

MEREDITH J. CHING CLAYTON W. DELA CRUZ CHIYOME L. FUKINO, M.D. BRIAN C. NISHIDA HERBERT M. RICHARDS, JR.

> 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

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,

54.W. Jun

ERNEST Y.W. LAU Deputy Director

LYN:ss

c: Edwin Petteys





Well No.	0327-01	Date of Review	7/1/2003
Well Name	waikoko monitor	Reviewer	RRI
Applicant	usgs		

# 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	
Total Depth	605 ft.	Wall Thickness	0,75 in.
		Casing	
Estimated Head	930.4 ft., m.s.l.	Material	Plastic
Calculated Aquifer Thickness	38146 ft.	Designation	Sch 40
		Length	505 ft.
County Water Supply (Y/N ?)	NO	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,
Minimum Wall Thickness		deep monitor or salt water)
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

RECEIVED JUN 2 A9: 47 COMMISSION ON WATER

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

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Enclosure

State of Havaii COMMISSION ON WATER RESOURCE MANAGEMENT Department of Land and Natural Resources WELL COMPLETION REPORT - PART I Well Construction Intructions: Please print in ink or type and send completed report (with attachments, if applicable) to the formission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. The Commission may be accept incomplete reports. This form shall be submitted within 60 days of the completion of work. For sistance, please consult the Hawaii Well Construction and Pump Installation Standards or call the Regulation ranch at 587-0225. For updates to this form or additional information, please visit our website at tp://www.state.hi.us/dlnr/cwrm/	For Official Use Only: RECEIVED June 13 MAY 2 A 9: 47 COMMISSION ON WATER RESOURCE MANAGEMENT
<ol> <li>State Well No.: <u>2-0327-01</u> Well Name: <u>Waikoko Monitor Well</u></li> <li>Address: <u>Lihue-Koloa Forest Reserve, Wailua, Kauai</u> Tax Map Key: _</li> <li>Drilling Company: <u>U.S. Geological Survey</u></li> <li>Drilling method used during contruction: X Rotary □ Percussion □ Other (des</li> </ol>	Island: <u>Kauai</u> <u>3-9-01:01</u> cribe)
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 X No         7. Initial water-level encountered       76.51       ft. below ground       Date and time of measu         8. Step-Drawdown Test completed?       □ No X Yes       Attach Step-Drawdown Test for         9. Constant Rate Aquifer Test completed?       □ No X Yes       Attach Constant Rate Aquifer T         Parameters prior to pump test:       10. Water-level:       929.30 feet       ft. above msl       Date and time of measurem         11. Chloride:        ppm       Date and time of sampling:         12. Temperature:        °F       Date and time of measurem         13. Fill in the as-built section on the other side of this sheet.       14.         14. Fill in attached surveyor's report.       15.       If a pump is not planned to be installed, please describe (below in the remarks sectior prevent unauthorized access (example: lockable cover, threaded coupling, etc.)         16. The proposed manufacturer's rated nump capacity is       D.a.       opm at a head of the sheed of the sheet of the proposed manufacturer's rated nump capacity is	urement: $\frac{1/9/03}{\text{month/day/year time}}$ rm (12/17/97 SDPTD Form) Test form (12/17/97 CRPTD Form) hent: $\frac{10/24/02 \ 12:40 \text{ PM}}{\text{month/day/year time}}$ hent: $\frac{10/24/02 \ 12:40 \text{ PM}}{\text{month/day/year time}}$ hent: $\frac{10/24/02 \ 12:40 \text{ PM}}{\text{month/day/year time}}$
17. Remarks:       Well secured with locked cap.         Licensed Driller (print)       Kimo Akina, USGS         C-57 Lic. No.	
Signature Date	5/22/03
Signature Date	5/20/03

WCR1 Form 9/12/01 Page 1 of 4

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



Not to scale

A-readme-wail.txt

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

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- MARINE CAR

 WAIKOKO MONITOR WELL (0327-01)

<u>Driller's Notes</u>

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

Waikoko Monitor Well (2-0327-01) Driller's log 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

Waikoko Monitor Well (2-0327-01) Driller's log

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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

Page 3 of 4

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# 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 Loops1-6 (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)

NNO27 12, 27, 45, 21 18, 27, 41,07 NALIL



22°03.000' N

Form 0-276 U.S., July 1957)	U.S. Geolog	<b>GE THE</b> gical Surv	ey	Ferm 9-27( (July 1987)	i ter	U. S. DI	EPARTM Geold WATER F	ENT OF TH	E INTERIOR By Ision	R	۲ هو
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TP 4 6.605 488	236 1.254	481.631	Yellow Pole	794	1.751	396537	11.849	394.776			
TP5 3.456 487	485 4.207	484.029		TOS	1.231	389.396	8.372	388 455		· · · · · · · · · · · · · · · · · · ·	
TP 6 1.027 478	.412 10.040	417,445	DOWN HILL	TP 6	1.598	382.028	8:956	380.43			2 
TP7 4.189 468	457 11.218	467.26	·	TPJ	0.955	372.48	10:865	311.42			
Te 8 7.129 458	50 11.017	457.386		TP8	1.448	362.290	11.276	360 852			
TP9 4.590 448	.185 11.420	447.00		TP9	6.407	336 30	11.890	350,000	350.40		
RM171.815 449	060 11 .+132	437.253	Adj. for closure \$ 437.	TBM 2	1.563	356.800	1510	355 297	355.307	Adj. for closure	
TP9 11.614 458	.709 1.973	447.545	·	-TOM2A	1,422	356 801	1.368	355.151	395-		
TP 8 11.165 468	554 1323	457,384	(	TPG	12.116	362.51	6,46)	350.40	350.4091		
TP7 -11.466 1478	730 1.287	167.26		TP8	11.529	372.34	1.674	360.442	360.851	*	ſ
TP6 10.255 481.	100 1.275	477.433		TP7	10.952	382-115	1.208	377.463	371.172	· · · ·	L.
TP5 431 488	.341 3.670	484.036		196	9.045	389 44	1.686	380.429	380.438		
TP4 1.227 482	.861 6.707	481.634	Yellow Pole	785	8.500	396 . 655	1.319	388.35	388.164		
7-3 1.816 478	0616.610	476.251		Tru	11.912	406 200	1.880	394.75	394.784		
Tr 2 1.548 413	.035 (.574	471,487	: :	<u> 113</u>	12.299	417.259	1.749	404,928	404.947		
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		463	592.46	1.764	599.958	1,495	TP9		557.635	1.844	559.827	2.192	TP9
	E using this to class	74	597.874	2.084	599.889	2.015	TBME	Adj. for closure 557.768	557.778	2.049	559.842	2:064	TBMS
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		62	592,46	7,427	594.313	1.851	TP9	Į	551.162	8.289	551.909	0.741	TP8
		42	586.74	7.571	588.100	1.358	<u>_7P8</u> _	Į	543.26	8,642	545.553	2.286	117
	· · · · · · · · · · · · · · · · · · ·	749	580.74	7.351	581.752	1.0031	TPT	a 	538.412	7.080	541.326	2.847	TPG
	<u></u>	102	573.902	7.850	575.072	1.170	TPG	2	534.080	7,240	536.032	1.952	TPS
		88	1368.288	6.784	570.111	1.889	105		528.855	7.177	531.037	2.182	TP4
		36	763.586	6.271	501.111	4,185	TP4	<u> </u>	523.914	7,123	528.543	4.629	TP 3
		×1	1264.84	2.927	5-0/11	7.550	113	l	524.084	4.459	528,817	4.133	TP2
		266	1569.26	3.119	572.553	2,201	<u> 192</u>	J	520.697	8.120	521.835	1.138	TPI
		139	563.73	8.814	556.551	2.012	I'Y I	1	510,1887	11.647		 	<u></u>
		78	557,778	6-113					ļ			, 	
									<u> </u>		ļ		
	CHK BY HALPhim	<u>L</u>	/ /P BY		HEFTS	OF S	NO.	CHK BY 94 44 Raise					NO.

