

STATE OF HAWAII - U.S.A.
DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

CONTRACT No. 27272

AGREEMENT FOR ADVISORY SERVICES
FOR THE GEOTHERMAL/CABLE PROJECT



A REVIEW OF THE HAWAII GEOTHERMAL/CABLE PROJECT

THE KILAUEA EAST RIFT ZONE :
GEOTHERMAL EVALUATION OF THE EXISTING DATA

ANNEX A
GEOCHEMISTRY DATA

June 1991



ENEL ENTE NAZIONALE PER L'ENERGIA ELETTRICA - ITALY

LEGEND

- * ALK.-EARTH-BICARB. Low chloride samples "Freshwaters" (Cl < 35 mg/l)
- UNCLASSIFIED SAMPLES (High analytical unbalance)
- SUB GROUP A (Cl < 600 mg/l)
 - ⊛ Low alk.-earth bicarb. component Low sea water contamination
 - High alk.-earth bicarb. component Low sea water contamination
 - Medium seawater contamination
- SUB GROUP B (Cl > 600 mg/l)
 - High seawater contamination
 - ▲ Deep fluid
 - △ Deep fluid contamination

KAU AREA

Pahala Shaft
 Pahala
 Palima
 Ninole GU TH, 4, B
 Punaluu
 Honuapo 1, 2, 3
 Honuapo Mill
 Naalehu 1

KEAAU AREA

PUNA AREA

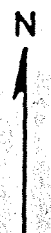
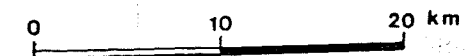
Makai 2
 Pepekeo MKI
 Pepekeo
 Papaikou
 Waiakea
 Waiakea 4
 Piihonua
 Kan G2
 Waiakea TH2, TH3
 Kanoelehua 1, 2, 3
 Panaewa 2
 Panaewa 1
 Keau Mill 1, 2, 3
 Keau 2, 1 (9, 3)
 Olaa Shaft
 Keau Orch 1, 2

Wai Pahoehoe

Keau Pahoa
 Hawn Beaches
 Hawn Shores 1
 Hawn Shores 2
 GTW 4
 Kapoho Test (LSW)
 Kapoho Cone
 Paho 2
 Paho 1
 KS1
 △ GTW 3
 Isaac Hale (Spring)
 Allison Well
 Ashida 1
 GTW 2
 Keauohana 2
 Keauohana 1
 Lanipuna 6
 KS 2
 Lanipuna 1
 Malama Ki

NSF (Kilauea)

Pulama



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Fig.
 1/An.A

LOCATION MAP OF THE MAIN WATER POINTS

ENEL ENTE NAZIONALE PER L'ENERGIA ELETTRICA - ITALY

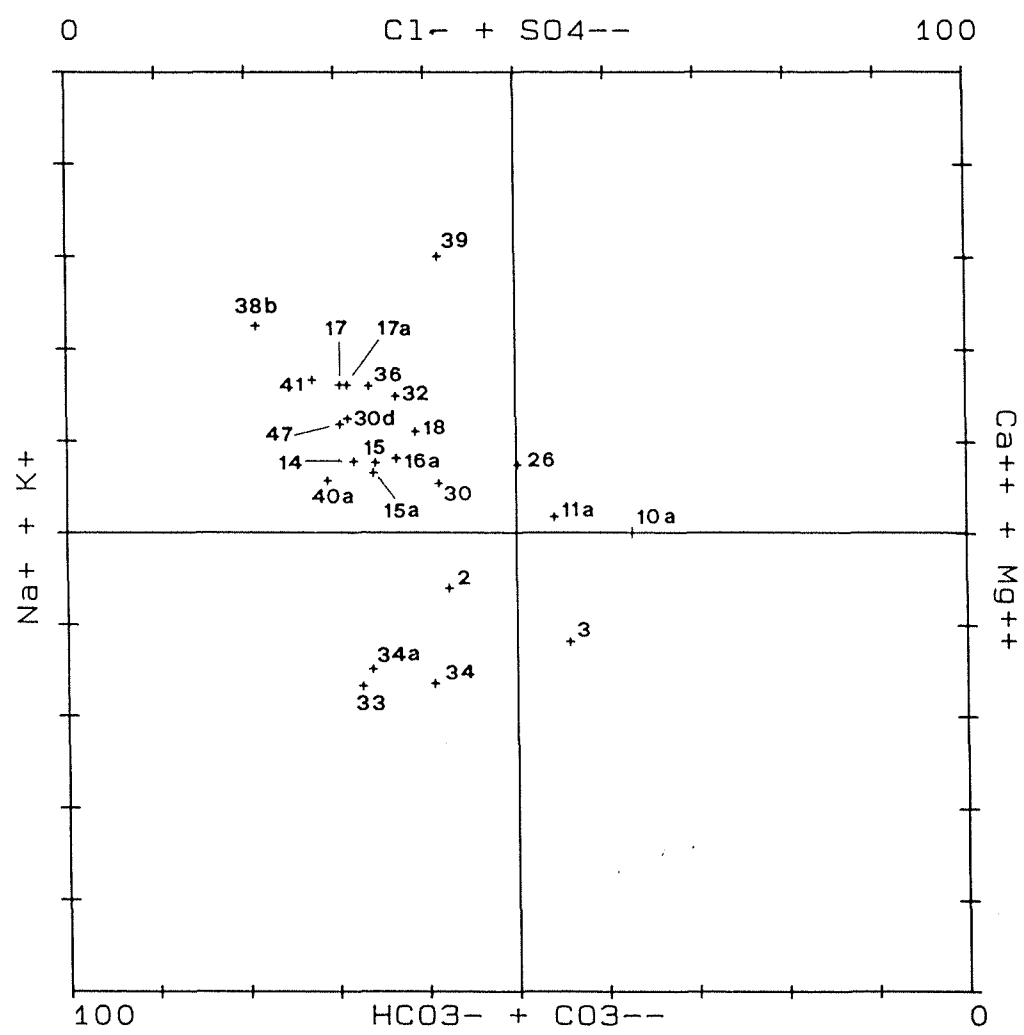


Fig. 2/An.A - Piper diagram for low chloride content waters ($\text{Cl} < 35 \text{ mg/l}$).

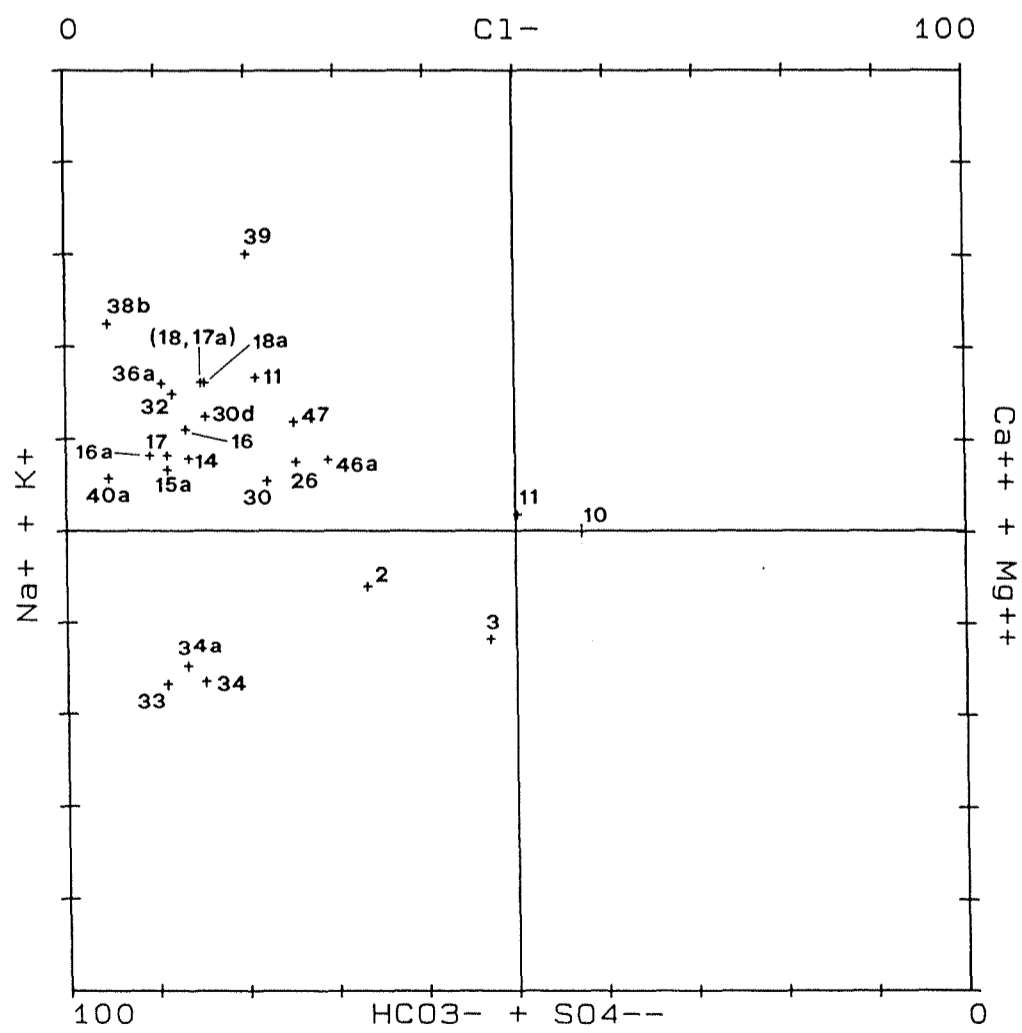


Fig. 3/An.A - Modified Piper diagram for low chloride content waters ($Cl < 35 \text{ mg/l}$).

