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DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

July 2, 2003

0327-01.wcr

Mr. Gordon Tribble
U.S. Geological Survey
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813

Dear Mr. Tribble:

Well Completion Report for Well No. 0327-01

We received your Well Completion Report Part I for the Waikoko Monitor Well (Well No. 0327-01) on **June 30, 2003** and acknowledge that it is complete. Thank you for your attention to this matter.

If you have any questions, please contact Lenore Y. Nakama of the Commission staff at 587-0218.

Sincerely,

A handwritten signature in black ink, appearing to read "Y.W. Lau".

ERNEST Y.W. LAU
Deputy Director

LYN:ss

c: Edwin Petteys

Well No. 0327-01
 Well Name waikoko monitor
 Applicant usgs

Date of Review 7/1/2003
 Reviewer RRI

SECTION 1: WELL LOCATION INFORMATION

Island	KAUAI	Proposed Use	Other
Aquifer System	#####	Proposed Withdrawal	0
Aquifer Sector	#####	System Sustainable Yield	#VALUE!

SECTION 2: WELL SECTION DATA (enter data in grey cells only)

Elevation at top of casing	1007 ft., m.s.l.	Solid Casing	
Ground Elevation	1006 ft., m.s.l.	Material	Steel
Cement Grout	200 ft.	Designation	ASTM A53
Rock Packing	0 ft.	Length	200 ft.
Hole Diameter	17.5 in.	Diameter	10 in.
Total Depth	605 ft.	Wall Thickness	0.75 in.
Estimated Head	930.4 ft., m.s.l.	Casing	
Calculated Aquifer Thickness	38146 ft.	Material	Plastic
County Water Supply (Y/N ?)	NO	Designation	Sch 40
		Length	605 ft.
		Diameter	4.5 in.
		Wall Thickness	schedul in.
		Openings	0 sq.in./l.f.
		Open Hole	
		Length	0 ft.
		Diameter	0 in.

SECTION 3: CHECKLIST (values to check are shaded)

Well Depth		
Theoretical Thickness of Aquifer	38146 ft.	
1/4 Aquifer Thickness	9537 ft.	
Depth of Well below Sea Level	-401 ft.	okay (refer to HWCPIS Section 2.2)
Well Casing		(disregard if the well is not basal, deep monitor or salt water)
Minimum Wall Thickness		
Material	Steel	
County or Non-County	non-county	
Minimum Thickness per standards	0.250 in.	
Wall Thickness Provided	0.750 in.	okay (refer to HWCPIS Section 2.4 c)
Minimum Length of Solid Casing		(disregard this if this is a non-county well)
90% of ground to top of aquifer	68.04 ft.	
Length of solid casing Provided	200 ft.	okay (refer to HWCPIS Section 2.4 d)
Casing Material	ASTM A53	okay (refer to HWCPIS Section 2.4 e)
Annular Space		If the cell above reads #N/A, reference HWCPIS)
Depth of Grouting		
Calculated Depth of Grouting	52.92 ft.	
Depth of Grouting provided	200 ft.	okay (refer to HWCPIS Section 2.6 c)
Thickness of Annular Space	3.75 in.	okay (refer to HWCPIS Section 2.6 d)



"Scot K Izuka"
<skizuka@usgs.gov>
06/30/2003 01:34 PM

To: lenore_y_nakama@exec.state.hi.us
cc: "Gordon W Tribble" <gtribble@usgs.gov>, "Stephen S Anthony"
<santhony@usgs.gov>, "Jill D Nishimura" <jtorikai@usgs.gov>,
kale_ewart@yahoo.com
Subject: Specs for Waikoko Casing

Lenore:

As requested here are the specifications for the casing at the Waikoko Monitor Well (2-0327-01).

Steel Casing (i.e. surface casing): 10-inch (ID), ASTM A53, standard black steel pipe, 3/4-inch wall thickness.

PVC inner casing: 4-inch (ID) schedule 40 PVC Certa-lok pipe

If you have any further questions. please feel free to call.

--Scot

Scot K. Izuka
U.S. Geological Survey
677 Ala Moana Blvd. Suite 415
Honolulu, Hawaii 96813
E-mail: skizuka@usgs.gov
Tel.: (808) 587-2415, Fax: (808) 587-2401



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

WATER RESOURCES

677 Ala Moana Blvd., Suite 415

Honolulu, HI 96813

Phone: (808) 587-2400/Fax: (808) 587-2401

May 29, 2003

COMMISSION ON WATER
RESOURCE MANAGEMENT

03 MAY 2 9:47

RECEIVED

Mr. Ernest Y.W. Lau
Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Lau:

Enclosed is the Well-Completion Report for the Waikoko Monitor Well (2-0327-01), Lihue-Koloa Forest Reserve, Wailua, Kauai, Tax Map Key: 3-9-01:01. If you have any questions, please contact Scot Izuka of my staff at 587-2415 or me at 587-2405.

Sincerely,

Gordon Tribble
District Chief

Enclosure

- 6/23 left msg for
Scott I. Need:
587-2415
- steel casing designation
 - " " thickness
 - PVC casing designation
 - " " thickness
 - ~~600 sp. out of 4.5'~~
open hole casing?



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

For Official Use Only:

RECEIVED

JUNE
03 MAY 2 9:47

COMMISSION ON WATER
RESOURCE MANAGEMENT

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.: 2-0327-01 Well Name: Waikoko Monitor Well Island: Kauai
 2. Address: Lihue-Koloa Forest Reserve, Wailua, Kauai Tax Map Key: 3-9-01:01
 3. Drilling Company: U.S. Geological Survey
 4. Drilling method used during construction: Rotary Percussion Other (describe)
 5. Date Well Construction (drilled, cased, grouted) completed: 1/9/03 Fill out attached Driller's Log
month/day/year
In addition to the driller's log, if a geologic log was prepared, please submit with this form.
 6. Was the subject well cored? Yes No
 7. Initial water-level encountered 76.51 ft. below ground Date and time of measurement: 1/9/03
month/day/year time
 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)
- Parameters prior to pump test:
10. Water-level: 929.30 feet ft. above msl Date and time of measurement: 10/24/02 12:40 PM
month/day/year time
 11. Chloride: _____ ppm Date and time of sampling: _____
month/day/year time
 12. Temperature: _____ °F Date and time of measurement: _____
month/day/year time
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 n.a. gpm at a head of n.a. ft.
 17. Remarks: Well secured with locked cap.

Licensed Driller (print) Kimo Akina, USGS C-57 Lic. No. _____

Signature ^{for} [Signature]

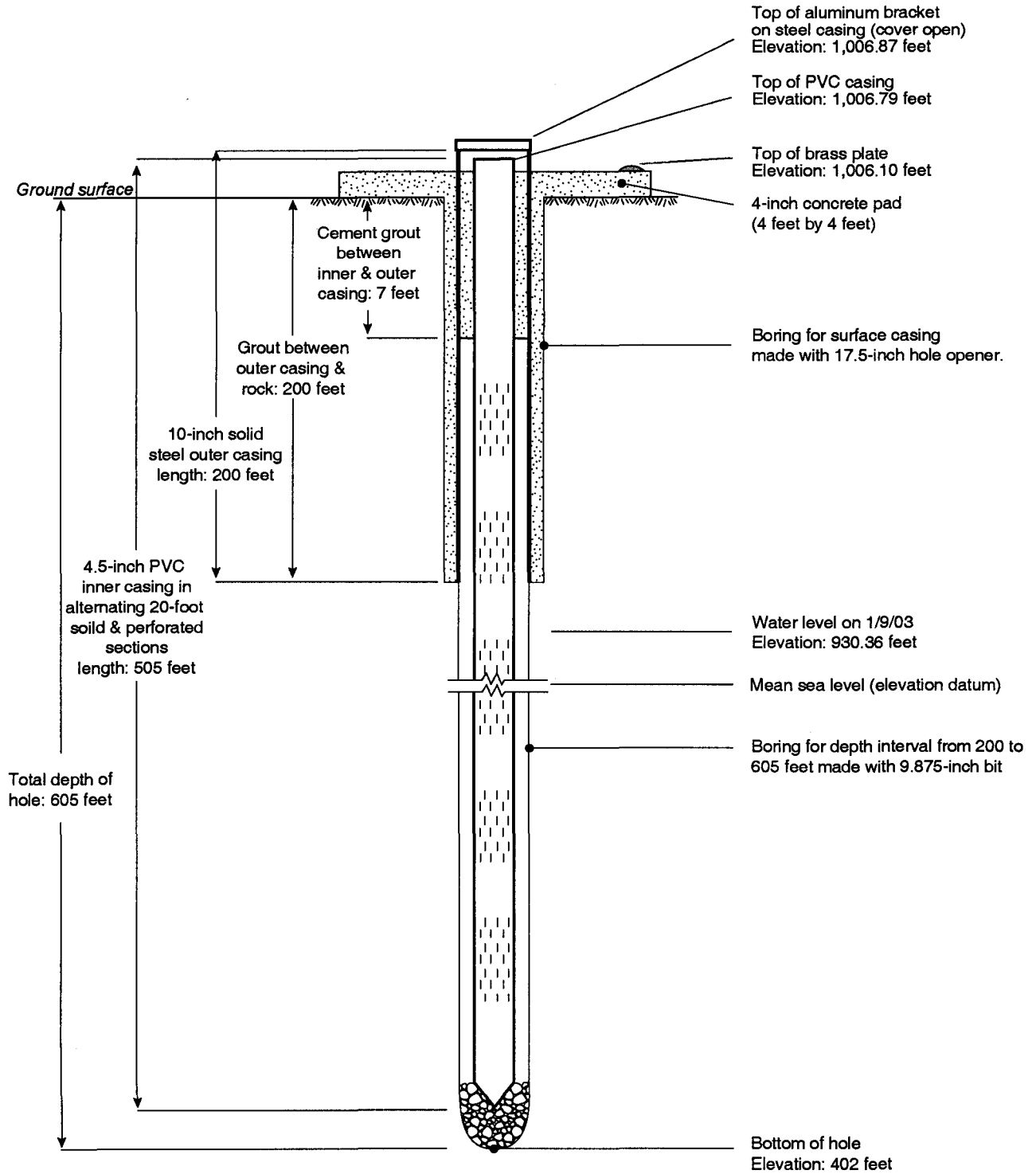
Date 5/28/03

Permittee (print) U.S. Geological Survey

Signature [Signature]

Date 5/28/03

WAIKOKO MONITOR WELL (STATE WELL NUMBER 2-0327-01) AS-BUILT DRAWING



Not to scale

Waikoko WCP
Table of Contents

- ITEM 1. CWRM Form WCP_1
- ITEM 2. As-built drawing
- ITEM 3. Driller's Log
- ITEM 4. Location map and surveying notes
 - a. location map
 - b. surveying summary
 - c. surveying notes
- ITEM 5. Aquifer test results
 - a. summary
 - b. step 10/24/02
 - c. stustained 10/25/02

WAIKOKO MONITOR WELL (0327-01)

Driller's Notes

Approximate Ground Elevation: 1,006 feet

1. Pilot hole – 6-inch hammer, 9.875-inch bit

0-5 feet -- black dirt soft
5-10 feet -- -- soft dirt
10-15 feet -- -- soft dirt with river rocks
15-20 feet -- -- soft dirt with some river round rocks
20-25 feet -- -- med. hard blue rock
25-30 feet -- -- med. hard river rock with tan dirt
30-35 feet -- -- med. hard river clinker rock
35-40 feet -- -- med. hard clinker
40-45 feet -- -- med. hard blue red brown
45-50 feet -- med. hard blue red brown clinker
50-55 feet -- med. hard blue red brown clinker
55-60 feet -- med. hard blue red brown clinker
60-65 feet -- med. hard red brown clinkers
65-70 feet -- soft red dirt; water in the hole
70-75 feet -- soft tan dirt
75-80 feet -- soft tan red dirt; more water
80-85 feet -- soft tan brown rock
85-90 feet -- soft tan brown rock
Depth to water 60 feet
90-95 feet -- med. hard tan brown rock
95-100 feet -- med. hard tan brown rock
100-105 feet -- med. hard brown blue rock
105-110 feet -- med. hard brown blue rock
110-115 feet -- med. hard red brown rock
115-120 feet -- med. hard red brown clinkers
120-125 feet -- med. hard brown red clinkers
125-130 feet -- med. hard brown red clinkers
130-135 feet -- med. hard brown red clinkers
135-140 feet -- soft tan; brown foam
140-145 feet -- soft tan; brown foam
145-150 feet -- soft brown tan rocks clinkers
150-155 feet -- soft brown tan rocks clinkers
155-160 feet -- soft brown tan rocks clinkers
160-165 feet -- soft brown tan rocks clinkers
165-170 feet -- med. soft clinkers, river rock
170-175 feet -- med. soft brown blue river rock
175-180 feet -- hard blue rock
180-185 feet -- hard blue rock
185-190 feet -- med. hard blue red
190-195- feet -- med hard blue red rock
195-200 feet -- hard blue rock
200-205 feet -- hard blue rock

2. Opened hole 0-200 feet -- with 17.5 inch bit

Set 10-inch casing to 200 feet

Cemented casing 0-200 feet

3. Resume drilling with 9.875-inch bit

205-210 feet -- hard blue rock

210-215 feet -- hard blue rock

215-218 feet -- hard blue rock fractured

218-220 feet -- med. hard blue rock with green olivine; water in the hole

220-225 feet -- med. hard blue green

225-230 feet -- med. hard; air 125 PSI

230-235 feet -- med. hard blue green

235-240 feet -- soft red

240-245 feet -- soft red fractured

245-250 feet -- soft red tan

250-255 feet -- med. hard blue tan

255-260 feet -- med. hard blue tan; lots of water

Depth to water 63.2 feet

260-265 feet -- med. hard blue green

265-270 feet -- med. hard blue green

270-275 feet -- med. hard blue red green

275-280 feet -- med. hard blue red

280-285 feet -- med. hard blue red green

285-290 feet -- med soft fractured; air 130 PSI

290-295 feet -- med. soft fractured

295-300 feet -- med. soft fractured; lots of water and foam

300-305 feet -- med. soft fractured blue rock

305-310 feet -- med. soft blue red

310-315 feet -- med. hard blue red

315-320 feet -- med. hard blue red

325-330 feet -- med. hard blue red

330-335 feet -- med. hard blue red fractured

335-340 feet -- med. hard blue red

Depth to water 63.8 feet

340-345 feet -- med. hard blue red rock

345-350 feet -- med. hard blue red green

350-355 feet -- soft tan red

355-360 feet -- soft tan red

360-365 feet -- soft tan red cinder

365-370 feet -- soft tan red cinder

370-375 feet -- med. soft tan red some blue

375-380 feet -- med. soft tan red blue

380-385 feet -- med. soft tan; still lots of water; air 130 PSI

385-390 feet -- med. soft tan red fractured

390-395 feet -- med. soft tan red blue

395-400 feet -- med. soft tan red blue
400-405 feet -- med. soft tan red blue green
405-410 feet -- med. soft tan red blue green
410-415 feet -- med. soft tan red blue green
415-420 feet -- med. soft tan blue red green
420-425 feet -- med. soft tan blue red green
425-430 feet -- med. soft tan blue red green
430-435 feet -- med. soft tan blue red green
435-440 feet -- med. soft tan blue red green
440-445 feet -- med. soft tan red blue
Depth to water 68.3
445-450 feet -- med. soft blue red
450-455 feet -- med. soft blue red cinder
455-460 feet -- med. soft blue red cinder
460-465 feet -- med. soft red blue cinder
465-470 feet -- med. soft red blue
470-475 feet -- med. soft red blue cinder
475-480 feet -- med. hard blue red rock
480-485 feet -- med. hard blue red rock; still lots of water
485-490 feet -- med. hard blue red rock
490-495 feet -- med. hard blue red rock
495-500 feet -- med. hard blue red rock
500-505 feet -- med. hard blue red rock
505-510 feet -- med. hard blue red rock
510-515 feet -- hard blue red green
515-520 feet -- hard blue red green
520-525 feet -- hard blue red green
Depth to water 70.2 feet
525-530 feet -- hard blue red green
530-535 feet -- hard blue red green
535-540 feet -- hard blue red green
540-545 feet -- hard blue red green
545-550 feet -- hard blue red green
550-555 feet -- hard blue red green
555-560 feet -- hard blue red
560-565 feet -- hard blue red fractured
Depth to water 72.3 feet
565-570 feet -- hard blue red fractured
570-575 feet -- hard blue red fractured; air 150 PSI; still lots of water
575-580 feet -- hard blue red green
Depth to water 72.8 feet
580-585 feet -- hard blue red green
585-590 feet -- hard blue red green
590-595 feet -- hard blue red rock; lots of water coming out of hole
595-600 feet -- hard blue red green
600-605 feet -- hard blue rock

WAIKOKO MONITOR WELL ELEVATION SURVEY SUMMARY

Reference benchmark: Brass plate at Northeast Kilohana Well (2-0124-01)

Elevation of reference benchmark: 466.420 feet above mean sea level

Benchmark at well: Elevation of benchmark at well: Top of aluminum bracket on steel casing: 1006.87 feet above mean sea level

Other elevations surveyed:

Top of inner PVC casing: 1006.79 feet above mean sea level

USGS brass tablet (see as-built drawing) 1006.10 feet above mean sea level

Method: Automatic level.

Surveyed by: USGS

Loops 1-9, NE Kilohana Well to Stable Storm Ditch: S. Izuka and D. Arnold

Loops 1-6 (renumbered RC1-RC6), Stable Storm Ditch to Waikoko Well: R.

