Well No. 1229
H Brothers Well

1 MILE RADIUS

SCALE: 1" = 2000'

Well Location
MEMO and ROUTE SLIP

WCR 1 Check for Well No. 1229-03 (survey to regulation memo)

1. **Pump Tests Check**  Glenn Bauer *(initial)*

- **Step-Drawdown Test:**
  - followed WCP1 Stds analysis attached
  - proposed pump cap o.k.

- **Aquifer Pump Test:**
  - followed WCP1 Stds T & S analysis attached

- **Well Interference:**
  - estimated Steady-State drawdown at 1-mile radius is ______ ft.

- **Stream Surface Water Impacted:**
  - Geology Code for Well Index: Q E 1

2. **Construction Check**  Mitch Ohye *(initial)*

- data complete
- followed Special Cond & elevations
- well database updated

- **Latitude**
- **Longitude**

3. Charley/Lenore/Ryan *(initial)* take action based on above analysis

- ATTACHMENTS FOR PUMP INSTALLATION PERMIT:
  - 1 COVER LETTER
  - 2 PERMIT (2x)
  - 3 DOH COMMENTS
  - 4 LAND DIV. COMMENTS
  - 5 WCR 2 FORM
  - 6 WUR FORM
  - 7 USGS MAP
  - 8 PARCEL CHECK
  - 9 DATABASE PRINTOUT
  - 10 GLENNS WORKSHEET
  - 11 WELL AS-BUILT CHECK PRINT

4. Roy  *(initial)* check
5. Subia  *(initial)* finalize
6. Ernie  *(initial)* signature
7. Charley/Lenore/Ryan file

**Notes:**
- Hot surf if E.I. 1500' or 1170' MDH.
- Form 12-9-6-5-18 correct v 9-6-5-18
- NAD27
- NAD83
- How did the change from 9-6-5-18 to 9-6-5-18 happen?
- Revised
- Correct
- Not necessary – only WCP.
- To be sent to applicant
- WC certificate not until survey complete.
- Fred Page to finalize
- No pump test or elev survey, but will do w/ Waiver letter to OAR also.
November 4, 2005

Ref: 1229-03.pip.doc

Mr. Dale Stromquist
Wai'eli Drilling
P.O. Box 5685
Kailua-Kona, HI 96745

Dear Mr. Stromquist:

Pump Installation Permit
H Brothers Well (Well No. 1229-03)

Enclosed are two (2) originals of your approved Pump Installation Permit for the captioned well(s) that authorize permanent pump installation work for your well(s). As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 11:

Special Conditions

1. If the elevation benchmark needs to be altered, the permittee, well operator, and/or well owner shall ensure that the benchmark is transferred (or the well resurveyed) and documentation of the new benchmark shall be submitted to the Commission within sixty (60) days after the pump is installed.

2. Attached for your information are copies of the Department of Health's (DOH) review comments. Please note DOH's requirements related to discharge of effluent from well drilling and testing activities.

3. The permittee shall conduct aquifer pump tests in accordance with the Hawaii Well Construction and Pump Installation Standards (revised February 2004) on the latest aquifer pump test data forms, which are available by contacting staff or on the web at www.hawaii.gov/dlnr/cwrm/forms.htm

4. An elevation survey must be completed in accordance with the Hawaii Well Construction and Pump Installation Standards.

The permittee is responsible for all conditions of the permit. This includes ensuring the submission of a completed Well Completion Report Part II form within sixty (60) days after the pump installation work is completed. Be advised that you may be subject to fines of up to $5,000 per day for any violations of your permit conditions starting from the permit approval date.

Please sign both permit originals and return one for our files.
IMPORTANT - Pump installation shall not commence until a fully signed permit is returned to the Commission.

Finally, this letter is notice that we have accepted your Well Completion Report - Part I as complete as of October 18, 2005.

If you have any questions, please call Ryan Imata of the Commission staff at 587-0255 or toll-free at 974-4000 (Hawaii), 274-3141 (Kauai), 984-2400 (Maui), or 1-800-468-4644 (Lanai & Molokai), extension 70255.

Sincerely,

[Signature]

Peter T. Young
Chairperson

Enclosure

c: Ellis Hester
   Hawaii DWS
PUMP INSTALLATION PERMIT
H Brothers Well, Well No. 1229-03

Note: This permit shall be prominently displayed at the site until the work is completed

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 H Brothers Well (Well No. 1229-03) at TMK 9-6-005: 018, Hawaii, subject to the Hawaii Well Construction & Pump Installation Standards (HWCPIS - February 2004) which include but are not limited to the following conditions:

1. The Chairperson to the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work covered by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. No withdrawal of water shall be made other than for testing until a Certificate of Pump Installation Completion has been issued by the Commission.

3. This permit shall be prominently displayed, or made available, at the site of construction work until work is completed.

4. The pump installation permit shall be for installation of a 200 gpm rated capacity, or less, pump in the well. This permanent capacity may be reduced in the event that the pump test data does not support the capacity.

5. A water-level measurement access shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels.

6. The permittee shall install an approved meter or other appropriate means for measuring and reporting withdrawals and appropriate devices or means for measuring chlorides and temperature at the well head.

7. Well Completion Report Part II shall be submitted to the Chairperson within 60 days after completion of work. This form can be obtained by contacting staff or on the internet at www.hawaii.gov/dlnr/cwrrm.

8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances, and non-compliance may be grounds for revocation of this permit.

9. The pump installation permit application and any related staff submittal approved by the Commission are incorporated into this permit by reference. This permit is also subject to the HWCPIS. If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result. Any variances from the HWCPIS shall be approved by the Chairperson prior to invoking the variance.

10. The work proposed in the pump installation 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 Chairperson upon a showing of good cause and good faith performance. A request to extend the permit shall be submitted to the Chairperson no later than the date the permit expires.

11. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

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

Date of Approval: October 18, 2005
Expiration Date: October 18, 2007

PETER T. YOUNG, Chairperson
Commission on Water Resource Management

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I shall not commence work until I and the pump installer have signed, dated, and returned the permit to the Commission. I understand that this permit is not to be transferred to any other entity. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $5,000 per day starting from the permit date of approval.

Installer's Signature: C-57, C-57a, or A License #: C-16543 Date: 

Printed Name: Dale Stromquist Firm or Title: Wai'eli Drilling

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

Attachments
November 4, 2005

Mr. Fred Page
P.O. Box 1434
Pahoa, HI 96778

Dear Mr. Page:

Well Completion Report Part I for Well No. 1229-03

We received your Well Completion Report Part I for the H Brothers Well (Well No. 1229-03) on June 14, 2004.

Your Well Completion Report was incomplete because it did not contain the elevation survey or pump test. However, we understand that Wai'eli Drilling is now taking care of the completion of the pump installation. Therefore, you are no longer required to furnish this information, and this requirement will be Wai’eli’s responsibility. Therefore, we are informing you that your obligation under this permit is complete.

If you have any questions, please contact Ryan Imata of the Commission staff at 587-0255 or toll-free at 974-4000 (Hawaii), extension 70255.

Sincerely,

DEAN A. NAKANO
Acting Deputy Director

RI:ss

c: Aiden Hester
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
WELL COMPLETION REPORT - PART I
Well Construction

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/

1. State Well No.: 1229-03  Well Name: H Brothers Well  Island: Hawaii
2. Address: Pahala  Tax Map Key: 9-6-5: 16
4. Drilling method used during construction: ☑ Rotary ☑ Percussion ☑ Other (describe)
5. Date Well Construction (drilled,cased,grouted) completed: 5/07/04
6. Was the subject well cored? ☑ Yes ☑ No
7. Initial water-level encountered 120 ft. below ground Date and time of measurement: 3/22/2004
8. Step-Drawdown Test completed? ☐ No ☑ Yes Attach Step-Drawdown Test form (12/17/97 SDPTD Form)
9. Constant Rate Aquifer Test completed? ☑ No ☑ Yes Attach Constant Rate Aquifer Test form (12/17/97 CRPTD Form)
10. Water-level: ft. above msl Date and time of measurement: 
11. Chloride: ppm Date and time of sampling: 
12. Temperature: °F Date and time of measurement: 3/22/2004
13. Fill in the as-built section on the other side of this sheet.
14. Fill in attached surveyor's report.
15. If a pump is not planned to be installed, please describe (below in the remarks section) how well is secured to prevent unauthorized access (example: lockable cover, threaded coupling, etc.)
16. The proposed manufacturer's rated pump capacity is gpm at a head of ft.
17. Remarks: As of this date 6/11/04 a pump has not been installed. The well is secured with a steel cap welded securely on to the casing.

Licensed Driller (print) Fred Page Drilling Int'l  C-57 Lic. No. C - 16653

Signature ___________________________ Date 6/11/2004

Permittee (print) Ellis Hester

Signature ___________________________ Date 6/11/04
13. AS-BUILT SECTION

(Please attach as-built if different diagram provided below)

- Elevation at top of casing (to nearest 0.01 ft.)
  - Hole Diameter: 1500 ft., msl
  - Ground Elevation: 1500 ft., msl
  - Minimum of 2' Radius & 4" Thick Concrete Pad

- Hole Diameter: 1170 ft., msl
- Total Depth: 1168 ft.
- Elevation at top of casing (to nearest 0.01 ft.)

- Bench mark elevation:
  - 1500 ft., msl
    - (Survey to nearest 0.01 ft.)

- Cement Grout: 500 ft.
  - (min. 70% of distance from ground elevation to top of water surface or 500 ft., whichever is less.)