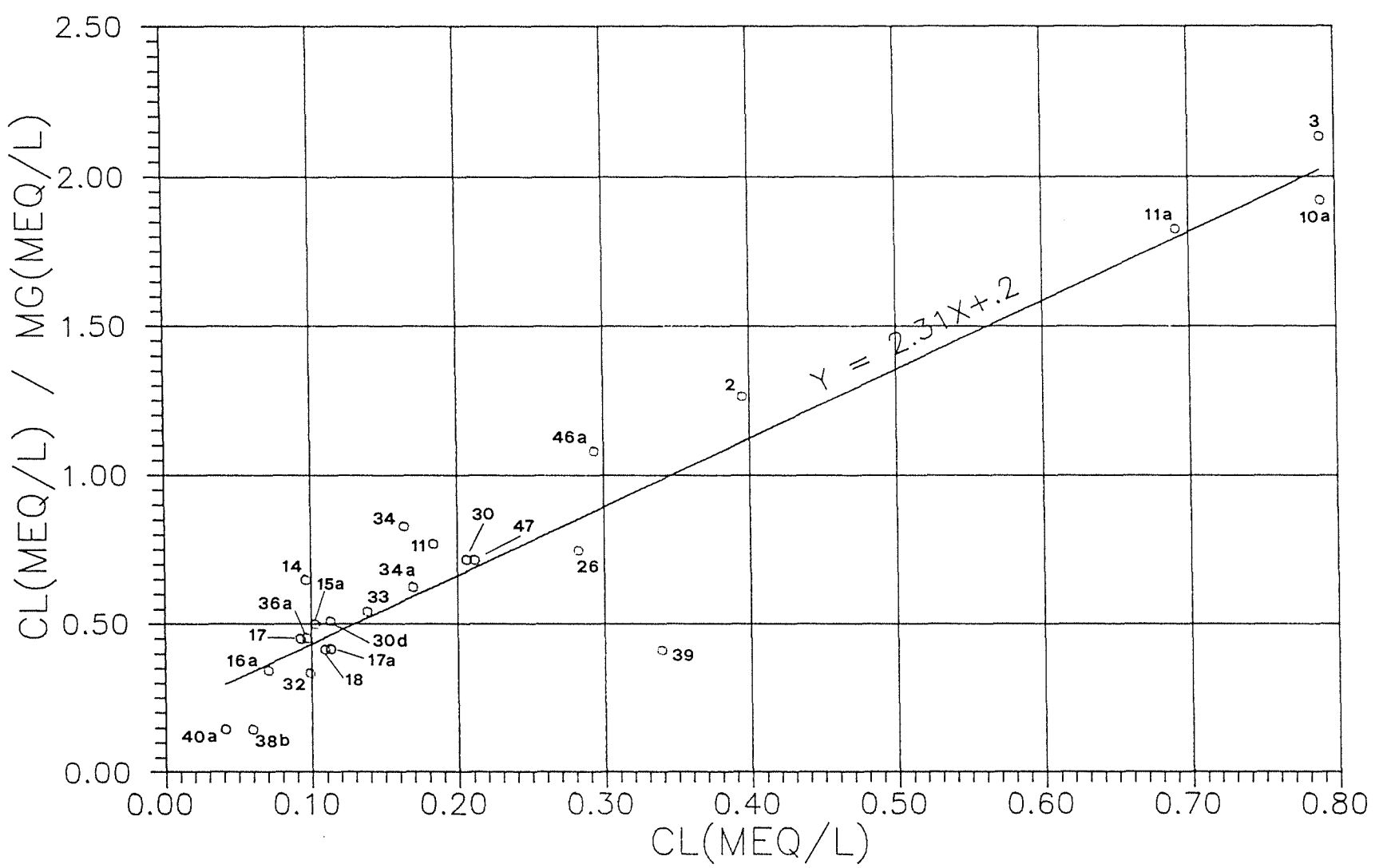


Fig. 4/An.A - Cl/Mg ratio vs. Cl diagram for low chloride waters (Cl < 35 mg/l)

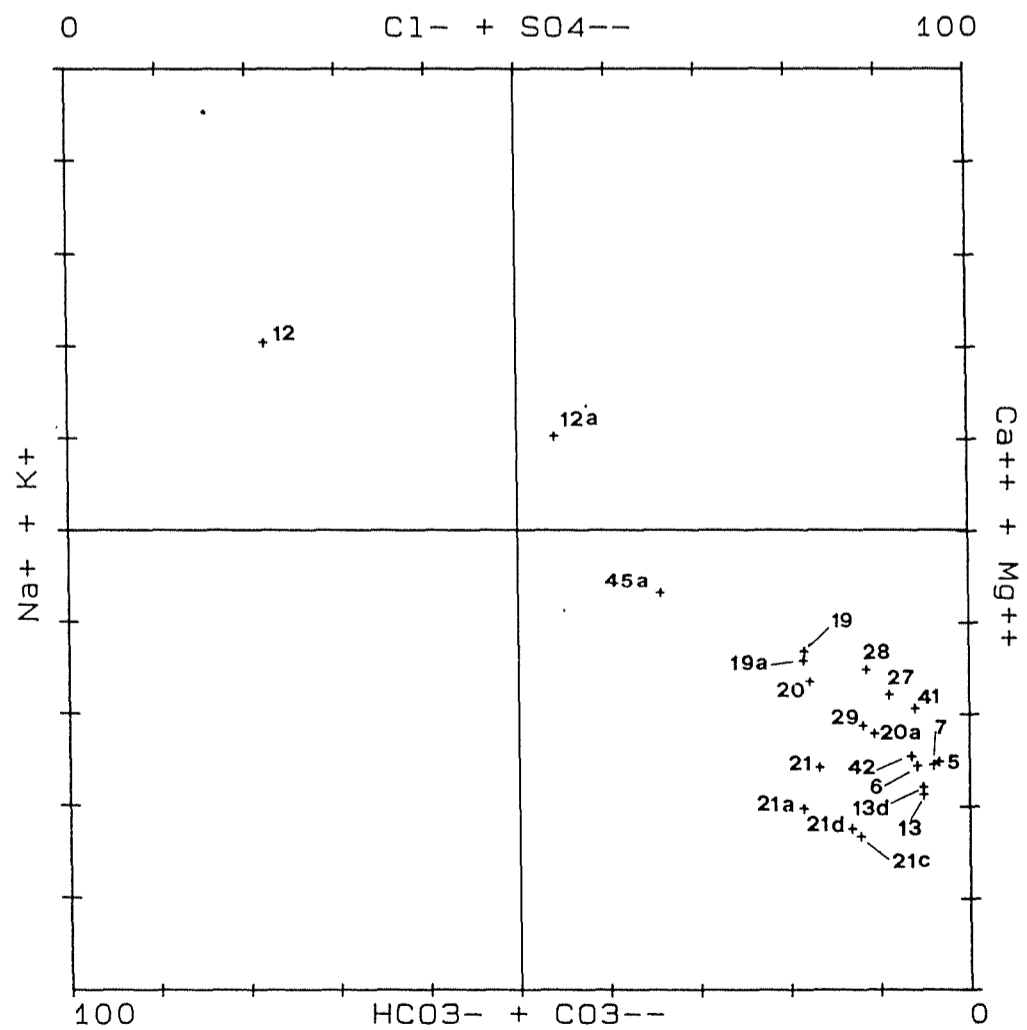


Fig. 5/An.A - Piper diagram for waters with chloride content > 35 mg/l, sub-group A.

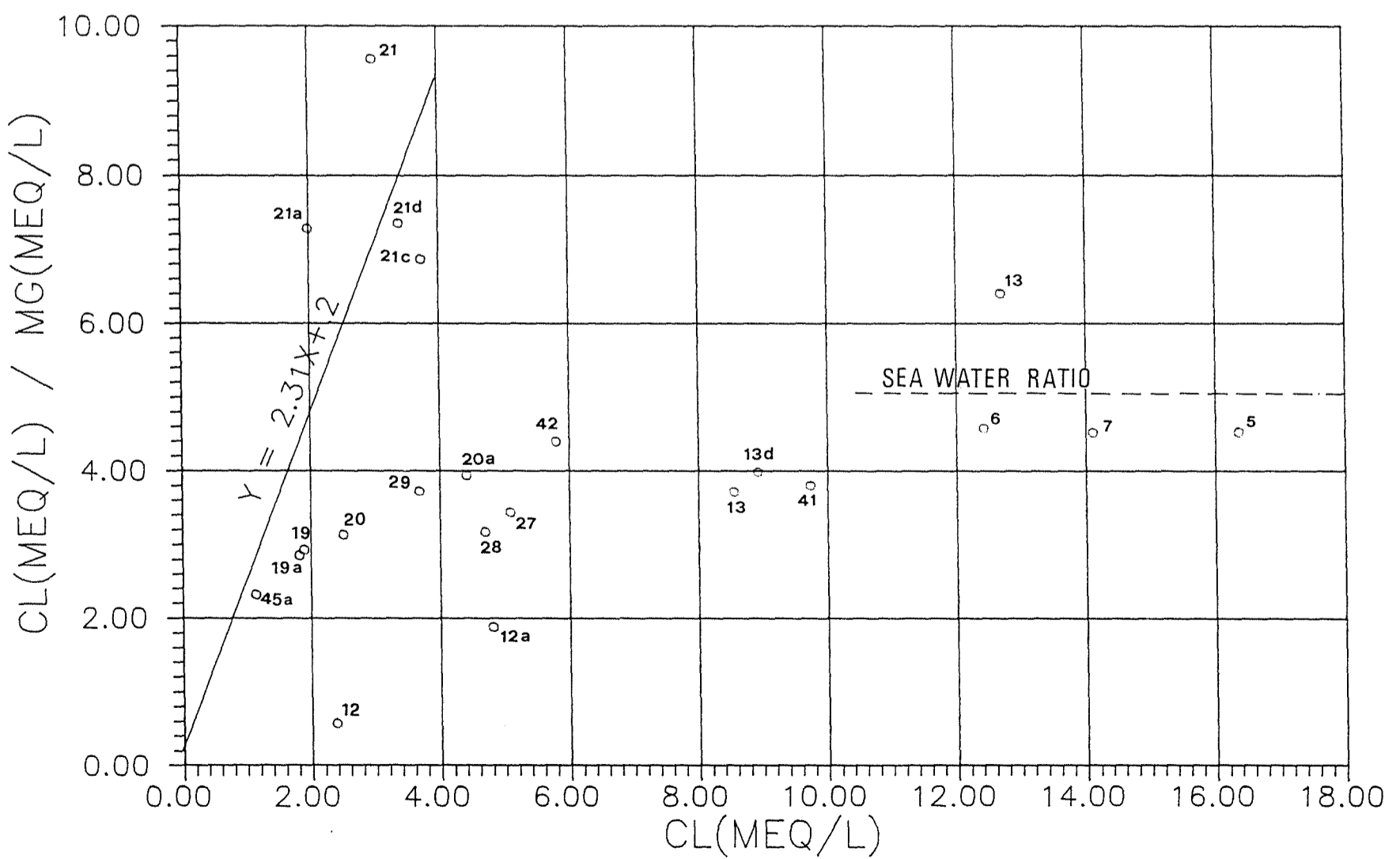


Fig. 6/An.A - Cl/Mg ratio vs. Cl diagram for waters with chloride content > 35 mg/l, sub-group A