•	•		2 (* <b>*1</b> 0)			•	•		·	9 85.0	i nativativ	STEPEN F
Form 9-27 (July 1957	76 )	U.S. DEP U.	ARTMEN S. Geolo	IT OF THE ogical Sur	INTERIOR STATION NUMBER	Form 9-2 (July 1957	76 7)	U.S. DEF U	ARTME	NT OF THE ogical Su	E INTERIOR rvey	STATION NUMBER
Wills		W/	ATER RESC	L NOTES	SION			. <b>v</b>	ATER RES	OURCES DIVI	SION	1
STREAM	NEK	bhana -	- Wa	ikoko		STREAM	JE K. OI	hana W	ell to	Wai	coko Well	
LOCALITY 5	1/2 k	<u>ai</u> ′ą <sup>×</sup> , D,	Arnol	dt) D	ATE 10/31, 20 02	LOCALITY _ PARTY _5.	Frika	D.A	rrnold	(4)	DATE 10/31/	, 20 02
STATION	B. S.	HT. INST.	F. S.	ELEVA- TION	REMARKS	STATION	B. S.	HT. INST.	F. S.	ELEVA- TION	REM/	ARKS
TBM 6	7.093	604.967	ĺ,	597.874	Adj. for closure from Loop 8 597.864	TBM7	6.791	651.493		6:44.702	Near Hana ha	ng pini Hill
TBM 6X			6819	598.148	For Ref only 598.148	19	6.958	653.479	2.972	648.521	Adj. for cl Loop 7 644.	osure from 690
TPI	7.607	610.302	2.272	602.695	1	TP2	4,724	656.94	3.265	652.216		
TP2	6.069	613.715	2.656	607.646	· · · · · · · · · · · · · · · · · · ·	TP3	6.254	657.05	6.143	650.791		
TP 3	6.493	617.548	2.660	611.055		TP4	6.071	662.452	1.270	655.781		
TPY	5.964	619.686	3,826	613,722		TP5	5.541	663.605	4.388	658,064		
TP 5	6.267	625,378	2.575	849.111		TPG	5.389'	665.007	3,987	659.618	Adj. For closu 664.502	re clay
TP6	8.975	632.942	1.411	623.967		TBM8	0.599 (	665.114	0.492	664,515	Top of Gate	Post, hinge side
TPJ	8.843	698.432	1.353	631.589	· · ·	TBMBA	1.935	665.114	1.828	663,179	Top of lock ca	n on Gate.
TP 8	6.541	644.979	1.994	638,438		TPG	4,254	663.87	5.496	659.618		
TPg	6.816	647.893	3.902	639		TPS	4,417	662.483	5.806	658.066		······································
TIGM 7	1.216	\$47,918	1.191	646.702	Adj. For closure 644.690 /	TP4	1.363	657.148	6.698	655.785		
TP9	3.996	645.072	6.842	641.076	·	TP3	6.204	657.904	6.348	650,800		
TPS	1.892	640.33	6.634	636,438		TP2	3.589	655 806'	4.787	652.21		
TP7	1352	832,943	8.139	651.591	· · · · · · · · · · · · · · · · · · ·	TPI	3.173	651.695	7.284	648.522		
TPG	1.426	833,395	8.974	623.969					6.991	644,704		
TPS	2,559	6-1,672	6.282	619:113								
TP4	3.863	611.589	5.946	613.726	*							
TP3	2.760	613.818	6.531	611,058								· · · · · · · · · · · · · · · · · · ·
TP2	2,597	610.246	6.161	607,649								
TPI	2.564	605.261	7.549	652.0								
	_		1.382	597,999								<u> </u>
			1021 - 100 - 10 M		the first distribution of the	Sa	-	<b></b>	and the second	i.t.	and the second second	
·		*	y 'n stankenske sy skip o	-	and the second se		1					********************************
NO	OF \$		CON	AP. BY	CHK. BY Huy Serme	NO	OF	HEETS	COM	P. BY	СНК. ВҮ_	heghorn

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Form 9-27 (July 1957)	<b>76</b> )	U.S. DEP/ U.	ARTMEN S. Geolo	IT OF THE ogical Su	INTERIOR vey	STATION NUMBER	Ferm 9-278 (July 1987)		U. S. DE	Geolog WATER RES	ical Survey lources divis	INTERIOR / ION	STATION NUM
		WA			SION	·····		.1.1	,	LEVE	L NOTES		<u>r1</u>
STREAM N	E Kiloh	ana to	Waik	0140		·	STREAM	Maik	to we	241	<u> </u>	#1	
LOCALITY	Kana!	<u> </u>					PARTY R	Hang	anapu.	. Jul	net & DA	TE No.2. 21	, 1920
PARTY	IZUKA	· VI RI	rnold	C	ATE 10/31/	02,20					ELEVA		
STATION	B. S.	HT. INST.	F. S.	ELEVA-	Adj. BY CUREM	ARKS 664.502	STATION	8. 5.	HI. INSI.	F. S.	TION	Ad for etc	MARKS TOS
TBM8	1798'	666.313		664.515	Epof Gate h	inge side	TBM9.	4,144	707.SZ		703.381-	AS give	n, top of
TBm 8A	3.133	666:312	¥	663.179	Top of Lock ca	n (for kep own)	TBM9A			4.284	703.141	011.004	
TPI	5.537	668.925	2.925	663.388	X'on to of h	readwall in wid Gale	· 7/1	6.710	710.247	3.990	703.537	<u>/</u>	•
TP2	8.164	674.172	2,917	666,008			TPZ	5,030	712.431-	2.346	707.901	/	
TP3	9.319-	681.956	1.535	672,631			113	4.670	713.453	4.148	708.783		
TPH	3.691	682.070	3,517	678.379		······	<u>1P4</u>	7.628	717.401.	3.680	709.773		
TPS	8.396	688 916	1,550	680 620			TPS	8.948	726.073-	,276	717.125	F	·
TPG	7.197	693 069	3.044	685,877			TP6	.892	724.171-	,794	725,279	Adj for	closare <u>25-266</u>
707	7.691	691 795	3.465	689.604	<u> </u>	·	<sup>5</sup> TP7	,190	717.317-	9.044	717.127-	F	
189	7401	702 418	2.27	695 017		·	1 1 1 1 1 1 1	3.798	113.573-	7.542	104.775	L	
TPA	7045	706,429	2 074	600 200	Adj. for c	Josure	3 1 pg	4.202	712.485-	4.190	708.783	<u> </u>	
TEMA	4,491	707 872	3,058	7-2 201	108,50 Nal 460	$\frac{1}{100}$	# TPR	2.638	710.539-	5.084	707.901-	<u> </u>	
TPM9A	11353	70779	4120	102.081	vinditon 1	regel wall 10ft	'TPII	3.926	707.463	7.002	703.537	F	
700	2.00	701.16	1.664	702.245	ap voudtion	101K 103.229	1BHUA			4.272	703.241	F.	
TBMM	3.026	106,401	4,412	109,301	Adj tor cus		TBM9			4.084	703.379	F	
<u></u>	2.919	1021214	1.012	1017.515					1				
TPS	2,404	611.702	1.476	810.674			1	1	1	1	1		
111	2495	19.041	1.896	689.606				1 · ·	1	1			
<u> 247</u>	2.829	600.705	1.167	685.874	<u> </u>			1	+	1	1	<u> </u>	
115	1.465	681.983	0.183	680.520			· · · · ·		1	1	-		
194	2.434	681.814	3.603	610.380	ļ								
143	1.517	674,154	9.177	672.637									
112	2.198	668.807	0.145	666+009	ļ		NO	OF S	HEETS	LCOMP	. ВҮ	Снк. Ву	GKI
TP1	3-149	666.539	5.4+7-	663.390	. <b>B</b> alaka ang saki		Ner.	· ··· <u> </u>		00.74	· · ·		
TBM8		17	2:023	664.516	Broken and and						a a carla da Manana Mangana da Sana da cardina da sera Bahar		a an faillean search an training a star an an training

