPING TESTS**  
Date: 05/01/89

<table>
<thead>
<tr>
<th>Start water level</th>
<th>37.4 ft. below R.P.</th>
<th>End water level</th>
<th>37.4 ft. below R.P.</th>
<th>Depth of well</th>
<th>60 ft. below R.P.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Elapsed Time (hours)</th>
<th>Rate (gpm)</th>
<th>Drawdown (ft.)</th>
<th>Cl- (ppm)</th>
<th>Temp. (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 to 9:15</td>
<td>590</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:15 to 9:45</td>
<td>500</td>
<td>0.5</td>
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</tr>
<tr>
<td>9:45 to 10:15</td>
<td>700</td>
<td>1.5</td>
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**Sampling Date**:...

### SUBSURFACE FORMATION

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<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
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</thead>
<tbody>
<tr>
<td>0 to 60</td>
<td>Fill Material</td>
</tr>
<tr>
<td>25 to 54</td>
<td>Tan Hard Coral</td>
</tr>
<tr>
<td>54 to 60</td>
<td>Medium Hard White Coral</td>
</tr>
</tbody>
</table>

### N. REMARKS:

**FOR DRILLER'S USE**

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job No.</th>
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</table>

**FOR OFFICIAL USE**

<table>
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<tr>
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<th>Longitude</th>
<th>Well No.</th>
</tr>
</thead>
</table>

**REFERENCES**:  
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<tr>
<th>Well #</th>
<th>Use</th>
<th>Name</th>
<th>GPM</th>
<th>HP</th>
<th>Volt</th>
<th>Ph</th>
<th>TDH</th>
<th>Date Installed</th>
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<td>2001-06</td>
<td>Yes</td>
<td>Palm Villa I</td>
<td>100</td>
<td>10</td>
<td>230</td>
<td>1Φ</td>
<td>243</td>
<td>Sept 93</td>
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<tr>
<td>2002-12</td>
<td>Temp Use</td>
<td>Palm Court 3</td>
<td>105</td>
<td>5</td>
<td>230</td>
<td>1Φ</td>
<td>130</td>
<td>Apr 92</td>
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<td>2001-03</td>
<td>Temp Use</td>
<td>Geiger Park</td>
<td>80</td>
<td>7½</td>
<td>480</td>
<td>3Φ</td>
<td>200</td>
<td>Aug 92</td>
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<tr>
<td>2001-08</td>
<td>Temp Use</td>
<td>Palm Villa II</td>
<td>120</td>
<td>7½</td>
<td>230</td>
<td>1Φ</td>
<td>140</td>
<td>Pump In No Elec.</td>
</tr>
<tr>
<td>2001-07</td>
<td>Temp Use</td>
<td>Arbors</td>
<td>100</td>
<td>7½</td>
<td>208</td>
<td>3Φ</td>
<td>180</td>
<td>EMC not started yet.</td>
</tr>
</tbody>
</table>

Notes: (144,000 gpd) 140, 250, 140, 250
(172,000 gpd) 140, 250, 140, 250
(144,000 gpd)
## 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 848-1543, Hydrology, Geology Section for assistance.

### A. STATE WELL NO. 2001-08
### WELL NAME Palm Villa 2
### ISLAND Oahu

### B. LOCATION
- **Nama:** Gentry
- **TAX MAP KEY:** 9-1-061-027

### C. WELL OWNER
- **Nome:** Gentry

### D. DRILLING OR PUMP INSTALLATION CONTRACTOR
- **Nome:** PMCO

### E. TYPE OF RIG
- **Nome:** Cable Tool

### F. DATE OF WELL COMPLETION
- **Nome:** March 1991

### G. GROUND ELEVATION
- **Nome:** 35.97 ft.
- **Top of Drilling Platform:** 35.97 ft.
- **Height of Drilling platform above ground surface:** 0 ft.
- **Bench mark and method used to determine ground elevation:** 35.97 ft.