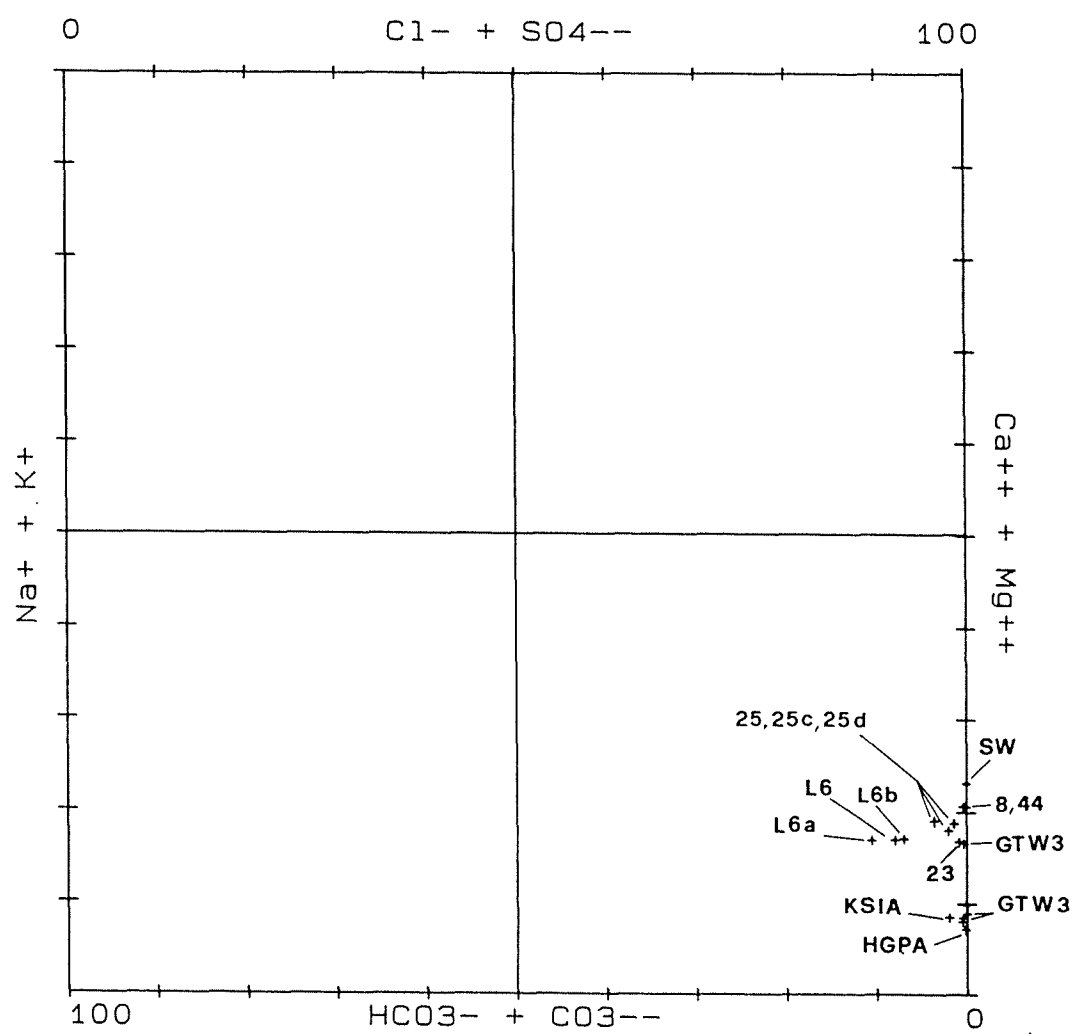


Fig. 7/An.A - Piper diagram for waters with chloride content >35 mg/l, sub-group B.

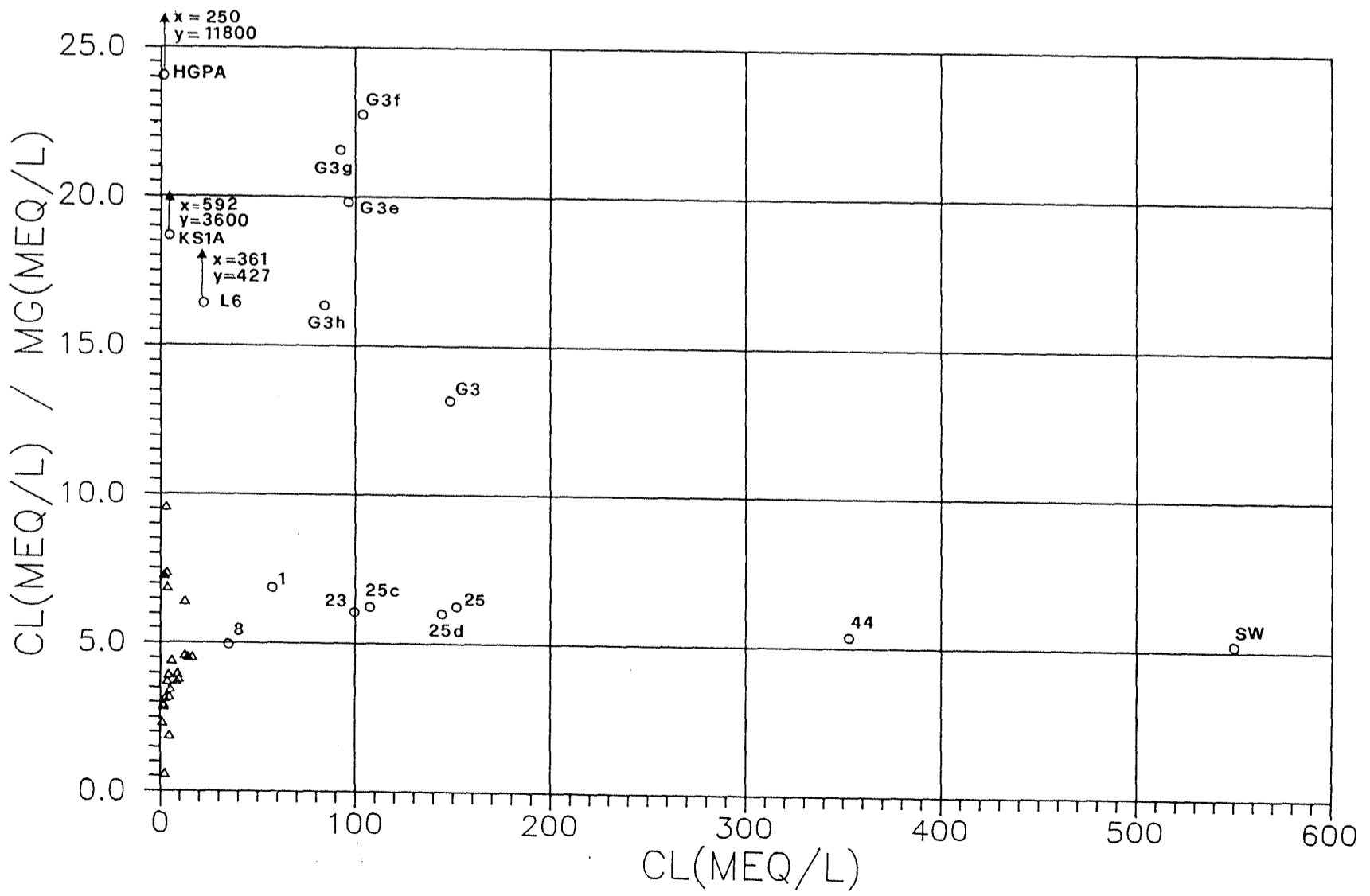


Fig. 8/An.A - Cl/Mg ratio vs. Cl diagram for waters with chloride content > 35 mg/l;
 Δ = sub-group A, ○ = sub-group B.

- SYMBOLS:**
- HGP-A down-hole samples
 - ◻ HGP-A liquid samples (1976-79)
 - ◐ " " " (1980)
 - ◑ " " " (1981)
 - ◒ " " " (1982)
 - ◓ " " " (1983-85)
 - ▲ Sub-group A. waters
 - △ Sub-group B. waters