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Ferm 9- (July 16	- 276 167)		U. S. DEF	Geologi WATER RES	IT OF THE Ical Surve IOURCES DIVIS	E INTERIOR Y SION	STATION RC:	o P NUMBER 2	Ferm 9-276 (July 1987)		U. S. DEI	PARTMEN Geolog WATER RE	NT OF THE Ical Survey sources divis	INTERIOR / ION	STATIO	N-TNUMBER
CIDEAL	. 11	L	le d	LEVE	L NOTES	Lava #	>.			11-1	L		L NOTES	1 2		
LOCALI	n <u> </u>	t L	ancan	a Dun		00p #				A 1/2	ofer w	<u>=11</u>		<u></u>	<u> </u>	
PARIY	Rit	asga	shi TT	2. 90	ihila Di	ATE Nov.	21 . 19	2002	PARIY 12	Targas	hin/2	Martin	to \$ DA	IE NON	121.	192000
STATI	01	B. S.	HT. INST.	F. S.	ELEVA - TION		REMARK S	<u> </u>	STATION	B. S.	HT. INST.	F. S.	ELEVA- TION		REMARKS	
TP	68	3.220	733.499		125,219	as gu	ven 72	5.266	<u>TP 18</u>	7.626	78730F	ŀ	779.675	- as g	resource Iven	779.6
TPI	12	1.850	740.775	574	732.925	F			TP25	8.342	794.735-	-908	786393	ř		
TPI	13 ]	1842	748.417	.200	740.575	-			TP 46	8.878	802.619	.984	793,751-			•
TP	14 8	1.990	757.175	.232	748.185	<b></b>	·		TPU	1.208	810.723-	.114	802.515-	F 		
TP	15 8	2.004	764,199	-,980	756.195	<u> </u>			TP28	8.810	819.289	1.2.44	810.479	F		· · · · · · · · · · · · · · · · ·
TP	16 8	F.868	772.857-	,210	763,989				1929	8.348	826.644	1.996	818.293-			
TP	178	7.396	780.843	.410	772.447				TP 30	8.948	835.055-	1.534	826.107 -	-		
TP	18/	.084	780.759-	1.168	779.615	Ad, for	29.661		<u> 1P31</u>	8.368	842.878	7.545	834,510-		E. C.C.	1
17 TP	19	.380	772827-	8.312	772 447	<u>}</u>		·	TP32	.310	843.028	F.X60	842.718-	Adjus	842-702	2
4 <u>TP</u>	20	.250	764.237	8.840	763,987	<u> </u>			N <u>TP 33</u>	.288	834.194	8.520	834.508	<u> </u>		
is Tr	21	1.060	757.152	8.045	756190	1			37 7P 34	.560	824.464	8690	826.106	-		
14 <u>TP</u>	22	,100	748.280	9.010	748.182	<u> </u>			H TP35	1.198	819.494	18.370	\$18.296	F		
13 <u>TP</u>	23	.128	740.707	1.700	740.57	Y			1º TP36	.438	810.918-	79.014	810.485	F		
12 TA	24	.400	733.327	1.780	732.927	4		·	27 1831	1.122	202. Mp	8.400	802.518	<u>F.</u>		
. TP	6			8.046	725.281	F			25 TP 38	.872	794.628	F8.88J	193.750	F		
									× TP39	1.214	787.616	1.228	786.400	,F		
	ĺ								1P18			7.936	179.680	<u>,</u>		
<u></u>		,														
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		· · · · · · · · · · · · · · · · · · ·	· ·			1						1		-		· · · · · · · · · · · · · · · · · · ·
ND	0	F S	HEETS	COMP	. BY	ОК.	BY5/4	-I-	N0	_OF	SHEETS	COM	P. BY	ОК	. BY	1=
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Ferm 9-276	U. S. DEPARTMENT OF THE INTERIOR Geological Survey Station Number Water Resources Division		Ferm 9-276 (July 1967)		U. S. DE	PARTMEN Geolog WATER RE	IT OF THE Ical Survey Sources Division	INTERIOR	LOUP STATION NORBER PC 4 Count
(JUIY 1987)	LEVEL NOTES		STREAM A	Jaile	the w	LEVE مدا	L NOTES	on # 1	(continued)
STREAM	Waikoko Well Loop #4		LOCALITY	t Ha	neana	puni			
LOCALITY	Tangahi The Yeshite DATE Nov. 21, 192002		PARIY R.	Teogo,	thin 1	C. Yu	shing DAT	E Mor.	21 . 19 Zooz
	D S HT INST E S ELEVA- REMARKS		STATION	B. S.	HT. INST.	F. S.	ELEVA- TION	R	EMARKS
	A all Para 1/2 Prin 2/64 a C Prince 8/2.702	41	TP 59	. 670	857.016	5.694	856.344	· .	
7132	9,000 851.804 042.118 as 91000	40	TP60	,130	851.700.	5.444	851.570-	·	
<u>7P40</u>	5.632 051.186 .250 851.554		TP 32			8.966	742.734		
<u>1P 41</u>	5.644 862.014 .864 856.322 .								
11 42	8.966 870.324,648 861.287							· - · · ·	
<u>TP 43</u>	8.000 877.8864.448 869.884								
<u>TP 44</u>	6.490 883.674 . 102 881.1845 Top of pipe at joint								
TBM 10	3.270 880.404 painted red								
<u>TP 45</u>	6.320 888.778 1.216 882.458				1				· · · · · · · · · · · · · · · · · · ·
1P 44	8.370 896.406 .742 888.034				[	1			
<u>19 47</u>	1 8820 904.6764.550 895,856								
TP 48	7.954 912.2047.426 904.250					1			· · · · · · · · · · · · · · · · · · ·
TP 49	1 8.666 920.288 , SF2 911,622		- <del></del>		1	1			
TP 50	.Sout 920.304.488 919.300 Hay 919.776		<u></u>		1				
4 TP SI	.450 912.0708.684 911.620		<u></u>	<u> </u>		+			
18 TP SZ	. 496 904.746 7.820 904.250	•		<u> </u>	<u> </u>		<u> </u>		
A TP SE	5 .542 896.3988.890 895.856			<u> </u>					
14 TP SY	4.684 818.728-8.354 888.044	'	······						
45 TP SS	5 1.124 883.595 6.242 882.966		<u>-</u>	<u> </u>					
TBMI	0 3.170 880.400					+			
WIPS	6 1.042 878.252 6380 877.2107			<u> </u>					
43 TAC	7 .306 870.2168.342 869.910 .		<del></del>	<b> </b>	<u> </u>	<u> </u>		·	
12 100	K . 1650 \$62. 04518-824 861. 349. T				<u> </u>		· ·	·	
NO/	OF 2 SHEETS COMP. BY OK. BY SKI	*	NU	UFS	HEETS	COMF	· BY	ик. Е	n <u></u>

Loop STATION NUMBER PC 4 (co.rt.)