- Annular space between hole and casing (min.3")
  - 4 in.

- Rock or Gravel Packing:
  - 668 ft.
  - Material:
    - Crushed Basalt
    - Rounded Gravel

- Water Level Elevation:
  - 1120 ft., msl

*msl = mean sea level

**Solid Casing Material:**

- Carbon Steel: compliant with (check one or more):
  - ANSI/AWWA C200
  - API Spec. 5L
  - ASTM A53
  - ASTM A139

- Stainles Steel: (check one):
  - ASTM A409 (production wells)
  - ASTM A312 (monitor wells)

- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)
  - Schedule 40
  - Schedule 80

- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one)
  - Schedule 40
  - Schedule 80
  - Schedule 1-0

- Thermoset Plastic: (check one)
  - Filament Wound Resin Pipe conforming to ASTM D2996
  - Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - FEP Fluorocarbon Tubing conforming to ASTM D3296

**Open Casing Material:**

- Carbon Steel: compliant with (check one or more):
  - ANSI/AWWA C200
  - API Spec. 5L
  - ASTM A53
  - ASTM A139

- Stainles Steel: (check one):
  - ASTM A409 (production wells)
  - ASTM A312 (monitor wells)

- ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)
  - Schedule 40
  - Schedule 80

- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one)
  - Schedule 40
  - Schedule 80
  - Schedule 1-0

- Thermoset Plastic: (check one)
  - Filament Wound Resin Pipe conforming to ASTM D2996
  - Centrifugally Cast Resin Pipe conforming to ASTM D2997
  - Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517
  - Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950
  - PTFE Fluorocarbon Tubing conforming to ASTM D3296
  - FEP Fluorocarbon Tubing conforming to ASTM D3296

**Open Hole:**

- Length: _________ ft.
- Diameter: _________ in.
- Bottom Elevation: _________ ft., msl

**Open Casing:**

- Perforated Screen
  - Length: _________ ft.
  - Nominal Diameter: _________ in.
  - Wall Thickness: _________ in.
  - Bottom Elevation: _________ ft., msl

**Solid Casing:**

- Length: _________ ft.
- Nominal Diameter: _________ in.
- Wall Thickness: _________ in.
- Bottom Elevation: _________ ft., msl

Please refer to the HAWAII WELL CONSTRUCTION AND PUMP INSTALLATION STANDARDS to ensure that your as-built is in compliance with applicable standards.
**DRILLER'S LOG**

**WELL NUMBER: 1229-03**

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, etc.</th>
<th>Dates</th>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, etc.</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4</td>
<td>Broken basalt</td>
<td></td>
<td>272 to 283</td>
<td>Grey basalt</td>
<td></td>
</tr>
<tr>
<td>4 to 18</td>
<td>Broken basalt &amp; brown clay</td>
<td></td>
<td>283 to 297</td>
<td>Brown basalt</td>
<td></td>
</tr>
<tr>
<td>18 to 22</td>
<td>Broken basalt/greybrown</td>
<td></td>
<td>297 to 360</td>
<td>Grey/brown basalt</td>
<td></td>
</tr>
<tr>
<td>22 to 28</td>
<td>Grey basalt (hard)</td>
<td></td>
<td>360 to 385</td>
<td>Grey basalt</td>
<td></td>
</tr>
<tr>
<td>28 to 32</td>
<td>Brown basalt</td>
<td></td>
<td>385 to 395</td>
<td>Brown basalt</td>
<td></td>
</tr>
<tr>
<td>32 to 63</td>
<td>Basalt gravel &amp; brown sandy clay</td>
<td></td>
<td>395 to 445</td>
<td>Grey basalt</td>
<td></td>
</tr>
<tr>
<td>63 to 80</td>
<td>Grey basalt</td>
<td></td>
<td>445 to 507</td>
<td>Grey/brown basalt (very open)</td>
<td></td>
</tr>
<tr>
<td>80 to 95</td>
<td>Brown/broken basalt/Sandy clay</td>
<td></td>
<td>507 to 530</td>
<td>Brown basalt (open)</td>
<td></td>
</tr>
<tr>
<td>95 to 100</td>
<td>Light brown basalt</td>
<td></td>
<td>530 to 540</td>
<td>Grey basalt</td>
<td></td>
</tr>
<tr>
<td>100 to 114</td>
<td>Grey basalt</td>
<td></td>
<td>540 to 627</td>
<td>Grey/brown basalt</td>
<td></td>
</tr>
<tr>
<td>114 to 120</td>
<td>Brown basalt</td>
<td></td>
<td>627 to 673</td>
<td>Grey basalt (firm)</td>
<td></td>
</tr>
<tr>
<td>120 to 175</td>
<td>Grey basalt</td>
<td></td>
<td>673 to 682</td>
<td>Cinders (lost all cuttings)</td>
<td></td>
</tr>
<tr>
<td>175 to 202</td>
<td>Grey/brown basalt</td>
<td></td>
<td>682 to 848</td>
<td>Brown basalt</td>
<td></td>
</tr>
<tr>
<td>202 to 229</td>
<td>Brown basalt</td>
<td></td>
<td>848 to 855</td>
<td>Grey/brown basalt (hard)</td>
<td></td>
</tr>
<tr>
<td>229 to 253</td>
<td>Grey/brown basalt</td>
<td></td>
<td>855 to 906</td>
<td>Grey basalt (firm)</td>
<td></td>
</tr>
<tr>
<td>253 to 257</td>
<td>Grey basalt</td>
<td></td>
<td>906 to 915</td>
<td>Brown basalt</td>
<td></td>
</tr>
<tr>
<td>257 to 268</td>
<td>Rock chips/brown clay</td>
<td></td>
<td>915 to 930</td>
<td>Grey basalt</td>
<td></td>
</tr>
<tr>
<td>268 to 272</td>
<td>Brown Basalt</td>
<td></td>
<td>930 to 981</td>
<td>Brown basalt</td>
<td></td>
</tr>
</tbody>
</table>

Remarks:
DRILLER'S LOG

WELL NUMBER: 1229-03

<table>
<thead>
<tr>
<th>Depths (ft.)</th>
<th>Rock Description, Water Level, etc.</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>981 to 992</td>
<td>Grey/brown basalt (hard)</td>
<td></td>
</tr>
<tr>
<td>992 to 1002</td>
<td>Grey basalt</td>
<td></td>
</tr>
<tr>
<td>1002 to 1015</td>
<td>Grey/brown basalt</td>
<td></td>
</tr>
<tr>
<td>1015 to 1040</td>
<td>Brown basalt</td>
<td></td>
</tr>
<tr>
<td>1040 to 1058</td>
<td>Grey basalt (firm)</td>
<td></td>
</tr>
<tr>
<td>1058 to 1078</td>
<td>Brown basalt</td>
<td></td>
</tr>
<tr>
<td>1078 to 1086</td>
<td>Grey basalt (firm)</td>
<td></td>
</tr>
<tr>
<td>1086 to 1098</td>
<td>Brown basalt (firm)</td>
<td></td>
</tr>
<tr>
<td>1098 to 1104</td>
<td>Brown basalt (open lost cuttings)</td>
<td></td>
</tr>
<tr>
<td>1104 to 1133</td>
<td>Basalt (lost all cuttings water at 1120)</td>
<td></td>
</tr>
<tr>
<td>1133 to 1157</td>
<td>Brown basalt (clean cuttings)</td>
<td></td>
</tr>
<tr>
<td>1157 to 1168</td>
<td>Lost all cuttings</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: 45ft. water in the hole.
Well Construction Permit for Well No. 1229-03

Thank you for submitting your signed Well Construction Permit on February 12, 2003. You had attached a letter requesting the installation of the permanent pump prior to obtaining the pump installation permit. However, Declaratory Ruling DEC-ADM98-G5 is only applicable to pumps that are between 0 and 70 gallons per minute. Your application shows that you will be installing a 200 gpm pump. Therefore, unless you have decided to install a pump that is less than 70 gpm, you must obtain a pump installation permit prior to installing the permanent pump.

If you have any questions, please contact Ryan Imata of the Commission staff at 587-0255 or toll-free at 974-4000 (Hawaii), extension 70255.

Sincerely,

DEAN A. NAKANO
Acting Deputy Director
Mr. Ellis Hester

Dear Mr. Hester:

Well Construction Permit
H Brothers Well (Well No. 1229-03)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) that authorize well construction activities but excludes installation work for your permanent pump. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 13:

Special Conditions

1. Attached for your information is a copy of the Department of Health's (DOH) review comments. Please note DOH's requirements related to discharge of effluent from well drilling and testing activities.

2. The well should not be used for drinking water unless it is properly tested and treated.

3. If potable water is used to supply both domestic and irrigation purposes in a single system, the permittee shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water.

4. The annular space may be 1 ½” if pressure grouting from the bottom upward is performed.

This permit does not authorize work for your permanent pump installation. Approval and issuance of your pump installation permit is contingent upon completed application and information provided to and accepted by Commission staff as required in the Well Construction & Pump Installation Standards (1/23/97) and any special conditions performed under this permit. However, a permanent pump may be installed prior to the permanent pump installation permit issuance in accordance with the Commission's April 15, 1998 Declaratory Ruling No. DEC-ADM98-G5, which states that:
WELL CONSTRUCTION PERMIT
H Brothers Well, Well No. 1229-03

Note: This permit shall be prominently displayed at the site until the work is completed.

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 construction and testing of H Brothers Well (Well No. 1229-03) at Pahala, Hawaii, TMK 9-6-005: 018, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The well construction permit shall be for construction and testing of the well only. A minimum 1 1/4-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson.