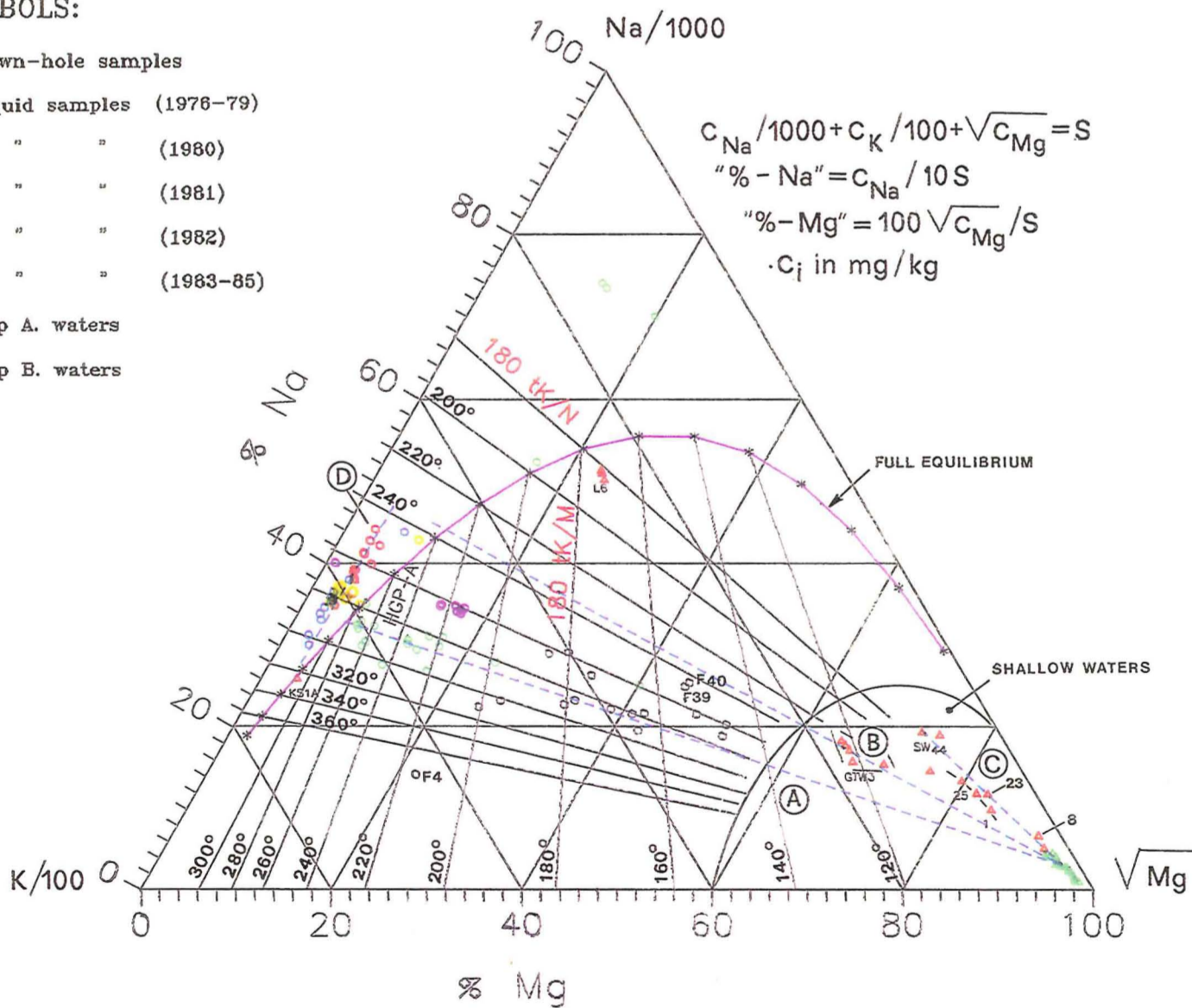


Fig. 9/An.A - Na, K, \sqrt{Mg} Giggenbach triangular diagram.

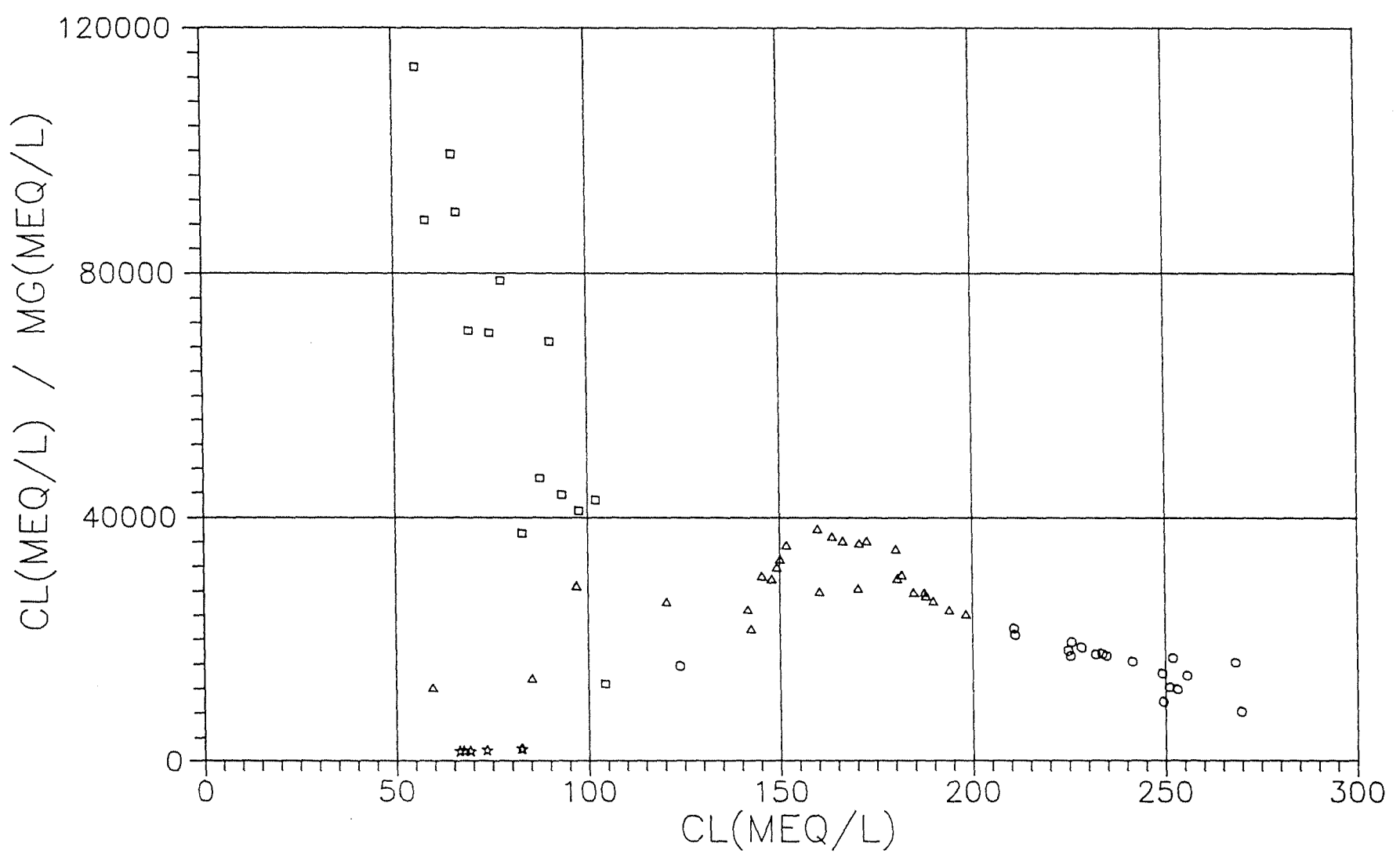


Fig. 10/An.A - Cl/Mg ratio vs. Cl diagram for HPG-A liquid samples:
 ★ = 1980, □ = 1981, △ = 1982, ○ = 1983-1985.

Tab.1 / An.A
 Chemical analyses of water samples (mg/l)
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D 018	D Deut	H3
				°C		meq/l											meq/l	Cat.	An.	o/oo	o/oo	T.U.
ALLISON	288101	31/01/74	1d	38.0	7.00	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	53.0	0.0	0.00	53	0.0	0.0	-3.30	-17.0	0.0
ALLISON	288101	07/01/75	1b	37.8	7.35	2.16	13.4	15.00	216.0	10.8	281.0	69.2	131.2	24.1	0.0	0.00	761	11.6	11.5	0.00	0.0	12.9
ALLISON*	288101	01/07/82	1	38.0	0.00	2.16	84.0	102.00	1190.0	68.0	2040.0	69.0	131.8	24.0	0.0	0.00	3709	66.1	61.1	0.00	0.0	0.0
ALLISON*	288101	11/11/11	1a	37.9	7.18	2.16	13.4	15.00	216.0	10.8	840.0	69.2	131.8	38.3	0.0	0.00	1334	11.6	27.3	0.00	0.0	0.0
ASHIDA1	268501	25/06/80	AS	288.0	0.00	5.01	113.0	1.45	432.0	20.5	174.0	185.0	0.0	0.0	70.3	0.45	1026	25.1	8.8	0.00	0.0	0.0
GTW2	298201	30/01/74	G2a	83.0	7.00	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0	0.0	0.0	-4.50	-10.0	0.0
GTW2	298201	14/12/74	G2	86.0	6.40	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.00	1	0.0	0.0	-2.40	-4.0	0.0
GTW3	298201	14/12/74	G3b	95.0	6.40	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	184.0	0.0	0.00	184	0.0	0.0	-2.50	-12.0	0.0
GTW3	298201	16/12/74	G3c	86.0	6.20	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	184.0	0.0	0.00	184	0.0	0.0	-2.50	-12.0	0.0
GTW3	298201	14/12/74	G3d	88.0	6.30	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	187.0	0.0	0.00	187	0.0	0.0	-2.50	-12.0	0.0
GTW3	298201	31/12/75	G3e	93.0	6.80	0.00	81.0	59.00	2000.0	195.0	3410.0	335.0	0.0	96.6	0.0	0.00	6177	101.0	103.0	0.00	0.0	0.0
GTW3	298201	07/01/75	G3g	93.0	6.85	0.50	76.8	52.00	2050.0	190.0	3270.0	314.0	30.5	96.6	0.0	0.00	6080	102.0	99.3	-4.66	0.0	10.3
GTW3	298201	10/09/74	G3a	93.0	6.00	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	178.0	0.0	0.00	178	0.0	0.0	-2.40	-13.0	0.0
GTW3	298201	21/07/75	G3h	74.0	1.40	0.33	71.0	62.50	1740.0	158.0	2980.0	317.0	0.0	0.0	0.0	0.00	5330	88.4	90.7	0.00	0.0	0.0
GTW3*	298201	11/11/11	G3f	89.0	6.40	0.49	78.9	55.50	2030.0	193.0	3680.0	325.0	29.9	156.0	0.0	0.00	6548	102.0	111.0	0.00	0.0	0.0
GTW3*	298201	01/11/82	G3	93.0	0.00	0.00	283.0	137.00	2760.0	300.0	5260.0	335.0	29.9	97.0	0.0	0.00	10075	153.0	156.0	0.00	0.0	0.0
GTW4*	308101	01/11/82	G4	35.0	0.00	0.00	38.5	22.40	269.0	20.1	390.0	65.0	0.0	70.0	0.0	0.00	875	16.0	12.4	0.00	0.0	0.0
HAWN_SHORES1	318501	31/12/74	2	21.5	7.70	0.68	3.9	3.80	13.0	3.2	14.0	5.1	41.5	51.9	0.0	0.00	137	1.1	1.2	0.00	0.0	0.0
HAWN_SHORES2	318502	31/12/74	3	0.0	7.60	0.74	3.9	4.50	19.0	3.5	28.0	7.0	45.2	49.0	0.0	0.00	162	1.5	1.7	0.00	0.0	0.0
HGPA	288301	12/01/84	HG	358.0	6.60	0.31	358.0	0.26	4930.0	756.0	8970.0	24.0	18.9	836.0	24.6	1.10	15154	252.0	254.0	0.00	0.0	0.0
HONUPO_1	053302	31/12/72	5	19.0	7.10	0.55	20.0	44.00	320.0	14.0	580.0	86.0	33.6	43.0	0.0	0.00	1141	18.9	18.7	0.00	0.0	0.0
HONUPO_2	063201	31/12/72	6	19.0	7.30	0.58	17.0	33.00	245.0	11.0	440.0	66.0	35.4	41.0	0.0	0.00	889	14.5	14.4	0.00	0.0	0.0
HONUPO_3	053303	31/12/72	7	19.0	7.00	0.55	18.0	38.00	272.0	12.0	500.0	75.0	33.6	43.0	0.0	0.00	992	16.2	16.2	0.00	0.0	0.0
HONUPO_MILL	053301	31/12/74	8	19.0	7.00	0.61	33.0	86.00	680.0	24.0	1240.0	169.0	37.2	43.0	0.0	0.00	2312	38.9	39.1	0.00	0.0	0.0
ISAAC_HALE_S	210202	07/01/75	23	36.0	7.75	0.92	32.4	200.00	2020.0	86.0	3530.0	507.0	55.5	81.5	0.0	0.00	6512	108.0	111.0	0.00	0.0	8.5
KANOELEHUA_2	420306	31/12/74	10	21.0	6.20	0.52	1.1	3.50	12.0	2.1	18.0	5.0	31.7	37.0	0.0	0.00	110	0.9	1.1	0.00	0.0	0.0
KANOELEHUA_2	420306	31/12/78	10a	21.0	6.20	0.52	7.8	5.00	17.0	2.2	28.0	5.0	31.7	38.5	0.0	0.00	155	1.6	1.4	0.00	0.0	0.0
KANOELEHUA_3	420307	31/12/78	11a	23.0	7.20	0.63	7.6	4.60	15.0	2.1	24.5	2.6	38.4	36.4	0.0	0.00	131	1.5	1.4	0.00	0.0	0.0
KANOELEHUA_3	420307	31/12/72	11	26.0	7.20	0.63	8.4	2.90	6.5	1.8	6.5	2.6	38.4	55.0	0.0	0.00	122	1.0	0.9	0.00	0.0	0.0