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Ferm 9-276 (July 1987)	`	U. S. DEI	PARTMEN Geolog WATER RES	NT OF THE Ical Surve sources divis	INTERIOR Y KON	STATION NUMBE	R	Ferm 9–276 (July 1987)		U. S. DEP	ARTMEN Geologi WATER RES	IT OF THE Ical Survey	INTERIOR , ION	STATION NUMBER	
STREAM C	Vaik	oka u	LEVE all	L NOTES	Loop #	5			aiko	to W	<u> </u>		Loop #	4-6	
PARIY TO	Targ	osh T	10. J	while Di	ATE 11-27	1 . 19 200		PARTY Ta	1 or Targo	ihi T	l c.J.	stril gos	IE Nov. 2	19 2002	~
STATION	<b>B.</b> S.	HT. INST.	F. S.	ELEVA- TION	11- 61	REMARKS	—	STATION	B. S.	HT. INST.	F. S.	ELEVA- TION	Adi G. P	EMARKS 974.3	1. 7
TPSO	8.162	927,962		919.800	as 91	ven 919.77	6	TBMIL	2642	977.028		974.386	as gi	sen	. ,
TP 60	8.562	935,808	,116	927.246		· .	_	TBHIL			2.796	974.232	Top of 1 Zos fi He	ron brace on q under side o	pote. A
<u>TP61</u>	8.968	943.510	1.266	934.542		•			<u></u>				Consiste	pillar	
1PGU	9.0.44	452.228	.3U	943.184	*	·····	<u> </u>	<u>TP 73</u>	6.868	983.532	.364	976.664			-
TP63	8.130	460.654	.304	951924			_	<u>TP 74</u>	8.360	990.538	1.354	982,178	,	<u></u>	•
TP64	8.528	968.868	3/4	960.360	·			<u>TP 75</u>	7.776	997.680	1630	989.908			•
TPGS	5.844	914,595	120	168.748	starte 1	Valar Titre	-sile	<u>TP 76</u>	7.914	1005.212	.384	997.296	Adjustos	t for stosure	-
TBM IL	.308	914.694	.206	974.35%	when of	Malal brace	privided	7P 71 Topot.	3.618	1007.716	1.114	1004.698	1 12	>06.866	•
TP66	,5000	969.250	5,944	968.750	- Alj	for closure 91	4.357	10 well Cas	ing .	1 2 6 6 6	-814	1006.900	Top of 1/2	" bolthead "	2
1861	170	760.164	8.5.700	760.544 ac. m	- 		- 1	10/ 13 14/070	1708	1031.868	1030	1001.000	tree los	ated 30th m	iaka i
TP 109	58%	9.12.300	9108	9112 100	: 	·····		15-10 75-19-79	,510 F21	711.814 Qan 1.	10.504	171.204			-
11 70	1.346	Pac 200	9.7721	149.172 And Sel	· · · · · · · · · · · · · · · · · · ·		-	H TPFO	1290	982 5710	8.500	982.1810			-
TP 11	710	9,7.77%	81.41	937256	· .			13 TP 81	.536	917.208	1. 904	976 612		·········	-
TPIZ	100		1.146	(117.815	·			TBM ID		1.1100	2914	974 134			-
				<u>• • • • • • • • • • • • • • • • • • • </u>				TBM II			2.812	974.396	· · · · ·		-
						·····	-	10.1.1		1		1		······································	-
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NO(	DFSH	EETS	COMP.	ΒΥ	Снк. в	Y_SKJ	_	NO	OF S	HEETS	COMP	. BY	ОК. Е	9YG(23	-

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# 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

Waikoko Monitor Well (2-0327-01) Driller's log

Well name	Waikoko Monitor W	/ell	State well number	2-0327-01	
Island	Kauai		Start date & time	10/24/02 12:40 PM	
Depth (below	ground surface)		Elevations (relative	e to mean sea level)	
Solid Csg.	200 ft Perf. Csg.	N.A.	Ground surface	1006.10 feet	
Total	605 ft DTW	80.01 ft	Top of PVC tube	1009.31 feet	
Test Pump			Measuring Devices	S	
Туре	6" 50 HP submersi	ble	Water level	Electic probe	
Intake elev.	758 feet (248 ft below o	around)	Discharge	Flow meter	

Remarks

\* m 7

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

Flopeod	Dumping	Dopth to	[		Specific	
Liapseu	roto	Depth to	Droudown	Tomporatura	Specific	
(minutee)		(fact)		(dogroop C)		Notoo
	(gpm)			(degrees C)	(μο/οπ)	start nump at 12:40 nm
0	0	00.01	10.00			Start pump at 12.40 pm
		90.37	14.70			
2		94.71	14.70			
3		90.37	10.30			
4		101.40	21.39			
		102.00	22.05			
6		102.67	22.00			
/		103.25	23.24			
8		105.81	25.80			
9		108.84	28.83			······································
10		110.90	30.89			
12		114.//	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	<u>48.57</u>			
35	394	130.28	50.27			
40	390	131.62	<u>5</u> 1.61			
46	388	133.18	<u>53.17</u>			
50	394	133.91	53.90			
59	393	135.74	55.73			
61		136.32	56.31			Adj. rate
62	410	136.48	<u>5</u> 6.47			Adj. rate
64		137.72	<u> </u>			
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			

Waikoko Monitor Well (2-0327-01)

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Step-drawdown test

(1) Construction and Article states and strategic strategic interaction for the states of the strategic strategic interaction of the strategic strategic interaction of the strategic s

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			Adi 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	<u> </u>		
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	t		
243		145 95	65.94	<u> </u>		shut down pump at 242
245		140 48	60.47			stat south partip at £7£
240		138 21	58.2			
247		134 20	54 10			
250		131.06	51 05	I		
250	<b> </b>	107.79	17 77		····	
1 202		121.10				

Waikoko Monitor Well (2-0327-01)

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Step-drawdown test

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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		

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- Marine Street and a street and the state of the state o

Step-drawdown test

Well name	Waikoko Monitor	Well	State well number	2-0327-01
Island	Kauai		Start date & time	10/25/02 10:10 AM
Depth (below	ground surface)		Elevations (relative	to mean sea level)
Solid Csg.	200 ft Perf. Csg.	N.A.	Ground surface	1006.10 feet
Total	605 ft DTW	80.52 ft	Top of PVC tube	1009.31 feet
Test Pump			Measuring Devices	
Туре	6" 50 HP subme	rsible	Water level	Electic probe
Intake elev.	758 ft (248 ft below ground)		Discharge	Flow meter

Elapsed	Pumping	Depth to			Specific	[·····
time	rate	water	Drawdown	Temperature	conductance	
(min)	(gpm)	(feet)	(feet)	(degrees C)	(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		:48.39	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			

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	1					
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 <sup>1</sup>
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		Allen and a 1991	
9980		154.42	73.9	22.4	259	
10060		153.91	73.39			
10080		154.11	73.59		daran	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		100 18	28.66			
10150	0	103.10	20.00			
10100		107.01	20.99			
10170	0	105.13	20.01			
10180	0	100.13	24.01			
10190	0	104.37	23.85		· · · · · · · · · · · · · · · · · · ·	
10210	0	103.2	22.68			

Waikoko Monitor Well (2-0327-01)

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Sustained-rate test

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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		

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

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Pumping\_Cooper-Jacob.xls

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	Reduced Data	
	Time,	Water Level
Entry	Date Hr:Min:Sec	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	103.11
23	1/0/00 1:10:00	100.00
24	1/0/00 1.20.00	170.55
20	1/0/00 1:31:00	175.53
20	1/0/00 1:40:00	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



			C	) Pui	mping StepDra	wdown.xis	
	WELL ID: V	Naikoko	o Well				
11	NPUT	Local ID: 0327-01					
Construction:			Date: 10	)/24/2002	2		
Casing dia. (d <sub>c</sub> )	9.875 Inch		Time: 12	2:40			
Annulus dia. (d <sub>w</sub> )	12 Inch						
Screen Length (L)	405 Feet		CO	MPUTE	D	•	
Depths to:		Aquifer	thickness =	500	Feet		
water level (DTW)	80 Feet						
Top of Aquifer	200 Feet		Input i	s consist	ent.		
Base of Aquifer	700 Feet	_					
Annular Fill:			K =	1	Feet/Day		
across screen O	pen Hole		T =	600	Feet2/Day		
above screen C	ement		S =	0.001	d'less		
Aquifer Material P	ermeable Basalt		K <sub>annular</sub> =	10	Feet/Day		
ASSUMED S =	0.001 d'less		Skin =	-0.2	d'less		
0.2 Adjust slop	be of line to estimate 1	r				]	
0.18			C				
0.14				D			

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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.