### H. TOTAL DEPTH OF WELL BELOW GROUND
- **Nome:** 16 ft. (hole size)
- **Nome:** 0 ft. to 60 ft. (hole size)

### J. CASING INSTALLED
- **Nome:** 12 in. I.D. x PVC
- **Nome:** 40 ft. below ground
- **Nome:** 12 in. I.D. x PVC
- **Nome:** 60 ft. below ground

### K. ANNUAL
- **Nome:** Grouted from 0 ft. to 20 ft. below ground
- **Nome:** Gravel packed from 0 ft. to 20 ft. below ground

### L. PERMANENT PUMP INSTALLATION
- **Nome:** Capacity 500 gpm
- **Nome:** Pump type, make, serial No.:
- **Nome:** Motor type, H.P., voltage, F.P.M.
- **Nome:** Depth of pump intake setting: 6 ft. below ground
- **Nome:** Depth of bottom of airline: 6 ft. below ground

### M. PROPOSED USE
- **Nome:** Date and time of measurement 3/11/91
- **Nome:** Date and time of sampling

### N. INITIAL WATER LEVEL
- **Nome:** 33.5 ft. below ground
- **Nome:** Date of well completion

### O. INITIAL CHLORIDE
- **Nome:** 50 ppm
- **Nome:** Date of Well Completion

### P. PUMPING TESTS: Reference point (R.P.) used:
- **Nome:** Date 3/11/91
- **Nome:** Start water level 33.26 ft. below R. P.
- **Nome:** End water level 33.26 ft. below R. P.
- **Nome:** Depth of well 60 ft. below R. P.

<table>
<thead>
<tr>
<th>Time (hours)</th>
<th>Draw down (ft.)</th>
<th>Cl (ppm)</th>
<th>Temp. °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00am</td>
<td>4:00pm</td>
<td>500</td>
<td>(50)</td>
</tr>
<tr>
<td></td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
<tr>
<td></td>
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<td>to</td>
<td>to</td>
<td>to</td>
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</table>

<table>
<thead>
<tr>
<th>Time (hours)</th>
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<th>Cl (ppm)</th>
<th>Temp. °F</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>to</td>
<td>to</td>
<td>to</td>
</tr>
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</table>

### Q. DRILLER'S LOG

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 38</td>
<td>Brown clay &amp; Coral</td>
</tr>
<tr>
<td>38 to 60</td>
<td>Coral-loose</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth, ft.</th>
<th>Rock Description &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### REMARKS

submitted by (print) 

Title: __________

Signature: __________

Date: __________
Description of Well--
1. Elevation: ground surface 35.37 ft., top of casing 40 ft., rotary table 20 ft., referenced to benchmark.
2. Total depth of well 60 ft.; or -25.63 ft. elevation, msl
3. 12 in. solid casing to 40 ft. depth, perforated to 20 ft. depth
4. Static water level 33.50 ft. below ground surface, top of casing; or 19 ft. elevation msl measured by method

Description of Pump and Pump Setting--
5. Turbine type pump with 3 stage bowl assembly
6. Gasoline diesel electric, power with 60 horsepower
7. Shaft speed: 1150 rpm at 500 gpm flow
8. Depth of pump intake: 53 ft. below ; or ft. elev. msl
9. Depth of airline bottom: 50 ft. below ground or -153 ft. elev. msl
10. Center of gage: ft. elev. msl. Flow measured with 6" Mcrometer
11. Test conducted by Leotoni Headly

<table>
<thead>
<tr>
<th>Date &amp; Time</th>
<th>Sample No.</th>
<th>Pumping rate (gpm)</th>
<th>Airline (feet)</th>
<th>Drawdown (feet)</th>
<th>Chlorides (ppm)</th>
<th>Temp. (°F)</th>
<th>Cond. (mmhos 25°C)</th>
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<tbody>
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<td></td>
<td></td>
<td>50</td>
<td>7.25 (57°F)</td>
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<td></td>
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<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:15</td>
<td>1</td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00</td>
<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
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<td>9:30</td>
<td></td>
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<td></td>
<td>7.00</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
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<td>10:30</td>
<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
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<td></td>
</tr>
<tr>
<td>11:00</td>
<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td></td>
<td>500</td>
<td></td>
<td>7.00</td>
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<tr>
<td>12:00</td>
<td></td>
<td>500</td>
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<td>7.00</td>
<td>500</td>
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</tr>
<tr>
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<td>7.00</td>
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<td>4:00</td>
<td></td>
<td>740</td>
<td></td>
<td>7.00</td>
<td>740</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheet No. 1 of ___ Sheets
TO: Gentry-Pacific, Ltd.
P.O. Box 295
Honolulu, HI 96809

In accordance with the Department of Land and Natural Resources Administrative Rules, Section 13-168, entitled "Water Use, Wells, and Stream Diversion Works", your application to construct and test Palm Villa-2 Well (Well No. 2001-08) within Tax Map Key: 9-1-12:33 to supply brackish water for landscape irrigation is 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 this permit commences.