Tab.1 / An.A (continued)
 Chemical analyses of water samples (mg/l)
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D 018	D Deut	H3
				°C		meq/l											meq/l	Cat.	An.	o/oo	o/oo	T.U.
KAPOHO-CS	308002	21/07/75	12d	22.1	7.10	5.37	23.2	25.70	86.5	6.2	95.7	22.7	327.1	0.0	0.0	0.00	587	7.2	8.5	-6.33	0.0	18.0
KAPOHO_CS	308002	31/12/74	12b	25.0	6.50	4.39	60.0	31.00	80.0	7.0	110.0	19.0	267.9	58.0	0.0	0.00	633	9.2	7.9	0.00	0.0	0.0
KAPOHO_CS	308002	06/01/75	12c	25.5	7.80	6.10	42.4	37.00	85.8	6.6	16.9	20.0	370.4	53.6	0.0	0.00	633	9.1	7.0	0.00	0.0	14.1
KAPOHO_CS	308001	31/12/74	12a	25.0	6.50	4.39	60.0	31.00	80.0	7.0	170.0	19.0	267.9	58.0	0.0	0.00	693	9.2	9.6	0.00	0.0	0.0
KAPOHO_CS	308001	12/12/12	12	25.0	7.70	9.00	80.0	51.00	73.0	10.5	84.0	6.8	546.7	41.0	0.0	0.00	893	11.6	11.5	0.00	0.0	0.0
KAPOHO_CS	308002	30/01/74	12g	25.0	7.30	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	56.0	0.0	0.00	56	0.0	0.0	-3.60	-19.0	0.0
KAPOHO_LSW	308101	01/11/82	13e	35.0	0.00	0.00	38.5	22.40	269.0	20.1	390.0	65.0	0.0	70.0	0.0	0.00	875	16.0	12.4	0.00	0.0	0.0
KAPOHO_LSW	308101	13/12/74	13f	34.0	6.10	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	53.0	0.0	0.00	53	0.0	0.0	-3.00	-12.0	0.0
KAPOHO_LSW	308101	31/12/61	13b	28.0	7.20	0.81	14.1	17.10	0.0	0.0	220.0	65.4	49.4	70.5	0.0	0.00	437	2.1	8.4	0.00	0.0	0.0
KAPOHO_LSW	308101	31/12/61	13a	33.9	7.20	0.81	14.1	17.10	0.0	0.0	331.0	65.4	49.4	70.5	0.0	0.00	548	2.1	11.5	0.00	0.0	0.0
KAPOHO_LSW	308101	29/01/74	13g	38.0	7.00	0.75	0.0	0.00	0.0	0.0	0.0	0.0	45.8	56.0	0.0	0.00	102	0.0	0.8	-3.20	-15.0	0.0
KAPOHO_LSW	308101	06/01/75	13c	36.8	7.42	0.79	23.0	28.00	238.0	13.6	303.0	204.0	48.2	71.3	0.0	0.00	929	14.2	13.6	-5.29	0.0	0.0
KAPOHO_LSW	308101	22/07/75	13d	33.5	7.75	0.72	12.5	27.20	223.0	16.8	316.0	211.0	43.9	0.0	0.0	0.00	850	13.0	14.0	0.00	0.0	0.0
KAPOHO_LSW*	308101	11/11/11	13	35.6	7.10	0.75	16.5	24.10	231.0	15.2	450.0	62.7	45.8	62.7	0.0	0.00	908	13.2	14.7	0.00	0.0	0.0
KEAAU_1(9_3)	380201	31/12/73	14	24.5	7.40	0.48	5.6	1.80	6.0	2.0	3.4	6.2	29.3	37.7	0.0	0.00	92	0.7	0.7	0.00	0.0	0.0
KEAAU_2	380202	31/12/74	15	24.5	7.40	0.60	4.9	2.80	5.0	2.0	5.4	5.6	36.6	34.6	0.0	0.00	97	0.7	0.9	0.00	0.0	0.0
KEAAU_2	380202	31/12/78	15a	19.2	7.40	0.60	4.8	2.50	6.8	1.8	3.6	10.0	36.6	33.5	0.0	0.00	100	0.8	0.9	0.00	0.0	0.0
KEAAU_MILL_1	380203	31/12/74	16	18.5	7.80	0.48	6.9	3.10	6.5	2.0	3.5	6.2	29.3	36.0	0.0	0.00	94	0.9	0.7	0.00	0.0	0.0
KEAAU_MILL_1	380203	31/12/78	16a	19.4	7.80	0.48	4.8	2.50	6.3	1.8	2.5	10.0	29.3	27.8	0.0	0.00	95	0.8	0.8	0.00	0.0	0.0
KEAAU_MILL_2	380204	31/12/78	17	19.7	7.40	0.52	4.8	2.50	6.3	1.8	3.3	10.0	31.7	36.7	0.0	0.00	97	0.8	0.8	0.00	0.0	0.0
KEAAU_MILL_2	380204	31/12/72	17a	22.0	7.40	0.52	5.5	3.30	5.2	2.1	4.0	5.5	31.7	36.0	0.0	0.00	93	0.8	0.7	0.00	0.0	0.0
KEAAU_MILL_3	380205	31/12/72	18a	22.0	7.40	0.50	5.5	3.30	5.2	2.1	4.0	5.5	30.5	36.0	0.0	0.00	92	0.8	0.7	0.00	0.0	0.0
KEAAU_MILL_3	380205	31/12/78	18	19.7	7.40	0.50	6.1	3.20	7.1	2.1	3.9	10.0	30.5	33.5	0.0	0.00	96	0.9	0.8	0.00	0.0	0.0
KEAAU_ORCH_1	390001	31/12/74	19	18.5	7.10	0.47	7.8	7.70	38.0	3.8	64.0	14.0	28.7	39.0	0.0	0.00	203	2.8	2.6	0.00	0.0	0.0
KEAAU_ORCH_1	390001	31/12/78	19a	18.5	7.10	0.47	8.1	7.80	41.0	3.5	66.6	10.0	28.7	38.5	0.0	0.00	224	2.9	2.6	0.00	0.0	0.0
KEAAU_ORCH_2	390002	31/12/74	20a	19.5	6.80	0.58	8.9	13.60	90.0	5.6	156.0	25.0	35.4	33.0	0.0	0.00	368	5.6	5.5	0.00	0.0	0.0
KEAAU_ORCH_2	390002	31/12/78	20	19.5	6.80	0.58	8.8	9.70	54.0	4.0	88.4	10.0	35.4	30.5	0.0	0.00	299	3.7	3.3	0.00	0.0	0.0
KEAUOHANA1	248701	21/07/75	21d	20.8	7.05	0.60	5.9	5.60	78.8	5.0	120.0	28.6	36.6	0.0	0.0	0.00	281	4.3	4.6	-6.33	0.0	18.0
KEAUOHANA1	248701	06/01/75	21c	28.5	7.68	0.62	5.3	6.60	89.6	5.2	132.0	37.2	37.8	44.5	0.0	0.00	358	4.8	5.1	-5.42	0.0	16.7