4. The permittee, well operator, and/or well owner shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee, well operator, and/or well owner shall stop work and contact the Department's Historic Preservation immediately.

6. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) 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 records, including time, pumping rate, drawdown, chlorine content, and other data.

8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997: HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

10. The permit may be revoked by the Commission 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

11. If the permit is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit relating to or connected with the granting of this permit.

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

Date of Approval: August 21, 2002
Expiration Date: August 21, 2004

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I shall not commence work until I and the driller have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the permit date of approval.

Permittee's Signature: 
Printed Name: Ellis J. Hazen
Firm or Title: Owner
Driller's Signature: 
Printed Name: Fred Page
C-57 License #: C-66773
Firm or Title: Page Drilling

Please sign both copies of this permit, return one to the Chairperson, and retain the other for your records.
"Permanent pump installation for capacities between 0-70 gpm and where the proposed use is for private individual needs in non-ground-water management areas may be allowed prior to the final pump installation permit issuance. When required as a condition of the well construction permit, subsequent pumping tests shall validate the acceptability of the permanent pump. The permanent pump installed prior to final pump installation permit issuance is subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant's well."

If you qualify and wish to take advantage of this ruling, please include a written request to install the permanent pump prior to final pump installation permit issuance when you return to us your signed well construction permit.

Please sign and have the contractor sign both permit originals and return one for our files. Also, copies of the aquifer pump test worksheet and the well completion report form are enclosed for your use.

IMPORTANT - Drilling work shall not commence until a fully signed permit is returned to the Commission. Please provide all the information in this packet to your well drilling contractor. The permittee, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the well construction contractor, or other party who constructs the well(s), submits a completed Part J of the Well Completion Report form (enclosed) within sixty (60) days after the well construction work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions starting from the permit approval date.

If you have any questions, please call Ryan Imata of the Commission staff at 587-0255 or toll-free at 974-4000 (Hawaii), 274-3141 (Kauai), 984-2400 (Maui), or 1-800-468-4644 (Lanai & Molokai) extension 70255.

Aloha,

[Signature]

GILBERT S. COLOMA-AGARAN
Chairperson

Endosures
Mr. Gilbert S. Coloma-Agaran, Chairperson  
Department of Land and Natural Resources  
Commission on Water Resources  
P.O. Box 621  
Honolulu HI 96809  

RE: H Brothers Well (Well No. 1229-03)

Dear Mr. Coloma-Agaran;

This is a request to install the permanent pump prior to final pump installation permit issuance in accordance with the Commission's April 15, 1998 Declaratory Ruling No.DEC-ADM98-G5.

Sincerely,

Ellis Hester

Mr. Ellis Hester

enc.
August 28, 2002

Mr. Ellis Hester

Dear Mr. Hester:

Notice of Commission Action
H Brothers Well (Well No. 1229-03)

This letter serves as your official notice of action taken by the Commission on Water Resource Management (Commission) on the subject application. By a unanimous vote of the Commission at their meeting on August 21, 2002, the Commission:

A. Approved the issuance of a well construction permit for H Brothers Well (Well No. 1229-03), subject to the standard conditions in Exhibit 3 of the staff submittal, and the following special conditions:

1) The well should not be used for drinking water unless it is properly tested and treated.

2) If potable water is used to supply both domestic and irrigation purposes in a single system, the permittee shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water.

3) Approve the variance for a 1 ½" annular space for the H Brothers Well (Well No. 1229-03) if pressure grouting from the bottom upward is performed.

If you have any questions, please contact Ryan Imata of Commission staff at 587-0255.

Sincerely,

Linnei T. Nishioka
Deputy Director
Mr. Ellis Hester

Dear Mr. Hester:

Well Construction Permit  
H Brothers Well (Well No. 1229-03)

Enclosed are two (2) copies of your approved Well Construction Permit for the captioned well(s) that authorize well construction activities but excludes installation work for your permanent pump. As part of the Chairperson's approval, the following special conditions were added and are part of your permit under Permit Condition 13:

**Special Conditions**

1. Attached for your information is a copy of the Department of Health's (DOH) review comments. Please note DOH's requirements related to discharge of effluent from well drilling and testing activities.

2. The well should not be used for drinking water unless it is properly tested and treated.

3. If potable water is used to supply both domestic and irrigation purposes in a single system, the permittee shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water.

4. The annular space may be 1 ½" if pressure grouting from the bottom upward is performed.

This permit **does not** authorize work for your permanent pump installation. Approval and issuance of your pump installation permit is contingent upon completed application and information provided to and accepted by Commission staff as required in the Well Construction & Pump Installation Standards (1/23/97) and any special conditions performed under this permit. However, a permanent pump may be installed prior to the permanent pump installation permit issuance in accordance with the Commission's April 15, 1998 Declaratory Ruling No. DEC-ADM98-G5, which states that:
"Permanent pump installation for capacities between 0-70 gpm and where the proposed use is for private individual needs in non-ground-water management areas may be allowed prior to the final pump installation permit issuance. When required as a condition of the well construction permit, subsequent pumping tests shall validate the acceptability of the permanent pump. The permanent pump installed prior to final pump installation permit issuance is subject to removal if the testing shows that a smaller pump is required to reduce the potential of affecting neighboring wells and localized upconing at the applicant's well."

If you qualify and wish to take advantage of this ruling, please include a written request to install the permanent pump prior to final pump installation permit issuance when you return to us your signed well construction permit.

Please sign and have the contractor sign both permit originals and return one for our files. Also, copies of the aquifer pump test worksheet and the well completion report form are enclosed for your use.

**IMPORTANT** - Drilling work shall not commence until a fully signed permit is returned to the Commission. Please provide all the information in this packet to your well drilling contractor. The permittee, well operator, and/or well owner are responsible for all conditions of the permit. This includes ensuring that the well construction contractor, or other party who constructs the well(s), submits a completed Part I of the Well Completion Report form (enclosed) within sixty (60) days after the well construction work is completed. Be advised that you may be subject to fines of up to $1000 per day for any violations of your permit conditions starting from the permit approval date.

If you have any questions, please call Ryan Imata of the Commission staff at 587-0255 or toll-free at 974-4000 (Hawaii), 274-3141 (Kauai), 984-2400 (Maui), or 1-800-468-4644 (Lanai & Molokai) extension 70255.

Aloha,

[Signature]

GILBERT S. COLOMA-AGARAN
Chairperson

Enclosures
Note: This permit shall be prominently displayed at the site until the work is completed.

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 construction and testing of H Brothers Well (Well No. 1229-03) at Pahala, Hawaii, TMK 9-6-005: 018, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 521, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The well construction permit shall be for construction and testing of the well only. A minimum 1½-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson.

4. The permittee, well operator, and/or well owner shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee, well operator, and/or well owner shall stop work and contact the Department's Historic Preservation immediately.

6. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) 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 records, including time, pumping rate, drawdown, chloride content, and other data.

8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

10. The permit may be revoked by the Commission 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. The permittee's successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

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

Date of Approval: August 21, 2002
Expiration Date: August 21, 2004

I have read the conditions and terms of this permit and understand them. I accept and agree to meet these conditions as a prerequisite and underlying condition of my ability to proceed and understand that I shall not commence work until I and the driller have signed, dated, and returned the permit to the Commission. I also understand that non-compliance with any permit condition may be grounds for revocation and fines of up to $1000 per day starting from the date of approval.

Permittee's Signature: ___________________________ Date: ___________________________
Printed Name: ___________________________ Firm or Title: ___________________________

Driller's Signature: ___________________________ C-57 License #: ___________________________ Date: ___________________________
Printed Name: ___________________________ Firm or Title: ___________________________

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

Attachment
  c: USGS
Department of Health/ Safe Drinking Water, Wastewater, and Clean Water Branches
Hawaii Department of Water Supply
STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

August 21, 2002
Honolulu, Oahu

Ellis Hester

APPLICATION FOR WELL CONSTRUCTION / PUMP INSTALLATION PERMITS
REQUEST FOR VARIANCE
H Brothers Well (Well No. 1229-03)
Well Construction: 8-inch Casing Diameter, 1210-ft. Deep Well
Pump Installation: 200 gpm for Irrigation use
TMK 9-6-5: 18, Hawaii

APPLICANT: Ellis Hester

LANDOWNER: Same

DESCRIPTION:
Location: (See Exhibit 1) Dimensions: (See Exhibit 2)

BACKGROUND:
The applicant submitted a Well Construction and Pump Installation Permit application on May 17, 2002. The applicant requested a variance to the annular space requirement, because of the costs associated with drilling a larger hole.

ISSUES/ANALYSIS:
Section 2.6(d) of the Hawaii Well Construction and Pump Installation Standards states that

The annular space of wells to be grouted must be a minimum of three inches all around the casing to permit effective placement of grout with a tremie pipe having a minimum diameter of 1 ¼ inches. Should casing with collars be used, the drilled hole shall be increased to provide a minimum three-inch annular space at the collars.
According to Section 4.7.8.3 of ANSA/AWWA A100-97, the AWWA Standard for Water Wells,

4.7.8.3 Thickness of sanitary seal. The annular space around the conductor and/or well casing, from the surface to the designated depth, shall be grouted and shall not be less than 3 in. (77 mm) in radial thickness or 6 in. (152 mm) in net diametrical difference. This may be reduced to 1 ½ in. (19 mm) radial thickness or 3 in. (77 mm) in net diametrical difference if the pressure grouting from the bottom upward is performed using cement tubing or the Halliburton method. This procedure shall be followed regardless of the drilling method.