2. This permit shall be for construction and testing only. No permanent pump may be installed and no water used from the well without the necessary pump installation and water use permits from the Commission.

3. The issuance of this permit shall in no way prejudice any future consideration by the Commission on the issuance or non-issuance of a permit to withdraw and use water from the well.

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

5. The following shall be submitted to DWRM, P.O. Box 373, Honolulu, Hawaii 96809, within 30 days after completion of the well:
WELL CONSTRUCTION PERMIT
Well No. 2001-08

a. Well Completion Report.
b. Elevation (referenced to mean sea level) survey by a Hawaii-licensed surveyor.
c. As-built sectional drawing of the well.
d. Plot plan and map showing the exact location of the well.
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. This permit may be revoked if work is not started within six months of the date of issuance or if work is suspended or abandoned for six months. The work shall be completed within two years of the date of issuance.

WILLIAM W. PATY, Chairperson
Commission on Water Resource Management

NOV 8 1990
Date of Issuance

c c: USGS
Department of Health
Drinking Water Branch
Ground Water Protection Program
Honolulu Board of Water Supply
Tom Nance Water Resources Engineering
CHECKLIST

☑ WELL CONSTRUCTION PERMIT
☐ PUMP INSTALLATION PERMIT

WELL NAME or LOCATION: Golf Villa - 1  
Gal.  
ISLAND: Oahu  

WELL NUMBER: 200-07-08  
Tax Map Key: 9-1-12:33

OWNER/OPERATOR:
Firm Name: Gentry-Pacific Ltd.  
Contact Person: Ronald Uemura  
Address: P.O. Box 295  
Honolulu, HI 96809  
Phone: 599-8203

LANDOWNER:
Firm Name: Same  
Contact Person:  
Address:  
Phone:

Date application received: 7-19-90
Date acknowledged receipt/request more info: 8-16-90
Date application accepted: 
Suspense date (90 days): 
Date filing fee deposited: 

Application sent to following:

<table>
<thead>
<tr>
<th>Department</th>
<th>Date sent</th>
<th>Comments received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept. of Health</td>
<td>8-21-90</td>
<td>9-12-90</td>
</tr>
<tr>
<td>Dept. of Hawn Home Lands</td>
<td>8-21-90</td>
<td></td>
</tr>
<tr>
<td>Dept/Bd of Water Supply</td>
<td>8-16-90</td>
<td>9-21-90</td>
</tr>
<tr>
<td>Historic Preserv. Prog.</td>
<td>8-16-90</td>
<td></td>
</tr>
<tr>
<td>Koolauola NB #28 (Oahu)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. Pub. Wrks (Hawaii)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OHA</td>
<td>8-21-90</td>
<td></td>
</tr>
</tbody>
</table>

Date agenda due:  
Date submittal due:  
Date submittal sent to applicant:  

Date application approved or disapproved: 
Date applicant notified of decision: 

REMARKS: 

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
MEMORANDUM

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

FROM:      Don Hibbard, Director, Historic Preservation Program

SUBJECT:   Well Construction and Pump Installation Permits (Ewa by Gentry)
            Hono'uli'uli, 'Ewa, O'ahu
            TMK: 9-1-12: 33

HISTORIC PRESERVATION PROGRAM CONCERNS:

Our records indicate that the property has undergone archaeological survey, and no historic properties were found other than the OR&L Right-of-Way. Archaeological subsurface testing was also done with negative results. The applicant's map shows both exploratory wells to be a distance from the OR&L Right-of-Way. Thus, we believe that the proposed actions will have "no effect" on any significant historic sites.