Tab.1 / An.A (continued)
 Chemical analyses of water samples (mg/l)
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D 018	D Deut	H3
				°C		meq/l											meq/l	meq/l	meq/l	o/oo	o/oo	T.U.
KEAUOHANA_1	248701	30/01/74	21b	24.0	6.90	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	48.0	0.0	0.00	48	0.0	0.0	-3.40	-16.0	0.0
KEAUOHANA_1	248701	31/12/74	21a	24.0	7.30	0.55	6.6	3.30	54.0	3.8	70.0	22.0	33.6	41.0	0.0	0.00	235	3.0	3.0	0.00	0.0	0.0
KEAUOHANA_1*	248701	01/11/82	21	24.0	0.00	0.67	12.4	3.80	64.0	5.0	106.0	22.0	42.1	41.0	0.0	0.00	296	3.8	4.1	0.00	0.0	0.0
KEAUOHANA_2	248702	31/12/74	22	24.0	7.00	0.60	11.8	5.90	57.0	5.4	160.0	25.0	36.6	45.3	0.0	0.00	348	3.7	5.6	0.00	0.0	0.0
KS_1A	288302	31/10/85	KS1A	343.0	0.00	0.00	920.0	2.00	10000.0	2700	21000.0	12.0	732.2	200.0	62.9	8.70	35748	551.0	605.0	0.00	0.0	0.0
LANIPUNA6	288305	08/08/84	L6	168.0	0.00	0.00	1480.0	14.00	8230.0	408.0	15400.0	430.0	2349.2	133.0	19.4	0.00	28464	443.0	482.0	0.00	0.0	0.0
LANIPUNA6	288305	03/08/84	L6a	168.0	0.00	0.00	1390.0	14.00	7750.0	397.0	14400.0	430.0	2989.8	137.0	20.0	0.00	27528	418.0	464.0	0.00	0.0	0.0
LANIPUNA6	288305	09/08/84	L6b	168.0	0.00	0.00	1520.0	15.00	8380.0	420.0	15600.0	403.0	2044.1	135.0	19.4	0.00	28536	452.0	482.0	0.00	0.0	0.0
MALAMA_KI	278301	22/07/75	25d	0.0	7.45	2.10	117.0	293.00	2890.0	149.0	5120.0	598.0	128.1	0.0	0.0	0.00	9297	159.0	159.0	-5.08	0.0	8.6
MALAMA_KI	278301	07/01/75	25c	52.2	7.02	2.40	66.8	210.00	2100.0	109.0	3810.0	471.0	146.4	101.0	0.0	0.00	7014	115.0	120.0	-4.57	0.0	15.6
MALAMA_KI	278301	31/12/74	25a	53.0	6.92	3.47	182.0	324.00	3090.0	0.0	5850.0	681.0	211.7	59.0	0.0	0.00	10500	170.0	183.0	0.00	0.0	0.0
MALAMA_KI	278301	13/12/74	25f	53.0	3.00	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0	0.0	0.0	-1.60	-9.0	0.0
MALAMA_KI*	278301	11/11/11	25b	53.1	7.10	2.92	122.0	267.00	2700.0	129.0	6890.0	583.0	178.2	83.2	0.0	0.00	10954	149.0	209.0	0.00	0.0	0.0
MALAMA_KI*	278301	01/07/83	25	55.0	3.47	4.29	293.0	295.00	3330.0	218.0	5380.0	681.0	0.0	59.0	0.0	0.00	10256	189.0	166.0	0.00	0.0	0.0
NANALEHU_1	033501	31/12/75	26	19.0	7.80	0.55	6.4	4.60	11.0	1.5	10.0	13.0	33.6	43.0	0.0	0.00	123	1.2	1.1	0.00	0.0	0.0
NINOLE_A	083102	30/12/74	27	18.0	7.30	0.55	13.0	18.00	100.0	5.9	180.0	29.0	33.6	43.0	0.0	0.00	423	6.6	6.2	0.00	0.0	0.0
NINOLE_A	083102	31/12/74	27a	18.0	7.30	0.55	13.0	18.00	100.0	5.9	150.0	29.0	33.6	43.0	0.0	0.00	393	6.6	5.4	0.00	0.0	0.0
NINOLE_B	083103	31/12/74	28	21.0	6.90	0.68	13.2	18.00	89.0	5.2	166.0	28.0	41.5	48.0	0.0	0.00	409	6.1	6.0	0.00	0.0	0.0
NINOLE_GU_TH	083101	31/12/72	29	18.0	7.30	0.56	9.2	12.00	80.0	4.4	130.0	24.0	34.2	41.0	0.0	0.00	335	5.0	4.7	0.00	0.0	0.0
NSF	231701	11/11/11	NSF	137.0	7.10	2.79	12.4	63.50	610.0	130.0	1660.0	0.0	169.6	170.0	0.0	0.00	2816	35.7	49.6	0.00	0.0	0.0
OLAA_SHAFT+7	370201	31/12/74	30d	23.0	7.00	0.50	6.0	2.70	5.8	2.4	4.0	5.5	30.5	40.0	0.0	0.00	97	0.8	0.7	0.00	0.0	0.0
OLAA_SHAFT+7	370201	31/12/78	30c	19.7	7.00	0.50	6.9	3.30	7.2	2.1	5.1	5.5	30.5	38.5	0.0	0.00	99	1.0	0.8	0.00	0.0	0.0
OLAA_SHAFT+7	370201	11/06/74	30b	22.0	6.80	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	39.0	0.0	0.00	39	0.0	0.0	-3.90	-20.0	0.0
OLAA_SHAFT+7	370201	12/12/12	30	0.0	0.00	0.00	4.8	3.50	8.7	1.8	7.3	8.4	32.9	21.0	0.0	0.00	89	1.0	0.9	0.00	0.0	0.0
PAHALA+SHAFT	112801	31/12/73	32	19.0	7.20	0.53	6.6	3.60	7.2	1.0	3.5	10.0	32.3	42.0	0.0	0.00	107	1.0	0.8	0.00	0.0	0.0
PAHOA1	298601	21/07/75	33c	23.3	6.65	0.72	1.6	1.90	19.3	2.7	9.8	27.3	43.9	27.3	0.0	0.00	134	1.1	1.6	-6.70	0.0	10.6
PAHOA1	298601	06/01/75	33b	0.0	7.30	0.79	1.6	2.70	36.0	2.7	13.5	21.1	48.2	50.0	0.0	0.00	176	1.9	1.6	0.00	0.0	9.9
PAHOA1*	298601	01/11/82	33	21.0	0.00	0.64	4.5	3.10	16.7	9.3	4.9	13.0	51.3	39.0	0.0	0.00	142	1.4	1.2	0.00	0.0	0.0
PAHOA2	298602	30/01/74	34b	23.0	6.90	0.00	0.0	0.00	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.00	60	0.0	0.0	-3.80	-18.0	0.0

Tab.1 / An.A (continued)
 Chemical analyses of water samples (mg/l)
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K ⁺	Cl	SO ₄	HCO ₃	SiO ₂	H ₃ BO ₃	Li	TDS	TDS	TDS	D	O18	D	Deut	H3
				°C		meq/l											meq/l	meq/l	meq/l	o/oo	o/oo	o/oo	o/oo	T.U.
PAHOA2	298602	31/12/74	34	23.0	6.40	0.63	3.9	2.40	16.0	3.2	5.8	13.0	38.4	55.0	0.0	0.00	138	1.2	1.1	0.00	0.0	0.0	0.0	0.0
PALIMA	112802	30/12/74	35	19.0	7.00	0.55	6.1	4.30	12.0	1.2	9.9	7.5	33.6	47.0	0.0	0.00	122	1.2	1.0	0.00	0.0	0.0	0.0	0.0
PALIMA	112802	31/12/74	35a	21.0	7.00	0.55	6.1	4.30	12.0	1.2	12.0	7.5	33.6	54.0	0.0	0.00	131	1.2	1.0	0.00	0.0	0.0	0.0	0.0
PANAWEA_1	400301	31/12/78	36a	20.0	7.50	0.60	6.4	2.60	5.5	1.4	3.4	10.0	36.6	36.4	0.0	0.00	102	0.8	0.9	0.00	0.0	0.0	0.0	0.0
PANAWEA_1	400301	31/12/73	36	20.0	7.50	0.60	6.8	2.70	5.1	1.8	4.0	0.0	36.6	34.0	0.0	0.00	91	0.8	0.7	0.00	0.0	0.0	0.0	0.0
PAHOA2	298602	12/12/12	34a	0.0	0.00	0.00	3.3	3.30	16.5	3.4	6.0	12.5	51.3	52.0	0.0	0.00	149	1.2	1.3	0.00	0.0	0.0	0.0	0.0
PAPAIKOU	470601	31/12/74	38a	0.0	7.30	1.00	7.2	3.60	6.0	1.3	15.0	5.0	61.0	29.8	0.0	0.00	130	1.0	1.5	0.00	0.0	0.0	0.0	0.0
PAPAIKOU	470601	31/12/78	38b	20.0	7.30	1.00	9.5	5.00	6.9	1.4	2.1	10.0	61.0	34.2	0.0	0.00	131	1.2	1.3	0.00	0.0	0.0	0.0	0.0
PEPEEKEO_SUG	500501	31/12/72	39	21.0	7.20	0.98	12.0	10.00	7.8	0.6	12.0	17.0	59.8	45.0	0.0	0.00	165	1.8	1.7	0.00	0.0	0.0	0.0	0.0
PEPEEKEO_SUG	500502	31/12/74	39c	23.0	5.70	0.97	11.0	8.50	8.4	0.6	1.1	13.0	59.2	29.0	0.0	0.00	131	1.6	1.3	0.00	0.0	0.0	0.0	0.0
PEPEEKEO_SUG	500501	31/12/78	39b	21.0	7.20	0.98	11.7	9.10	9.3	1.0	9.9	10.0	59.8	32.1	0.0	0.00	157	1.8	1.5	0.00	0.0	0.0	0.0	0.0
PIIHONUA	430601	31/12/73	40	17.8	8.00	0.61	5.0	3.30	7.8	2.2	2.0	5.9	37.2	37.0	0.0	0.00	101	0.9	0.8	0.00	0.0	0.0	0.0	0.0
PIIHONUA	430601	31/12/78	40a	17.8	8.00	0.61	5.0	3.40	8.4	2.2	1.4	10.0	37.2	40.6	0.0	0.00	108	1.0	0.9	0.00	0.0	0.0	0.0	0.0
PULAMA	210201	31/12/63	41	25.8	7.50	0.71	15.9	31.20	170.0	8.5	345.0	65.1	43.3	72.4	0.0	0.00	752	11.0	11.8	0.00	0.0	0.0	0.0	0.0
PUNALUU	083001	31/12/72	42	19.0	7.10	0.45	9.6	16.00	118.0	5.5	205.0	37.0	27.5	32.0	0.0	0.00	451	7.1	7.0	0.00	0.0	0.0	0.0	0.0
PUNALUU	083001	31/12/72	42	19.0	7.10	0.45	9.6	16.00	118.0	5.5	205.0	37.0	27.5	32.0	0.0	0.00	451	7.1	7.0	0.00	0.0	0.0	0.0	0.0
SEAWATER	/	/	SW	0.0	0.00	0.25	450.0	1290.00	9600.0	398.0	19500.0	2200.0	0.0	4.0	0.0	0.00	33442	556.0	596.0	0.00	0.0	0.0	0.0	0.0
WAIKEA	430401	31/12/72	43	20.5	7.20	1.29	132.0	390.00	3400.0	110.0	16000.0	832.0	78.7	44.0	0.0	0.00	22438	189.0	470.0	0.00	0.0	0.0	0.0	0.0
WAIKEA	430402	31/12/72	44	19.5	7.20	1.39	340.0	800.00	7200.0	240.0	12500.0	1630.0	84.8	33.0	0.0	0.00	22829	402.0	388.0	0.00	0.0	0.0	0.0	0.0
WAIKEA	430403	31/12/72	44a	20.0	7.10	1.16	132.0	460.00	6250.0	110.0	6250.0	868.0	70.8	46.0	0.0	0.00	14187	319.0	196.0	0.00	0.0	0.0	0.0	0.0
WAIKEA_4	420304	31/12/74	45	31.0	7.20	0.61	8.4	2.90	6.9	1.8	6.5	2.6	37.2	55.0	0.0	0.00	122	1.0	0.8	0.00	0.0	0.0	0.0	0.0
WAIKEA_4	420304	31/12/78	45a	21.0	7.20	0.61	7.8	5.90	25.0	2.4	39.8	2.6	37.2	37.6	0.0	0.00	159	2.0	1.8	0.00	0.0	0.0	0.0	0.0
WAIKEA_TH_2	420302	31/12/78	46a	28.0	7.00	0.66	6.6	3.30	9.2	1.6	10.4	2.5	40.3	36.5	0.0	0.00	110	1.0	1.0	0.00	0.0	0.0	0.0	0.0
WAIKEA_TH_2	420302	31/12/64	46	21.1	7.00	0.66	8.0	4.40	10.0	1.0	11.0	2.5	40.3	33.0	0.0	0.00	110	1.2	1.0	0.00	0.0	0.0	0.0	0.0
WAIKEA_TH_3	420303	31/12/72	47	23.5	7.10	0.58	6.0	3.60	7.4	1.8	7.5	2.0	35.4	36.0	0.0	0.00	100	1.0	0.8	0.00	0.0	0.0	0.0	0.0
WAI_PAHOEHOE	350001	31/12/61	48	22.0	7.10	0.93	5.3	6.70	0.0	0.0	5.5	10.9	56.7	46.5	0.0	0.00	132	0.8	1.3	0.00	0.0	0.0	0.0	0.0