Taogoshi and C. Yoshida

Comments: Copy of surveying notes attached. Adjustments for closure were made after surveying parties returned from the field (noted as "Adj. for closure" or "Adjusted for closure" with adjusted elevation in "REMARKS" column)

NW027
2005 45.21
1006.27 41.27
Mick

159°29.000' W

TOPO! map printed on 05/14/03 from "Untitled.tpo"
159°28.000' W 159°27.000' W

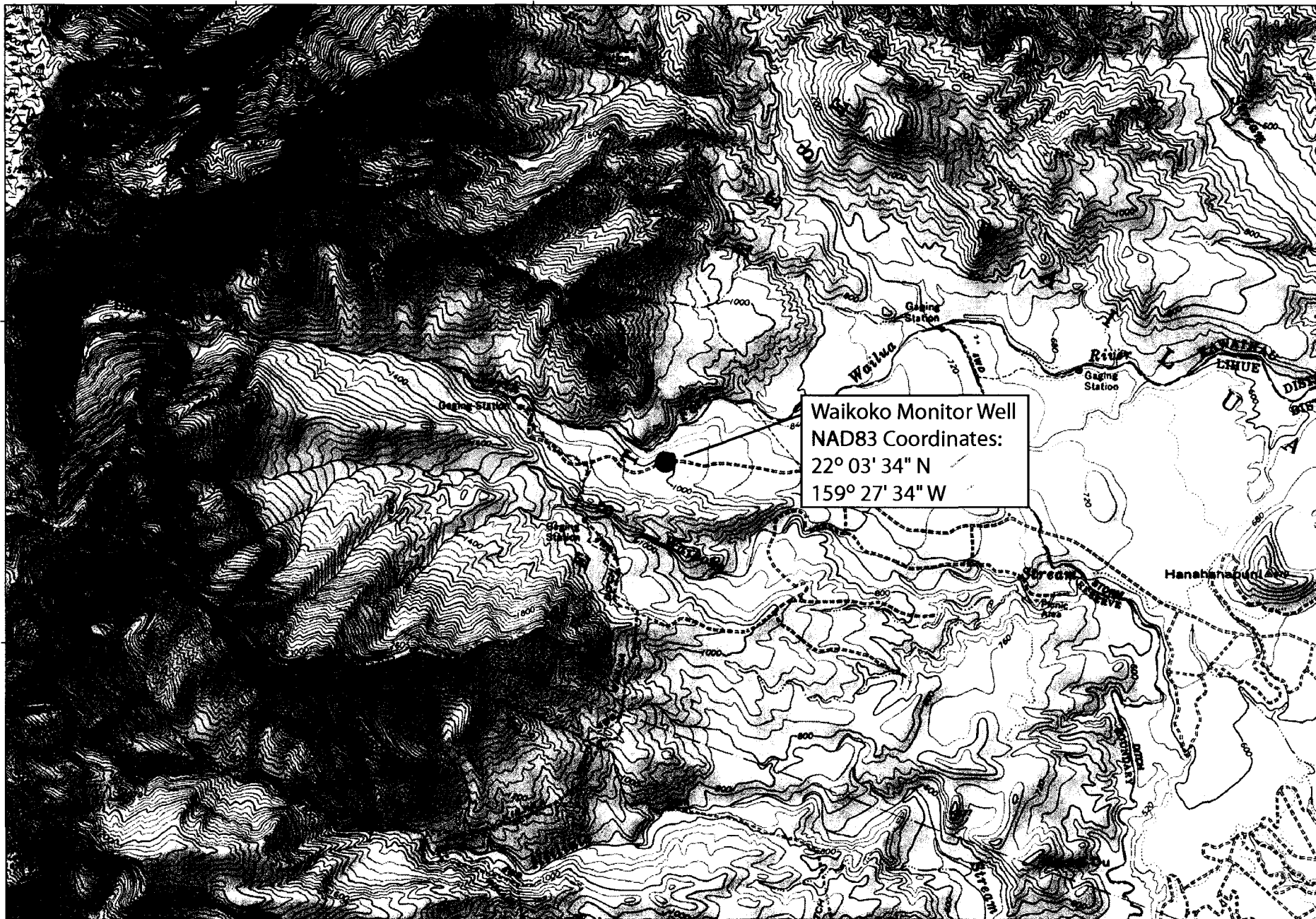
WGS84 159°26.000' W

22°04.000' N

22°03.000' N

22°04.000' N

22°03.000' N



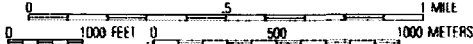
Waikoko Monitor Well
 NAD83 Coordinates:
 22° 03' 34" N
 159° 27' 34" W

159°29.000' W

159°28.000' W

159°27.000' W

WGS84 159°26.000' W



Map created with TOPO! © 2002 National Geographic (www.nationalgeographic.com/topo)

STREAM NE Kilohana - Waikaloa
LOCALITY Kauai
PARTY Izuka (K); Arnold (P) DATE 10/29, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
RM	1.495	467.915		466.420	Brass Plate @ NE Kilohana well
TP1	6.731	472.744	1.902	466.013	Boulder side of road
TP2	6.346	477.826	1.264	471.480	
TP3	6.638	482.885	1.579	476.247	
TP4	6.605	488.236	1.254	481.631	Yellow Pole
TP5	3.456	487.485	4.207	484.029	
TP6	7.027	478.472	10.040	477.445	DOWN HILL
TP7	7.189	468.457	11.218	467.261	
TP8	7.129	458.515	11.067	457.386	
TP9	7.590	448.685	11.420	447.895	
RM1	7.815	449.068	11.432	437.253	Adj. for closure 437.
TP9	7.614	458.709	1.973	447.845	
TP8	11.165	468.554	1.323	457.386	
TP7	11.466	478.730	1.287	467.264	
TP6	10.255	487.700	1.275	477.455	
TP5	4.311	488.341	3.670	484.030	
TP4	1.227	482.861	6.707	481.634	Yellow Pole
TP3	7.810	478.061	6.610	476.251	
TP2	7.548	473.035	6.574	471.487	
TP1	7.852	467.871	7.016	466.019	Rock @ road side
RM			1.448	466.423	Brass Plate

STREAM NE Kilohana to Waikaloa
LOCALITY Kauai
PARTY Izuka (K); Arnold (P) DATE 10/29, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM1	1.128	438.371	1	437.243	Adj. for closure from loop 1/ 437.242
TP1	1.229	427.575	12.025	426.346	
TP2	1.386	417.182	11.799	415.766	
TP3	1.686	406.625	12.213	404.929	
TP4	1.751	396.527	11.849	394.776	
TP5	1.231	389.386	8.372	388.455	
TP6	1.598	382.028	8.956	380.438	
TP7	0.955	372.488	10.865	371.173	
TP8	1.448	362.290	11.276	360.842	
TP9	6.407	356.807	11.890	350.400	350.410
TBM2	1.563	356.880	1.510	355.297	355.307 Adj. for closure 355.306
TBM2A	1.422	356.871	1.368	355.451	355.
TP9	12.116	362.576	6.461	350.400	350.409
TP8	11.529	372.377	1.674	360.842	360.851
TP7	10.952	382.445	1.208	371.463	371.172
TP6	9.045	389.477	1.686	380.438	380.438
TP5	8.500	396.655	1.319	388.455	388.164
TP4	11.912	406.688	1.880	394.775	394.784
TP3	12.299	417.857	1.749	404.947	404.947
TP2	12.041	427.357	1.471	415.766	415.775
TP1	11.172	437.518	1.471	426.346	426.345
			0.214	437.244	437.243

NO. _____ OF _____ SHEETS _____ COMP. BY _____ CHK. BY Izuka

U.S. DEPARTMENT OF THE INTERIOR
U.S. Geological Survey
WATER RESOURCES DIVISION
LEVEL NOTES

STATION NUMBER
Loop 3

STREAM NE Kihohana Well - Waikoko Well
LOCALITY KAUAI
PARTY Izuka, Arnold DATE 10/29, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM2	11.600	366.907		355.307	Adj. for closure from loop 2 355.306 ✓
TP1	12.121	371.690	1.338	365.569	
TP2	12.171	388.446	1.415	376.275	
TP3	11.793	399.254	0.985	387.461	
TP4	12.445	410.187	1.512	397.742	
TBM3	1.092	410.075	1.204	408.983	Adj. for closure 408.982 ✓
TBM3A	1.200	410.075	1.312	408.875	
TP4	1.386	399.129	12.332	397.743	
TP3	0.611	388.071	11.669	387.460	
TP2	1.415	377.690	11.796	376.275	
TP1	1.285	366.854	12.121	365.569	
TBM2			11.548	355.306	

U.S. DEPARTMENT OF THE INTERIOR
U.S. Geological Survey
WATER RESOURCES DIVISION
LEVEL NOTES

STATION NUMBER
Loop 4

STREAM NE Kihohana Well - Waikoko Well
LOCALITY Wailua, Kauai
PARTY Izuka, Arnold DATE 10/30, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM3	6.264	415.247		408.983	Adj. for closure from loop 3 408.982 ✓
TBM3A	8.619	417.495	6.371	408.876	CHECK w/ Loop 3 (408.875)
TP1	12.218	428.557	1.186	416.309	
TP2	11.994	439.691	0.866	427.677	
TP3	12.024	450.369	1.346	438.345	
TP4	12.145	461.427	1.087	449.282	
TP5	11.556	471.948	1.035	460.392	
TP6	11.950	482.980	0.918	471.030	
TP7	11.833	493.570	1.243	481.737	
TP8	9.386	501.881	1.075	492.495	
TP9	10.938	511.118	1.701	500.180	
TBM4	0.879	511.055	0.942	510.176	Adj. for closure 510.172 ✓
TP9	1.537	501.717	10.875	500.180	
TP8	1.035	493.529	9.223	492.494	
TP7	1.153	482.890	11.792	481.737	
TP6	0.419	471.449	11.860	471.030	
TP5	1.021	461.415	11.055	460.394	
TP4	0.484	449.769	12.130	449.285	
TP3	0.866	439.215	11.420	438.349	
TP2	0.841	428.541	11.515	427.700	
TP1	0.873	417.187	12.227	416.314	
TBM3A	6.342	415.222 ²²⁴	8.306	408.881 ⁸⁸²	
TBM3			6.235	408.988 ⁹⁸⁹	

WATER RESOURCES DIVISION
LEVEL NOTES

Loop 5

STREAM NE Kilohana to Waikoko Well
LOCALITY Kauai
PARTY Izuka, Arnold DATE 10/30, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM 4	11.867	522.043		510.176	Adj. for closure from Loop 4 5100 510.172
TP 1	8.274	528.959	1.758	520.685	
TP 2	4.415	528.486	4.888	524.071	
TP 3	7.124	531.025	4.585	523.901	
TP 4	7.329	536.171	2.183	528.842	
TP 5	7.205	541.290	2.086	534.085	
TP 6	7.070	545.547	2.813	538.477	
TP 7	8.833	552.106	2.274	543.273	
TP 8	8.312	559.479	0.939	551.167	
TP 9	2.192	559.827	1.844	557.635	
TBM 5	2.064	559.842	2.049	557.778	Adj. for closure 557.768 ✓
TP 9	1.819	559.451	2.210	557.632	
TP 8	0.747	551.909	8.289	551.162	
TP 7	2.286	545.553	8.642	543.267	
TP 6	2.847	541.320	7.080	538.473	
TP 5	1.952	536.032	7.240	534.080	
TP 4	2.182	531.037	7.177	528.855	
TP 3	4.629	528.543	7.123	523.914	
TP 2	4.733	528.817	4.459	524.084	
TP 1	1.138	521.835	8.120	520.697	
			11.647	510.188	

WATER RESOURCES DIVISION
LEVEL NOTES

Loop 6

STREAM NE Kilohana Well to Waikoko Well
LOCALITY Kauai
PARTY S. Izuka & D. Arnold DATE 10/30, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM 5	8.804	566.582		557.778	Adj. for closure from Loop 5 557.768 ✓
TP 1	8.692	572.430	2.844	563.738	
TP 2	2.987	572.255	3.162	569.268	
TP 3	2.993	567.842	7.406	564.849	
TP 4	6.618	570.206	4.254	563.588	
TP 5	6.877	575.170	1.913	568.293	
TP 6	7.952	581.860	1.262	573.904	
TP 7	7.414	588.167	1.107	580.753	
TP 8	7.492	594.227	1.422	586.745	
TP 9	7.495	599.958	1.764	592.463	
TBM 6	2.015	599.889	2.084	597.874	← using this to close
TP 6A	1.743	599.891	1.810	598.148	Adj. for closure 597.864 ✓
TP 9	1.851	594.313	7.427	592.462	
TP 8	1.358	588.100	7.571	586.742	
TP 7	1.003	581.752	7.351	580.749	
TP 6	1.170	575.072	7.850	573.902	
TP 5	1.889	570.177	6.784	568.288	
TP 4	4.185	567.771	6.591	563.586	
TP 3	7.538	572.385	2.924	564.847	
TP 2	3.287	572.553	3.119	569.266	
TP 1	2.812	556.551	8.814	563.739	
			8.773	557.778	

Loop 7

WATER RESOURCES DIVISION
LEVEL NOTES

Wells
STREAM NE Kibohana - Waikoko
LOCALITY Kauai
PARTY S. Izuka, D. Arnold (+) DATE 10/31, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM 6	7.093	604.967		597.874	Adj. for closure from loop 6 597.864 ✓
TBM 6X			6.819	598.148	For Ref only 598.148
TP1	7.607	610.302	2.272	602.695	
TP2	6.069	613.715	2.656	607.646	
TP3	6.493	617.548	2.660	611.055	
TP4	5.964	619.686	3.826	613.722	
TP5	6.267	625 ⁶²³ 378	2.575	619 ⁶¹⁷ 111	
TP6	8.975	632 ⁶³⁰ 942	1.411	623 ⁶²¹ 967	
TP7	8.843	640 ⁶³⁸ 432	1.353	631 ⁶²⁹ 589	
TP8	6.541	644 ⁶⁴² 979	1.994	638 ⁶³⁶ 438	
TP9	6.816	647 ⁶⁴⁵ 893	3.902	640 ⁶³⁹ 077	
TBM 7	1.216	647 ⁶⁴⁴ 918	1.191	646 ⁶⁴⁴ 702	Adj. for closure 644.690 ✓
TP9	3.996	645 ⁶⁴³ 072	6.842	641 ⁶³⁹ 076	
TP8	1.892	648 ⁶³⁸ 339	6.634	638 ⁶³⁶ 438	
TP7	1.352	632 ⁶³⁰ 943	8.139	631 ⁶²⁹ 591	
TP6	1.426	625 ⁶²³ 395	8.974	623 ⁶²¹ 969	
TP5	2.559	621 ⁶¹⁷ 612	6.282	619 ⁶¹⁷ 113	
TP4	3.863	617.589	5.946	613.726	
TP3	2.760	613.818	6.531	611.058	
TP2	2.597	610.246	6.169	607.649	
TP1	2.564	605.261	7.549	602.697	
			7.382	597.879	

Loop 8

WATER RESOURCES DIVISION
LEVEL NOTES

STREAM NE Kibohana Well to Waikoko Well
LOCALITY Kauai
PARTY S. Izuka, D. Arnold (+) DATE 10/31, 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM 7	6.791	651.493		644.702	(South of) Near Hanahana puni Hill
TP1	6.958	653.479	2.972	648.521	Adj. for closure from loop 7 644.690 ✓
TP2	4.724	656.940	3.263	652.216	
TP3	6.254	657.051	6.143	650.791	
TP4	6.071	662.452	1.270	655.781	
TP5	5.541	663.603	4.388	658.064	
TP6	5.389	665.007	3.987	659.618	Adj. for closure 664.502 ✓
TBM 8	0.599	665.114	0.492	664.515	Top of Gate Post, hinge side <i>Close this on this TBM 8</i>
TBM 8A	1.935	665.114	1.828	663.179	Top of lock can, on Gate.
TP6	4.254	663.872	5.496	659.618	
TP5	4.417	662.483	5.806	658.066	
TP4	1.363	657.148	6.698	655.785	
TP3	6.204	657.004	6.348	650.800	
TP2	3.589	655.806	4.787	652.217	
TP1	3.173	651.695	7.284	648.522	
			6.991	644.704	

WATER RESOURCES DIVISION
LEVEL NOTES

STREAM NE Kilohana to Waikoloa
LOCALITY Kawai
PARTY S. Izuka, D. Arnold DATE 10/31/02, 20

STATION	B. S.	HT. INST.	F. S.	ELEVATION	Adj. for closure from loop REMARKS
TBM8	1.798	666.313		664.515	Top of Gate, hinge side
TBM8A	3.133	666.312		663.179	Top of lock can (for Ref only)
TP1	5.537	668.925	2.925	663.388	X on top of head wall at intersection w. of Gate
TP2	8.164	674.172	2.917	666.008	
TP3	9.319	681.956	1.535	672.637	
TP4	3.691	682.070	3.577	678.379	
TP5	8.396	688.916	1.550	680.520	
TP6	7.197	693.069	3.044	685.872	
TP7	7.691	697.295	3.465	689.604	
TP8	7.401	702.418	2.278	695.017	
TP9	7.045	706.439	3.024	699.374	Adj. for closure 703.367
TBM9	4.491	707.872	3.058	703.381	Nail in tree at fork in road
TBM9A	4.553	707.796	4.629	703.243	X in ditch head wall 100ft up road from fork
TBM9	3.026	706.407	4.415	703.381	Adj for closure 703.229
TP9	2.919	702.314	7.012	699.395	
TP8	2.484	697.502	7.296	695.018	
TP7	3.435	693.041	7.896	689.606	
TP6	2.829	688.703	7.167	685.874	
TP5	1.463	681.983	8.183	680.520	
TP4	3.434	681.814	3.603	678.380	
TP3	1.517	674.154	9.177	672.637	
TP2	2.798	668.807	8.145	666.009	
TP1	3.111	666.539	5.417	663.390	
TBM8			2.023	664.516	

LEVEL NOTES

STREAM Waikoloa well Loop #1
LOCALITY Haananihuli
PARTY R. Torgaki & C. Schubert DATE Nov. 21, 192002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM9	4.144	707.521		703.381	Adj. for closure 703.367 as given, top of nail on bottom of tree
TBM9A			4.286	703.441	
TP1	6.710	710.247	3.990	703.537	
TP2	5.030	712.931	2.346	707.901	
TP3	4.670	713.453	4.148	708.783	
TP4	7.628	717.401	3.680	709.773	
TP5	8.948	716.073	1.276	717.125	
TP6	.892	714.171	1.794	725.279	Adj for closure 725.266
TP7	.190	717.317	9.044	717.127	
TP8	3.798	713.513	7.542	709.775	
TP9	4.202	712.985	4.790	708.783	
TP10	2.638	710.539	5.084	707.901	
TP11	3.926	707.463	7.002	703.537	
TBM9A			4.222	703.241	
TBM9			4.084	703.379	

U. S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION

Loop
STATION NUMBER
RC2

LEVEL NOTES

STREAM Waikoloa wall Loop #2
LOCALITY at Hananapuni
PARTY R. Teague & C. Yoshida DATE Nov. 21 192002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TP 6	8.220	733.499		725.279	Adj. for closure as given 725.266
TP 12	7.850	740.775	.574	732.925	
TP 13	7.842	748.417	.200	740.515	
TP 14	8.990	757.175	.232	748.185	
TP 15	8.004	764.199	.980	756.195	
TP 16	8.868	772.857	.210	763.989	
TP 17	8.396	780.843	.410	772.447	
TP 18	1.084	780.759	1.168	779.675	Adj. for closure 779.661
17 TP 19	.380	772.827	8.312	772.447	
14 TP 20	.250	764.237	8.840	763.987	
15 TP 21	1.060	757.252	8.045	756.192	
14 TP 22	.100	748.282	9.070	748.182	
13 TP 23	.128	740.707	7.703	740.579	
12 TP 24	.400	733.327	7.780	732.927	
TP 6			8.046	725.281	

U. S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION

Loop
STATION NUMBER
RC3

LEVEL NOTES

STREAM Waikoloa wall #3
LOCALITY at Hananapuni
PARTY R. Teague & C. Yoshida DATE Nov. 21 192002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TP 18	7.626	787.004		774.675	Adj. for closure as given 779.661
TP 25	8.342	794.735	.908	786.393	
TP 26	8.878	802.629	.984	793.751	
TP 27	8.208	810.723	.114	802.515	
TP 28	8.810	819.289	.244	810.479	
TP 29	8.348	826.641	.996	818.293	
TP 30	8.948	835.055	.534	826.107	
TP 31	8.368	842.878	.545	834.510	
TP 32	.310	843.028	8.860	842.718	Adjusted for closure 842.702
21 TP 33	.288	834.796	8.520	834.508	
30 TP 34	.560	826.666	8.690	826.106	
24 TP 35	1.198	819.494	8.370	818.296	
23 TP 36	.438	810.918	9.014	810.480	
27 TP 37	.122	802.540	8.400	802.518	
26 TP 38	.872	794.628	8.884	793.756	
25 TP 39	1.216	787.616	8.228	786.400	
TP 18			7.936	779.680	

Form 9-278
(July 1987)

U. S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION

^{Loop}
STATION NUMBER

204

LEVEL NOTES

STREAM Waikoko Well Loop #4
LOCALITY at Hanganapuni
PARTY R. Teague & C. Yashita DATE Nov. 21, 192002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TP 32	9.006	851.804		842.718	Adj for closure as given 842.702
TP 40	5.632	857.186	.250	851.554	
TP 41	5.694	862.016	.864	856.322	
TP 42	8.966	870.324	.648	861.268	
TP 43	8.000	877.886	.448	869.886	
TP 44	6.490	883.674	.102	887.184	
TBM 10			3.270	880.404	Top of pipe at joint painted red
TP 45	6.320	888.778	.216	882.458	
TP 46	8.370	896.406	.742	888.036	
TP 47	8.820	904.676	.550	895.856	
TP 48	7.954	912.204	.426	904.250	
TP 49	8.666	920.288	.582	911.622	
TP 50	.504	920.304	.488	919.800	Adjusted for closure 919.776
TP 51	.450	912.070	8.684	911.620	
TP 52	.496	904.746	7.820	904.250	
TP 53	.542	896.398	8.890	895.856	
TP 54	.684	888.728	8.354	888.044	
TP 55	1.124	883.598	6.262	882.966	
TBM 10			3.170	880.420	
TP 56	1.042	878.252	6.380	877.210	
TP 57	.306	870.216	8.342	869.910	
TP 58	1.650	862.042	8.824	861.392	

NO. 1 OF 2 SHEETS COMP. BY _____ CHK. BY SKJ

U. S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION

Form 9-278
(July 1987)

^{Loop}
STATION NUMBER
PC 4 (Cont.)