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WELL ID: Waikoko Well





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2:06:00

158.49



	Reduced Data					
	Time,	Water Level			Time,	Water Level
Entry	Hr:Min:Sec	Feet	E	ntry	Hr:Min:Sec	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	i	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				
30	1.10.00	145.99				
30	1.20.00	140.33				
30	1.20.00	148.65				
40	1:35:00	149.00				
40	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				



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	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 determing 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 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-09j = s/Q - nQ = 0.000483

Laminar flow equation: s = jQ = 57.65329 54.91% Head loss due to laminar flow

Thiem Eq.

 $T = 1/2pij(ln{re/r})$ 

re = Well Depth BSL * 1.6 =	524.8
Therefore:	1
T = 1/2pij(ln{re/r}) =	2357 ft^2/d 🦯



Waterloo Hydrogeologic	Pumping test analysis		Date: 04.06.2003	Page 2
180 Columbia St. W. 🛛 🖋	HANTUSH's method Leaky aquifer, no aquitard storage	$\checkmark$	Project: Waikoko M	lonitor W
ph.(519)746-1798			Evaluated by: Glen	n Bauer

Project: Waikoko Monitor Well, Kauai

Test conducted on: October 25, 2002

Distance from the pumping well 1.00 ft

Waikoko Monitor Well

Pumping Test No. Constant Rate

0327-01

Discharge 115500.00 ft³/d

Static water level: 80.52 ft below datum

	Pumping test duration	Water level	Drawdown	
	[d]	[ft]	[ft]	
1	0.00069	95.20	14.68	
2	0.00139	102.33	21.81	
3	0.00208	103.66	23.14	
4	0.00278	109.00	28.48	
5	0.00347	114.14	33.62	
6	0.00417	119.55	39.03	
7	0.00556	127.17	46.65	
8	0.00625	130.08	49.56	
9	0.00694	132.03	51.51	
10	0.00833	135.91	55.39	
11	0.00972	138.77	58.25	
12	0.01111	141.18	60.66	
13	0.01250	143.31	62.79	
14	0.01389	144.98	64.46	
15	0.01736	148.39	67.87	
16	0.02083	150.90	70.38	
17	0.02431	153.25	72.73	
18	0.02778	155.12	74.60	
19	0.03125	157.25	76.73	
20	0.03472	158.86	78.34	
21	0.04167	163.11	82.59	
22	0.04861	168.68	88.16	
23	0.05556	170.99	90.47	
24	0.06319	173.44	92.92	
25	0.06944	175.53	95.01	
26	0.07639	178.66	98.14	
27	0.08333	180.18	99.66	
28	0.09722	181.98	101.46	
29	0.11181	182.73	102.21	
30	0.12500	182.78	102.26	
31	0.14583	183.52	103.00	
32	0.16667	182.82	102.30	
33	0.18750	182.97	102.45	
34	0.20833	183.25	102.73	
35	0.33333	185.14	104.62	
				·
		-		
				• • • • • • • • • • • • • • • • • • •
			· · · · · · · · · · · · · · · · · · ·	



# United States Department of the Interior

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

al0:36

June 26, 2002

Linnel T. Nishioka Deputy Director State of Hawaii Department of Land and Natural Resources Commission on Water Resource Managenent 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,

565 H

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

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

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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,

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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

то:	Lenore Nakama	
OFFICE:	CWRM	
FAX NUMI	BER: 587-0219	

FROM: Scot Izuka

Phone: <u>587-2415</u>

Z\_Pages, including cover page

Lenore: letta Taxing your agence lin the of I should for thought 9 Anthony @ 587 eve a co Thay



# United States Department of the Interior

# U.S. GEOLOGICAL SURVEY

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6-6-1

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

June 3, 2002

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

# <u> Waikoko Monitor, Well No. 0327-0</u>

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

- The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in 1. 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.
- The well construction permit shall be for construction and testing of the well only. A minimum 11/4-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is 2. approved and issued by the Chairperson.
- 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. 3.
- 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. 4.
- 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.
- 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 6. rights.
- The following shall be submitted to the Chairperson within sixty (60) days after completion of work: 7.

  - Well completion report, (attached Part I, Well Construction Report). Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor.
  - As-built sectional drawing of the well. Plot plan and map showing the exact location of the well.
  - c. d. Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data. e.
- 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. 8
- 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. 9.
- 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. 10.
- 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. 11.
- The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit. 12
- 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

DLNR. Land Division

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> GILBERT S. COLOMA-AGARAN, Chairperson Commission on Water Resource Management

> > 0.0 CO

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 Sign	ature: <u>Cf</u>		Date: <u>G ) 3/02</u>
Printed Name:	CHORDON TRIBBLE	Firm or Title:	ct Chief
Driller's Signatur Printed Name:	e: <u>An Ten</u> For Kino Aking	_ C-57 License # : _ Firm or Title: <b>Drill</b>	Date: <u>Clo3lo2</u> Rig Operator
Please sign both c	opies of this permit, return one to the Chairperson, ar	nd retain the other for your reco	ords.
Attachment C:	USGS Department of Health/ Safe Drinking Water, Wastewater, and Cle Kauai Department of Water Supply	an Water Branches	

BENJAMIN J. CAYETANO GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN

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

LINNEL T. NISHIOKA

### 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.

<u>IMPORTANT</u> - Drilling work shall not commence until a fully signed permit is returned to the Commission. Please provide <u>all</u> the information in this packet to your well drilling contractor. The permittee, well operator, and/or well owner are responsible for <u>all</u> 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

GÍLBERT 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:

- The Chairperson of the Commission on Water Resource Management (Commission), P.O. Box 621, Honolulu, HI 96809, shall be notified, in 1. 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.
- The well construction permit shall be for construction and testing of the well only. A minimum 11/4-inch diameter monitor tube shall be permanently installed, in a manner acceptable to the Chairperson, to accurately record water levels. The permittee, well operator, and/or well owner shall coordinate with the Chairperson and conduct a pumping test in accordance with the Standards (a pump testing worksheet is attached). The permittee, well operator, and/or well owner shall submit to the Chairperson the test results as a basis for supporting an application to install a permanent pump and withdraw water for use. No permanent pump may be installed until a pump installation permit is 2. approved and issued by the Chairperson.
- 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. 3.
- 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. 4.
- In the event that subsurface cultural remains such as artifacts, burials or concentrations of shells or charcoal are encountered during 5. construction, the permittee, well operator, and/or well owner shall stop work and contact the Department's Historic Preservation immediately.
- 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 6. rights
- The following shall be submitted to the Chairperson within sixty (60) days after completion of work: 7.
  - Well completion report, (attached Part I, Well Construction Report). a.
  - Elevation (referenced to mean sea level, msl) survey by a Hawaii-licensed surveyor. b.
  - C. d.
  - As-built sectional drawing of the well. Plot plan and map showing the exact location of the well.
  - Complete pumping test records, including time, pumping rate, drawdown, chloride content, and other data. e.
- 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. 8
- 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. 9.
- 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 10. permittee, well operator, and/or well owner notice of the proposed action and an opportunity to be heard.
- 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. 11.
- The permittee, its successors, and assigns shall indemnify, defend, and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any act or omission of the applicant, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit. 12
- 13 Special conditions in the attached cover transmittal letter are incorporated herein by reference.