Tab.2 / An.A
 Chemical analyses of HGPA liquid samples (mg/l)
 Note: 0.0 values = not determined

NAME	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS Cat.	TDS An.	D O18	D Deut	H3
			°C		meq/l												meq/l	meq/l	o oo	o oo	T.U.
hgpa	03/11/76	5	0.0	7.00	0.00	46.2	0.00	1140.0	205.0	2170.0	0.0	0.0	132.0	0.0	0.00	3693	57.1	61.2	0.00	0.0	0.0
hgpa	05/11/76	6	0.0	7.00	0.00	56.7	0.00	1200.0	205.0	2210.0	0.0	0.0	128.0	0.0	0.00	3800	60.3	62.3	0.00	0.0	0.0
hgpa	07/11/76	7	0.0	8.80	0.00	60.3	0.00	1200.0	208.0	2350.0	0.0	0.0	110.0	0.0	0.00	3928	60.5	66.3	0.00	0.0	0.0
hgpa	08/11/76	8	0.0	8.80	0.00	81.9	0.00	1200.0	213.0	2190.0	0.0	0.0	105.0	0.0	0.00	3790	61.7	61.8	0.00	0.0	0.0
hgpa	10/11/76	9	0.0	8.80	0.00	81.9	0.00	1260.0	250.0	2190.0	0.0	0.0	145.0	0.0	0.00	3927	65.3	61.8	0.00	0.0	0.0
hgpa	12/11/76	10	0.0	8.90	0.00	74.4	0.00	1260.0	215.0	2410.0	0.0	0.0	140.0	0.0	0.00	4099	64.0	68.0	0.00	0.0	0.0
hgpa	14/11/76	11	0.0	8.80	0.00	68.7	0.00	1280.0	215.0	2450.0	0.0	0.0	153.0	0.0	0.00	4167	64.6	69.1	0.00	0.0	0.0
hgpa	16/11/76	12	0.0	8.80	0.00	75.7	0.00	1320.0	226.0	2530.0	0.0	0.0	150.0	0.0	0.00	4302	67.0	71.4	0.00	0.0	0.0
hgpa	17/11/76	13	0.0	0.00	0.00	78.8	0.50	1320.0	223.0	2520.0	0.0	0.0	0.0	0.0	0.00	4142	67.1	71.1	0.00	0.0	0.0
hgpa	02/12/76	F1	0.0	3.60	0.00	24.2	1.90	540.0	75.0	950.0	0.0	0.0	740.0	0.0	0.00	2331	26.8	26.8	0.00	0.0	0.0
hgpa	02/12/76	F3	0.0	2.00	0.00	17.3	0.70	480.0	85.0	920.0	0.0	0.0	740.0	0.0	0.00	2243	24.0	25.9	0.00	0.0	0.0
hgpa	02/12/76	F2	0.0	3.40	0.00	21.0	1.90	500.0	77.5	910.0	0.0	0.0	760.0	0.0	0.00	2270	24.9	25.7	0.00	0.0	0.0
hgpa	02/12/76	F4	0.0	2.00	0.00	22.6	0.60	500.0	225.0	980.0	0.0	0.0	740.0	0.0	0.00	2468	28.7	27.6	0.00	0.0	0.0
hgpa	12/12/76	14	0.0	7.00	0.00	41.4	0.20	1040.0	228.0	2130.0	0.0	0.0	140.0	0.0	0.00	3580	53.2	60.1	0.00	0.0	0.0
hgpa	13/12/76	15	0.0	6.00	0.00	57.2	0.10	1170.0	213.0	2330.0	0.0	0.0	130.0	0.0	0.00	3900	59.2	65.7	0.00	0.0	0.0
hgpa	15/12/76	16	0.0	6.00	0.00	78.1	0.40	1300.0	225.0	2560.0	0.0	0.0	130.0	0.0	0.00	4294	66.2	72.2	0.00	0.0	0.0
hgpa	25/01/77	F20	0.0	2.30	0.00	10.4	0.50	480.0	92.5	1000.0	0.0	0.0	670.0	0.0	0.00	2253	23.8	28.2	0.00	0.0	0.0
hgpa	25/01/77	F21	0.0	5.30	0.00	121.0	1.10	1060.0	154.0	2280.0	0.0	0.0	400.0	0.0	0.00	4016	56.2	64.3	0.00	0.0	0.0
hgpa	25/01/77	F19	0.0	2.30	0.00	13.2	1.10	480.0	92.5	980.0	0.0	0.0	670.0	0.0	0.00	2237	24.0	27.6	0.00	0.0	0.0
hgpa	26/01/77	D31	0.0	3.30	0.00	79.2	2.10	740.0	123.0	1490.0	0.0	0.0	580.0	0.0	0.00	3014	39.5	42.0	0.00	0.0	0.0
hgpa	26/01/77	D29	0.0	2.90	0.00	7.5	0.30	500.0	118.0	1000.0	0.0	0.0	710.0	0.0	0.00	2336	25.2	28.2	0.00	0.0	0.0
hgpa	26/01/77	D28	0.0	2.60	0.00	24.4	1.10	550.0	95.0	1080.0	0.0	0.0	650.0	0.0	0.00	2400	27.7	30.5	0.00	0.0	0.0
hgpa	26/01/77	D30	0.0	2.50	0.00	8.4	0.50	480.0	87.5	960.0	0.0	0.0	700.0	0.0	0.00	2236	23.6	27.1	0.00	0.0	0.0
hgpa	26/01/77	23	0.0	5.80	0.00	17.7	0.80	5000.0	92.5	1080.0	0.0	0.0	210.0	0.0	0.00	6401	221.0	30.5	0.00	0.0	0.0
hgpa	26/01/77	24	0.0	6.30	0.00	14.2	0.70	5000.0	92.5	1010.0	0.0	0.0	180.0	0.0	0.00	6297	221.0	28.5	0.00	0.0	0.0
hgpa	26/01/77	26	0.0	8.50	0.00	37.8	0.10	1100.0	220.0	2190.0	0.0	0.0	150.0	0.0	0.00	3698	55.4	61.8	0.00	0.0	0.0
hgpa	26/01/77	27	25.0	8.00	0.48	30.6	0.10	1020.0	62.0	2040.0	0.0	29.3	150.0	0.0	0.00	3332	47.5	58.0	0.00	0.0	0.0
hgpa	26/01/77	35	0.0	8.50	0.00	32.4	0.40	1000.0	210.0	2110.0	0.0	0.0	150.0	0.0	0.00	3503	50.5	59.5	0.00	0.0	0.0
hgpa	26/01/77	25	0.0	5.80	0.00	180.0	4.80	1360.0	189.0	3090.0	0.0	0.0	250.0	0.0	0.00	5074	73.4	87.2	0.00	0.0	0.0
hgpa	26/01/77	22	0.0	5.50	0.00	88.0	5.50	8200.0	120.0	1730.0	0.0	0.0	360.0	0.0	0.00	10504	365.0	48.8	0.00	0.0	0.0

Tab.2 / An.A (continued)
 Chemical analyses of HGPA liquid samples (mg/l)
 Note: 0.0 values = not determined