LEVEL NOTES

STREAM Waikoko Well Loop #4 (Continued)
LOCALITY at Hanganapuni
PARTY R. Teague & C. Yashita DATE Nov. 21, 192002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
41 TP 59	.670	857.016	5.694	856.346	
40 TP 60	.130	851.700	5.446	851.570	
TP 32			8.966	842.734	

NO. 2 OF 2 SHEETS COMP. BY _____ CHK. BY SKJ

U. S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION

Form 9-276
(July 1967)

STATION NUMBER
RL5

LEVEL NOTES

STREAM Waikoko Well Loop # 5
LOCALITY at Hananaguri
PARTY R. Tazoguchi & C. Fukuda DATE 11-27, 19 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TP 50	8.162	927.962		919.800	Adj. for closure as given 919.776
TP 60	8.562	935.808	.716	927.246	
TP 61	8.968	943.510	1.266	934.542	
TP 62	9.044	952.228	.326	943.184	
TP 63	8.730	960.654	.304	951.924	
TP 64	8.528	968.868	.314	962.350	
TP 65	5.844	974.598	.120	968.748	
TBM 11	.308	974.644	.206	974.356	at gate, station, three sides corner of metal brace painted red
TP 66	.5200	969.250	5.944	968.750	Adj. for closure 974.357
TP 67	.420	960.764	8.906	960.344	
TP 68	.370	952.300	8.834	951.930	
TP 69	.586	943.778	9.108	943.192	
TP 70	1.346	935.900	9.224	934.554	
TP 71	.720	927.776	8.644	927.256	
TP 72			8.166	917.810	

NO. _____ OF _____ SHEETS COMP. BY _____ CHK. BY SKI

U. S. DEPARTMENT OF THE INTERIOR
Geological Survey
WATER RESOURCES DIVISION

Form 9-276
(July 1967)

STATION NUMBER
RL6

LEVEL NOTES

STREAM Waikoko Well Loop # 6
LOCALITY at Hananaguri
PARTY R. Tazoguchi & C. Fukuda DATE Nov. 27, 19 2002

STATION	B. S.	HT. INST.	F. S.	ELEVATION	REMARKS
TBM 11	2.642	977.028		974.386	Adj. for closure 974.357 as given
TBM 12			2.796	974.232	Top of iron brace on gate 2.5 ft Hananaguri side of concrete pillar
TP 73	6.868	983.532	.364	976.664	
TP 74	8.360	990.538	1.354	982.178	
TP 75	7.772	997.680	1.630	989.908	
TP 76	2.916	1005.212	.384	997.246	
TP 77	3.618	1007.716	1.114	1004.698	Adjusted for closure 1006.866
Top of 10" well casing			.816	1006.900	by locking holes
TBM 13	.808	1007.888	1.636	1007.080	Top of 4" bit head in tree located 30 ft makai
TP 78	.510	997.814	10.584	997.304	of well
TP 79	.826	990.736	7.904	989.910	
TP 80	1.390	983.576	8.550	982.186	
TP 81	.536	977.208	6.904	976.672	
TBM 12			2.974	974.234	
TBM 11			2.812	974.396	

NO. _____ OF _____ SHEETS COMP. BY _____ CHK. BY SKI

4. Aquifer testing

Step test conducted October 24, 2002

Long-term test conducted October 25 to November 1, 2002

5. Well completion

505 feet of 4.5-inch PVC casing installed in alternating 20-foot slotted and blank sections

7 feet of grout installed between PVC (inner) and steel (outer) casing

Well completed January 9, 2003; Depth to water 76.51 feet at 8:30 am

Well name Waikoko Monitor Well
 Island Kauai

State well number 2-0327-01
 Start date & time 10/24/02 12:40 PM

Depth (below ground surface)
 Solid Csg. 200 ft Perf. Csg. N.A.
 Total 605 ft DTW 80.01 ft

Elevations (relative to mean sea level)
 Ground surface 1006.10 feet
 Top of PVC tube 1009.31 feet

Test Pump
 Type 6" 50 HP submersible
 Intake elev. 758 feet (248 ft below ground)

Measuring Devices
 Water level Electric probe
 Discharge Flow meter

Remarks Step-drawdown test conducted in open hole prior to installation of PVC inner casing.

Elapsed time (minutes)	Pumping rate (gpm)	Depth to water (feet)	Drawdown (ft)	Temperature (degrees C)	Specific conductance (μS/cm)	Notes
0	0	80.01	0.00			start pump at 12:40 pm
1		90.37	10.36			
2		94.71	14.70			
3		98.37	18.36			
4		101.40	21.39			
5		102.06	22.05			
6		102.67	22.66			
7		103.25	23.24			
8		105.81	25.80			
9		108.84	28.83			
10		110.90	30.89			
12		114.77	34.76			
14	400	117.40	37.39			
16		119.81	39.80			
18		121.75	41.74			
20	395	123.27	43.26			
25	395	126.19	46.18			
30	395	128.58	48.57			
35	394	130.28	50.27			
40	390	131.62	51.61			
46	388	133.18	53.17			
50	394	133.91	53.90			
59	393	135.74	55.73			
61		136.32	56.31			Adj. rate
62	410	136.48	56.47			Adj. rate
64		137.72	57.71			
65	430	138.47	58.46			Adj. rate
66		140.07	60.06			
67	450	141.03	61.02			Adj. rate
68		141.81	61.80			
69	450	142.51	62.50			
70	450	143.00	62.99			
72		143.93	63.92			
74	450	144.72	64.71			
76		145.40	65.39			

78	448	145.99	65.98		
80	445	146.53	66.52		
85	445	147.75	67.74		
90	440	148.65	68.64		
95	440	149.42	69.41		
100	439	150.09	70.08		
105	439	150.81	70.80		
110	439	151.21	71.20		
120		152.05	72.04		Adj. rate
121		155.60	75.59		
122		156.73	76.72		
123		157.39	77.38		
124		157.89	77.88		
125		158.24	78.23		
126	540	158.49	78.48		
128		158.79	78.78		
130	550	159.00	78.99		
133		159.15	79.14		
134		159.17	79.16		
136	570	159.29	79.28		
138	570	159.37	79.36		
140	568	159.40	79.39		
145	569	159.45	79.44		
150	570	159.49	79.48		
155	573	159.68	79.67		
160	576	159.70	79.69		
165	578	159.86	79.85		
170	590	159.75	79.74	23.0	246
180		159.90	79.89		Adj. rate
183		185.61	105.6		
185		176.25	96.24		
187		182.39	102.38		
188		179.89	99.88		
190	715	178.00	97.99		
192	715	178.37	98.36		
194		178.35	98.34		
196		177.95	97.94		
198		181.68	101.67		
200	615	188.43	108.42		
205	640	178.40	98.39		
210	625	178.90	98.89		
215	635	181.47	101.46		
220	620	179.89	99.88		
225	625	182.20	102.19		
230	610	188.92	108.91		
240	635	179.66	99.65		
243		145.95	65.94		shut down pump at 242
245		140.48	60.47		
247		138.21	58.2		
248		134.20	54.19		
250		131.06	51.05		
252		127.78	47.77		

255		123.53	43.52			
258		119.74	39.73			
261		116.17	36.16			
265		112.37	32.36			
270		107.45	27.44			
275		103.68	23.67			
280		102.32	22.31			
285		100.73	20.72			
290		96.75	16.74			
300		93.03	13.02			

Well name Waikoko Monitor Well
 Island Kauai

State well number 2-0327-01
 Start date & time 10/25/02 10:10 AM

Depth (below ground surface)
 Solid Csg. 200 ft Perf. Csg. N.A.
 Total 605 ft DTW 80.52 ft

Elevations (relative to mean sea level)
 Ground surface 1006.10 feet
 Top of PVC tube 1009.31 feet

Test Pump
 Type 6" 50 HP submersible
 Intake elev. 758 ft (248 ft below ground)

Measuring Devices
 Water level Electric probe
 Discharge Flow meter

Remarks Sustained-discharge-rate test conducted in open hole prior to installation of PVC inner casing.

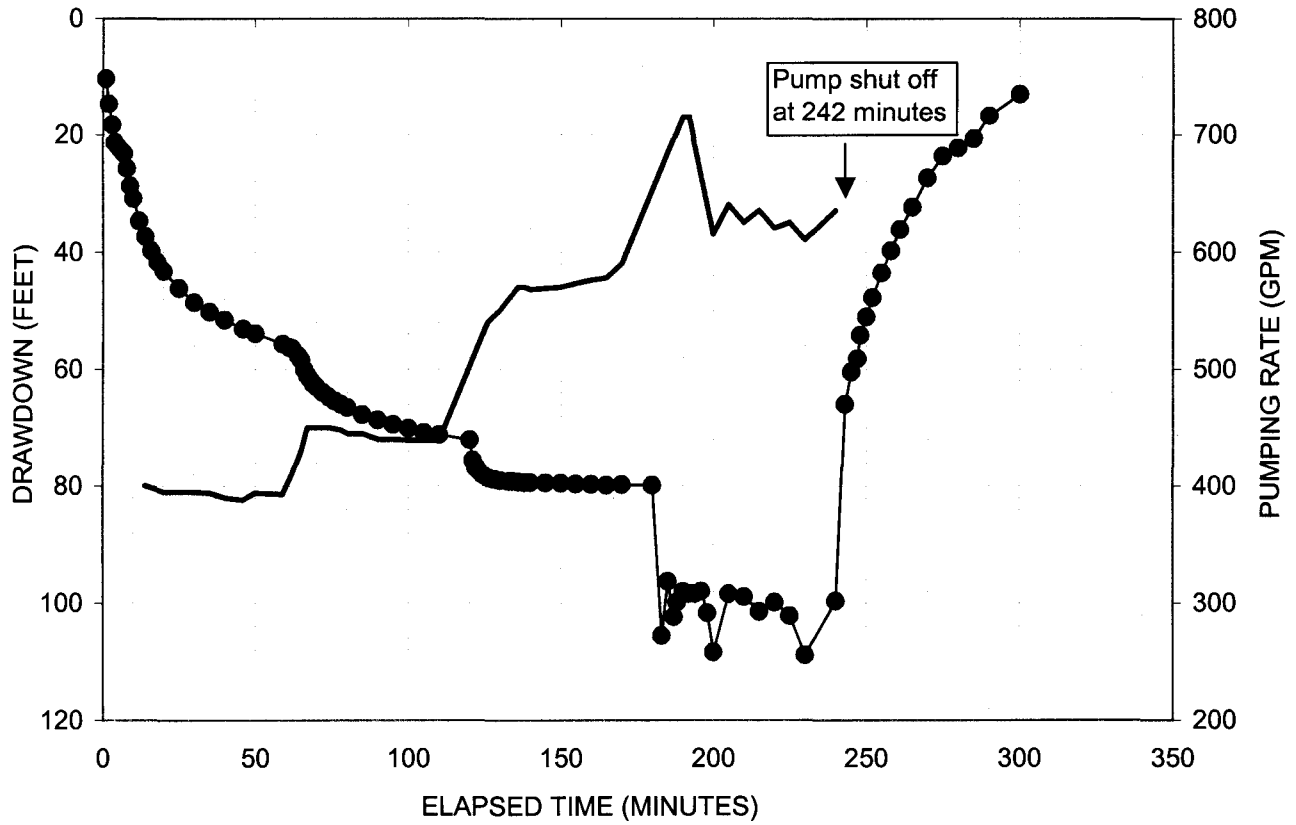
Elapsed time (min)	Pumping rate (gpm)	Depth to water (feet)	Drawdown (feet)	Temperature (degrees C)	Specific conductance (µS/cm)	Notes
0		80.52	0.00			start pump @ 10:10 am
1		95.20	14.68			
2	590	102.33	21.81			
3	595	103.66	23.14			
4		109.00	28.48			
5		114.14	33.62			
6	600	119.55	39.03			
8		127.17	46.65			
9		130.08	49.56			
10	610	132.03	51.51			
12	620	135.91	55.39			
14		138.77	58.25			
16		141.18	60.66			
18		143.31	62.79			
20	600	144.98	64.46			
25		148.39	67.87			
30	598	150.90	70.38			
35	598	153.25	72.73			
40	619	155.12	74.60			
45	610	157.25	76.73			
50	612	158.86	78.34	22.4	229	
60	605	163.11	82.59			
70	605	168.68	88.16			
80	585	170.99	90.47			
91	585	173.44	92.92			
100	600	175.53	95.01			
110	595	178.66	98.14			
120	585	180.18	99.66			
140	602	181.98	101.46			
161	595	182.73	102.21			
180	632	182.78	102.26	22.4	257	
210	632	183.52	103.00			
240	625	182.82	102.30			
270	621	182.97	102.45			

300	620	183.25	102.73	22.6	263	
360	620	183.11	102.59			
420	622	181.56	101.04	22.5	263	
480	566	185.14	104.62			
620	523	179.18	98.66			
800	521	182.43	101.91			
1020	488	180.06	99.54			
1220	533	170.49	89.97			
1400	546	169.05	88.53	22.0	268	
1460	546	168.22	87.7			
1670	545	168.43	87.91			
1850	550	167.93	87.41			
2810	500	163.45	82.93			
3230	520	162.97	82.45			
4160	100	94.82	14.3			Suspect vandalism ¹
4730	680	180.34	99.82			
5690	600	170.34	89.82			
6050	595	170.13	89.61			
7130		167.52	87			meter not working
8570		163.00	82.48			
8990		160.40	79.88			
9980		154.42	73.9	22.4	259	
10060		153.91	73.39			
10080		154.11	73.59			shut down pump
10081	0	144.92	64.4			
10082	0	141.47	60.95			
10083	0	139.42	58.9			
10084	0	137.91	57.39			
10085	0	136.69	56.17			
10086	0	135.68	55.16			
10087	0	134.72	54.2			
10088	0	133.88	53.36			
10089	0	133.06	52.54			
10090	0	132.28	51.76			
10092	0	130.88	50.36			
10094	0	129.39	48.87			
10096	0	128.05	47.53			
10098	0	126.84	46.32			
10100	0	125.67	45.15			
10105	0	123.14	42.62			
10110	0	120.69	40.17			
10115	0	118.54	38.02			
10120	0	116.62	36.1			
10125	0	115.12	34.6			
10130	0	113.74	33.22			
10140	0	111.28	30.76			
10150	0	109.18	28.66			
10160	0	107.51	26.99			
10170	0	106.13	25.61			
10180	0	105.13	24.61			
10190	0	104.37	23.85			
10210	0	103.2	22.68			

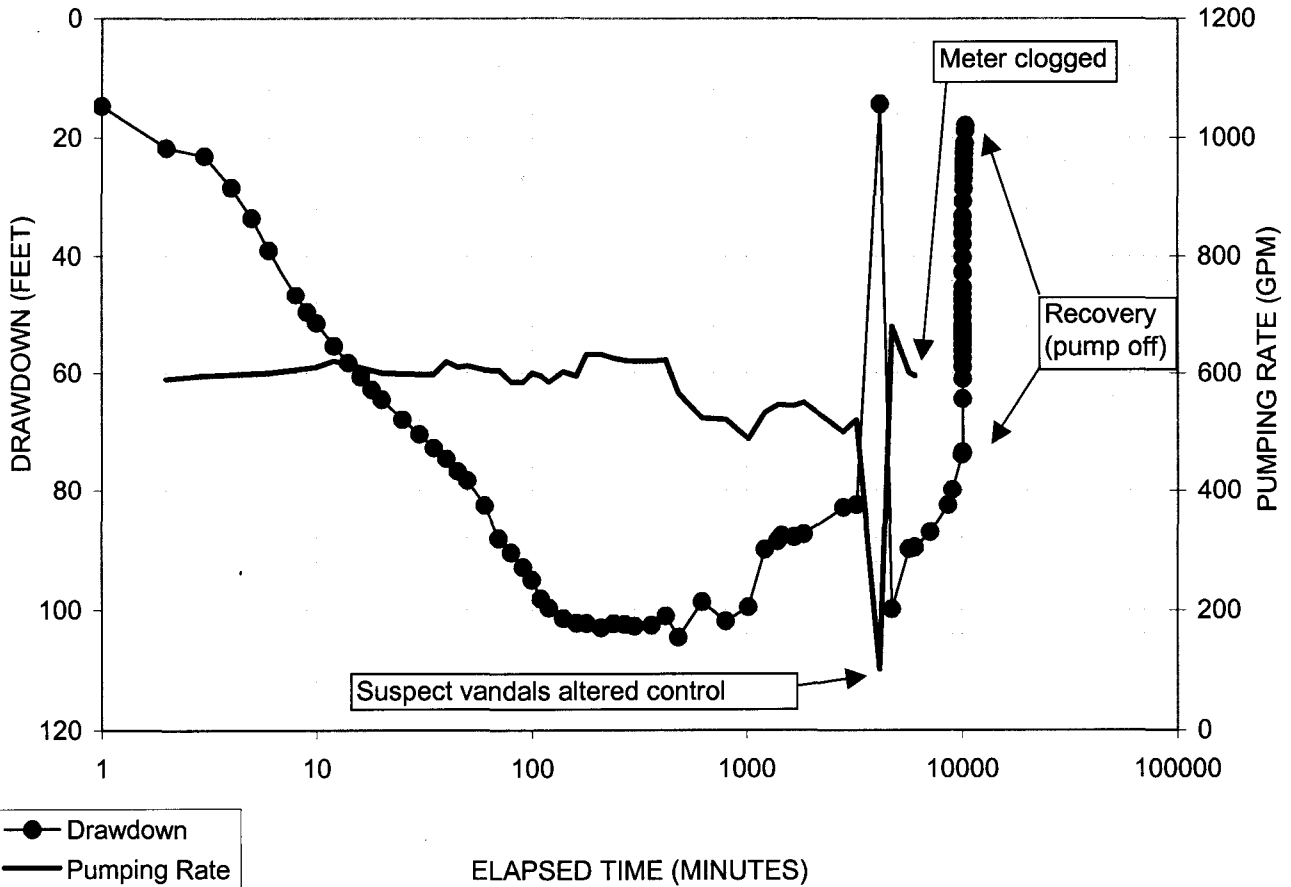
10230	0	102.51	21.99			
10260	0	101.48	20.96			
10291	0	100.31	20.96			
10320	0	99.32	18.8			
10361	0	98.48	17.96			

¹ At 4160 minutes (10/28/02 7:30 am), discovered valve had been turned down over weekend. Suspect vandalism

Waikoko Monitor Well Step-Drawdown Test



Waikoko Monitor Well Sustained-Rate Test



● Drawdown
 — Pumping Rate

WELL ID: Waikoko 10/25/02

Local ID: 2-0327-01

Date: #####

Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	9.875 Inch
Annulus dia. (d_w)	9.875 Inch
Screen Length (L)	405 Feet
Depths to:	
water level (DTW)	80 Feet
Top of Aquifer	200 Feet
Base of Aquifer	705 Feet
Annular Fill:	
across screen --	Open Hole
above screen --	Cement
Aquifer Material -- Permeable Basalt	
FLOW RATE	610 GPM