If you have any questions regarding this review, please contact Carol Kawachi of the Historic Preservation Division at 587-0015.
William W. Paty, Chairperson  
Commission on Water Resource Management  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Paty,

Well Construction and Pump Installation Permit Applications

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

- (Golf Villa (Well No. 2001-07)  
- Palm Villa (Well No. 2001-08)  
- Wailea 9 (Well No. 4226-13)  
- Wailea 10 (Well No. 4226-14)  
- Seibu #5 (Well No. 3926-04)  
- Seibu #6 (Well No. 3926-05)  
- Seibu #7 (Well No. 3826-04)  
- Seibu #8 (Well No. 3926-06)  
- Seibu #10 (Well No. 3926-08)  
- Seibu #11 (Well No. 3926-09)

The proposed wells do not impact Hawaiian Home Lands.

All of these wells support golf course irrigation. 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.
The Golf and Palm Villa wells (Gentry-Pacific) propose pumping a total of 160,000 GPD, the Wailea wells represent 1.056 MGD, and the Seibu wells would pump a total of 1.349 MGD, for a grand total of 2.565 MGD, or the equivalent of 5130 residential households. With fresh water a major constraint on housing development, this is a serious tradeoff.

We know that this is a difficult decision, and that the Water Resources Management Commission has had the same concerns.

Warmest aloha,

Hoaliko L. Drake, Chairman
Hawaiian Homes Commission
Honoroble 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 and Pump Installation 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:

Golf Villa-1 (Well No. 2001-07)
Palm Villa-2 (Well No. 2001-08)
Wailea 9 (Well No. 4226-13)
Wailea 10 (Well No. 4226-14)
Seibu #5 (Well No. 3926-04)
Seibu #6 (Well No. 3926-05)
Seibu #7 (Well No. 3826-04)
Seibu #8 (Well No. 3926-06)
Seibu #10 (Well No. 3926-08)
Seibu #11 (Well No. 3926-09)

Please submit your comments to us, orally or in writing, by September 4, 1990.

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

Very truly yours,

[Signature]

Encl.
Mr. Thomas K. Kaulukukui Sr.
Chairman & Trustee-At-Large
Office of Hawaiian Affairs
1600 Kapiolani Blvd., Suite 1500
Honolulu, Hawaii 96814

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

Dear Mr. Kaulukukui:

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

- Golf Villa-1 (Well No. 2001-07)
- Palm Villa-2 (Well No. 2001-08)
- Wailea 9 (Well No. 4226-13)
- Wailea 10 (Well No. 4226-14)
- Seibu #5 (Well No. 3926-04)
- Seibu #6 (Well No. 3926-05)
- Seibu #7 (Well No. 3826-04)
- Seibu #8 (Well No. 3926-06)
- Seibu #10 (Well No. 3926-08)
- Seibu #11 (Well No. 3926-09)

Please submit your comments to us, orally or in writing, by September 4, 1990.

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

Very truly yours,

WILLIAM W. PATY

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

Dear Mrs. Drake:

Well Construction and Pump Installation Permit Applications

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

- Golf Villa-1 (Well No. 2001-07)
- Palm Villa-2 (Well No. 2001-08)
- Wailea 9 (Well No. 4226-13)
- Wailea 10 (Well No. 4226-14)
- Seibu #5 (Well No. 3926-04)
- Seibu #6 (Well No. 3926-05)
- Seibu #7 (Well No. 3826-04)
- Seibu #8 (Well No. 3926-06)
- Seibu #10 (Well No. 3926-08)
- Seibu #11 (Well No. 3926-09)

Please submit your comments to us, orally or in writing, by September 4, 1990.

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

Very truly yours,

[Signature]

Encl.
Mr. Kazu Hayashida  
Manager and Chief Engineer  
Board of Water Supply  
City and County of Honolulu  
630 South Beretania Street  
Honolulu, Hawaii 96843  

Dear Mr. Hayashida:  

Well Construction and Pump Installation Permit Applications  

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

Golf Villa-1 (Well No. 2001-07)  
Palm Villa-2 (Well No. 2001-08)  

Please submit your comments to us, orally or in writing, by September 4, 1990.  

If you have any questions, please contact Ed Sakoda at 548-7543.  

Sincerely,  

[Signature]  
MANABU TAGOMORI  
Deputy Director  

ES:bm
MEMORANDUM

To: Don Hibbard, Director
   Historic Preservation Program

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

Subject: Well Construction and Pump Installation Permit Applications

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

   Golf Villa-1 (Well No. 2001-07)
   Palm Villa-2 (Well No. 2001-08)

Please submit your comments to us, orally or in writing, by September 4, 1990.