Date of Approval: May 15, 2002 May 15, 2004 Expiration Date:

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:	
	0.571	
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	Date of Review	<del>#######</del>
Well Name	waikoko monitor	Reviewer	RRI
Applicant	usgs		

data

# 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	<b>4.5</b> 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)
Well Casing	<u></u>	(disregard if	the well is not basal)
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)
Minimum Length of Solid Casing		(disregard th	is if this is a non-county well)
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)
Annular Space		If the cell ab	ove reads #N/A, reference HWCPIS)
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 | 5 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. <del>.</del>... **AFFIRMATION .**0 5 I hereby affirm that the State of Hawaii is the owner of that certain parcel of land. identified as: 15.5  $c_{7}$ located at W31/42, Likue, Kauzi (Likue Kaloz Forent Reserve) TMK 3-9-1: por.1 on the island of KAUAI ahm my By: Land Division Administrator MAY | 5 2002 Dated: \_\_\_\_

**BENJAMIN J. CAYETANO** GILBERT S. COLOMA-AGARAN RECEIVED BRUCE S. ANDERSON I AND DIVISION MEREDITH J. CHING CLAYTON W. DELA CRUZ BRIAN C. NISHIDA HERBERT M. RICHARDS, JR. 2002 MAY -2 P 3:00 UNNEL T NISHIOKA STATE OF HAWAII DEPUTY DIRECTO DEPARTMENT OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT P.O. BOX 621 HONOLULU, HAWAII 96809 Ref:0327-01.let MAY - 1 2002 TO: Ms. Dede Mamiya, Land Division Administrator ΰ ŵ Linnel Nishioka, Deputy Director FROM: W 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 To: Linnel T Nishioka/DLNR/StateHiUS, 05/09/02 08:08 AM 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.

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	te of Ha MISSION ON Martment of Lan	ii WATER RESOURCE M/ Id and Natural Resourc		For Official Use Only:	
APP ⊠ We	LICATION I	FOR PERMIT	lation	jang tina sa kana sa ka La sa kana sa k	
Instructions: Please print in on Water Resource Managem 3 copies and a non-refundabl Commission may not accept For further information and up	ink or type and send ient, P.O. Box 621, Ho ie filing fee of <b>\$25.00</b> incomplete application dates to this application	completed application with attachme pholulu, Hawaii 96809. Application m payable to the Dept. of Land and N Is. For assistance, call the Regulation form, visit http://www.state.hi.us/d	ents to the Commission nust be accompanied b latural Resources. The on Branch at <b>587-0225</b> Inr/cwrm.	р у 02 АГТ 25 А9:	37
APPLICANT INFORMA	TION: (Fill out all thr	ee if applicable, and place a check i	next to the primary con	tact).	
1. (a) 🗹 WELL OWNER:	U.S. Geological Sur	vev Contact Person:	Gordon Tribble	Phone: (808) 587-24	405
Mailing Address:	677 Ala Moana Blvc	d., Suite 415, Honolul <u>u, HI, 96813</u>			
Fax: <u>(8</u> 08) 58	37-2401	E-mail: gtrib	ble@usgs.gov		
(b) 🛛 LAND OWNER: _	State of Hawaii	Contact Person:	Edwin Petteys	Phone: (808) 274-3433	3
Mailing Address:	3060 Eiwa Street, I	Room 306, Lihue, HI 96766-1875			
Fax: <u>(808) 27</u>	4-3438	E-mail:			
		Contact Person:		Phone:	
Mailing Address:					
Fax:	·····	E-mail:		Lic #:	
				(circle one: C-57, C-5	7a, or /
WELL & PUMP INFORM	VATION: (Please	fill in the diagram on the back of this	form.)		
2. WELL NAME:	koko Monitor W <u>ell</u>	Is	land: Kauai		_
Addrees Wailua Kau			Kov: 3 -	• • • • • • • • • • • • • • • • • • •	
AUUICOS <u>Wanuu, Kuu</u>		(usels )	Zone	Sec Plat	Parce
Attach the relevant portion property tax map, showing	of (a) a 7.5-Minute Se well location reference	ries USGS topographic map (scale ed to established property boundarie	1:24,000) and include τ es.	he name of the quad map, and	(b) a
3. PROPOSED WORK:	Construct N	ew Well	🗌 install New	v Pump*	
(check all that apply)	Modify Exist	tina Well*	🗌 Modify Pu	mp*	
	☐ Abandon/Se	alt	-	k	
	·	Jai			
	*State Well No.	· (i	sunknown nlease call	Commission at 587-0225)	
4. CONSTRUCTION:	*State Well No.	: (	if unknown, please call	Commission at 587-0225)	
<ol> <li>CONSTRUCTION:</li> <li>PROPOSED PUMP I</li> </ol>	*State Well No.	∷( □ Dug □ Shaft of a battery of wells? □Yes ଔ Rated Pump Capacity:	if unknown, please call	Commission at 587-0225) e) gallons per minute	
<ol> <li>CONSTRUCTION:</li> <li>PROPOSED PUMP I Pump Type (4)</li> </ol>	*State Well No. Drilled Is this well part of NFORMATION: Check one):	∷( □ Dug □ Shaft of a battery of wells? □Yes ଔ Rated Pump Capacity:	if unknown, please call	Commission at 587-0225) e) gallons per minute	
<ol> <li>CONSTRUCTION:</li> <li>PROPOSED PUMP I Pump Type (I Deep Wel</li> </ol>	*State Well No. Drilled Is this well part of NFORMATION: Check one):   Turbine	∷( □ Dug □ Shaft of a battery of wells? □Yes ଔ Rated Pump Capacity: □ Rotary	if unknown, please call	Commission at 587-0225) e) gallons per minute Propeller	
<ol> <li>CONSTRUCTION:</li> <li>PROPOSED PUMP I Pump Type (I Deep Wel Submersil</li> </ol>	*State Well No. Drilled Is this well part ( NFORMATION: Check one): I Turbine >le	∷( □ Dug □ Shaft of a battery of wells? □Yes ଔ Rated Pump Capacity: □ Rotary □ Rotary-Displacement	if unknown, please call	Commission at 587-0225) e) gallons per minute Propeller Reciprocating	
<ol> <li>CONSTRUCTION:</li> <li>PROPOSED PUMP I Pump Type ( Deep Wel</li> <li>Submersil</li> <li>Centrifugation</li> </ol>	*State Well No. Drilled Is this well part of NFORMATION: Check one): I Turbine ple I	:: ( Dug Dug Shaft of a battery of wells? DYes Rated Pump Capacity: Rotary Rotary-Displacement Rotary-Gear	if unknown, please call Tunnel ÍNo (Please describe	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse	
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type ( Deep Wel Submersil Centrifuga</li> <li>6. PROPOSED USE: (check all that apply)</li> </ul>	*State Well No.	:: ( Dug Dug Shaft of a battery of wells? DYes Rated Pump Capacity: Rotary Rotary-Displacement Rotary-Gear Ig hotels, stores, etc.) Displacement Capacity: Rotary-Displacement Rotary-Gear	if unknown, please call	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse	
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type ( Deep Wel Submersil Centrifuge</li> <li>6. PROPOSED USE: (check all that apply)</li> </ul>	*State Well No.	::( Dug Dug Shaft of a battery of wells? DYes Rated Pump Capacity: Rotary Rotary-Displacement Rotary-Gear ng hotels, stores, etc.) al, noncommercial water system) 25 common people at least 60 days pr	if unknown, please call Tunnel No (Please describe	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse strial	
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type ( Deep Wel Submersil Centrifuga</li> <li>6. PROPOSED USE: (check all that apply)</li> </ul>	*State Well No.	<ul> <li>.:</li></ul>	if unknown, please call Tunnel No (Please describe Industry Per year or have 15 or mo No, o	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse strial ore service connections?	es 🗆 I
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type (I Deep Wel</li> <li>Submersil</li> <li>Centrifuga</li> <li>6. PROPOSED USE: (check all that apply)</li> </ul>	*State Well No.	<ul> <li>.:</li></ul>	if unknown, please call	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse strial ore service connections?  Ye of Acres:	es 🗆
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type (I Deep Wel</li> <li>Submersil</li> <li>Centrifuga</li> <li>6. PROPOSED USE: (check all that apply)</li> </ul>	*State Well No.	.:( Dug Dug Shaft of a battery of wells? DYes S Rated Pump Capacity: Rotary Rotary-Displacement Rotary-Gear ng hotels, stores, etc.) nal, noncommercial water system) e 25 or more people at least 60 days pro- 	if unknown, please call	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse strial ore service connections?  Ye of Acres: r (explain): Observation	es 🗆
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type ( Deep Wel</li> <li>Submersil</li> <li>Centrifuga</li> <li>6. PROPOSED USE: (check all that apply)</li> <li>7. (a) PROPOSED AMONG</li> </ul>	*State Well No.		if unknown, please call	Commission at 587-0225) e) gallons per minute Propeller Reciprocating Impulse strial ore service connections?  Ye of Acres: r (explain): Observation gallons per day	<b>25</b>
<ul> <li>4. CONSTRUCTION:</li> <li>5. PROPOSED PUMP I Pump Type (I Deep Wel Submersil</li> <li>6. PROPOSED USE: (check all that apply)</li> <li>7. (a) PROPOSED AMO (b) METHOD OF FLO</li> </ul>	*State Well No.	:: ( Dug Dug Shaft of a battery of wells? Yes Rated Pump Capacity: Rotary Rotary-Displacement Rotary-Gear ng hotels, stores, etc.) nal, noncommercial water system) e 25 or more people at least 60 days pr RAWAL: <u>ENT: Displacement Cop</u>	if unknown, please call	Commission at 587-0225) e) gallons per minute gallons per minute Propeller Reciprocating Impulse strial ore service connections?  Ye of Acres: r (explain): Observation gallons per day Orifice Other(e	es 🗆
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ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)