COMPUTED

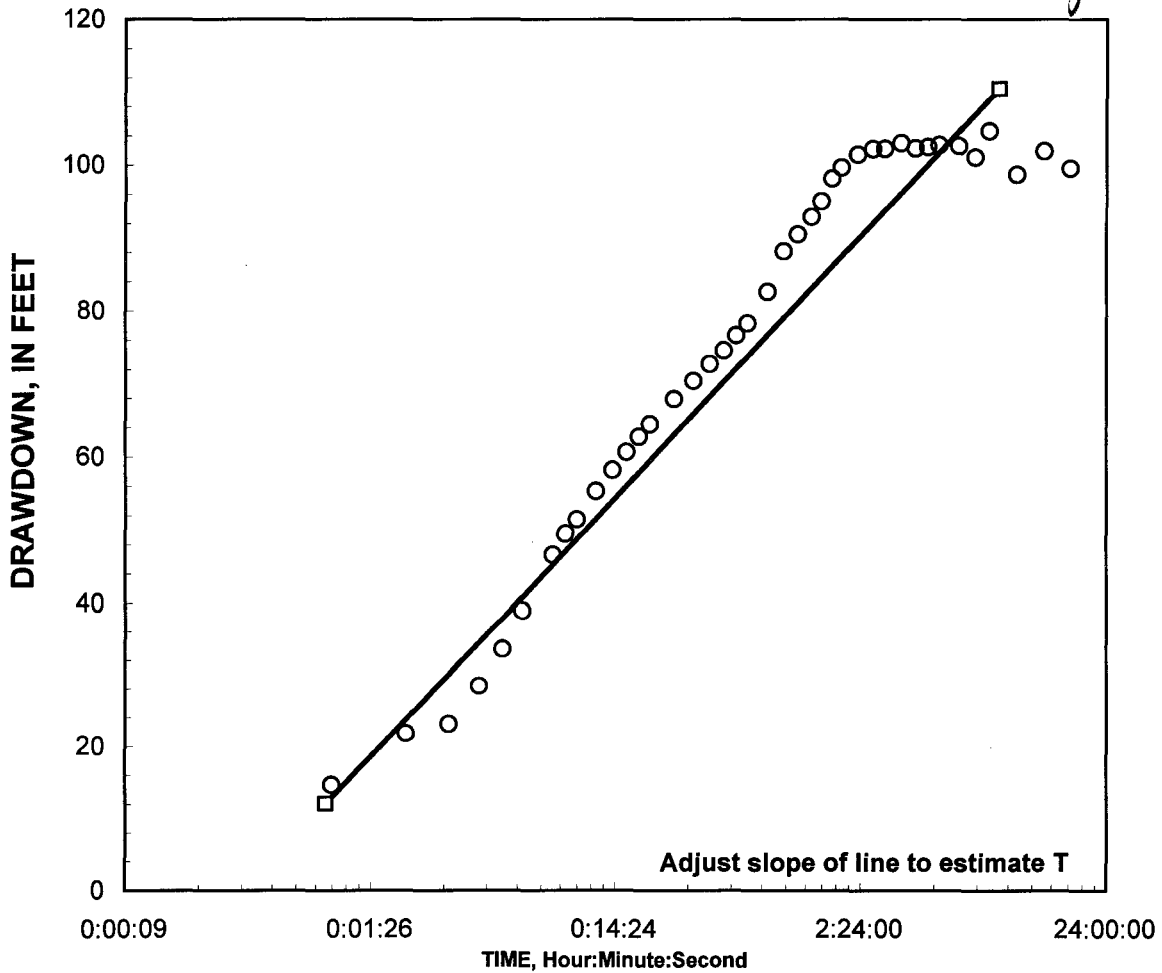
Aquifer thickness = 500 Feet

Slope = 35.82878 Feet/log10

Input is consistent.

K =	1 Feet/Day
T =	600 Feet ² /Day

Use 600 Feet²/day



REMARKS:

Cooper-Jacob analysis of single-well aquifer test

Reduced Data		
Entry	Time, Date Hr:Min:Sec	Water Level Feet
1	1/0/00 0:00:00	80.52
2	1/0/00 0:01:00	95.20
3	1/0/00 0:02:00	102.33
4	1/0/00 0:03:00	103.66
5	1/0/00 0:04:00	109.00
6	1/0/00 0:05:00	114.14
7	1/0/00 0:06:00	119.55
8	1/0/00 0:08:00	127.17
9	1/0/00 0:09:00	130.08
10	1/0/00 0:10:00	132.03
11	1/0/00 0:12:00	135.91
12	1/0/00 0:14:00	138.77
13	1/0/00 0:16:00	141.18
14	1/0/00 0:18:00	143.31
15	1/0/00 0:20:00	144.98
16	1/0/00 0:25:00	148.39
17	1/0/00 0:30:00	150.90
18	1/0/00 0:35:00	153.25
19	1/0/00 0:40:00	155.12
20	1/0/00 0:45:00	157.25
21	1/0/00 0:50:00	158.86
22	1/0/00 1:00:00	163.11
23	1/0/00 1:10:00	168.68
24	1/0/00 1:20:00	170.99
25	1/0/00 1:31:00	173.44
26	1/0/00 1:40:00	175.53
27	1/0/00 1:50:00	178.66
28	1/0/00 2:00:00	180.18
29	1/0/00 2:20:00	181.98
30	1/0/00 2:41:00	182.73
31	1/0/00 3:00:00	182.78
32	1/0/00 3:30:00	183.52
33	1/0/00 4:00:00	182.82
34	1/0/00 4:30:00	182.97
35	1/0/00 5:00:00	183.25
36	1/0/00 6:00:00	183.11
37	1/0/00 7:00:00	181.56
38	1/0/00 8:00:00	185.14
39	1/0/00 10:20:00	179.18
40	1/0/00 13:20:00	182.43

WELL ID: Waikoko Well

INPUT

Construction:	
Casing dia. (d _c)	9.875 Inch
Annulus dia. (d _w)	12 Inch
Screen Length (L)	405 Feet
Depths to:	
water level (DTW)	80 Feet
Top of Aquifer	200 Feet
Base of Aquifer	700 Feet
Annular Fill:	
across screen --	Open Hole
above screen --	Cement
Aquifer Material --	Permeable Basalt
ASSUMED S =	0.001 d'less

Local ID: 0327-01

Date: 10/24/2002

Time: 12:40

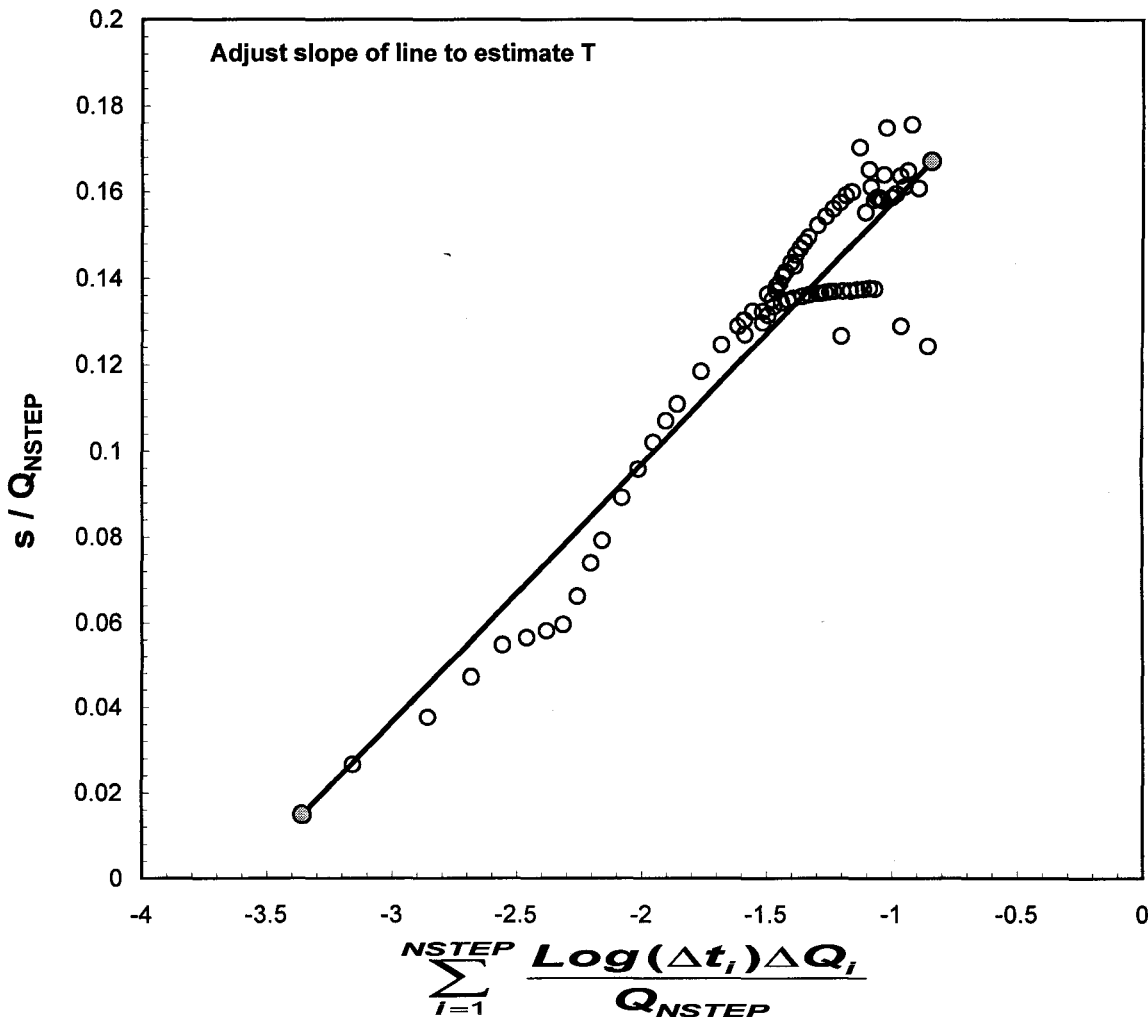
COMPUTED

Aquifer thickness = 500 Feet

Input is consistent.

K =	1 Feet/Day
T =	600 Feet ² /Day
S =	0.001 d'less
K _{annular} =	10 Feet/Day
Skin =	-0.2 d'less

=

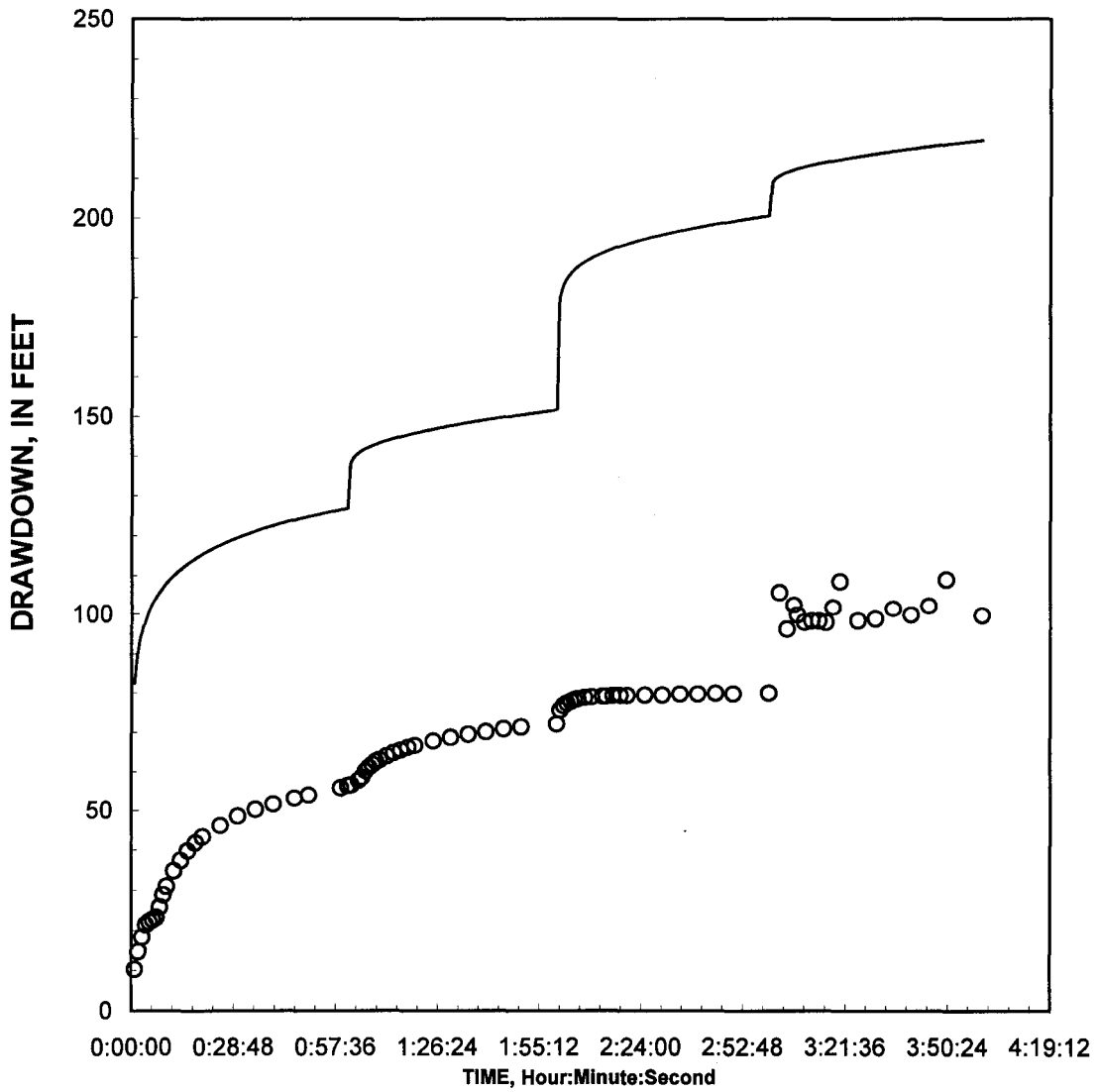
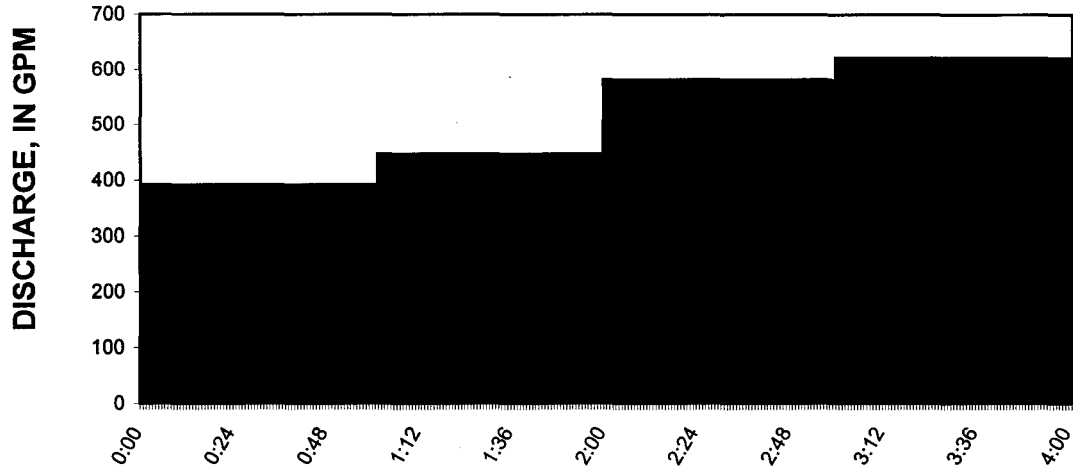


REMARKS:

Step-drawdown analysis of single-well aquifer test

KANNULAR is estimated by fitting simulated drawdowns to measured drawdowns in a secondary plot. A reasonable storage value must be assigned by the user because storage and KANNULAR cannot be estimated independently. The estimate of T is not affected by changes in estimates of storage and KANNULAR.

WELL ID: Waikoko Well



Reduced Data					
Entry	Time, Hr:Min:Sec	Water Level Feet	Entry	Time, Hr:Min:Sec	Water Level Feet
1	0:00:00	80.01	51	2:08:00	158.79
2	0:01:00	90.37	52	2:10:00	159.00
3	0:02:00	94.71	53	2:13:00	159.15
4	0:03:00	98.37	54	2:14:00	159.17
5	0:04:00	101.40	55	2:16:00	159.29
6	0:05:00	102.06	56	2:18:00	159.37
7	0:06:00	102.67	57	2:20:00	159.40
8	0:07:00	103.25	58	2:25:00	159.45
9	0:08:00	105.81	59	2:30:00	159.49
10	0:09:00	108.84	60	2:35:00	159.68
11	0:10:00	110.90	61	2:40:00	159.70
12	0:12:00	114.77	62	2:45:00	159.86
13	0:14:00	117.40	63	2:50:00	159.75
14	0:16:00	119.81	64	3:00:00	159.90
15	0:18:00	121.75	65	3:03:00	185.61
16	0:20:00	123.27	66	3:05:00	176.25
17	0:25:00	126.19	67	3:07:00	182.39
18	0:30:00	128.58	68	3:08:00	179.89
19	0:35:00	130.28	69	3:10:00	178.00
20	0:40:00	131.62	70	3:12:00	178.37
21	0:46:00	133.18	71	3:14:00	178.35
22	0:50:00	133.91	72	3:16:00	177.95
23	0:59:00	135.74	73	3:18:00	181.68
24	1:01:00	136.32	74	3:20:00	188.43
25	1:02:00	136.48	75	3:25:00	178.40
26	1:04:00	137.72	76	3:30:00	178.90
27	1:05:00	138.47	77	3:35:00	181.47
28	1:06:00	140.07	78	3:40:00	179.89
29	1:07:00	141.03	79	3:45:00	182.20
30	1:08:00	141.81	80	3:50:00	188.92
31	1:09:00	142.51	81	4:00:00	179.66
32	1:10:00	143.00			
33	1:12:00	143.93			
34	1:14:00	144.72			
35	1:16:00	145.40			
36	1:18:00	145.99			
37	1:20:00	146.53			
38	1:25:00	147.75			
39	1:30:00	148.65			
40	1:35:00	149.42			
41	1:40:00	150.09			
42	1:45:00	150.81			
43	1:50:00	151.21			
44	2:00:00	152.05			
45	2:01:00	155.60			
46	2:02:00	156.73			
47	2:03:00	157.39			
48	2:04:00	157.89			
49	2:05:00	158.24			
50	2:06:00	158.49			

WELL ID: Waikoko

Local ID: 0327-01

Date: #####

Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	9.875 Inch
Annulus dia. (d_w)	9.875 Inch
Screen Length (L)	405 Feet
Depths to:	
water level (DTW)	80 Feet
Top of Aquifer	200 Feet
Base of Aquifer	700 Feet
Annular Fill:	
across screen --	Open Hole
above screen --	Cement
Aquifer Material --	Permeable Basalt
FLOW RATE	550 GPM

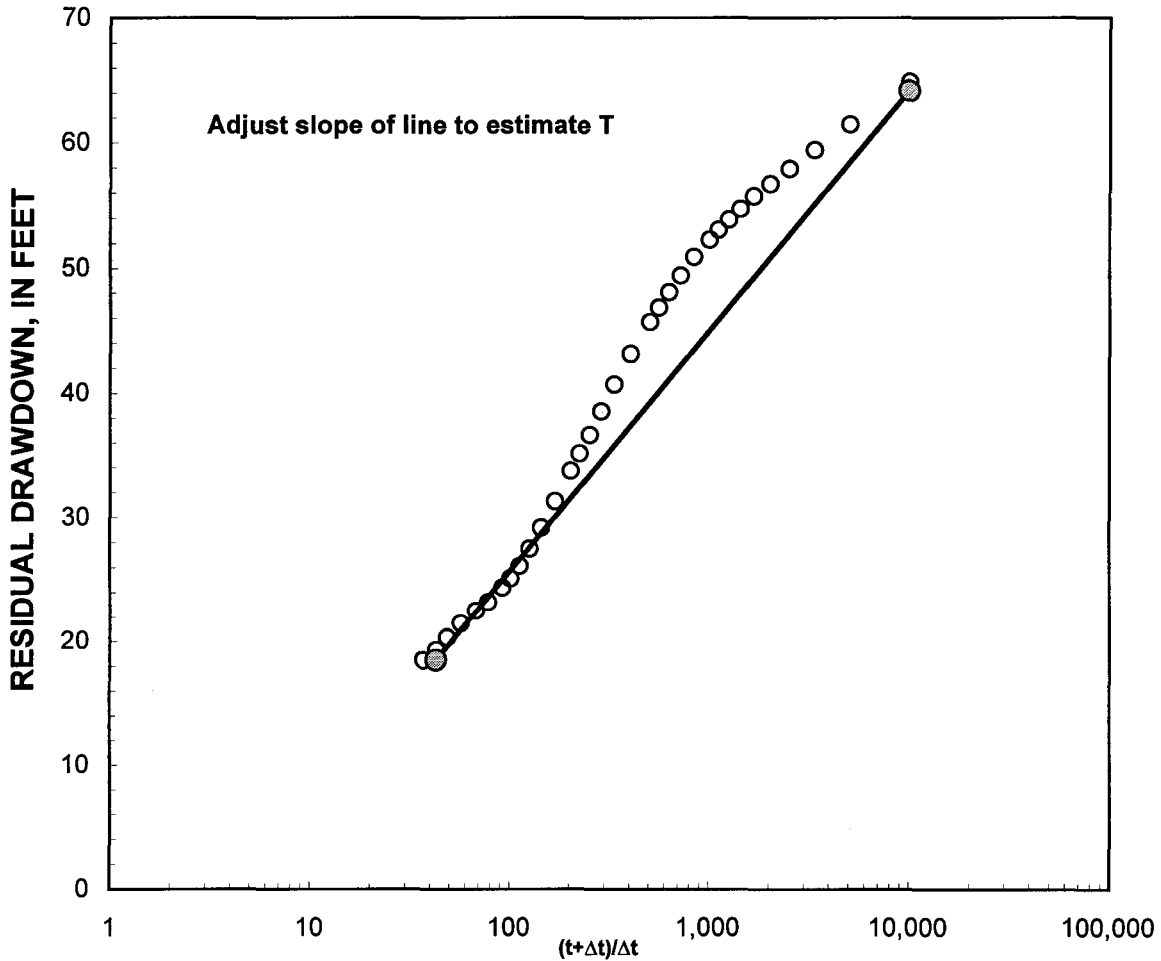
COMPUTED

Aquifer thickness = 500 Feet

Slope = 19.2827 Feet/log10

Input is consistent.