The driller is intending to pump grout the annulus with a tremie pipe. While a 1 ½” annulus requires a variance from the standards, it is sufficient according to AWWA if pressure grouting from the bottom upward is performed.

RECOMMENDATION:

A. Approve the issuance of a well construction permit for H Brothers Well (Well No. 1229-03), subject to the standard conditions in Exhibit 3, and the following special conditions:

1) The well should not be used for drinking water unless it is properly tested and treated.

2) If potable water is used to supply both domestic and irrigation purposes in a single system, the permittee shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water.

3) Approve the variance for a 1 ½” annular space for the H Brothers Well (Well No. 1229-03) if pressure grouting from the bottom upward is performed.

Respectfully submitted,

LINNEL T. NISHIOKA
Deputy Director

Exhibit(s):
1. (Location Map)
2. (Proposed Well Section)
3. (Standard Well Construction Permit Conditions)
PROPOSED WELL SECTION

- Elevation at top of casing: 1502 ft., msl*
- Total Depth: 1210 ft.
- Cement Grout: 500 ft. (min. 70% of distance from ground elevation to top of water surface or 500 ft., whichever is less.)
- Annular space between hole and casing: 2 in.
- Rock or Gravel Packing: 710 ft.
  - Material: Crushed Basalt, Rounded Gravel
- Solid Casing: (≥ 90% x (Ground Elev.-Water Level Elev))
  - Total Length: 1110 (approx) ft.
  - Nominal Diameter: 8 in.
  - Wall Thickness: 3/4 in.
  - Bottom Elevation: 280 ft., msl*
- Open Casing: □ Perforated
  - Total Length: as needed to 100 ft.
  - Nominal Diameter: 8 in.
  - Wall Thickness: 3/4 in.
  - Bottom Elevation: 280 ft., msl*
- Open Hole:
  - Length: n/a ft.
  - Diameter: n/a in.
  - Bottom Elevation: n/a ft., msl*

EXHIBIT 2
WELL CONSTRUCTION PERMIT STANDARD CONDITIONS

1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §13-168-15, Hawaii Administrative Rules.

2. The well construction permit shall be for construction and testing of the well only. A minimum 11/4-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is approved and issued by the Chairperson.

3. In basal ground water, the depth of the well may not exceed one-fourth (1/4) of the theoretical thickness (41 times initial head) of the basal ground water unless otherwise authorized by the Chairperson.

4. The permittee, well operator, and/or well owner shall incorporate mitigation measures to prevent construction debris from entering the aquatic environment, to schedule work to avoid periods of high rainfall, and to revegetate any cleared areas as soon as possible.

5. In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during construction, the permittee, well operator, and/or well owner shall stop work and contact the Department’s Historic Preservation immediately.

6. The proposed well construction shall not adversely affect existing or future legal uses of water in the area, including any surface water or established instream flow standards. This permit or the authorization to construct the well shall not constitute a determination of correlative water rights.

7. The following shall be submitted to the Chairperson within sixty (60) days after completion of work:
   b. Elevation (referenced to mean sea level, msl) 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 records, including time, pumping rate, drawdown, chloride content, and other data.

8. The permittee, well operator, and/or well owner shall comply with all applicable laws, rules, and ordinances; non-compliance may be grounds for revocation of this permit.

9. The well construction permit application is incorporated into this permit by reference and is subject to the Hawaii Well Construction & Pump Installation Standards (January 23, 1997; HWCPIS). If the HWCPIS are not followed and as a consequence water is wasted or contaminated, a lien on the property may result.

10. The permit may be revoked by the Commission 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 Chairperson upon a showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Chairperson no later than three (3) months prior to the date the permit expires. If the commencement date is not met, the Commission may revoke the permit after giving the permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.

11. If the well is not to be used it must be properly capped. If the well is to be abandoned then the permittee, well operator, and/or well owner must apply for a well abandonment permit in accordance with §13-168-12(f) prior to any well sealing or plugging work.

12. The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act of omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit.

13. Special conditions in the attached cover transmittal letter are incorporated herein by reference.
3. METHODS OF INSTALLATION OF GROUT

3.1 General Considerations

Positive emplacement of grout by tremie, pumping or pressure is strongly recommended for all wells where the void space is not easily accessible from the ground surface, or where waste disposal wells are being constructed or where the casing has been drawn or where the well has been drilled by jetting or hydraulicing method.

The annular space for positive emplacement methods is to be a minimum of 1 1/2 inches for sand and cement or neat cement grout.

Before grouting the annular space should be flushed to make sure the void is open and ready for grouting.

Where grouting is to exceed 100 feet in total depth, the collapse strength of the casing should first be checked.

The annular space should be filled in one operation and should be completed before the occurrence of the initial set.

Grouting should always be introduced at the BOTTOM of the space to be grouted so as to avoid segregation or bridging.

Grout placement by dump bailer, or by gravity installation without the aid of a tremie or grout pipe should only be used if the interval to be grouted can be seen clearly and is dry and less than 30 feet in total depth below ground surface to ensure adequate visual observation. Bad subsurface water quality zones should be grouted five feet above and below the zone. The annular space surrounding the casing between grouted zones should be filled with sand.

Grout should only extend to within one foot of a pitless adapter or unit casing connection.

Centralizers are required to maintain a minimum annular space where a complete seal is required. Centralizers should be mandatory at the bottom of an irrigation well. In community water supply wells centralizers should be placed in the bottom of the hole and at other critical points.

3.2 Methods of Drilled Well Construction to Provide an Adequate Grout Seal Around the Well Casing


8/21/2002
Drilled wells constructed with a surface seal in overburden it is recommended be constructed by first drilling and installing a surface casing of a diameter 4 inches larger than the finished well. In formations where the hole can be kept open the surface casing may not be necessary and a 4 inch oversized open hole can be drilled instead. The annular space between the surface casing or open hole and the permanent inner casing can then be filled with grout. The surface casing can be withdrawn as the grout is placed.

In cases where there is a possibility for contamination of wells drilled into bedrock or drilled wells penetrating clay, hardpan or other relatively stable unconsolidated material, a cement grout seal is recommended which extends from the surface through these formations and in the case of a bedrock well extends 15 feet down into the bedrock.

This cement grout seal in the bedrock well for example, can be achieved by first drilling and installing an oversized casing 4 inches larger in diameter than the finished well, down to the bedrock. The oversized hole is then continued as an "open hole" into the bedrock below the casing to the minimum 15 foot depth. The permanent inner casing is then installed to the bottom of the oversized open bedrock hole. The annular space between the outer casing or open hole and the permanent inner casing is filled with cement grout. The outer casing can be withdrawn as the grout is placed.

3.3 Methods of Grouting the Annular Space Surrounding a Well Casing*

Grout Pipe Outside Casing

If the annular space is of sufficient size to accommodate a grout pipe of such diameter as is necessary to complete operations in the time available, use of such pipe is satisfactory, in fact perhaps the most fool-proof method of grouting. The pipe should extend to the bottom of the annular space initially and should remain submerged in grout during the entire time that grout is being placed. The pipe may be left in place, or it may be gradually removed. In the event of interruption in the grouting operations, the bottom of the pipe should be raised above the grout level and should not be resubmerged until all air and water have been displaced from the grout pipe. The grout may be pumped into the pipe or applied continuously by gravity, although this method of placing grout is not advocated for depths in excess of 100 ft. or where the grout level cannot be readily determined by sampling or by displacement calculations. A minimum width of 1 1/2 in. is necessary to accommodate a 1/2 in. coupled minimum size grout pipe.

Grout Pipe Inside Casing

A second method of applying grout employs a pipe installed within the casing. The drill hole is plugged below the bottom of the casing, or the grouting operation is conducted when the drill hole has been completed to the depth at which the casing is to terminate. A suitable packer connection, permitting removal of the grout pipe and preventing grout leakage into the interior of the casing pipe, is provided at the bottom of the casing. The casing is suspended slightly above point of bearing, and the grout is forced upward through the annular space by means of pumps or
pneumatic pressure arrangements. When the annular space has been filled to the overflow point, the grout pipe is disconnected and pulled out through the casing pipe. The casing may be held in place or lowered to the point of bearing. In deep settings the casing pipe should be kept full of water. After 72 hr. or longer, work on the well may be resumed by drilling out the grout pipe packer connection and plug. When the well is drilled by the rotary method, the grout may be forced into the annular space in a manner similar to that described above, except that the grout is applied through the hollow drill stem.

**Halliburton Method**

A third method of grouting is that employed by the Halliburton Oil Well Cementing Co. who hold certain patents thereon. With this method the grout is applied through the casing pipe, being preceded and succeeded by a "spacer" or piston plug." In brief, the first plug is inserted and the casing capped; a measured amount of grout is applied; the second plug is inserted and the casing capped; a measured volume of water is pumped into the casing until the second plug reaches the end thereof. The first plug drops into the drill hole below the casing, which is suspended sufficiently to provide clearance, while the grout moves upward into the annular space. Neat cement grout is normally used with this method.