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

ES:bm
Enc
Gentry-Pacific, Ltd.
P.O. Box 295
Honolulu, HI 96809

Dear Gentry-Pacific, Ltd.:

We have received your applications and $25.00 filing fees to construct the Golf Villa-1 (Well No. 2001-07) and the Palm Villa-2 (Well No. 2001-08) wells at Tax Map Key: 9-1-12:33, Ewa, Oahu.

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

Dear Manabu:

RE: Tom Nance's Letter Dated July 18, 1990 Regarding Well Permit Applications for Ewa by Gentry

Upon review of Mr. Nance's letter and report, we note a few errors we wish to correct.

1. The recently completed report by Roscoe Moss Company for Palm Court 3 is for Well No. 2002-12, not No. 2002-13.

2. Also on the location map submitted by Mr. Nance, the well to be drilled in the vicinity of Geiger Road and the Park site is Well No. 2001-04, not No. 2001-02.

Mr. Nance's summary table of permitted wells is correct, however.

Attached for your use is a map indicating the revised locations of the wells granted approval earlier.

If there should be any further questions regarding this matter, please feel free to call me.

Sincerely,

GENTRY DEVELOPMENT COMPANY

Ronald M. Uemura, PE  
Director of Engineering

RMU:me

Attachment

cc: Tom Nance (w/map)  
ND  
BE  
RKO
Summary of the Eight Permitted Ewa by Gentry Caprock Aquifer Wells

<table>
<thead>
<tr>
<th>Present DLNR Well No.</th>
<th>Corrected No. (If Necessary)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>same</td>
<td>Well has a water use permit and irrigates landscaping in the vicinity of the Ewa by Gentry entrance.</td>
</tr>
<tr>
<td>2001-03</td>
<td>same</td>
<td>Well has been drilled, cased, and pump tested. A water use permit application will be made at a future time for Palm Villa-3.</td>
</tr>
<tr>
<td>2001-04</td>
<td>2001-07 same</td>
<td>Not drilled yet; will be used to irrigate a park.</td>
</tr>
<tr>
<td>2001-05</td>
<td>same</td>
<td>Not drilled yet; will be used to irrigate Palm Court-4.</td>
</tr>
<tr>
<td>2002-11</td>
<td>same</td>
<td>Not drilled yet; will be used for golf course irrigation.</td>
</tr>
<tr>
<td>2002-12</td>
<td>same</td>
<td>Recently drilled, cased, and pump tested; will irrigate Palm Court-3.</td>
</tr>
<tr>
<td>2002-13</td>
<td>2001-06</td>
<td>Well has a water use permit and irrigates landscaping at Palm Villa-1.</td>
</tr>
<tr>
<td>1902-02</td>
<td>same</td>
<td>Not drilled yet; will be used for golf course irrigation.</td>
</tr>
</tbody>
</table>
Dear Manabu:

Well Drilling Permit Applications for the
Ewa by Gentry Project

The enclosed two well drilling permit applications and check for the filing fees are submitted on behalf of Gentry-Pacific, Ltd. These wells would be drilled, cased, and pump tested for their possible use to irrigate the landscaping at Golf Villa-1 and Palm Villa-2, two multi-family projects within Ewa by Gentry. Development of brackish water for irrigation will minimize consumption of potable-quality water for non-potable uses.

If the two permits are granted, they would bring the total number of permitted wells within Ewa by Gentry to 10. Since we have created some confusion regarding the well identification numbers and have shifted the well locations somewhat, the enclosed table and map provide an updated and corrected record of the first eight wells. Also enclosed are the as-buil dimensions and pump test record of well No. 2002-13 recently completed by Roscoe Moss. It will be used to irrigate the Palm Court-3 project. We anticipate submitting a water use permit application for it shortly.

If you have any questions, please contact me or Ron Uemura at Gentry-Pacific (599-8283).

Sincerely,

Tom Nance

TN: It

cc: Ron Uemura

Enclosures
Hoaliku L. Drake  
CHAIRMAN  
HAWAIIAN HOMES COMMISSION

August 31, 1990

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

Dear Mr. Paty,

Well Construction and Pump Installation Permit Applications

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

- Golf Villa (Well No. 2001-07)
- Palm Villa (Well No. 2001-08)
- Wailea 9 (Well No. 4226-13)
- Wailea 10 (Well No. 4226-14)
- Seibu #5 (Well No. 3926-04)
- Seibu #6 (Well No. 3926-05)
- Seibu #7 (Well No. 3826-04)
- Seibu #8 (Well No. 3926-06)
- Seibu #10 (Well No. 3926-08)
- Seibu #11 (Well No. 3926-09)

The proposed wells do not impact Hawaiian Home Lands.