K =	2 Feet/Day
T =	1,000 Feet ² /Day



REMARKS: Cooper-Jacob recovery analysis of single-well aquifer test

Hypothetical recovery test

Reduced Data		
	Time,	Water Level
Entry	Date Hr:Min:Sec	Feet
1	1/0/00 0:00:00	80.00
2	1/7/00 0:00:00	154.00
3	1/7/00 0:01:00	144.92
4	1/7/00 0:02:00	141.47
5	1/7/00 0:03:00	139.42
6	1/7/00 0:04:00	137.91
7	1/7/00 0:05:00	136.69
8	1/7/00 0:06:00	135.68
9	1/7/00 0:07:00	134.72
10	1/7/00 0:08:00	133.88
11	1/7/00 0:09:00	133.06
12	1/7/00 0:10:00	132.28
13	1/7/00 0:12:00	130.88
14	1/7/00 0:14:00	129.39
15	1/7/00 0:16:00	128.05
16	1/7/00 0:18:00	126.84
17	1/7/00 0:20:00	125.67
18	1/7/00 0:25:00	123.14
19	1/7/00 0:30:00	120.69
20	1/7/00 0:35:00	118.54
21	1/7/00 0:40:00	116.62
22	1/7/00 0:45:00	115.12
23	1/7/00 0:50:00	113.74
24	1/7/00 1:00:00	111.28
25	1/7/00 1:10:00	109.18
26	1/7/00 1:20:00	107.51
27	1/7/00 1:30:00	106.13
28	1/7/00 1:40:00	105.13
29	1/7/00 1:50:00	104.37
30	1/7/00 2:10:00	103.20
31	1/7/00 2:30:00	102.51
32	1/7/00 3:00:00	101.48
33	1/7/00 3:31:00	100.31
34	1/7/00 4:00:00	99.32

Well Name: Waikoko Well 0327-01
Date of Test: October 2002
Date of Analysis: 06-Jun-03

Alternative way for determining T from step-drawdown data (Mink, per. comm)

$Q = ft^3/d$ $Q1$ (gpm) = 620 = 119350 ft^3/d
 $s = ft.$ $Q2$ (gpm) = 390 = 75075 ft^3/d

Set up two equations:

$$s1 = jQ1 + nQ1^2$$

$$s2 = jQ2 + nQ2^2$$

green = input
red = calculated
blue = equations

$Q2 = 75075$ $s2 = 55$
 $Q1 = 119350$ $s1 = 105$
Well Depth below sea level = 328
Radius of well (ft) = 0.41 = r

$$n = s1 - (Q1/Q2)s2/Q1(Q1-Q2) = 3.32E-09$$
$$j = s/Q - nQ = 0.000483$$

Laminar flow equation:

$$s = jQ = 57.65329 \quad 54.91\% \text{ Head loss due to laminar flow}$$

Thiem Eq.

$$T = 1/2\pi ij(\ln\{re/r\})$$

$$re = \text{Well Depth BSL} * 1.6 = 524.8$$

Therefore:

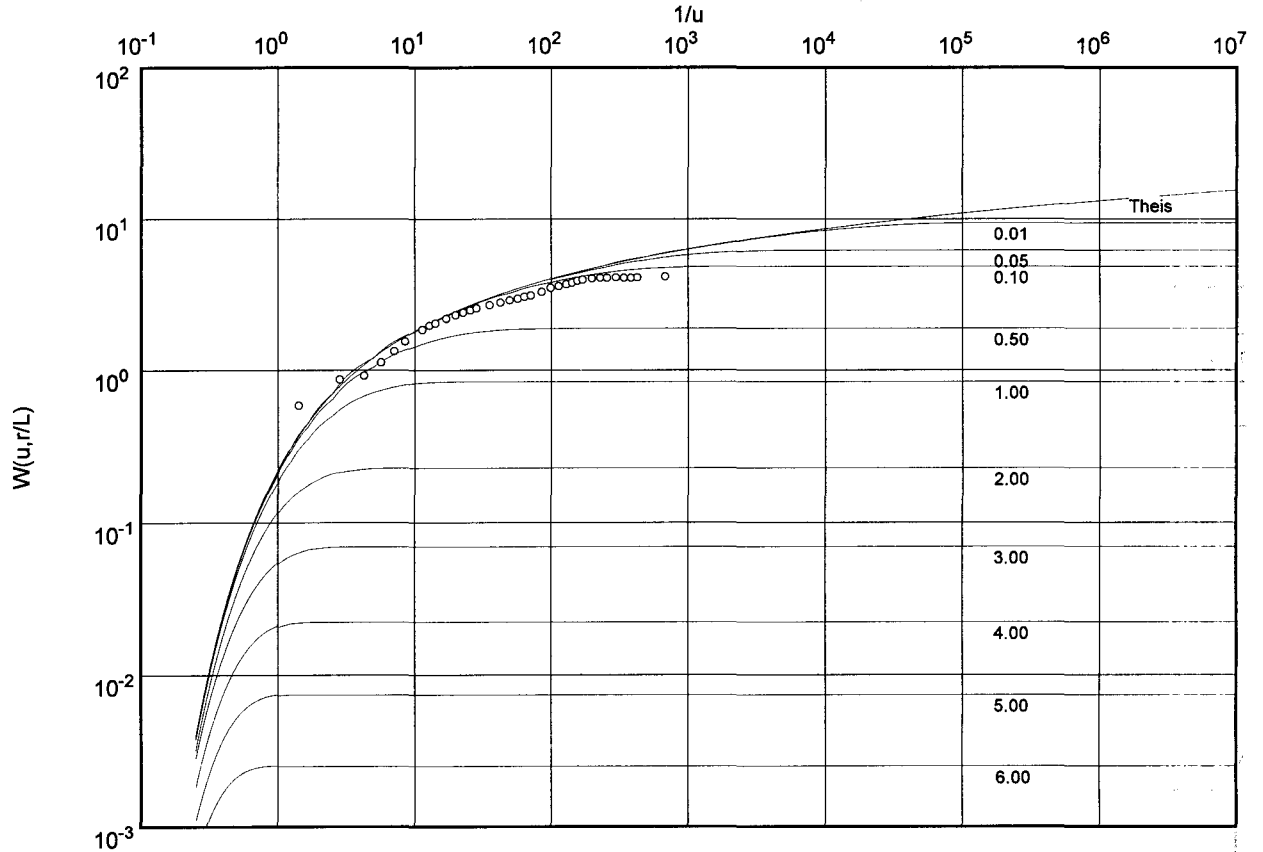
$$T = 1/2\pi ij(\ln\{re/r\}) = 2357 \text{ ft}^2/d$$

Pumping Test No. Constant Rate

Test conducted on: October 25, 2002

0327-01

Discharge 115500.00 ft³/d



○ Waikoko Monitor Well

Transmissivity [ft²/d]: 3.65×10^2



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Water Resources Discipline
677 Ala Moana Blvd. Suite 415
Honolulu, HI 96813

12 JUL 2 10:36

June 26, 2002

Linnel T. Nishioka
Deputy Director
State of Hawaii Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

Dear Ms. Nishioka:

This letter is to inform you that the U.S. Geological Survey will begin construction of the Waikoko Monitor Well (2-0327-01) on or about June 28, 2002, in accordance with the permit issued by the Commission on Water resource Management on May 30, 2002. If you have any questions please call me at 587-2406.

Sincerely,

Stephen S. Anthony
Associate District Chief



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Water Resources Discipline
677 Ala Moana Blvd. Suite 415
Honolulu, HI 96813

June 26, 2002

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State of Hawaii Department of Land and Natural Resources
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P.O. Box 621
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Sincerely,

Stephen S. Anthony
Associate District Chief



U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
HAWAII DISTRICT
677 Ala Moana Blvd., Suite 415
Honolulu, Hawaii 96813
FAX: 808.587.2401

DATE: 6/26/02

TO: Lenore Nakama

FROM: Scot Izuka

OFFICE: CWRM

FAX NUMBER: 587-0219

Phone: 587-2415

2 Pages, including cover page

Lenore:

Faxing a letter notifying your agency that we plan to start construction of the Waikoko well. Since it is late, I thought I should fax it - a hard copy will be mailed. If there's any question or problem, please call Steve Anthony @ 587-2406.

Thanks,
Scot



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

WATER RESOURCES DISCIPLINE

677 Ala Moana Blvd., Suite 415

Honolulu, HI 96813

Phone: (808) 587-2400/Fax: (808) 587-2401

June 3, 2002

02 JUN 4 11:06

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

Dear Mr. Coloma-Agaran:

As requested in your letter dated May 30, 2002, enclosed please find one fully-signed Well Construction Permit for the Waikoko Monitor Well (No. 0327-01), which authorizes well construction activities for the U.S. Geological Survey.

Thank you for your approval of the permit.

Sincerely,

Gordon Tribble
District Chief

Enclosure

WELL CONSTRUCTION PERMIT

Waikoko Monitor, Well No. 0327-01

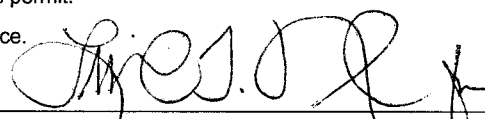
Note: This permit shall be prominently displayed at the site until the work is completed

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 Waikoko Monitor (Well No. 0327-01) at Wailua, Kauai, TMK 3-9-01:01, subject to the Hawaii Well Construction & Pump Installation Standards (1/23/97) which include but are not limited to the following conditions:

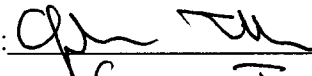
1. The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in writing, at least two (2) weeks before any work authorized by this permit commences and staff shall be allowed to inspect installation activities in accordance with §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:
 - a. Well completion report, (attached - Part I, Well Construction Report).
 - 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; HWCPLS). If the HWCPLS 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 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.

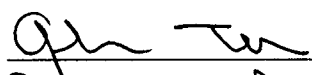
Date of Approval: **May 15, 2002**

Expiration Date: **May 15, 2004**


GILBERT S. COLOMA-AGARAN, 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 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:  Date: 6/3/02
Printed Name: Gordon Tribble Firm or Title: District Chief

Driller's Signature:  Date: 6/03/02
Printed Name: For King Akina Firm or Title: Drill Rig Operator

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
Kauai Department of Water Supply
DLNR, Land Division

11
11
11
11
11

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON

BRUCE S. ANDERSON
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

May 30, 2002

0327-01 Waikoko Monitor.wcp

Mr. Gordon Tribble
U.S. Geological Survey
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813

Dear Mr. Tribble:

Well Construction Permit
Waikoko Monitor (Well No. 0327-01)

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 a 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. The U.S. Geological Survey shall be liable, to the extent allowed by the Federal Tort Claims Act, for claims for personal injuries or property damage resulting from the negligent or wrongful act or omission on any employee of the United States while acting within the scope of his employment, arising out of this agreement. Therefore, standard condition 12 is void.
2. Unless a variance from the Commission is obtained in advance, the annular space of the well 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 1¼ inches.
3. Standard Condition 2 is modified to exempt the permittee from the requirement for pumping tests.
4. Standard Condition 7.e. is waived.

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 Lenore Nakama of the Commission staff at 587-0218.

Aloha,

A handwritten signature in black ink, appearing to read "G.S. Coloma-Agaran".

GILBERT S. COLOMA-AGARAN
Chairperson

Enclosures

c: DLNR, Land Division

WELL CONSTRUCTION PERMIT

Waikoko Monitor, Well No. 0327-01

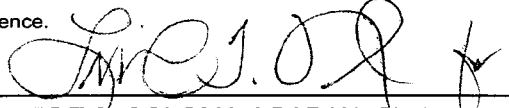
Note: This permit shall be prominently displayed at the site until the work is completed

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 Waikoko Monitor (Well No. 0327-01) at Wailua, Kauai, TMK 3-9-01:01, 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:
 - a. Well completion report, (**attached - Part I, Well Construction Report**).
 - 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 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: **May 15, 2002**

Expiration Date: **May 15, 2004**


 GILBERT S. COLOMA-AGARAN, 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 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: _____ 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
 Kauai Department of Water Supply
 DLNR, Land Division

Well No. 0327-01
 Well Name waikoko monitor
 Applicant usgs

Date of Review #####
 Reviewer RRI

SECTION 1: WELL LOCATION INFORMATION

Island	KAUAI	Proposed Use	Other
Aquifer System	LIHUE	Proposed Withdrawal	54000
Aquifer Sector	WAILUA	System Sustainable Yield	60

SECTION 2: WELL SECTION DATA (enter data in grey cells only)

Elevation at top of casing	1041 ft., m.s.l.	Solid Casing	
Ground Elevation	1040 ft., m.s.l.	Material	Steel
Cement Grout	40 ft.	Designation	ASTM A53
Rock Packing	0 ft.	Length	200 ft.
Hole Diameter	17.5 in.	Diameter	12 in.
Total Depth	1000 ft.	Wall Thickness	0.25 in.
		Casing	
Estimated Head	1000 ft., m.s.l.	Material	Plastic
Calculated Aquifer Thickness	41000 ft.	Designation	Sch 40
		Length	1000 ft.
County Water Supply (Y/N ?)	NO	Diameter	4.5 in.
		Wall Thickness	0.25 in.
		Openings	0 sq.in./l.f.
		Open Hole	
		Length	0 ft.
		Diameter	0 in.

SECTION 3: CHECKLIST (values to check are shaded)

Well Depth

Theoretical Thickness of Aquifer	41000 ft.	
1/4 Aquifer Thickness	10250 ft.	
Depth of Well below Sea Level	-40 ft.	okay (refer to HWCPIS Section 2.2) (disregard if the well is not basal)

Well Casing

Minimum Wall Thickness		
Material	Steel	
County or Non-County	non-county	
Minimum Thickness per standards	0.313 in.	
Wall Thickness Provided	0.250 in.	too small (refer to HWCPIS Section 2.4 c) (disregard this if this is a non-county well)
Minimum Length of Solid Casing		
90% of ground to top of aquifer	36 ft.	
Length of solid casing Provided	200 ft.	okay (refer to HWCPIS Section 2.4 d)
Casing Material	ASTM A53	okay (refer to HWCPIS Section 2.4 e) If the cell above reads #N/A, reference HWCPIS)

Annular Space

Depth of Grouting		
Calculated Depth of Grouting	28 ft.	
Depth of Grouting provided	40 ft.	okay (refer to HWCPIS Section 2.6 c)
Thickness of Annular Space	2.75 in.	too small (refer to HWCPIS Section 2.6 d)

State of Hawaii
Department of Land and Natural Resources
LAND DIVISION
Honolulu, Hawaii
MAY 15 2002

MEMORANDUM

TO: Mr. Gilbert S. Coloma-Agaran, Chairperson
Board of Land and Natural Resources

FROM: Dede Mamiya, Land Division Administrator

SUBJECT: Request for Chairperson's Signature as Landowner

As you know, each application for permits issued by the Commission on Water Resource Management requires the signature of the landowner of the property involved. On behalf of the applicant, may we have your signature on the attached permit application, which entails the use of State-owned land?

I have attested to the State's ownership of the property covered in the application, as indicated below. Your signature would allow the permit application to be filed and processed. It would not represent an endorsement of the applicant's proposal or an approval for the use of State land; both approvals would be sought by the applicant under separate actions later.


Please return this memo and the permit application to the Water Commission when you're through. Thank you.

Attach.

AFFIRMATION

I hereby affirm that the State of Hawaii is the owner of that certain parcel of land identified as:

TMK 3-9-1: par. 1 located at Wailua, Lihue, Kauai
on the island of KAUAI (Lihue Koloa Forest Reserve)

By: *Dede Mamiya*
Land Division Administrator 

Dated: MAY 15 2002

RECEIVED
MAY 15 2002
2:25

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON

BRUCE S. ANDERSON
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

RECEIVED
LAND DIVISION

2002 MAY -2 P 3:00

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

P.O. BOX 621
HONOLULU, HAWAII 96809

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

DEPT. OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

Ref:0327-01.let

MAY -1 2002

RECEIVED
LAND DIVISION
HILO, HAWAII
2002 MAY -6 P 12:32

TO: Ms. Dede Mamiya, Land Division Administrator

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

SUBJECT: Request for Chairperson's Signature as Landowner

The attached permit application entails the use of State-owned land and, accordingly, requires the signature of the Chairperson as the landowner. Here, we are requesting your help in affirming the State's ownership of the property and, thereafter, routing the application to the Chairperson for his signature. (We have enclosed the appropriate transmittal memo that contains the affirmation statement.)

Please note that the Chairperson's signature on the permit application completes the application and allows it to be accepted for processing by the Commission. The signature neither represents an endorsement of the applicant's proposal nor an approval for the use of State land; both approvals would be sought by the applicant under separate actions later.

Please inform us if the proposed project is in the Conservation District and, if so, whether the requirements of Chapter 343 have been met.

Lastly, please inform us of the contact person at Land Division who is responsible for transmitting the attached original applications to the Chairperson's office.

LN:fc
Attach.