*From AWWA Standard for Deep Wells See also Sanitary Protection of Wells in Part 1 of these guide-lines.
<table>
<thead>
<tr>
<th>Well No.</th>
<th>1229-03</th>
<th>Date of Review</th>
<th>7/2/2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Name</td>
<td>0</td>
<td>Reviewer</td>
<td>RRI</td>
</tr>
<tr>
<td>Applicant</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 1: WELL LOCATION INFORMATION

<table>
<thead>
<tr>
<th>Island</th>
<th>HAWAII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquifer System</td>
<td>######</td>
</tr>
<tr>
<td>Aquifer Sector</td>
<td>######</td>
</tr>
</tbody>
</table>

**Proposed Use**

<table>
<thead>
<tr>
<th>Proposed Withdrawal</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Sustainable Yield</td>
<td>17</td>
</tr>
</tbody>
</table>

### SECTION 2: WELL SECTION DATA

(enter data in grey cells only)

<table>
<thead>
<tr>
<th>Elevation at top of casing</th>
<th>15580 ft., m.s.l.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Elevation</td>
<td>15580 ft., m.s.l.</td>
</tr>
<tr>
<td>Cement Grout</td>
<td>15580 ft.</td>
</tr>
<tr>
<td>Rock Packing</td>
<td>15580 ft.</td>
</tr>
<tr>
<td>Hole Diameter</td>
<td>15580 ft.</td>
</tr>
<tr>
<td>Total Depth</td>
<td>15580 ft.</td>
</tr>
</tbody>
</table>

| Estimated Head             | 15580 ft.          |
| Calculated Aquifer Thickness | 15580 ft.     |
| County Water Supply (Y/N ?) | N     |

### SECTION 3: CHECKLIST

(values to check are shaded)

**Well Depth**

<table>
<thead>
<tr>
<th>Theoretical Thickness of Aquifer</th>
<th>15580 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 Aquifer Thickness</td>
<td>3695 ft.</td>
</tr>
<tr>
<td><strong>Depth of Well below Sea Level</strong></td>
<td>-290 ft.</td>
</tr>
</tbody>
</table>

(disregard if the well is not basal)

**Well Casing**

<table>
<thead>
<tr>
<th>Minimum Wall Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
</tr>
<tr>
<td>County or Non-County</td>
</tr>
<tr>
<td>Minimum Thickness per standards</td>
</tr>
<tr>
<td><strong>Wall Thickness Provided</strong></td>
</tr>
</tbody>
</table>

(disregard this if this is a non-county well)

<table>
<thead>
<tr>
<th>Minimum Length of Solid Casing</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% of ground to top of aquifer</td>
</tr>
<tr>
<td><strong>Length of solid casing Provided</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM A53</td>
</tr>
</tbody>
</table>

**Annular Space**

<table>
<thead>
<tr>
<th>Calculated Depth of Grouting</th>
<th>500 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depth of Grouting provided</strong></td>
<td>500 ft.</td>
</tr>
<tr>
<td><strong>Thickness of Annular Space</strong></td>
<td>2 in.</td>
</tr>
</tbody>
</table>

If the cell above reads #N/A, reference HWCPIS)

okay (refer to HWCPIS Section 2.2.2)

okay (refer to HWCPIS Section 2.4 c)

okay (refer to HWCPIS Section 2.4 d)

okay (refer to HWCPIS Section 2.4 e)

If the cell above reads #N/A, reference HWCPIS)

okay (refer to HWCPIS Section 2.6 c)

If the cell above reads #N/A, reference HWCPIS)

too small (refer to HWCPIS Section 2.6 d)
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

June 17, 2002

TO: Honorable Bruce S. Anderson, Director
Department of Health
Attention: Dennis Tulang, Wastewater Branch
William Wong, Safe Drinking Water Branch
Dr. Keith Kawaoka, Hazardous Evaluation and Emergency Response
Alec Wong, Clean Water Branch

FROM: Gilbert S. Coloma-Agaran, Chairperson
Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
H Brothers Well (Well No. 1229-03)

Transmitted for your review and comment is a copy of the captioned Well Construction/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 28, 2002. If we do not receive comments or a request for additional review time by this date, we will assume that you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:

This well qualifies as a source which will serve as a source of potable water to a public water system (defined as serving 25 or more people at least 60 days per year or having 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-2.

This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year or 15 service connection(s)) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

For the applicant's information, a source of possible wastewater contamination is not located near the proposed well site (information attached).

An NPDES permit is required.

Other relevant DOH rules/regulations, information, or recommendations are attached.

No comments/objections

Contact Person: Lori N Kajimura
Phone: 586-4294

Signed: 06-25-2002
June 17, 2002

TO: Dede Mamiya, Administrator
   Land Division

FROM: Linnel T. Nishioka, Deputy Director
   Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
   H Brothers Well (Well No. 1229-03)

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by June 28, 2002. If we do not receive comments or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:

[ ] A water lease/permit is required of this applicant and an application for such will be requested by our division.

☒ A water lease/permit is not required of this applicant.

[ ] A water lease/permit has been obtained by the applicant through lease no. ____________________________

☒ This well project [ ] requires [ ] does not require a CDUP. If a CDUP is required it [ ] has [ ] has not been approved and [ ] is [ ] is not currently active.

[ ] Other relevant Land Division rules/regulations, information, or recommendations are attached.

[ ] No objections

☒ Other comments: Original source of private title is Grant 1374:2 issued prior to Statehood in 1959.

Contact Person: Gary Martin
Phone: 587-0421

Signed: ________________________ Date: JUN 25 2002
June 17, 2002

TO: Honorable Bruce B. Anderson, Director  
Department of Health  
Attention: Dennis Tulang, Wastewater Branch  
William Wong, Safe Drinking Water Branch  
Dr. Keith Kawaoa, Hazardous Evaluation and Emergency Response  
Alex Wong, Clean Water Branch

FROM: Gilbert S. Coloma-Aganan, Chairperson  
Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application  
H Brothers Well (Well No. 1228-03)

Transmitted for your review and comment is a copy of the captioned Well Construction/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 28, 2002. If no response is received by this date, we will assume that you have no comments.

Please find the attached map to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:

[1] This well qualifies as a source which will serve as a source of potable water to a public water system (defined as serving 25 or more people a least 60 days per year of two 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-202.

[2] This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 60 days per year of 10 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if the well is to be used for any other purpose, the water quality can be maintained through proper maintenance and usage.

[3] If the well is to be used for both potable and non-potable purposes in a single system, the user shall maintain cross-contamination barriers by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable systems with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

[4] It does not appear that this well will be used for potable purposes and is not subject to Safe Drinking Water Regulations.

For the applicant's information, a source of potable water contamination [the 1 is not located near the proposed well site (information attached).

An NPDES permit is required.

Other relevant DOH rules/regulations, information, or recommendations are attached.

No comments/objections

Contact Person: Bill Wong  
Phone: 586-4258

Signed: Bill Wong  
Date: JUN 26 2002
The Department of Health, Safe Drinking Water Branch has the following additional comments for the Well Construction/Pump Installation Permit Application for the H Brothers Well (Well No. 8-1229-03 Hawaii):

1. It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water regulations. However, steps should be taken to prevent both direct human consumption of this water, and cross-connections with any potable water supply. If the user receives water from the Hawaii Department of Water Supply, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots and piping as "NON-POTABLE", to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested. The Hawaii Department of Water Supply must be notified as they may require a backflow preventer on their service connection to the facilities.

2. Please be advised that the Department of Health has experienced drinking water and groundwater contamination by submersible pumps containing mercury. Specifically, the failure of the seals of the pumps allowed mercury to leak out into the well shaft resulting in contamination of the well and the water served by the well. Please review your pump specifications to be sure that the submersible pump(s) you propose to use does not contain materials which could result in either groundwater contamination or drinking water contamination.

6/26/02
The Department of Health, Clean Water Branch has the following comments:

1. For Well-Drilling Activities

Any discharge to State waters of treated process wastewater effluent associated with well drilling activities is regulated by Hawaii Administrative Rules, Title 11, Chapter 55, Appendix I, effective September 22, 1997. Treated process wastewater effluent covered by this general permit includes well drilling slurries, lubricating fluids wastewaters, and well purge wastewaters. This general permit does not cover well pump testing. The applicable Notice of Intent Forms and filing fee shall be submitted at least thirty (30) days before the start of discharge to the Department of Health, Clean Water Branch at 919 Ala Moana Boulevard, Room 301, Honolulu, Hawaii 96814-4920 or P.O. Box 3378, Honolulu, Hawaii 96801-3378. Inquiries may be directed to the Clean Water Branch at (808) 586-4309 or by fax at (808) 586-4352.

2. For Well Pump Testing

The discharger shall take all measures necessary to prevent the discharge of pollutants from entering State waters. Such measures shall include, if necessary, containment of the initial discharge until the discharge is essentially free of pollutants. If the discharge is entering a stream or river bed, best management practices shall be implemented to prevent the discharge from disturbing the clarity of the receiving water. If the discharge is entering a storm drain, the discharger must obtain written permission from the owner of that storm drain prior to discharge. Furthermore, best management practices shall be implemented to prevent the discharge from collecting sediments and other pollutants prior to entering the storm drain.

JS/cr
TO:                   Honorable Bruce S. Anderson, Director  
                     Department of Health  
                     Attention: Dennis Tulang, Wastewater Branch  
                     William Wong, Safe Drinking Water Branch  
                     Dr. Keith Kawoaka, Hazardous Evaluation and Emergency Response  
                     Alec Wong, Clean Water Branch  
FROM:                 Gilbert S. Coloma-Agaran, Chairperson  
                     Commission on Water Resource Management  
SUBJECT:              Well Construction/Pump Installation Permit Application  
                     H Brothers Well (Well No. 1229-03)  

Transmitted for your review and comment is a copy of the captioned Well Construction/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 26, 2002. If we do not receive comments or a request for additional review time by this date, we will assume that you have no comments.  