All of these wells support golf course irrigation. 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.
The Golf and Palm Villa wells (Gentry-Pacific) propose pumping a total of 160,000 GPD, the Wailea wells represent 1.056 MGD, and the Seibu wells would pump a total of 1.349 MGD, for a grand total of 2.565 MGD, or the equivalent of 5130 residential households. With fresh water a major constraint on housing development, this is a serious tradeoff.

We know that this is a difficult decision, and that the Water Resources Management Commission has had the same concerns.

Warmest aloha,

Hoaliku L. Drake, Chairman
Hawaiian Homes Commission
July 18, 1990

**DEPARTMENT OF LAND & NATURAL RESOURCES**

### DELUXE FORM WVC-3 V-2

<table>
<thead>
<tr>
<th>DATE</th>
<th>DESCRIPTION</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WELL DRILLING PERMIT APPLICATIONS FOR THE EWA BY GENTRY PROJECT (054.3400)</td>
<td>$50.00</td>
</tr>
<tr>
<td></td>
<td><strong>GOLF VILLA - 1</strong> (WELL NO. 2001-07)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>PALMA VILLA - 2</strong> (WELL NO. 2001-08)</td>
<td></td>
</tr>
</tbody>
</table>
APPLICATION FOR

PUMP INSTALLATION PERMIT

INSTRUCTIONS: Please print or type and send completed application with attachments to the Division of Water Resource Management, P.O. Box 373, Honolulu, Hawaii 96809. Application must be accompanied by a non-refundable filing fee of $25.00 payable to the Department of Land and Natural Resources. (Filing fee waived for government agencies.) If necessary, phone 548-1543, Hydrology/Geology Section for assistance.

1. WELL LOCATION

Island Oahu Tax Map Key 9-1-12:33
Address Ewa by Gentry Construction Site

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

2. WELL OWNER

Firm Name Gentry-Pacific, Ltd.
Contact Person Ronald Uemura
Address P.O. Box 295 Honolulu, Hawaii 96809
Phone 599-8283

3. PROPOSED CONTRACTOR FOR: [ ] Well Drilling [ ] Pump Installation

Name Roscoe Moss Company
Address 830 Ahua Street
Contractor's License No. C-2101
Phone 839-6888

4. PROPOSED WORK

[ ] Drill New Well [ ] Deepen
[ ] Alter [ ] Seal
[ ] Install New Pump [ ] 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) Landscape at Palm Villa-2 [ ] Other (specify) ______

Approx.

6. PROPOSED AMOUNT OF WITHDRAWAL 80,000 gallons per day

7. PROPOSED PUMP INFORMATION

Pump Type: [ ] Vertical Turbine [ ] Submersible
[ ] Centrifugal
Motor: [ ] Diesel [ ] Gas [ ] Electric: 10 Rated Horsepower
Rated Pump Capacity 130 gallons per minute (gpm)


Well Owner (print) Ronald H. Uemura Landowner (print) Ronald H. Uemura
Signature ____________________________ Signature ____________________________
Date 7/16/99 Date 7/16/99

For Official Use Only:

Field Checked By ____________________________ Latitude ____________ Hydrologic Unit ____________
Date ____________________________ Longitude ____________ State Well No. 2001-08

Palm Villa-2
Briefly describe the proposed work:

The well will be drilled, cased, and pump tested for its possible use to irrigate landscaping at Gentry's Palm Villa-2 project.

PROPOSED SECTION OF WELL

Elevation at top of casing 37 ft., msl.
Cement Grout 30 ft.
Hole Dia. 16 in.
Total Depth 55 ft.
Rock Packing 0 ft.

Ground Elev. 35 ft., msl

Solid Casing:
- Material: ASTM A-242 (Corten) Steel
- Length: 35 ft.
- Diameter: 12 in.
- Wall thickness: 0.3125 in.

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

Open Hole:
- Length: 2
- Diameter: 16 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.