MAY - 8 2002

Mike L Laureta
05/09/02 08:08 AM

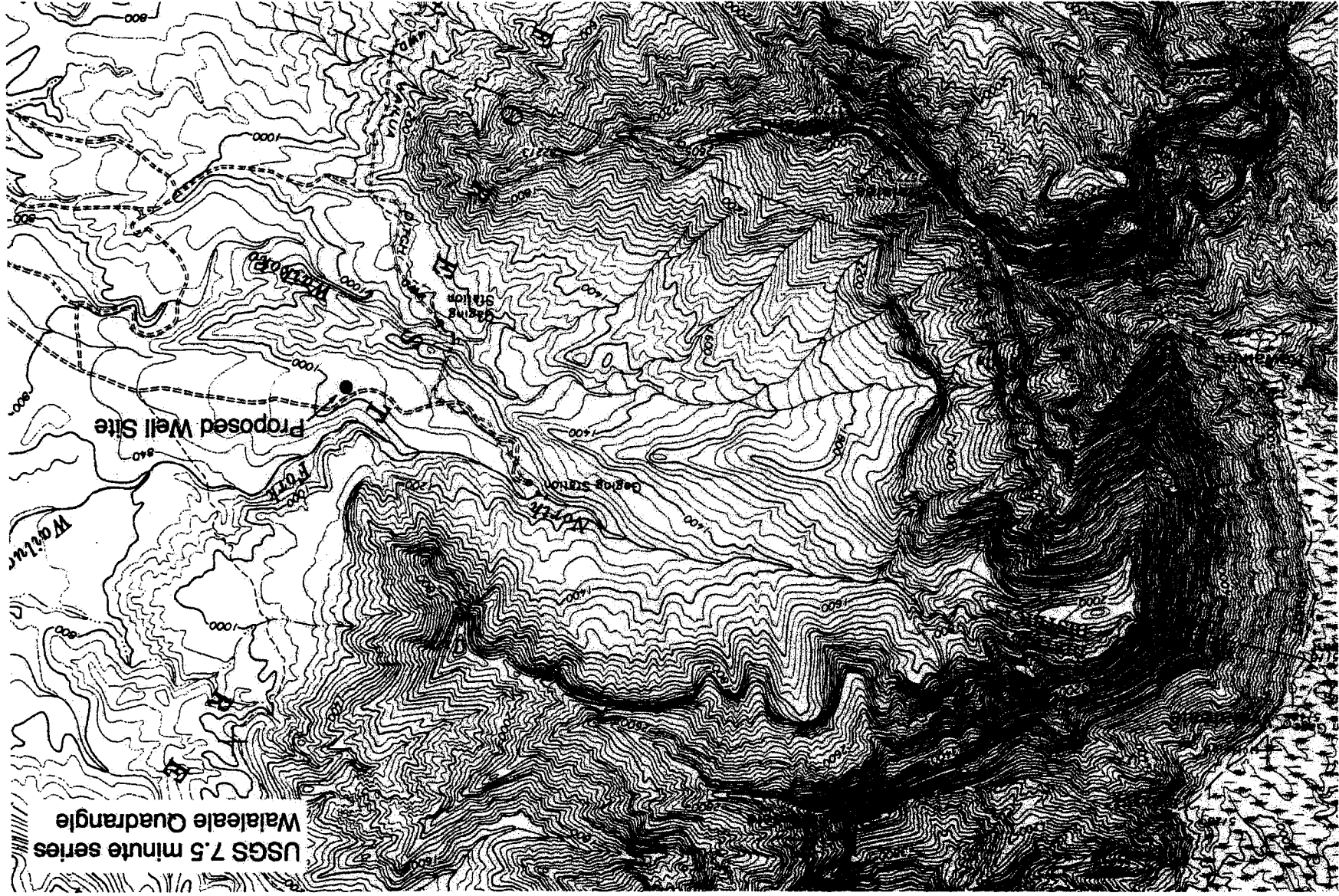
To: Linnel T Nishioka/DLNR/StateHiUS,
cc:
cc:
Subject: REquest for Chairperson signature

Regarding your 5/1/02 memo for the Chairperson's signature as landowner for the USGS well site on TMK 3-9-01: por. 1.

The area is located within the Conservation District. Please contact Planner Sam Lemmo for a determination as to whether or not a CDUA permit is necessary.

The area is located within the Lihue Koloa Forest Reserve. The property is State owned, but under the management jurisdiction of DOFAW. District Manager for the Forest Reserve on Kauai is Ed Petteys, who is noted on the USGS application. Land Division does not manage the forest reserve. Question - why is Land Division involved with this application?

I have forwarded a copy to Ed P. as a heads up. I have confirmed the above, and returned it to Dede for her signature.



USGS 7.5 minute series
Waiialele Quadrangle

Proposed Well Site

Waiialele

Waiialele Point

Waiialele Station

Waiialele Station





State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
 Department of Land and Natural Resources
APPLICATION FOR PERMIT

For Official Use Only:

02 APR 25 9:37

Well Construction and/or Pump Installation

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>.

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

1. (a) **WELL OWNER:** U. S. Geological Survey Contact Person: Gordon Tribble Phone: (808) 587-2405
 Mailing Address: 677 Ala Moana Blvd., Suite 415, Honolulu, HI, 96813
 Fax: (808) 587-2401 E-mail: gtribble@usgs.gov
- (b) **LAND OWNER:** State of Hawaii Contact Person: Edwin Petteys Phone: (808) 274-3433
 Mailing Address: 3060 Eiwa Street, Room 306, Lihue, HI 96766-1875
 Fax: (808) 274-3438 E-mail: _____
- (c) **CONTRACTOR:** _____ Contact Person: _____ Phone: _____
 Mailing Address: _____
 Fax: _____ E-mail: _____ Lic #: _____
 (circle one: C-57, C-57a, or A)

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

2. **WELL NAME:** Waikoko Monitor Well Island: Kauai
 Address Wailua, Kauai, Hawaii Tax Map Key: 3 - 9 - 01 : 01
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 name of the quad map, and (b) a property tax map, showing well location referenced to established property boundaries.

3. **PROPOSED WORK:** Construct New Well Install New Pump*
 (check all that apply) Modify Existing Well* Modify Pump*
 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: _____ gallons per minute
 Pump Type (Check one):
 Deep Well Turbine Rotary Propeller
 Submersible Rotary-Displacement Reciprocating
 Centrifugal Rotary-Gear Impulse

6. **PROPOSED USE:** Municipal (including hotels, stores, etc.) Industrial
 (check all that apply) Domestic (individual, noncommercial water system)
 Does this well serve 25 or more people at least 60 days per year or have 15 or more service connections? Yes No
 Irrigation (crop) _____ No. of Acres: _____
 Military Other (explain): Observation

7. (a) **PROPOSED AMOUNT OF WITHDRAWAL:** _____ gallons per day
 (b) **METHOD OF FLOW MEASUREMENT:** Flowmeter Open-pipe Weir Orifice Other(explain)

OTHER IMPORTANT INFORMATION:

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

9. **REMARKS, EXPLANATIONS:** A copy of the CDUP for this project is attached.

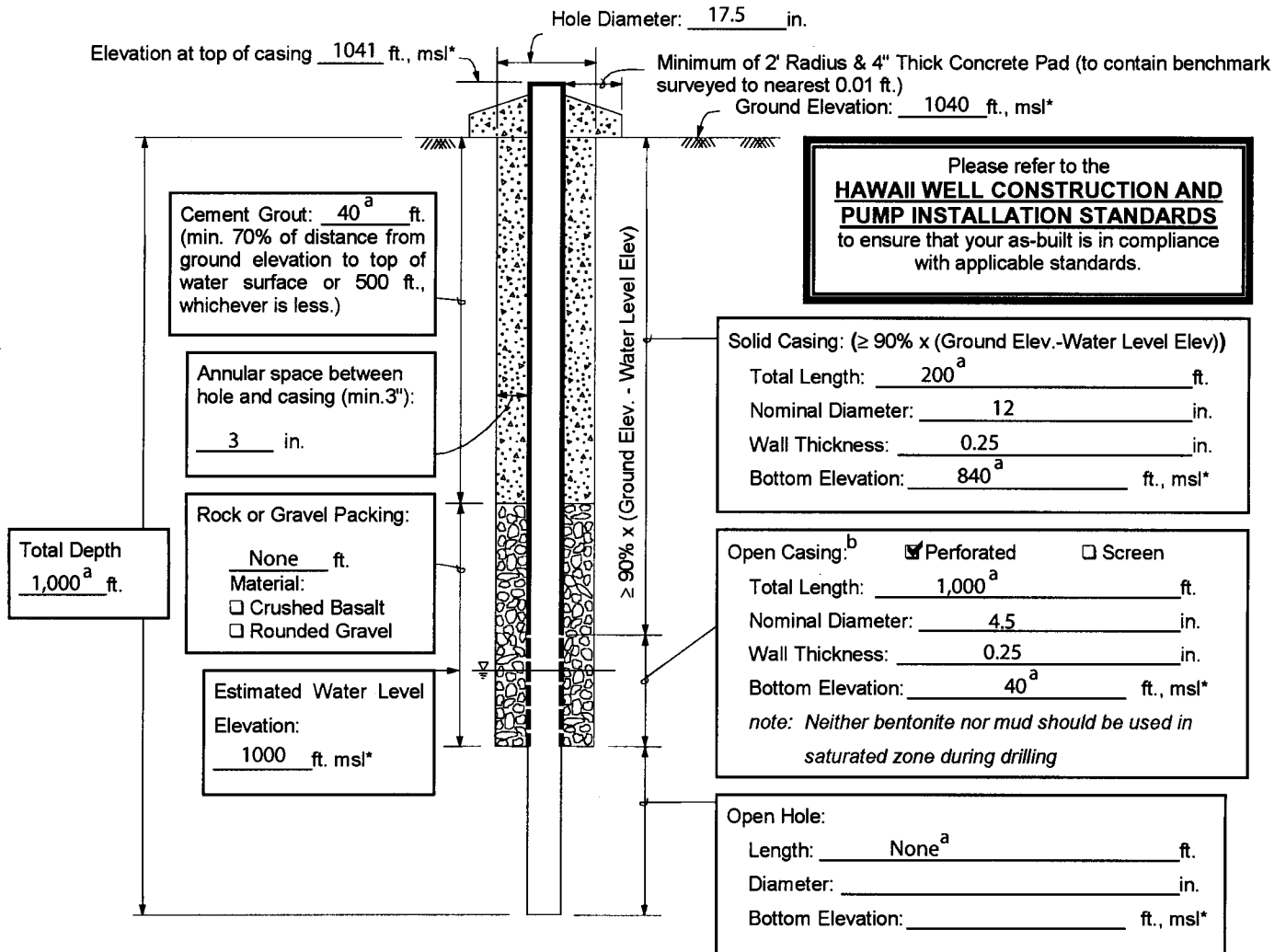
(if more space is needed, please attach additional sheet)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 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.

Well Owner U.S. Geological Survey Landowner State of Hawaii Contractor _____
 (print legibly) (print legibly) (print legibly)
 Signature [Signature] Signature [Signature] Signature _____
 Date 4-23-02 Date _____ Date _____

For official use only
 Latitude _____ Aquifer System No. _____
 Longitude _____ State Well No. 0327-01

10. PROPOSED WELL SECTION (Please attach schematic if different from diagram provided below)



* 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.

^a These items may change depending on field conditions such as depth of water below ground surface.

^b 4.5-inch open casing will be telescoped inside the 12-inch solid surface casing and grouted in place.

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

$$\text{Bottom Elevation of Well Limit} = \left(\text{Water Elevation} - \frac{41 \times \text{Water Level Elevation}}{4} \right)$$

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

Solid Casing Material:

Carbon Steel: compliant with (check one or more): ANSI/AWWA C200 API Spec. 5L ASTM A53 ASTM A139
And compliant with (check one or more): ASTM A242 Type E Type S Grade B Other

Stainless 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 120

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

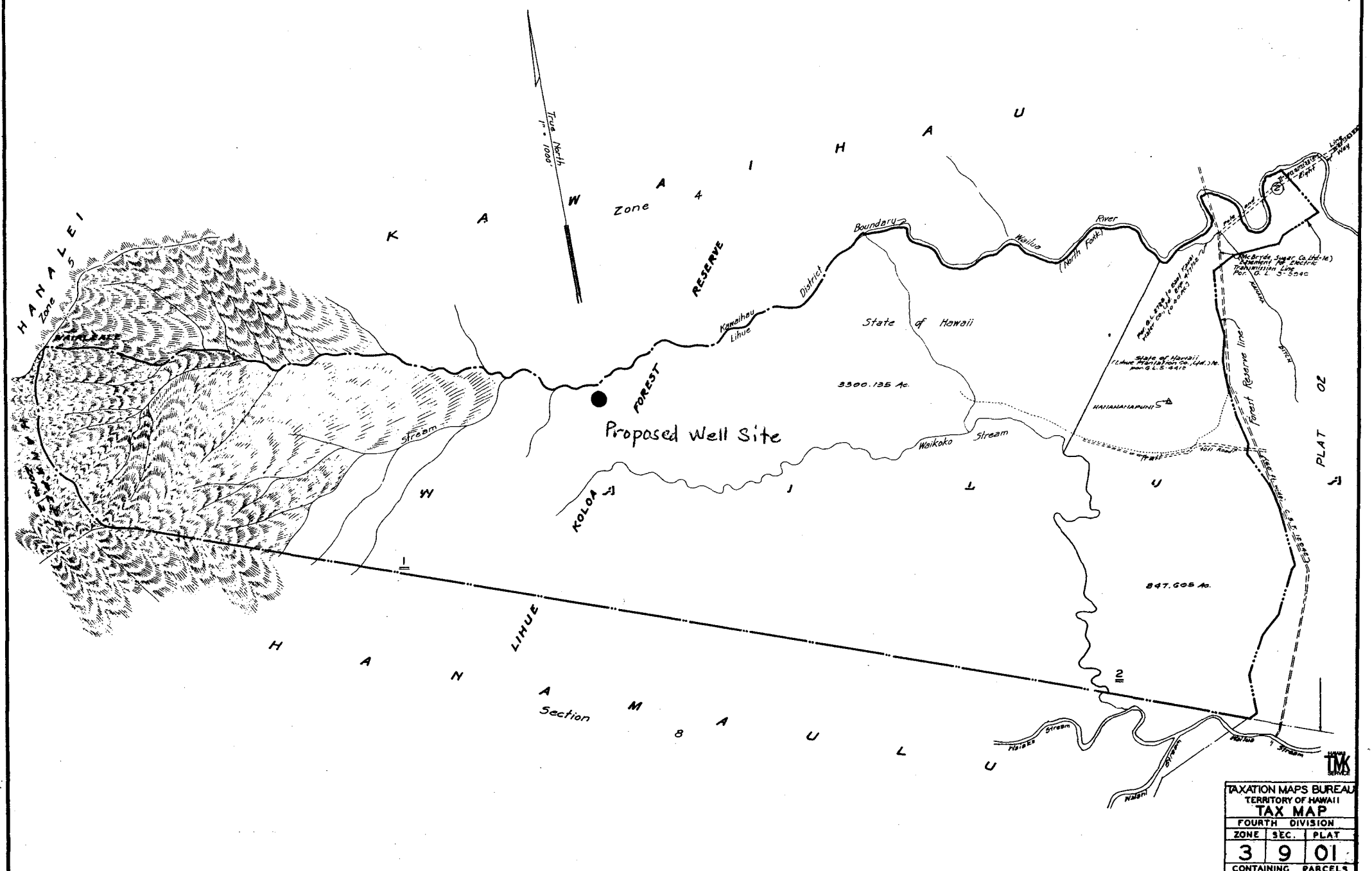
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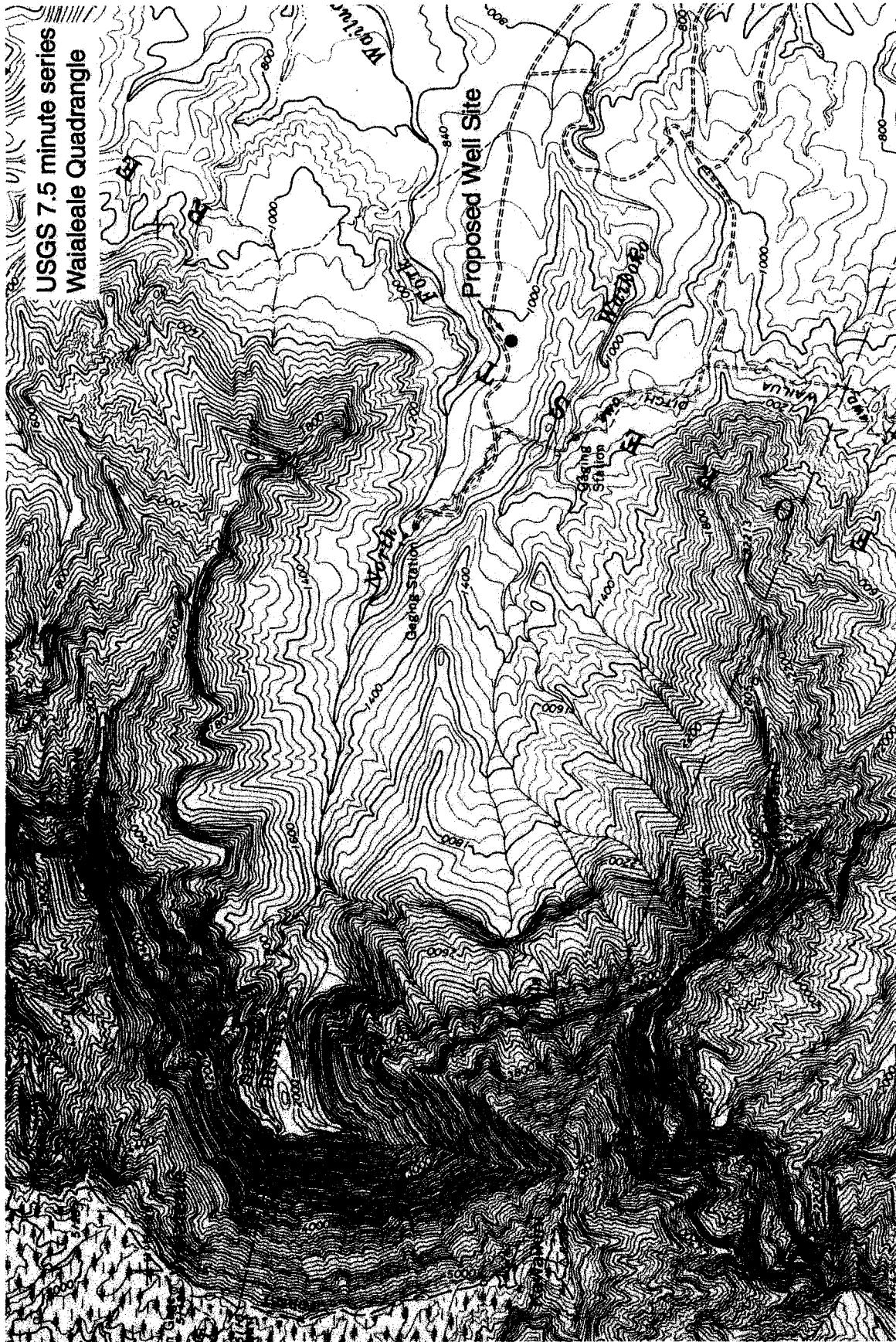
Orig. No. 22
Source: Tax Maps Bureau & Survey Dept.
By: H. N. Tipton 1936



FOR. OF LIHUE-KOLOA FOR RES. (WAILUA SEC.) WAILUA, LIHUE, KAUAI.

SUBJECT TO CHANGE

TAXATION MAPS BUREAU		
TERRITORY OF HAWAII		
TAX MAP		
FOURTH DIVISION		
ZONE	SEC.	PLAT
3	9	01
CONTAINING PARCELS		
SCALE: 1 in. = 1000 ft.		



USGS 7.5 minute series
Waialeale Quadrangle

Proposed Well Site

Caching Station

Signal Station

MOUNTAIN

MOUNTAIN

MOUNTAIN

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON

BRUCE S. ANDERSON
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

Ref:0327-01.let

MAY - 1 2002

TO: Ms. Dede Mamiya, Land Division Administrator

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

A handwritten signature in black ink, appearing to read "Linnel Nishioka".

SUBJECT: Request for Chairperson's Signature as Landowner

The attached permit application entails the use of State-owned land and, accordingly, requires the signature of the Chairperson as the landowner. Here, we are requesting your help in affirming the State's ownership of the property and, thereafter, routing the application to the Chairperson for his signature. (We have enclosed the appropriate transmittal memo that contains the affirmation statement.)

Please note that the Chairperson's signature on the permit application completes the application and allows it to be accepted for processing by the Commission. The signature neither represents an endorsement of the applicant's proposal nor an approval for the use of State land; both approvals would be sought by the applicant under separate actions later.

Please inform us if the proposed project is in the Conservation District and, if so, whether the requirements of Chapter 343 have been met.