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:  

This well qualifies as a source which will serve as a source of potable water to a public water system (defined as serving 25 or more people at least 60 days per year or having 15 or more service connections and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 26, Rules Relating to Potable Water Systems, §11-25-26).  

This well does not qualify as a source serving a public water system (serves less than 25 people or more people at least 90 days per year or 15 service connections) and if the well is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.  

If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable pipes with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.  

It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.  

For the applicant's information, a source of possible wastewater contamination is not located near the proposed well site (information attached).  

An NPDES permit is required.  

Other relevant DOH rules/regulations, information, or recommendations are attached.  

No comments/objections  

Contact Person: Alec Wong  
Phone: 586-4309  
Signed: Alec Wong  
Date: 6/24/02
June 17, 2002

Mr. Ellis Hester

Dear Mr. Hester:

Well Construction/Pump Installation Permit Application for Well No. 1229-03

We acknowledge receipt, on May 17, 2002, of your completed Well Construction/Pump Installation permit application and filing fee for the H Brothers Well (Well No. 1229-03). You can expect your application to be processed within ninety (90) days from this date.

For your information, the process of constructing a well is normally regulated and permitted in two (2) steps. First, a well construction permit is issued for drilling and testing purposes only. Based upon information provided by you through a Well Completion Report Part 1 (Well Construction), a pump installation permit (upon completed application) may then be issued to authorize pump work. If a pump is installed then a Well Completion Report Part 2 (Pump Installation) is required.

If you have any questions about your permit application, please contact Ryan Imata of the Commission staff at 587-0255 or toll-free at 974-4000 (Hawaii), 274-3141 (Kauai), 984-2400 (Maui), or 1-800-468-4644 (Lanai & Molokai) extension 70255.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director
June 17, 2002

TO: Honorable Bruce S. Anderson, Director
Department of Health
Attention: Dennis Tulang, Wastewater Branch
William Wong, Safe Drinking Water Branch
Dr. Keith Kawaoka, Hazardous Evaluation and Emergency Response
Alec Wong, Clean Water Branch

FROM: Gilbert S. Coloma-Agaran, Chairperson
Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
H Brothers Well (Well No. 1229-03)

Transmitted for your review and comment is a copy of the captioned Well Construction/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 28, 2002. If we do not receive comments or a request for additional review time by this date, we will assume that you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:

This well qualifies as a source which will serve as a source of potable water to a public water system (defined as serving 25 or more people at least 60 days per year or has 15 or more service connections) and must receive Director of Health approval prior to its use to comply with Hawaii Administrative Rules (HAR), Title 11, Chapter 20, Rules Relating to Potable Water Systems, §11-2.

This well does not qualify as a source serving a public water system (serves less than 25 people at least 60 days per year or 15 service connections) and if the well water is used for drinking, the private owner should test for bacteriological and chemical presence before initiating such use and routinely monitor the water quality thereafter. However, if future planned use from this source increases to meet the public water system definition then Director of Health approval is required prior to implementation.

If the well is used to supply both potable and non-potable purposes in a single system, the user shall eliminate cross-connections and backflow connections by physically separating potable and non-potable systems by an air gap or an approved backflow preventer, and by clearly labeling all non-potable spigots with warning signs to prevent inadvertent consumption of non-potable water. Backflow prevention devices should be routinely inspected and tested.

It does not appear that this well will be used for consumptive purposes and is not subject to Safe Drinking Water Regulations.

For the applicant's information, a source of possible wastewater contamination is not located near the proposed well site (information attached).

An NPDES permit is required.

Other relevant DOH rules/regulations, information, or recommendations are attached.

No comments/objections

Contact Person: __________________________ Phone: ______________

Signed: __________________________ Date: ______________
TO: Dede Mamiya, Administrator
   Land Division

FROM: Linnel T. Nishioka, Deputy Director
   Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
          H Brothers Well (Well No. 1229-03)

Transmitted for your review and comment is a copy of the captioned Well
Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the
programs, plans, and objectives specific to your division. Please respond by returning this
cover memo form by June 28, 2002. If we do not receive comments or a request for
additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions
about this permit application, request additional information, or request additional review time,
please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:

[ ] A water lease/permit is required of this applicant and an application for such will be requested by our division.

[ ] A water lease/permit is not required of this applicant.

[ ] A water lease/permit has been obtained by the applicant through lease no. ____________________.

[ ] This well project [ ] requires [ ] does not require a CDUP. If a CDUP is required it [ ] has
   [ ] has not been approved and [ ] is [ ] is not currently active.

[ ] Other relevant Land Division rules/regulations, information, or recommendations are attached.

[ ] No objections

[ ] Other comments:

Contact Person: ____________________ Phone: __________

Signed: ____________________ Date: __________
June 17, 2002

TO: Don Hibbard, Administrator
    Historic Preservation

FROM: Linnel T. Nishioka, Deputy Director
      Commission on Water Resource Management

SUBJECT: Well Construction/Pump Installation Permit Application
         H Brothers Well (Well No. 1229-03)

Transmitted for your review and comment is a copy of the captioned Well Construction/Pump Installation permit application.

We would appreciate your comments on the captioned application with regard to the programs, plans, and objectives specific to your division. Please respond by returning this cover memo form by June 28, 2002. If we do not receive comments or a request for additional review time by this date, we will assume you have no comments.

Please find the attached maps to locate the proposed well. If you have any questions about this permit application, request additional information, or request additional review time, please contact Ryan Imata of the Commission staff at 587-0255.

RESPONSE:

[ ] There may be areas in the vicinity of the well site that contain subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal.

[ ] Other relevant Historic Preservation rules/regulations, information, or recommendations are attached.

[ ] No objections

[ ] Other comments:

Contact Person: ___________________________ Phone: ___________

Signed: _________________________________ Date: _______________
AWWA STANDARD
FOR
WATER WELLS

First edition approved by AWWA Board of Directors May 10, 1946.
This edition approved June 15, 1997.

AMERICAN WATER WORKS ASSOCIATION
8888 West Quincy Avenue, Denver, Colorado 80235
4.7.4 Well-casing installation. The method of well-casing installation shall be at the option of the drilling constructor, provided the installation meets the requirements of Sec. 4.7.9, and the installation process does not alter the shape, size, configuration, or strength of the casing.

4.7.4.1 Casing joints. Casing joints shall be of the types listed in Table 6.

4.7.4.2 Drive shoes. Special steel drive shoes used when the casing is pushed or driven shall be heat-treated (Rockwell C Hardness 30-32) SAE 1040 steel ring or equivalent.

4.7.4.3 Sealing of well casing. Well casing shall be sealed in accordance with Sec. 4.7.8.

4.7.5 Well-screen installation. Well screens installed in gravel pack wells shall be centered in the hole. A sufficient number of centralizing devices shall be used to ensure concentricity.

4.7.6 Gravel-pack installation.

4.7.6.1 Placement. Gravel shall be placed to ensure continuity of the gravel pack without bridging, voids, or segregation (see appendix B).

4.7.6.2 Drilling fluid. Before the introduction of gravel pack, the drilling fluid shall be reconditioned, unless different properties are needed to protect the well, until it has the following properties:

1. Weight—a maximum of 68 lb/ft³ (1,083 kg/m³).
2. Viscosity—a maximum of 30 seconds, API Marsh funnel test.
3. Sand content of fluid in the system—a maximum of 1 percent, by volume.

4.7.6.3 Unusual drilling conditions. Where aquifer conditions make it necessary to continue drilling operations with drilling fluid that does not meet these standards, the drilling constructor shall be responsible for the complete removal of drilling fluid and development of the well.

4.7.7 Gravel-pack disinfection. The gravel pack shall be disinfected according to Sec. 4.9 as it is installed.

4.7.8 Grouting and sealing requirements.

4.7.8.1 General. Sealing consists of filling the annular space between the casing and borehole with a substance that forms an impermeable seal.

4.7.8.2 Sealing requirements. All wells shall be sealed to a 50-ft (15.2-m) depth or more, unless modified by state or local regulatory agencies, to prevent the entrance of water from any source other than from the aquifers selected.

4.7.8.3 Thickness of sanitary seal. The annular space around the conductor and/or well casing, from the surface to the designated depth, shall be grouted and shall not be less than 3 in. (77 mm) in radial thickness or 6 in. (152 mm) in net diametrical difference. This may be reduced to 1½ in. (19 mm) radial thickness or 3 in. (77 mm) in net diametrical difference if the pressure grouting from the bottom upward is performed using cement tubing or the Halliburton method. This procedure shall be followed regardless of the drilling method.

<table>
<thead>
<tr>
<th>Material</th>
<th>Type of Joint</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Welded or threaded and coupled</td>
<td>ANSI/WWA C206</td>
</tr>
<tr>
<td></td>
<td>Threaded and coupled, solvent-welded, or key locked</td>
<td>ASTM F480</td>
</tr>
<tr>
<td></td>
<td>Welded</td>
<td>ANSI/WWA C206</td>
</tr>
<tr>
<td>F</td>
<td>YR</td>
<td>APP</td>
</tr>
<tr>
<td>---</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>S</td>
<td>02</td>
<td>326</td>
</tr>
<tr>
<td>(1)</td>
<td>25.00</td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>25.00</td>
<td></td>
</tr>
</tbody>
</table>

**REMARKS:**

LINE (1) Well No. 1229-03 (WCPA)

LINE (2)____

LINE (3)____

LINE (4)____

Date: JUN 13

**NAME/DESCRIPTION (WANG INPUT):**

Sokha & Ellis J. Hester

59-102/1213

Pay to the Order of...