Centrifugally Cast Resin Pipe conforming to ASTM D2997

C 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

PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one): Schedule 40 Schedule 80 Schedule 120 Thermoset Plastic: (check one) Ifilament Wound Resin Pipe conforming to ASTM D2996







GILBERT S. COLOMA-AGARAN

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

Ref:0327-01.let

MAY - 1 2002

TO:	Ms. Dede Mamiya, Land Division Administrator
FROM:	Linnel Nishioka, Deputy Director GMCJ. TX 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.

# 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

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 \_\_\_\_\_ located at \_

located at \_\_\_\_\_

on the island of \_\_\_\_\_

By:

Land Division Administrator

Dated: \_\_\_\_\_

Sta CON Depa	te of Hayali IMISSION ON W/ artment of Land	ATER RESOURCE and Natural Resou	MANAGEME	T	cial Use Only:
APP <u> </u>	LICATION FC	)R PERMIT and/or <u>D Pump Ins</u> t	tallation		
Instructions: Please print ir on Water Resource Managen 3 copies and a non-refundab Commission may not accept For further information and up	hink or type and send con- nent, P.O. Box 621, Honol le filing fee of <b>\$25.00</b> pay incomplete applications. podates to this application fr	mpleted application with attacl lulu, Hawaii 96809. Applicatio yable to the Dept. of Land an For assistance, call the Regu form, visit http://www.state.hi.u	hments to the Comm on must be accompan d Natural Resources llation Branch at <b>587</b> - us/dlnr/cwrm.	ission ied by . The 0225.	25 A9:3
APPLICANT INFORMA	TION: (Fill out all three,	, if applicable, and place a che	eck next to the primary	y contact)	
1. (a) 🗹 WELL OWNER:	U.S. Geological Survey	Contact Perso	on: <u>Gordon Tribble</u>	Phone	(808) 587-2405
Mailing Address:	<u>6// Ala Moana bivu., 2</u> 12-2401	Sulte 415, нопоши, пі, усот F-mail: d	13 httibble@usas.gov		
(b) [] LAND OWNER:	State of Hawaii	Contact Persc	n: Edwin Petteys	Phone	· (808) 274-3433
Mailing Address:	3060 Eiwa Street, Roc	om 306, Lihue, H <u>I 96766-1875</u>	5		. (000) 27
Fax: (808) 27	/4-3438	E-mail:			
		Contact Perso	on:	Phone:	·
Mailing Address:		······································			
Fax:		E-mail:		Lic #:	·
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WELL & PUMP INFOR	MATION: (Please fill i	in the diagram on the back of t	this form.)		
2. WELL NAME: <u>Wai</u>	koko Monitor Well		Island: Kau	Jai	
Address <u>Wailua, Ka</u> u	uai, Hawaii	Tax Ma	ap Key: <u>3</u>		·
property tax map, showing 3. PROPOSED WORK (check all that apply)	y well location referenced t Construct New Modify Existing	to established property bound Well g Well*	laries.	I New Pump* fy Pump*	б Чивч плар, ₂ , ,
	□ Abandon/Seal*	*			
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WCPIPA Form 10/25/00

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. <sup>a</sup> These items may change depending on field conditions such as depth of water below ground surface.

<sup>b</sup> 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, Bottom Elevation of Well Limit = (Water Elevation  $-\frac{41 \times Water Level Elevation}{4}$ )

Example: Estimated + 2 ft. Water Level Elev.  $\longrightarrow$  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 MASTM A53 D ASTM A139 Grade B Other ASTM A409 (production wells) C ASTM A312 (monitor wells) Stainless Steel: (check one): 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): Check one Thermoset Plastic: (check one) C Filament Wound Resin Pipe conforming to ASTM D2996 Centrifugally Cast Resin Pipe conforming to ASTM D2997 C 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 C FEP Fluorocarbon Tubing conforming to ASTM D3296 **Open Casing Material:** Carbon Steel: compliant with (check one or more): ANSI/AWWA C200 API Spec. 5L D ASTM A53 ASTM A139

And compliant with (check one or more): CANSTMA242 Type E C Type S C Grade B

And compliant with (check one or more): CASTM A242 Type E Type S Grade B COther Stainless Steel: (check one): CASTM A409 (production wells) ASTM A312 (monitor wells)

ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one)

- PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one): Schedule 40 Schedule 80 Schedule 120 Thermoset Plastic: (check one) IFilament Wound Resin Pipe conforming to ASTM D2996
  - Centrifugally Cast Resin Pipe conforming to ASTM D2997

C Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

C PTFE Fluorocarbon Tubing conforming to ASTM D3296

□ FEP Fluorocarbon Tubing conforming to ASTM D3296





Approve	d Well No.	Well Name	Applicant	Driller	Туре	Issued	Signed	WCR1	Accept	Issued Signed WCR2 Accept
3/31/1995	0124-01	Ne Kilohana	U.S. Geological Survey [04]	USGS	WELL	3/31/1995	413/95	8/22/1996	8/22/1996	Arathe rever signed by
3/31/1995	5923-08	Hanamaulu TZ	U.S. Geological Survey [04]	USGS	WELL	3/31/1995	4120	8/22/1996	8/22/1996	uses did? N.S
9/7/1995	0121-01	South Wailua	U.S. Geological Survey [04]	USGS	WELL	9/7/1995	9/11/45	8/22/1996	8/22/1996	(4-)
1/26/1996	0023-01	Pukaki Res Mon	U.S. Geological Survey [04]	USGS	WELL	1/26/1996	2/8/1996	8/22/1996	8/22/1996	0565 Sign.
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	$\sim \lambda$
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	and the second sec
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	and the second sec
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]	USGS	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]	USGS	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]	USGS	WELL	2/24/1998	2/27/1998			
2/19/1998	0222-01	Aahoaka Mon	U.S. Geological Survey [04]	USGS	WELL	2/24/1998	2/27/1998			
3/16/1998	5534-06	Uppr Eleele Res	U.S. Geological Survey [04]	USGS	WELL	3/18/1998	3/20/1998			
9/22/1999	6331-01	Ahualoa Plant	U.S. Geological Survey [04]	USGS	WELL	10/1/1999	10/12/1999			
1/4/2000	0800-01	Kualapuu Deep M	U.S. Geological Survey [04]	USGS	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			

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# 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

92 MT 25 A 9:37

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, 341 pull

Gordon Tribble District Chief

Enclosures

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

State COMM Depar	e of H <b>O</b> aii MISSION ON Wartment of Land	ATER RESOURCE MANA and Natural Resources	GEMENT	For Official Use Only:
APPI	LICATION FC	DR PERMIT	<b>n</b>	图7章学学生的
Instructions: Please print in in on Water Resource Manageme 3 copies and a non-refundable Commission may not accept in For further information and upd	nk or type and send cor nt, P.O. Box 621, Honol filing fee of <b>\$25.00</b> pay icomplete applications. lates to this application f	npleted application with attachments to lulu, Hawaii 96809. Application must be yable to the Dept. of Land and Natural For assistance, call the Regulation Bra form, visit http://www.state.hi.us/dlnr/cw	the Commission accompanied by Resources. The anch at <b>587-0225</b> . rm.	02 AND 25 A 9:37
APPLICANT INFORMAT	ION: (Fill out all three,	, if applicable, and place a check next to	the primary contac	
1. (a) 🗹 WELL OWNER:	U.S. Geological Survey	Contact Person: Gorc	don Tribble	Phone: (808) 587-2405
Mailing Address:	677 Ala Moana Bivd., :	Suite 415, Honolulu, HI, 96813		<u> </u>
Fax: (000,00,	<u>′-2401</u>	E-mail: guiuoice .	usgs.gov	2000 AZC ACC
(b) LAND COMPANY (b) Mailing Address:	itate of Hawan	Contact Person	n Petteys	Phone: (808) 274-5455
Fax: (808) 274	3000 Eiwa Juezy	E-mail:		
(c)		Contact Person:		Dhone:
Mailing Address:				FIUNE.
Fax:	<u> </u>	E-mail:		Lic #:
				(circle one: C-57, C-5/a, or F
WELL & PUMP INFORM	ATION: (Please fill i	in the diagram on the back of this form.)	)	
2. WELL NAME: Waike	oko Monitor Well	Island:	Kauai	· · · · · · · · · · · · · · · · · · ·
Address <u>Wailua, Kaua</u>	ai, Hawaii	Тах Мар Кеу:		9 - 01 : 01
Attach the relevant portion or property tax map, showing v	of (a) a 7.5-Minute Serie	s USGS topographic map (scale 1:24,0 to established property boundaries.	Zone 00) and include the	Sec Plat Parcel name of the quad map, and (b) a
3. PROPOSED WORK:	Construct New	Well	🗆 Instali New P	<sup>9</sup> ump*
(check all that apply)	Modify Existing	J Well*	🛛 Modify Pump	•
	Abandon/Seal*	N Contraction of the second seco		
	Abandon/Seal* *State Well No.:	(if unkn	own, please call Co	ommission at 587-0225)
	Abandon/Seal* *State Well No.:	(if unkn	own, please call Co	ommission at 587-0225)
1. CONSTRUCTION:	Abandon/Seal' *State Well No.:  Drilled		iown, please call Co	ommission at 587-0225)
4. CONSTRUCTION:	☐ Abandon/Seal' *State Well No.: I Drilled [ Is this well part of a	(if unkr □ Dug □ Shaft a battery of wells? □Yes ੴNo (f	nown, please call Co □ Tunnel Please describe)	ommission at 587-0225)
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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.

<sup>a</sup> These items may change depending on field conditions such as depth of water below ground surface.

<sup>b</sup> 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, Bottom Elevation of Well Limit = (Water Elevation  $-\frac{41 \times Water Level Elevation}{4}$ )

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 MASTM A53 □ ASTM A139 Grade B C Other □ ASTM A312 (monitor wells) Stainless Steel: (check one): □ ASTM A409 (production wells) ABS Plastic conforming to ASTM F480 and ASTM D1527: (check one) □ Schedule 40 C 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 D 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 C ASTM A139 And compliant with (check one or more): 
ASTM A242
Type E
Type S Grade B Other □ ASTM A409 (production wells) Stainless Steel: (check one): □ ASTM A312 (monitor wells) ABS Plastic conforming to ASTM F480 and ASTM D1527; (check one) C Schedule 40 C Schedule 80 PVC Plastic conforming to ASTM F480 and (ASTM D1785 or ASTM D2241): (check one): Schedule 40 🖸 Schedule 80 🖾 Schedule 120 innoset Plastic: (check one) □ Filament Wound Resin Pipe conforming to ASTM D2996 Centrifugally Cast Resin Pipe conforming to ASTM D2997 C Reinforced Plastic Mortar Pressure Pipe conforming to ASTM D3517

Glass Fiber Reinforced Resin Pressure Pipe conforming to AWWA C950

O PTFE Fluorocarbon Tubing conforming to ASTM D3296

□ FEP Fluorocarbon Tubing conforming to ASTM D3296





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State of Hawaii Department of Land and Natural Resources Land Division



Ref:PB:TC

File: CDUA KA-3071D

APR 1 7 2002

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

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:

- 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

modified, suspended or revoked, in whole or in part, and/or the Department may, in addition, institute appropriate legal proceedings;

- 6) Should historic remains such as artifacts, burials or concentration of charcoal be encountered during construction activities, work shall cease immediately in the vicinity of the find, and the find shall be protected from further damage. The contractor shall immediately contact SHPD (587-0013), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.
- 7) The applicant shall ensure that mitigation measures be taken to prevent potential adverse impact to aquatic resources during construction;
- Other terms and conditions as may be prescribed by the Chairperson; and
- 9) Failure to comply with any of these conditions shall render this Conservation District Use Permit null and void.

Should you have any questions on this matter, please contact Traver Carroll of our Planning Branch, at 587-0439.

Please acknowledge your receipt of this permit and acceptance of conditions by signing in the space provided below and returning a **copy** to us.

Sincerely,

Min my

Dierdre S. Mamiya, Administrator Land Division

Receipt and acceptance acknowledged:

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Cc: Kauai Board member County of Kauai, Planning Department KDLO/DOFAW/DOH



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 Ein ('15)

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