Lastly, please inform us of the contact person at Land Division who is responsible for transmitting the attached original applications to the Chairperson's office.

LN:fc
Attach.

State of Hawaii
Department of Land and Natural Resources
LAND DIVISION
Honolulu, Hawaii

MEMORANDUM

TO: Mr. Gilbert S. Coloma-Agaran, Chairperson
Board of Land and Natural Resources

FROM: Dede Mamiya, Land Division Administrator

SUBJECT: Request for Chairperson's Signature as Landowner

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I have attested to the State's ownership of the property covered in the application, as indicated below. Your signature would allow the permit application to be filed and processed. It would not represent an endorsement of the applicant's proposal or an approval for the use of State land; both approvals would be sought by the applicant under separate actions later.

Please return this memo and the permit application to the Water Commission when you're through. Thank you.

Attach.

AFFIRMATION

I hereby affirm that the State of Hawaii is the owner of that certain parcel of land identified as:

TMK _____ located at _____

on the island of _____

By: _____
Land Division Administrator

Dated: _____



State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
 Department of Land and Natural Resources
APPLICATION FOR PERMIT

For Official Use Only:

RECEIVED

02 APR 25 9:37

Well Construction and/or Pump Installation

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>.

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

1. (a) **WELL OWNER:** U. S. Geological Survey Contact Person: Gordon Tribble Phone: (808) 587-2405
 Mailing Address: 677 Ala Moana Blvd., Suite 415, Honolulu, HI, 96813
 Fax: (808) 587-2401 E-mail: gtribble@usgs.gov

(b) **LAND OWNER:** State of Hawaii Contact Person: Edwin Petteys Phone: (808) 274-3433
 Mailing Address: 3060 Eiwa Street, Room 306, Lihue, HI 96766-1875
 Fax: (808) 274-3438 E-mail: _____

(c) **CONTRACTOR:** _____ Contact Person: _____ Phone: _____
 Mailing Address: _____
 Fax: _____ E-mail: _____ Lic #: _____
 (circle one: C-57, C-57a, or A)

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

2. **WELL NAME:** Waikoko Monitor Well Island: Kauai
 Address Wailua, Kauai, Hawaii Tax Map Key: 3 - 9 - 01 : 01
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 name of the quad map, and (b) a property tax map, showing well location referenced to established property boundaries.

3. **PROPOSED WORK:** Construct New Well Install New Pump*
 Modify Existing Well* Modify Pump*
 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: _____ gallons per minute

Pump Type (Check one):

Deep Well Turbine Rotary Propeller
 Submersible Rotary-Displacement Reciprocating
 Centrifugal Rotary-Gear Impulse

6. **PROPOSED USE:** Municipal (including hotels, stores, etc.) Industrial
 Domestic (individual, noncommercial water system)
 Does this well serve 25 or more people at least 60 days per year or have 15 or more service connections? Yes No
 Irrigation (crop) _____ No. of Acres: _____
 Military Other (explain): Observation

7. (a) **PROPOSED AMOUNT OF WITHDRAWAL:** _____ gallons per day
 (b) **METHOD OF FLOW MEASUREMENT:** Flowmeter Open-pipe Weir Orifice Other(explain)

OTHER IMPORTANT INFORMATION:

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

9. **REMARKS, EXPLANATIONS:** A copy of the CDUP for this project is attached.

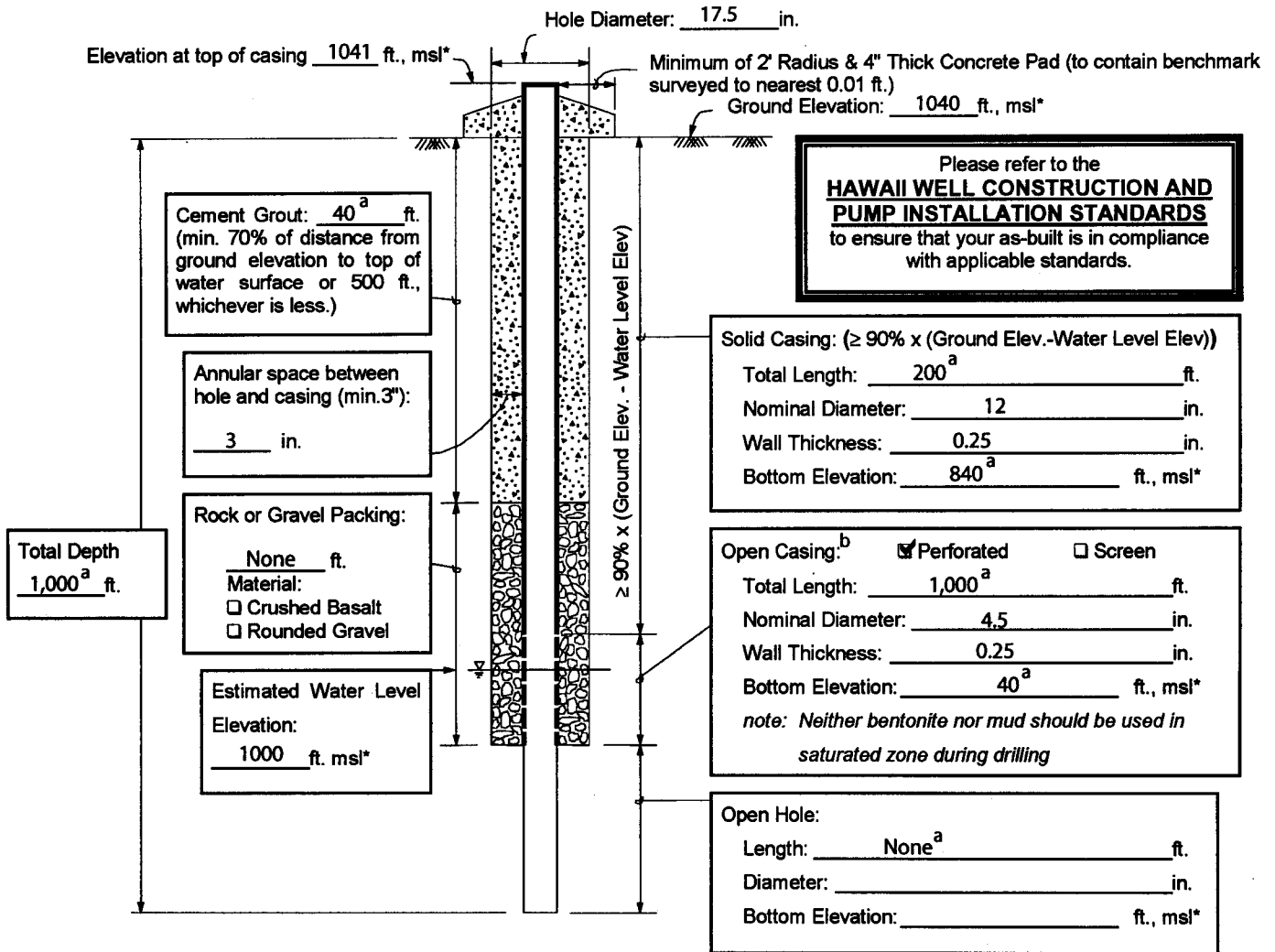
(if more space is needed, please attach additional sheet)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 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.

Well Owner U.S. Geological Survey Landowner State of Hawaii Contractor _____
 (print legibly) (print legibly) (print legibly)
 Signature [Signature] Signature _____ Signature _____
 Date 4-23-02 Date _____ Date _____

For official use only
 Latitude _____ Aquifer System No. _____
 Longitude _____ State Well No. 0327-01

10. PROPOSED WELL SECTION (Please attach schematic if different from diagram provided below)



* 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.

^a These items may change depending on field conditions such as depth of water below ground surface.

^b 4.5-inch open casing will be telescoped inside the 12-inch solid surface casing and grouted in place.

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

$$\text{Bottom Elevation of Well Limit} = \left(\text{Water Elevation} - \frac{41 \times \text{Water Level Elevation}}{4} \right)$$

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

Solid Casing Material:

Carbon Steel: compliant with (check one or more): ANSI/AWWA C200 API Spec. 5L ASTM A53 ASTM A139
 And compliant with (check one or more): ASTM A242 Type E Type S Grade B Other

Stainless 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 120

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

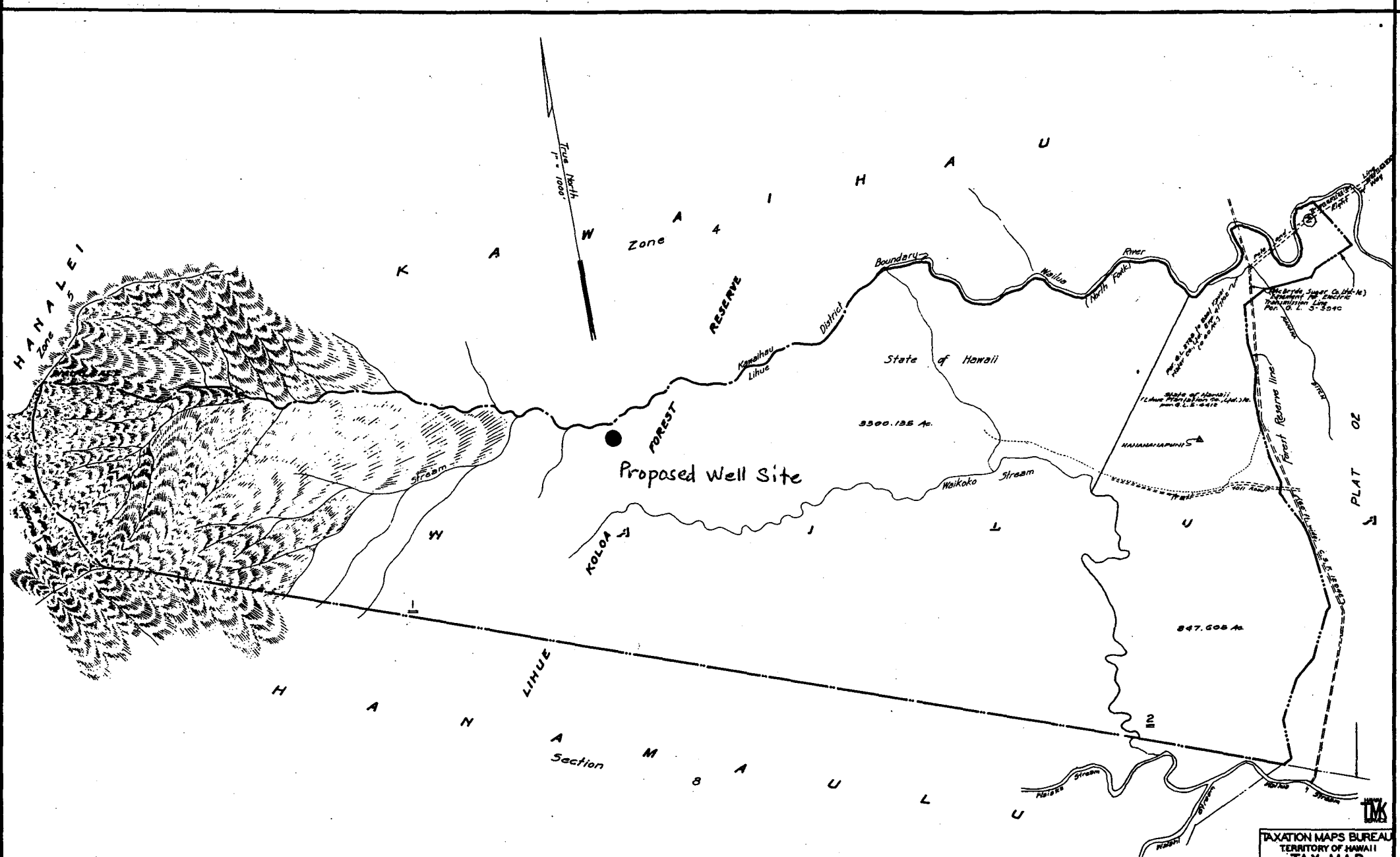
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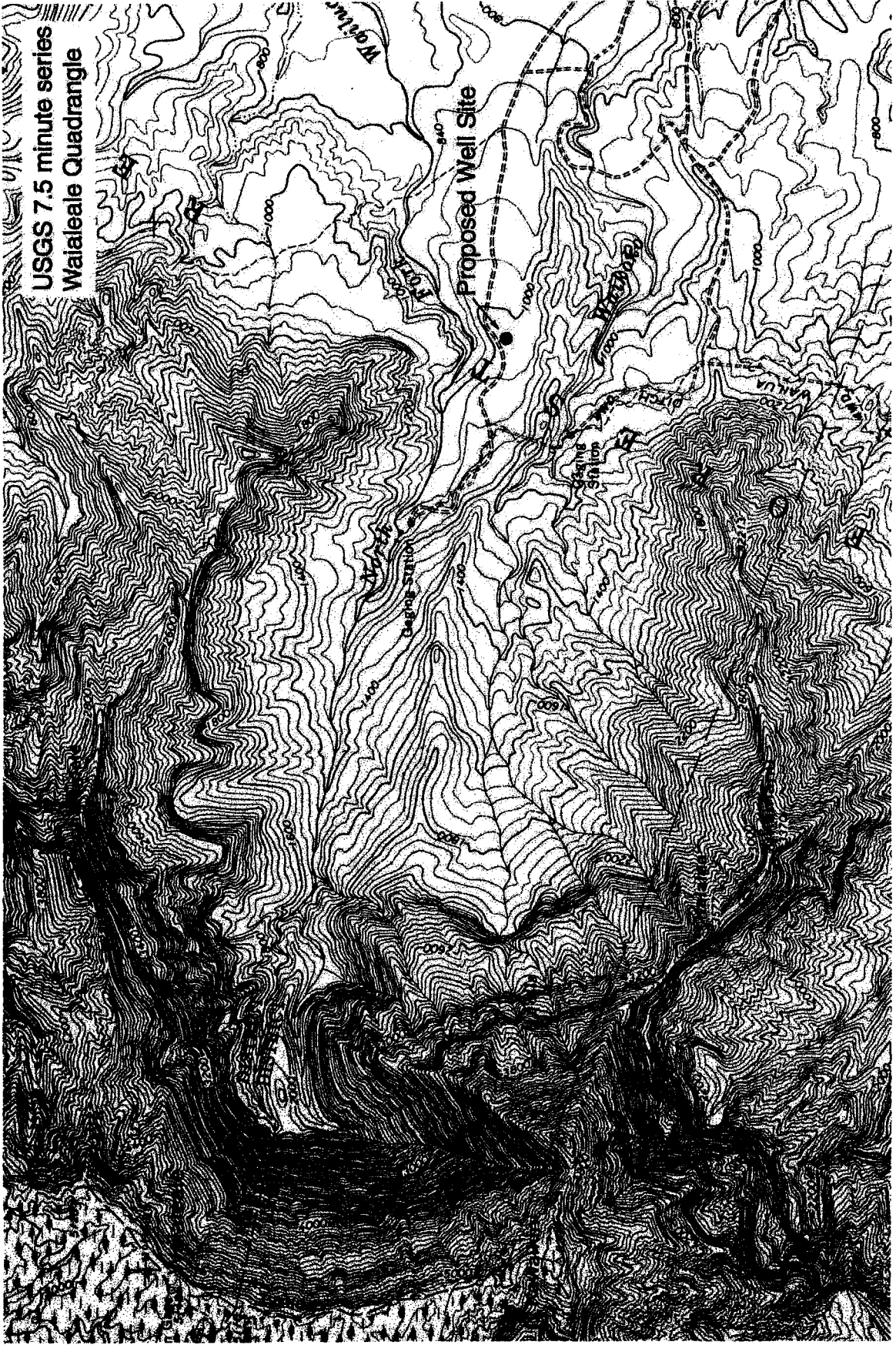
Map No. 22
Source: Tax Maps Bureau of Survey Dept.
By: H. N. Tipton 1936



FOR. OF LINUE-KOLOA FOR RES. (MAUIHA SEC.) MAUIHA, LINUE, KAUI.

SUBJECT TO CHANGE

TAXATION MAPS BUREAU		
TERRITORY OF HAWAII		
TAX MAP		
FOURTH DIVISION		
ZONE	SEC.	PLAT
3	9	01
CONTAINING PARCELS		
SCALE: 1 in. = 1000 ft.		



Approved Well No.	Well Name	Applicant	Driller	Type	Well Construction				Pump Installation				
					Issued	Signed	WCR1	Accept	Issued	Signed	WCR2	Accept	
3/31/1995	0124-01	Ne Kilohana	U.S. Geological Survey [04]	U S G S	WELL	3/31/1995	4/13/95	8/22/1996	8/22/1996				
3/31/1995	5923-08	Hanamaulu TZ	U.S. Geological Survey [04]	U S G S	WELL	3/31/1995	4/13/95	8/22/1996	8/22/1996				
9/7/1995	0121-01	South Wailua	U.S. Geological Survey [04]	U S G S	WELL	9/7/1995	9/10/95	8/22/1996	8/22/1996				
1/26/1996	0023-01	Pukaki Res Mon	U.S. Geological Survey [04]	U S G S	WELL	1/26/1996	2/8/1996	8/22/1996	8/22/1996				
6/4/1996	1747-04	Waialae Deep Mo	U.S. Geological Survey [04]		WELL	6/4/1996	6/5/1996	11/19/1996	11/19/1996				
12/2/1996	2255-40	Halawa-USGS	U.S. Geological Survey [04]	USGS	WELL	12/2/1996	12/2/1996	6/4/1997	6/4/1997				
2/28/1997	1952-47	Kalihi Deep Mon	U.S. Geological Survey [04]	USGS	WELL	2/28/1997	3/1/1997	6/4/1997	6/4/1997				
4/8/1997	0339-01	South Point Tank	U.S. Geological Survey [04]		WELL	5/1/1997	5/12/1997	9/3/1997	9/16/1997				
5/6/1997	6141-01	Waiakea Tank	U.S. Geological Survey [04]	U S G S	WELL	5/14/1997	5/23/1997	1/7/2000	1/7/2000				
9/2/1997	4708-02	Kaieie Mauka	U.S. Geological Survey [04]	U S G S	WELL	9/5/1997	9/8/1997	12/23/1999	5/2/2000				
2/19/1998	0123-01	Maalo Road Mon	U.S. Geological Survey [04]	U S G S	WELL	2/24/1998	2/27/1998						
2/19/1998	0222-01	Aahoaka Mon	U.S. Geological Survey [04]	U S G S	WELL	2/24/1998	2/27/1998						
3/16/1998	5534-06	Uppr Eleele Res	U.S. Geological Survey [04]	U S G S	WELL	3/18/1998	3/20/1998						
9/22/1999	6331-01	Ahualoa Plant	U.S. Geological Survey [04]	U S G S	WELL	10/1/1999	10/12/1999						
1/4/2000	0800-01	Kualapuu Deep M	U.S. Geological Survey [04]	U S G S	WELL	1/11/2000	11/14/2001	10/16/2001	11/14/2001				
11/3/2000	4421-01	Waiohuli Explorat	U.S. Geological Survey [04]	USGS	WELL	11/20/2000	11/28/2000						
11/3/2000	4423-01	Puu O Kali Explor	U.S. Geological Survey [04]	USGS	WELL	11/16/2000	11/27/2000						
10/1/2001	0023-01	Pukaki Res Mon	U.S. Geological Survey [04]		WELL	10/4/2001	10/12/2001						
2/12/2002	0523-02	Wailua Homestea	U.S. Geological Survey		WELL	2/20/2002	2/20/2002						

AMTAC never signed but
USGS did? Yes

USGS sign?

Wailua
0



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DISCIPLINE
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

APR 25 09:37

April 23, 2002

Ms. Linnel T. Nishioka
Deputy Director
State of Hawaii
Department of Land and Natural Resources
Commission on Water Resources Management
P.O. Box 621
Honolulu, HI 96809

Dear Ms. Nishioka:

Enclosed is a completed well-construction-permit application for a monitor well the U.S. Geological Survey (USGS) proposes to construct in the Lihue-Koloa Forest Reserve, Wailua, Kauai. The well will be constructed as part of the Kauai-County/USGS monitor-well drilling program, which seeks to gather hydro-geologic information to better assess and manage water resources on Kauai. Attached to the application are copies of a CDUP for the project and a memorandum from the Kauai office of the State Forestry and Wildlife Division indicating that they are aware and have no objections to the project.