Dept of Land & Natural Resource $25.00

Ellis J. Hester

For: Well Permit

To Reorder Call 1-800-355-8123
**PUBLIC RECORD DATA**

<table>
<thead>
<tr>
<th>Taxkey</th>
<th>Subdiv/Condo</th>
<th>Tnr</th>
<th>Property Address</th>
<th>Owner/Lessee</th>
<th>Beds</th>
<th>Baths</th>
<th>Land area</th>
<th>Living area</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-9-6-5-18</td>
<td>F</td>
<td></td>
<td></td>
<td>HESTER, ELLIS J</td>
<td></td>
<td></td>
<td>112.40 ac</td>
<td></td>
</tr>
</tbody>
</table>

This information has been supplied by third parties and has not been independently verified by Hawaii Information Service and is, therefore, not guaranteed.
<table>
<thead>
<tr>
<th>Approved Well No.</th>
<th>Well Name</th>
<th>Applicant</th>
<th>Driller</th>
<th>Type</th>
<th>Well Construction</th>
<th>Pump Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/20/2002</td>
<td>2485-02</td>
<td>Rupa Barbara McKenzie</td>
<td>C-16653</td>
<td>BOTH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
May 15, 2002

TO: Commission of Water Resources Management
Hawaii Department of Land Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

From: Ellis J. Hester

Subject: Request for a Variance on Grouted Annulus for the Hester Well in Pahala

My understanding is that the widely recognized American Water Works Association standards for well construction states that an 1 1/2-inch grouted annulus is provides an adequate seal to prevent contamination from the surface. My proposed well is very deep so that volume of annulus to be grouted is quite large. The lava formations of Mauna Loa are known to have lava tubes that will take large volumes of cement to fill. In order to control cost of the well, I request a variance from the State Well Construction Standards to permit my well to have an 1 1/2 inch grouted annulus.
State of Hawaii  
COMMISSION ON WATER RESOURCE MANAGEMENT  
Department of Land and Natural Resources  
APPLICATION FOR PERMIT  

** werd construction and/or pump installation**

**Instructions:** Please read this application form carefully. If the Commission may not accept incomplete applications, for assistance, call the Regulation Branch at 587-0225. For further information and updates to this application form, visit http://www.state.hi.us/dlnr/cwrm.

### Applicant Information

- **Applicant:** Ellis Hester  
- **Contact Person:** Ellis Hester  
- **Fax:** (808) 965-5339

### Well & Pump Information

- **Well Name:** Brothers  
- **Island:** Hawaii

#### 2. Well Name

- **Address:** P.O. Box 219, Pahoa  
- **Tax Map Key:** 96-6-12

#### 3. Proposed Work

- **Proposed Method of Flow:** Install New Pump*  
- **Rated Pump Capacity:** 200 gallons per minute

#### 4. Construction

- **Type:** Drilled  
- **Method:** Deep Well Turbine

#### 5. Proposed Pump Information

- **Pump Type (Check one):** Deep Well Turbine  
- **Rate:** 300,000 gallons per day

#### 6. Proposed Use

- **Proposed Use:** Domestic (individual, noncommercial water system)

#### 7. Proposed Amount of Withdrawal

- **Proposed Amount of Withdrawal:** 300,000 gallons per day

### Other Information

- **LEGAL REQUIREMENTS:**  
  - CDUP  
  - SMAP  
  - EIS  
  - EA  
  - None  
  - Other (explain): Other (explain)

### Remarks, Explanations

- **Remarks:** Irrigation of Crops

---

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 v.t completion/abandonment report within 60 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 cumulative water rights and shall not guarantee the pump capacity or future use up to the permitted pump capacity.

---

For official use only

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Aquifer System No.</th>
<th>Longitude</th>
<th>State Well No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. PROPOSED WELL SECTION

(please attach schematic if different from diagram provided below)

Elevation at top of casing 10 ft., msl*

Hole Diameter: 12 in.

Minimum of 2' Radius & 4" Thick Concrete Pad (to contain benchmark surveyed to nearest 0.01 ft.)

Ground Elevation: 1500 ft., msl*

Please refer to the HAWAII WELl CONSTRUCTION AND PUMP INSTALLATION STANDARDS to ensure that your as-built is in compliance with applicable standards.

Casing: (± 90% x (Ground Elev.-Water Level Elev.))

Total Length: 1110 APPROX ft.

Nominal Diameter: 8 in.

Wall Thickness: 1/4 in.

Bottom Elevation: 280 ft., msl*

Solid Casing:

Total Length: AS NEEDED TO 108 ft.

Nominal Diameter: 8 in.

Wall Thickness: 1/4 in.

Bottom Elevation: 280 ft., msl*

note: Neither bentonite nor mud should be used in saturated zone during drilling

Open Casing:

Perforated Screen

Total Length: AS NEEDED TO 108 ft.

Nominal Diameter: 8 in.

Wall Thickness: 1/4 in.

Bottom Elevation: 280 ft., msl*

Open Hole:

Length: N/A ft.

Diameter: N/A in.

Bottom Elevation: N/A ft., msl*

* The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,

Bottom Elevation of Well Limit = \( \frac{2 \times (\text{Water Level Elev.} - \text{Ground Elev.})}{4} \)

Example: Estimated + 2 ft. Level Elev. = Bottom Elevation of Well Limit = \( \frac{2 \times (41 - 18.5)}{4} \) = 18.5 ft.

Solid Casing Material:

Carbon Steel: compliant with (check one or more): Q ANSI/AWWA C200 Q API Spec. 5L \( \checkmark \) ASTM A53 Q ASTM A139

And compliant with (check one or more): Q ASTM A242 Q Type E Q Type S \( \checkmark \) Grade B Q Other

Stainless Steel: (check one):

Q ASTM A409 (production wells) Q ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) \( \checkmark \) Schedule 40 Q Schedule 80

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):

Q Schedule 40 Q Schedule 80 Q Schedule 120

Thermoset Plastic: (check one):

Q Filament Wound Resin Pipe conforming to ASTM D2996

Q Centrifuely Cast Resin Pipe conforming to ASTM D2997

Q Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

Q Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

Q PTFE Fluorocarbon Tubing conforming to ASTM D3296

Q FEP Fluorocarbon Tubing conforming to ASTM D3296

Open Casing Material:

Carbon Steel: compliant with (check one or more): Q ANSI/AWWA C200 Q API Spec. 5L \( \checkmark \) ASTM A53 Q ASTM A139

And compliant with (check one or more): Q ASTM A242 Q Type E Q Type S \( \checkmark \) Grade B Q Other

Stainless Steel: (check one):

Q ASTM A409 (production wells) Q ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) \( \checkmark \) Schedule 40 Q Schedule 80

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):

Q Schedule 40 Q Schedule 80 Q Schedule 120

Thermoset Plastic: (check one):

Q Filament Wound Resin Pipe conforming to ASTM D2996

Q Centrifuely Cast Resin Pipe conforming to ASTM D2997

Q Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

Q Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

Q PTFE Fluorocarbon Tubing conforming to ASTM D3296

Q FEP Fluorocarbon Tubing conforming to ASTM D3296

*The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

For non-salt water Basal Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,

Bottom Elevation of Well Limit = \( \frac{2 \times (\text{Water Level Elev.} - \text{Ground Elev.})}{4} \)

Example: Estimated + 2 ft. Level Elev. = Bottom Elevation of Well Limit = \( \frac{2 \times (41 - 18.5)}{4} \) = 18.5 ft.

Solid Casing Material:

Carbon Steel: compliant with (check one or more): Q ANSI/AWWA C200 Q API Spec. 5L \( \checkmark \) ASTM A53 Q ASTM A139

And compliant with (check one or more): Q ASTM A242 Q Type E Q Type S \( \checkmark \) Grade B Q Other

Stainless Steel: (check one):

Q ASTM A409 (production wells) Q ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) \( \checkmark \) Schedule 40 Q Schedule 80

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):

Q Schedule 40 Q Schedule 80 Q Schedule 120

Thermoset Plastic: (check one):

Q Filament Wound Resin Pipe conforming to ASTM D2996

Q Centrifuely Cast Resin Pipe conforming to ASTM D2997

Q Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

Q Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

Q PTFE Fluorocarbon Tubing conforming to ASTM D3296

Q FEP Fluorocarbon Tubing conforming to ASTM D3296

Open Casing Material:

Carbon Steel: compliant with (check one or more): Q ANSI/AWWA C200 Q API Spec. 5L \( \checkmark \) ASTM A53 Q ASTM A139

And compliant with (check one or more): Q ASTM A242 Q Type E Q Type S \( \checkmark \) Grade B Q Other

Stainless Steel: (check one):

Q ASTM A409 (production wells) Q ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) \( \checkmark \) Schedule 40 Q Schedule 80

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one):

Q Schedule 40 Q Schedule 80 Q Schedule 120

Thermoset Plastic: (check one):

Q Filament Wound Resin Pipe conforming to ASTM D2996

Q Centrifuely Cast Resin Pipe conforming to ASTM D2997

Q Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

Q Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

Q PTFE Fluorocarbon Tubing conforming to ASTM D3296

Q FEP Fluorocarbon Tubing conforming to ASTM D3296
COMMISSION ON WATER RESOURCE MANAGEMENT
ROUTE SLIP FOR NEW APPLICATIONS

DATE: 17-May-02

TO: RYAN
INIT. BAUER, G.

INIT. CHING, F.

INIT. FUJII, N.

INIT. HARDY, R.