We note that in previous well-construction permits, standard condition 12 requires the USGS to indemnify the State of Hawaii, which Federal law prohibits. In the past, the Water Commission has agreed to reword the permit so that it is consistent with the Federal Tort Claims Act (28 U.S.C. § 2671 et seq.). We hereby request that standard condition 12 of the well-construction permit be replaced by the following clause:

"The U.S. Geological Survey agrees to cooperate to the extent allowed by law in the submittal of all claims for alleged loss, injuries, or damages to persons or property arising from the acts of the applicant's employees, acting within the scope of their employment, in the construction, use, and maintenance of the proposed monitor well pursuant to the Federal Tort Claims Act (28 U.S.C. § 2671 et seq.)."

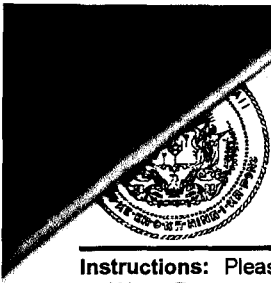
We anticipate that drilling and testing will start sometime before September 2002 and will take about three to four months to complete. We will inform you when the actual start date will be as soon as it is known. If you have any questions, please feel free to contact me at 808-587-2405 or Scot Izuka at 808-587-2415.

Sincerely,

Gordon Tribble
Gordon Tribble
District Chief

Enclosures

We already have special condition that addresses. No need change Standard Condition



State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
 Department of Land and Natural Resources
APPLICATION FOR PERMIT

For Official Use Only:
 RECEIVED
 02 NOV 25 09:37

Well Construction and/or Pump Installation

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>.

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

1. (a) **WELL OWNER:** U. S. Geological Survey Contact Person: Gordon Tribble Phone: (808) 587-2405
 Mailing Address: 677 Ala Moana Blvd., Suite 415, Honolulu, HI, 96813
 Fax: (808) 587-2401 E-mail: gtribble@usgs.gov
- (b) **LAND OWNER:** State of Hawaii Contact Person: Edwin Petteys Phone: (808) 274-3433
 Mailing Address: 3060 Eiwa Street, Room 306, Lihue, HI 96766-1875
 Fax: (808) 274-3438 E-mail: _____
- (c) **CONTRACTOR:** _____ Contact Person: _____ Phone: _____
 Mailing Address: _____
 Fax: _____ E-mail: _____ Lic #: _____
 (circle one: C-57, C-57a, or A)

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

2. **WELL NAME:** Waikoko Monitor Well Island: Kauai
 Address Wailua, Kauai, Hawaii Tax Map Key: 3 - 9 - 01 : 01
 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 name of the quad map, and (b) a property tax map, showing well location referenced to established property boundaries.

3. **PROPOSED WORK:** Construct New Well Install New Pump*
 (check all that apply) Modify Existing Well* Modify Pump*
 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: _____ gallons per minute
 Pump Type (Check one):
 Deep Well Turbine Rotary Propeller
 Submersible Rotary-Displacement Reciprocating
 Centrifugal Rotary-Gear Impulse

6. **PROPOSED USE:** Municipal (including hotels, stores, etc.) Industrial
 (check all that apply) Domestic (individual, noncommercial water system)
 Does this well serve 25 or more people at least 60 days per year or have 15 or more service connections? Yes No
 Irrigation (crop) _____ No. of Acres: _____
 Military Other (explain): Observation

7. (a) **PROPOSED AMOUNT OF WITHDRAWAL:** _____ gallons per day
 (b) **METHOD OF FLOW MEASUREMENT:** Flowmeter Open-pipe Weir Orifice Other(explain)

OTHER IMPORTANT INFORMATION:

8. **LEGAL REQUIREMENTS:** CDUP SMAP EIS EA None Other (explain)
 9. **REMARKS, EXPLANATIONS:** A copy of the CDUP for this project is attached.

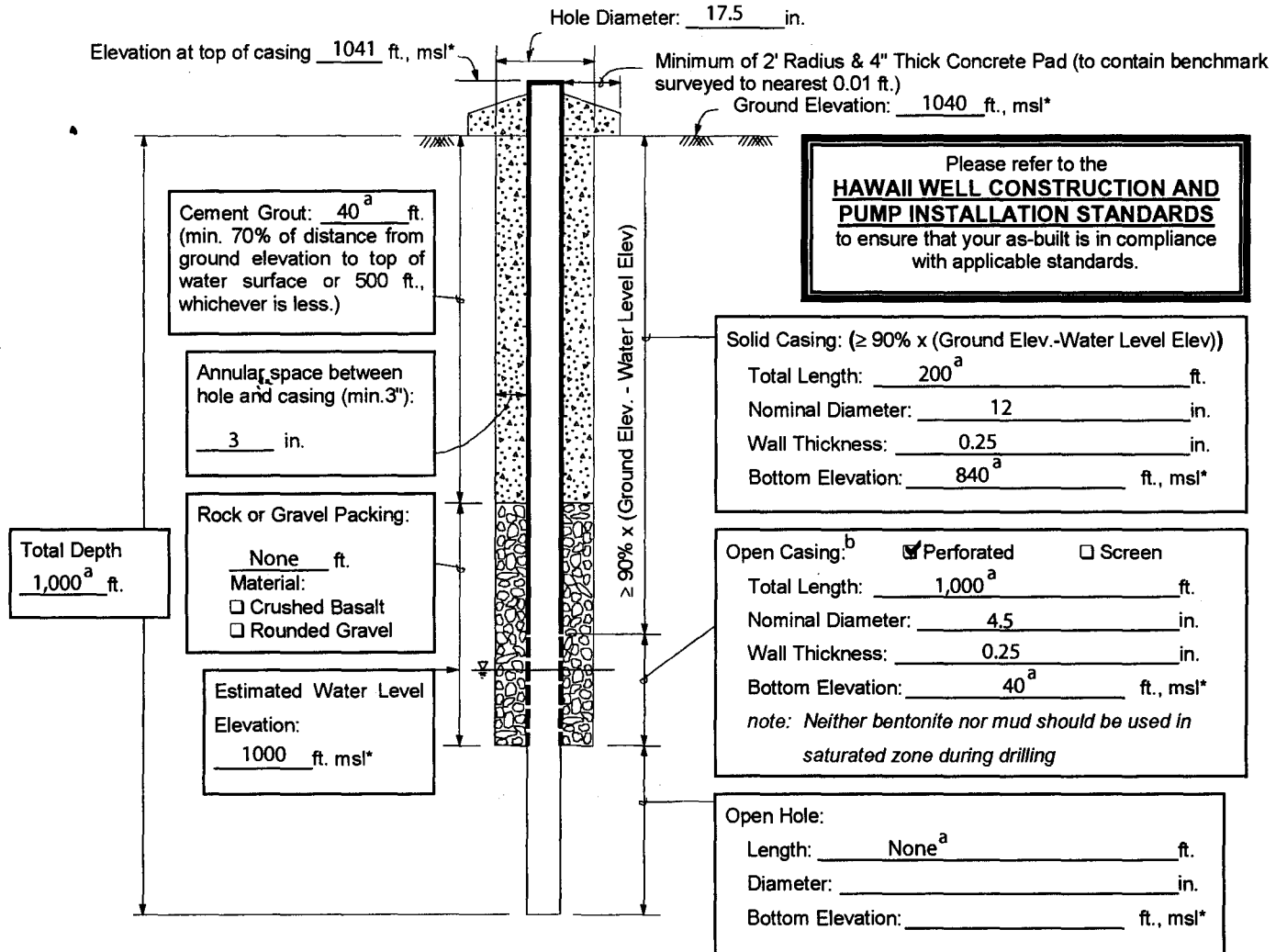
(if more space is needed, please attach additional sheet)

I understand that approval of this application attaches the following standard conditions: 1) the proposed work is to be completed within two (2) years of the approval date; 2) the contractor shall submit to the Commission a well completion/abandonment report within 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.

Well Owner U.S. Geological Survey Landowner State of Hawaii Contractor _____
 (print legibly) (print legibly) (print legibly)
 Signature Signature _____ Signature _____
 Date 4-25-02 Date _____ Date _____

For official use only
 Latitude _____ Aquifer System No. _____
 Longitude _____ State Well No. 0321-01

10. PROPOSED WELL SECTION (Please attach schematic if different from diagram provided below)



* 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.

^a These items may change depending on field conditions such as depth of water below ground surface.

^b 4.5-inch open casing will be telescoped inside the 12-inch solid surface casing and grouted in place.

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$$\text{Bottom Elevation of Well Limit} = \left(\text{Water Elevation} - \frac{41 \times \text{Water Level Elevation}}{4} \right)$$

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

Solid Casing Material:

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

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PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one): Schedule 40 Schedule 80 Schedule 120

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Open Casing Material:

Carbon Steel: compliant with (check one or more): ANSI/AWWA C200 API Spec. 5L ASTM A53 ASTM A139
 And compliant with (check one or more): ASTM A242 Type E Type S Grade B Other

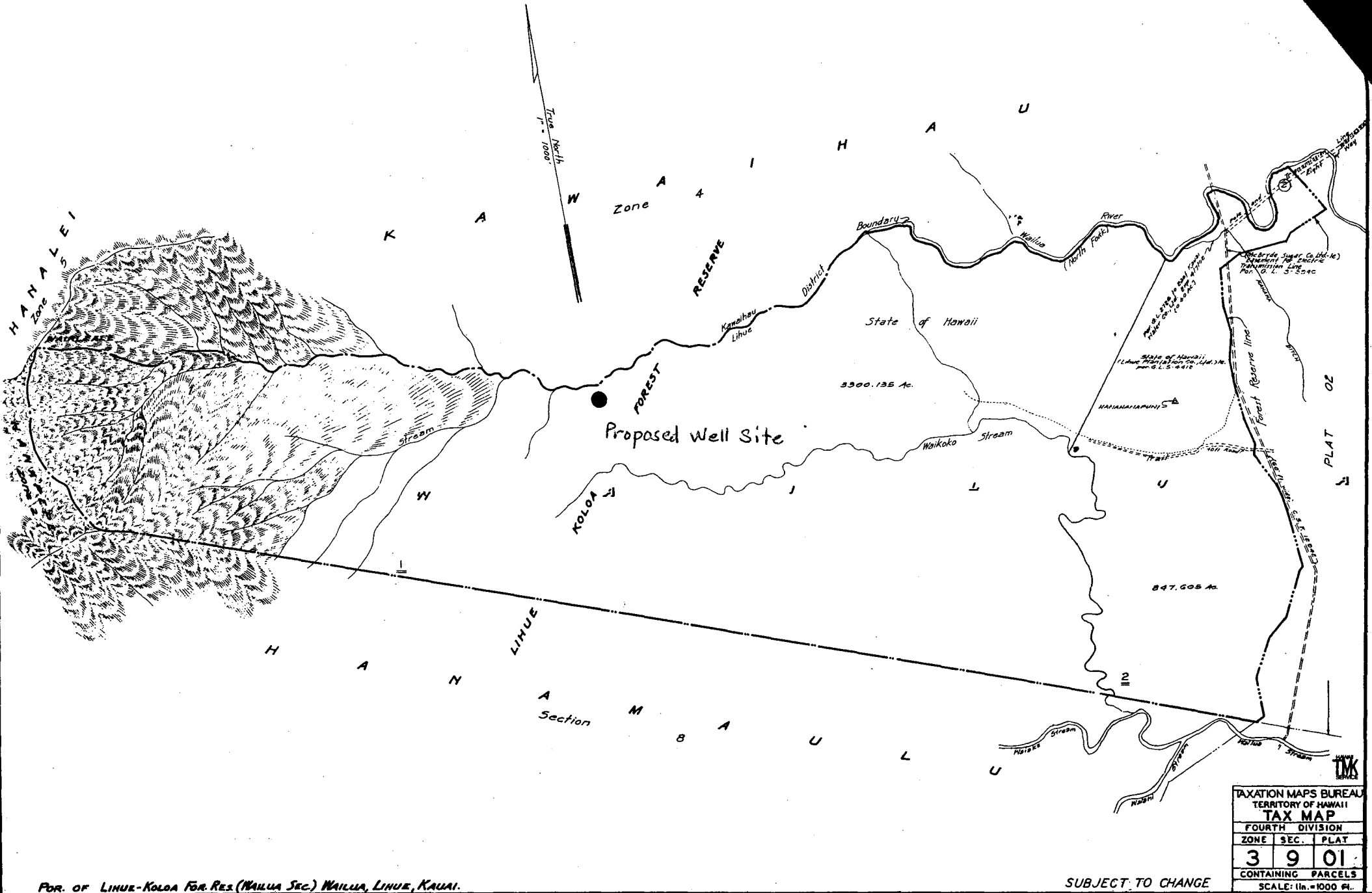
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Map No. 22
Source: Tax Maps Bureau & Survey Dept.
By: H.N. Tipton 1936

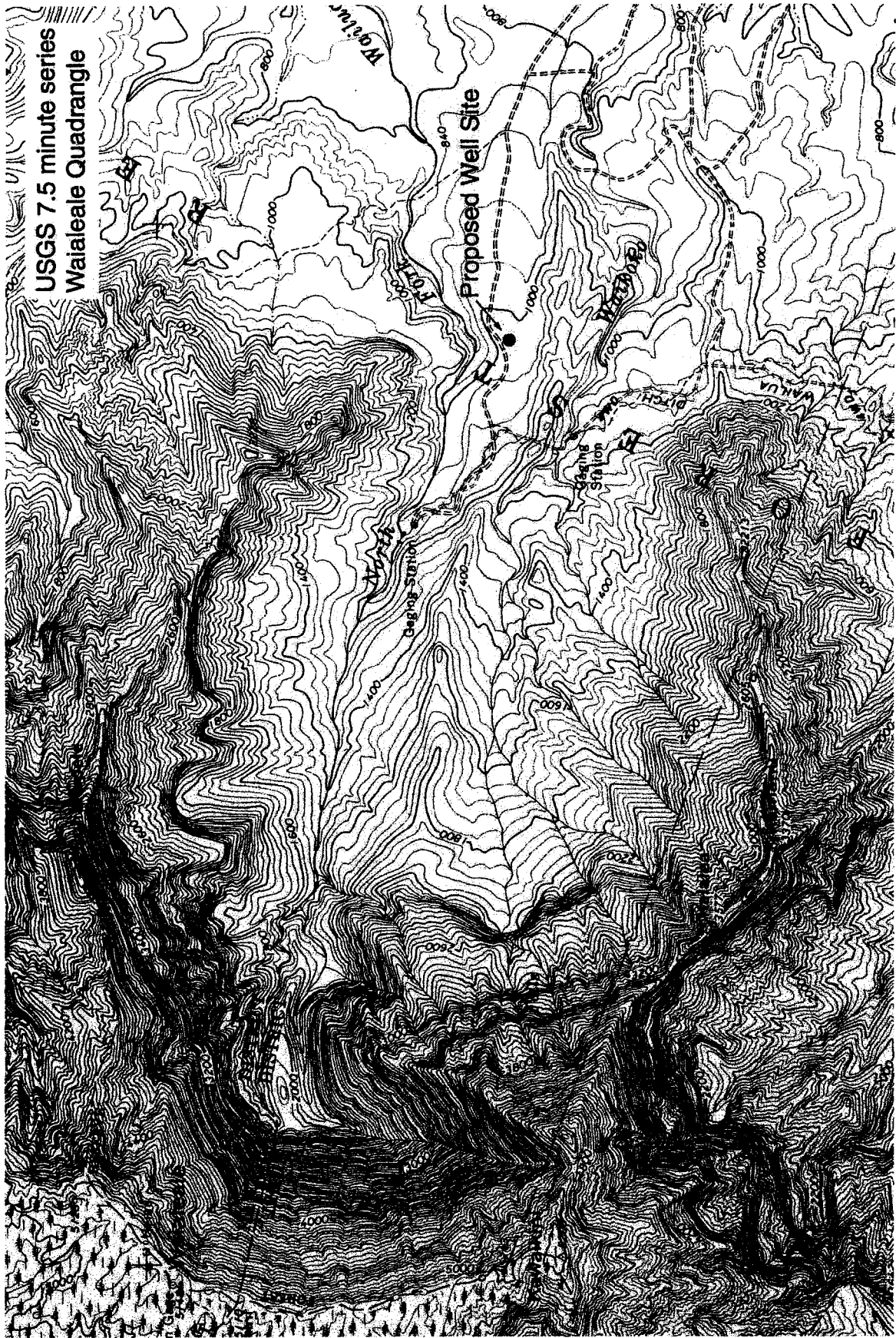


FOR. OF LINUE-KOLOA FOR. RES. (MAUIA SEC.) MAILUA, LINUE, KAUAI.

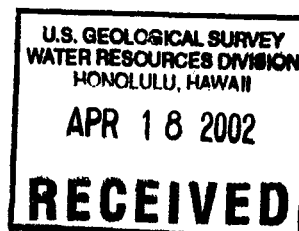
SUBJECT TO CHANGE

TAXATION MAPS BUREAU		
TERRITORY OF HAWAII		
TAX MAP		
FOURTH DIVISION		
ZONE	SEC.	PLAT
3	9	01
CONTAINING PARCELS		
SCALE: 1 in. = 1000 ft.		

USGS 7.5 minute series
Waialeale Quadrangle



State of Hawaii
Department of Land and Natural Resources
Land Division



Ref:PB:TC

File: Cдуа KA-3071D

Gordon Tribble, District Chief
U.S. Geological Survey,
Water Resources Division
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813

APR 17 2002

Dear Mr. Tribble:

SUBJECT: Conservation District Use Application (CDUA) KA-3071D
Departmental Permit, to drill a monitor well in the
Lihue-Koloa Forest Reserve, Wailua, Kauai

I am pleased to inform you that CDUA KA-3071D was approved, by the
Chairman, of the Board of Land and Natural Resources on February
12, 2002, subject to the following conditions:

- 1) The applicant shall comply with all applicable statutes,
ordinances, rules, regulations, and conditions of the Federal,
State and County governments;
- 2) The applicant agrees to cooperate to the extent allowed by law
in the submittal of all claims for alleged loss, injuries, or
damages to persons or property arising from the acts of the
applicant's employees, acting within the scope of their
employment, in the construction, use, and maintenance of the
proposed monitor well pursuant to the Federal Tort Claims Act
(28 U.S.C. § 2671 et seq.);
- 3) The applicant shall comply with all applicable Department of
Health, administrative rules;
- 4) Any work done on the land shall be initiated within one year
of the approval of such use, and unless otherwise authorized
be completed within three years of the approval. The
applicant shall notify the Department in writing when
construction activity is initiated and when it is completed;
- 5) In issuing this permit, the Department has relied on the
information and data that the applicant has provided in
connection with this permit application. If, subsequent to
the issuance of this permit, such information and data prove
to be false, incomplete or inaccurate, this permit may be

Waikoko

**Department of Land and Natural Resources
Division of Forestry and Wildlife
Kauai District
3060 Eiwa St., Room 306
Lihue, HI 96766-1875
(808) 274-3433/(808) 274-3438 (Fax)**



November 28, 2001

MEMORANDUM

TO: Sam Lemmo, Senior Planner
Division of Land Management, Planning Branch

FROM: Edwin Petteys, Branch Manager

A handwritten signature in black ink, appearing to read "Edwin Petteys".

SUBJECT: USGS Request - Exploratory Well Drilling, Lihue-Koloa FR

We have been in communication with the USGS on their request, and are aware that they are preparing a CDUA.

This memo is to let you know that we have no objections to their project, as described in their request letter of Oct. 9, 2001.

cc: Scott Izuka, USGS
Ernest Lau, KDOW
Sam Lee, KDLM

Attachment 1