INIT. HIGA, D.

INIT. HIRANO, E.

INIT. ICE, C.

INIT. IMATA, R.

INIT. JINNAI, R.

INIT. KUNIMURA, I.

FOR: JUM, A.

FOR: NAKAMA, L.

FOR: NAKANO, D.

FOR: NISHIOKA, L.

FOR: OYHE, M.

FOR: SAKODA, E.

FOR: SUBIA, S.

FOR: SWANSON, S.

FOR: UYENO, D.

FOR: YODA, K.

PLEASE:

1. Review & Comment

2. Take Action

3. Approval

4. Signature

5. Information

6. Type Final, label new file folder

7. File

8. Xerox copies

WELL NUMBER 1229-03

WELL NAME H Brothers

☐ WELL CONSTRUCTION

☐ PUMP INSTALLATION

☒ BOTH

ATTACHMENTS FOR APPLICATION PROCESSING - Both applicant & staff generated

1. TRANS. LETTER

2. CWRM MAP

3. APPL. FORM (3X)

4. USGS MAPS (3X)

5. TAX MAPS (3X)

6. PARCEL OWNER VERIF. - MLS PRINTOUT

7. CONTRACTOR VERIF. - DCCA LICENSE SCREEN PRINTOUT

8. ALL INFO FILLED IN

9. BACKGROUND CHECK

FOLDER:

☒ MADE NEW FILE FOLDER, ATTACHED

☐ FILE FOLDER ALREADY MADE, IN FILE CABINET

INCOMPLETE ACTION DATES:

DATE ACTION

---------

Variance

accept date 6/1/02

---------
May 15, 2002

TO: Commission of Water Resources Management
Hawaii Department of Land Natural Resources
P. O. Box 621
Honolulu, Hawaii  96809

From: Ellis J. Hester

Subject: Request for a Variance on Grouted Annulus for the Hester Well in Pahala

My understanding is that the widely recognized American Water Works Association standards for well construction states that an 1 1/2-inch grouted annulus is provides an adequate seal to prevent contamination from the surface. My proposed well is very deep so that volume of annulus to be grouted is quite large. The lava formations of Mauna Loa are known to have lava tubes that will take large volumes of cement to fill. In order to control cost of the well, I request a variance from the State Well Construction Standards to permit my well to have an 1 1/2 inch grouted annulus.
May 15, 2002

TO: Commission of Water Resources Management
    Hawaii Department of Land Natural Resources
    P. O. Box 621
    Honolulu, Hawaii 96809

From: Ellis J. Hester

Subject: Request for a Variance on Grouted Annulus for the Hester Well in Pahala

My understanding is that the widely recognized American Water Works Association standards for well construction states that an 1 1/2-inch grouted annulus is provides an adequate seal to prevent contamination from the surface. My proposed well is very deep so that volume of annulus to be grouted is quite large. The lava formations of Mauna Loa are known to have lava tubes that will take large volumes of cement to fill. In order to control cost of the well, I request a variance from the State Well Construction Standards to permit my well to have an 1 1/2 inch grouted annulus.
State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
APPLICATION FOR PERMIT

Instructions: Please print in ink or type and send completed application with attachments to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. Application must be accompanied by 3 copies and a non-refundable filing fee of $25.00 payable to the Dept. of Land and Natural Resources. The Commission may not accept incomplete applications. For assistance, call the Regulation Branch at 587-0225. For further information and updates to this application form, visit http://www.state.hi.us/dlnr/cwrm. The Commission may not accept incomplete applications. For assistance, call the Regulation Branch at 587-0225.

APPLICANT INFORMATION: (Fill out all three, if applicable, and place a check next to the primary contact)

1. (a) ☐ WELL OWNER: Ellis Hester  
   Contact Person: Ellis Hester

   Mailing:  
   Fax:  
   E-mail: 

2. ☐ LAND OWNER: Ellis Hester  
   Contact Person: Ellis Hester

   Mailing:  
   Fax:  
   E-mail: 

3. ☐ CONTRACTOR: Fred Page Drilling Int'l  
   Contact Person: Fred Page

   Mailing Address: P.O. Box 1434  
   Hilo  
   HI 96778

   Fax: (808) 965-5339  
   E-mail: 

WELL & PUMP INFORMATION: (Please fill in the diagram on the back of this form.)

2. WELL NAME:  
   Island: HI

   Address  
   P.O. Box 2148  
   Pahoa  
   HI 96778

   Tax Map Key:  
   Zone:  
   Sec:  
   Plat:  
   Parcel:  

   Attach the relevant portion of (a) a 7.5-Minute Series USGS topographic map (scale 1:24,000) and include the names of the quasi map, and (b) a property tax map, showing well location referenced to established property boundaries.

3. PROPOSED WORK: (Check all that apply)
   ☐ Construct New Well
   ☐ Install New Pump
   ☐ Modify Existing Well
   ☐ Abandon/Seal

   State Well No:  
   (if unknown, please call Commission at 587-0225)

4. CONSTRUCTION:  
   ☐ Drilled
   ☐ Dug
   ☐ Shaft
   ☐ Tunnel
   ☐ is this well part of a battery of wells? ☐ Yes ☐ No
   (Please describe)

5. PROPOSED PUMP INFORMATION:  
   Rated Pump Capacity: 200 gallons per minute

   Pump Type (Check one):  
   ☐ Deep Well Turbine  
   ☐ Rotary  
   ☐ Submersible  
   ☐ Propeller  
   ☐ Centrifugal  
   ☐ Rotary-Displacement  
   ☐ Reciprocating  
   ☐ Rotary-Gear  
   ☐ Impulse

   Does this well serve 25 or more people at least 60 days per year or have 15 or more service connections? ☐ Yes ☐ No

6. PROPOSED USE: (Check all that apply)
   ☐ Diversified Crops
   ☐ Other (explain):  
   ☐ Irrigation (crop)  
   ☐ Domestic (including hotels, stores, etc.)  
   ☐ Municipal (including hotels, stores, etc.)  
   ☐ Industrial  
   ☐ Other (explain):  

   No. of Acres:  
   ☐ Other (explain):  

7. (a) PROPOSED AMOUNT OF WITHDRAWAL: 300,000 gallons per day

   (b) METHOD OF FLOW MEASUREMENT:  
   ☐ Flowmeter  
   ☐ Open-pipe  
   ☐ Weir  
   ☐ Office  
   ☐ Other (explain):  

OTHER IMPORTANT INFORMATION:

8. ☐ CDUP  
   ☐ SMAP  
   ☐ EIS  
   ☐ EA  
   ☐ None  
   ☐ Other (explain):

9. REMARKS, EXPLANATIONS:  
   ☐ IRRIGATION OF CROPS  
   ☐ Other (explain):

I understand that approval of this application attaches the following 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 60 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.

Date: May 2, 2002

For Official Use Only:

Lat: _______ Aquifer System No:  
Long: _______ State Well No:  

WCPIPA Form 10/25/00
10. PROPOSED WELL SECTION (Please attach schematic if different from diagram provided below)

Hole Diameter: __ in.

Elevation at top of casing 1502 ft., msl*

Minimum of 2' Radius & 4' Thick Concrete Pad (to contain benchmark surveyed to nearest 0.01 ft.).

Ground Elevation: 1560 ft., msl*

Please refer to the HAWAII WELL CONSTRUCTION AND PUMP INSTALLATION STANDARDS to ensure that your as-built is in compliance with applicable standards.

Cement Grout: 500 ft.
(min. 70% of distance from ground elevation to top of water surface or 500 ft., whichever is less.)*

Annular space between hole and casing (min.3"): 2 in.

Rock or Gravel Packing: 710 ft.
Material: Crushed Basalt

Estimated Water Level Elevation: 380 ft., msl*

Total Depth: 1210 ft.

Solid Casing Material:
- Thermoset Plastic: ASS
- Carbon
- PVC Plastic conforming to ASTM F480
- Stainless Steel: ASTM A515

Open Casing Material:
- Filament Wound Resin Pipe conforming to ASTM D2996
- Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D2997
- Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

Solid Casing:
- 30 ft. x (Ground Elev.-Water Level Elev.)
- Total Length: 1110 APPX ft.
- Nominal Diameter: 8 in.
- Wall Thickness: 1/4 in.
- Bottom Elevation: 280 ft., msl*

Open Casing:
- Perforated Screen
- Total Length: AS NEED DED TO 10 ft.
- Nominal Diameter: 8 in.
- Wall Thickness: 1/4 in.
- Bottom Elevation: 280 ft., msl*

Open Hole:
- Length: N/A ft.
- Diameter: N/A in.
- Bottom Elevation: N/A ft., msl*

Solid Casing Material:
- Carbon Steel: compliant with (check one or more): ANSI/AWWA C200
- Stainless Steel: compliant with (check one): ASTM A502

Open Casing Material:
- Carbon Steel: compliant with (check one or more): ANSI/AWWA C200
- Stainless Steel: compliant with (check one): ASTM A502

* The approximate elevation must be referenced to mean sea level (msl) at the time of application filing. Final elevations of well components shall be submitted in the Well Completion/Well Abandonment reports and referenced to a benchmark which has been established by a surveyor licensed by the State.

For non-salt water Basalt Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,

Bottom Elevation of Well Limit = (Water Elevation - Water Level Elev.)

Example: Estimated + 2 ft. Water Level Elev. Bottom Elevation of Well Limit = (2 - 1.85 ft.) = 18.5 ft.

For non-salt water Basalt Wells - bottom elevation of well should not be deeper than 1/4 of aquifer thickness or,