NAME	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D 018	D Deut	H3
			°C		meq/l											meq/l	meq/l	meq/l	o oo	o oo	T.U.
hgpa	26/01/77	32	0.0	8.00	0.00	30.6	0.00	1020.0	62.0	2040.0	0.0	0.0	150.0	0.0	0.00	3303	47.5	57.5	0.00	0.0	0.0
hgpa	26/01/77	33	0.0	8.50	0.00	40.6	0.10	1100.0	226.0	2230.0	0.0	0.0	150.0	0.0	0.00	3747	55.7	62.9	0.00	0.0	0.0
hgpa	26/01/77	F34	0.0	2.60	0.00	22.6	0.30	480.0	104.0	1040.0	0.0	0.0	710.0	0.0	0.00	2357	24.7	29.3	0.00	0.0	0.0
hgpa	29/01/77	36	0.0	0.00	0.00	78.2	0.50	1260.0	225.0	2590.0	0.0	0.0	0.0	0.0	0.00	4154	64.5	73.1	0.00	0.0	0.0
hgpa	30/01/77	18	0.0	8.40	0.00	84.7	0.40	1280.0	243.0	2650.0	0.0	0.0	130.0	0.0	0.00	4388	66.2	74.7	0.00	0.0	0.0
hgpa	30/01/77	17	0.0	8.50	0.00	72.7	0.30	1280.0	235.0	2650.0	0.0	0.0	200.0	0.0	0.00	4438	65.3	74.7	0.00	0.0	0.0
hgpa	30/01/77	37	0.0	8.50	0.00	24.0	0.11	390.0	68.0	780.0	0.0	0.0	41.0	0.0	0.00	1303	19.9	22.0	0.00	0.0	0.0
hgpa	09/02/77	38	0.0	0.00	0.00	30.1	0.10	720.0	135.0	1610.0	0.0	0.0	0.0	0.0	0.00	2495	36.3	45.4	0.00	0.0	0.0
hgpa	14/02/77	F43	0.0	4.80	0.00	95.7	1.90	620.0	88.0	1310.0	0.0	0.0	210.0	0.0	0.00	2326	34.2	37.0	0.00	0.0	0.0
hgpa	14/02/77	F41	0.0	8.20	0.00	39.3	0.40	600.0	82.5	1030.0	0.0	0.0	195.0	0.0	0.00	1947	30.2	29.1	0.00	0.0	0.0
hgpa	14/02/77	F39	0.0	2.90	0.00	430.0	13.00	2000.0	240.0	4620.0	0.0	0.0	440.0	0.0	0.00	7743	116.0	130.0	0.00	0.0	0.0
hgpa	14/02/77	F42	0.0	5.20	0.00	161.0	2.00	1080.0	160.0	2330.0	0.0	0.0	170.0	0.0	0.00	3903	59.3	65.7	0.00	0.0	0.0
hgpa	14/02/77	F40	0.0	3.20	0.00	465.0	14.70	2160.0	248.0	4800.0	0.0	0.0	425.0	0.0	0.00	8113	125.0	135.0	0.00	0.0	0.0
hgpa	09/04/77	44	0.0	8.10	0.00	75.6	0.10	1400.0	266.0	3000.0	0.0	0.0	140.0	0.0	0.00	4882	71.5	84.6	0.00	0.0	0.0
hgpa	11/04/77	45	0.0	8.20	0.00	77.3	0.10	1460.0	266.0	3050.0	0.0	0.0	150.0	0.0	0.00	5003	74.2	86.0	0.00	0.0	0.0
hgpa	22/04/77	46	0.0	0.00	0.00	72.2	0.10	1480.0	277.0	3190.0	0.0	0.0	0.0	0.0	0.00	5019	75.1	90.0	0.00	0.0	0.0
hgpa	15/06/78	47	0.0	0.00	0.00	56.6	0.08	1500.0	250.0	2420.0	0.0	0.0	0.0	0.0	0.00	4227	74.5	68.3	0.00	0.0	0.0
hgpa	10/01/80	49	25.0	0.00	1.00	16.3	0.50	1430.0	200.0	2390.0	50.0	0.0	865.0	0.0	0.00	4952	68.2	68.5	0.00	0.0	0.0
hgpa	11/01/80	51	25.0	0.00	1.00	33.2	0.50	1460.0	211.0	2450.0	60.0	0.0	792.0	0.0	0.00	5007	70.6	70.4	0.00	0.0	0.0
hgpa	12/01/80	53	25.0	0.00	1.00	25.9	0.50	1410.0	204.0	2350.0	62.0	0.0	0.0	0.0	0.00	4052	67.9	67.6	0.00	0.0	0.0
hgpa	14/01/80	55	25.0	0.00	1.00	31.0	0.50	1440.0	205.0	2450.0	60.0	0.0	796.0	0.0	0.00	4982	69.5	70.4	0.00	0.0	0.0
hgpa	16/01/80	56	0.0	0.00	0.00	33.9	0.00	1520.0	224.0	2590.0	69.0	0.0	832.0	0.0	0.00	5269	73.5	74.5	0.00	0.0	0.0
hgpa	16/01/80	58	25.0	0.00	1.00	33.2	0.50	1530.0	216.0	2600.0	67.0	0.0	832.0	0.0	0.00	5279	73.8	74.7	0.00	0.0	0.0
hgpa	17/01/80	60	25.0	0.00	1.00	17.9	0.50	1710.0	247.0	2920.0	59.0	0.0	875.0	0.0	0.00	5829	81.6	83.6	0.00	0.0	0.0
hgpa	18/01/80	61	25.0	0.00	1.00	17.9	0.50	1700.0	248.0	2930.0	73.6	0.0	873.0	0.0	0.00	5843	81.2	84.2	0.00	0.0	0.0
hgpa	12/06/81	63	0.0	0.00	10.00	25.5	0.01	900.0	200.0	2070.0	0.0	0.0	1200.0	0.0	0.00	4846	45.5	58.4	0.00	0.0	0.0
hgpa	18/06/81	64	0.0	0.00	0.00	25.0	0.01	1100.0	200.0	1990.0	0.0	0.0	0.0	0.0	0.34	3315	54.3	56.1	0.00	0.0	0.0
hgpa	20/06/81	65	0.0	0.00	0.00	30.0	0.01	1280.0	220.0	2320.0	0.0	0.0	0.0	0.0	0.38	3850	62.9	65.4	0.00	0.0	0.0
hgpa	29/06/81	66	0.0	0.00	0.00	36.0	0.01	1250.0	265.0	2360.0	0.0	0.0	0.0	0.0	0.39	3911	63.0	66.6	0.00	0.0	0.0
hgpa	04/07/81	67	0.0	0.00	0.00	39.5	0.01	1320.0	255.0	2470.0	0.0	0.0	0.0	0.0	0.41	4085	66.0	69.7	0.00	0.0	0.0

Tab.2 / An.A (continued)
 Chemical analyses of HGPA liquid samples (mg/l)
 Note: 0.0 values = not determined

NAME	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D O18	D Deut	H3
			°C		meq/l											meq/l	meq/l	meq/l	o oo	o oo	T.U.
hgpa	16/07/81	68	0.0	0.00	0.00	46.5	0.01	1460.0	255.0	2660.0	0.0	0.0	0.0	0.0	0.45	4422	72.4	75.0	0.00	0.0	0.0
hgpa	03/08/81	69	0.0	0.00	0.00	55.0	0.03	1710.0	265.0	2940.0	0.0	0.0	0.0	0.0	0.49	4970	84.0	82.9	0.00	0.0	0.0
hgpa	12/08/81	70	0.0	0.00	0.00	58.0	0.02	1700.0	270.0	3110.0	0.0	0.0	0.0	0.0	0.52	5138	83.8	87.7	0.00	0.0	0.0
hgpa	22/08/81	71	0.0	0.00	0.00	61.0	0.03	1810.0	280.0	3310.0	0.0	0.0	0.0	0.0	0.56	5462	89.0	93.4	0.00	0.0	0.0
hgpa	28/08/81	72	0.0	0.00	0.00	63.0	0.03	1900.0	305.0	3470.0	0.0	0.0	0.0	0.0	0.59	5739	93.7	97.9	0.00	0.0	0.0
hgpa	04/09/81	73	0.0	0.00	0.00	72.0	0.10	2190.0	250.0	3700.0	0.0	0.0	800.0	0.0	0.00	7012	105.0	104.0	0.00	0.0	0.0
hgpa	04/09/81	74	0.0	0.00	0.00	66.5	0.03	1890.0	295.0	3620.0	0.0	0.0	860.0	0.0	0.00	6732	93.1	102.0	0.00	0.0	0.0
hgpa	11/12/81	75	0.0	0.00	0.00	33.0	0.01	1590.0	300.0	2760.0	0.0	0.0	1000.0	0.0	0.00	5683	78.5	77.8	0.00	0.0	0.0
hgpa	17/12/81	76	0.0	0.00	0.00	48.5	0.02	1850.0	310.0	3210.0	0.0	0.0	0.0	0.0	0.56	5419	90.9	90.5	0.00	0.0	0.0
hgpa	22/12/81	77	0.0	0.00	0.00	56.0	0.01	1820.0	295.0	3290.0	0.0	0.0	0.0	0.0	0.58	5462	89.6	92.8	0.00	0.0	0.0
hgpa	05/02/82	79	0.0	0.00	0.00	90.5	0.06	2320.0	405.0	4270.0	0.0	0.0	0.0	0.0	0.73	7086	116.0	120.0	0.00	0.0	0.0
hgpa	08/02/82	80	0.0	0.00	0.00	95.5	0.06	2410.0	410.0	5240.0	0.0	0.0	0.0	0.0	0.84	8156	120.0	148.0	0.00	0.0	0.0
hgpa	26/02/82	81	0.0	0.00	0.00	115.0	0.06	2920.0	490.0	5290.0	0.0	0.0	0.0	0.0	0.86	8816	145.0	149.0	0.00	0.0	0.0
hgpa	22/03/82	83	0.0	0.00	0.00	0.0	0.07	2820.0	470.0	5020.0	0.0	0.0	0.0	0.0	0.84	0	0.0	0.0	0.00	0.0	0.0
hgpa	22/03/82	82	0.0	0.00	0.00	121.0	0.08	2660.0	431.0	5050.0	0.0	0.0	0.0	0.0	0.00	8262	133.0	142.0	0.00	0.0	0.0
hgpa	12/04/82	84	0.0	0.00	0.00	112.0	0.06	2840.0	495.0	5150.0	0.0	0.0	0.0	0.0	0.95	8598	142.0	145.0	0.00	0.0	0.0
hgpa	19/04/82	85	0.0	0.00	0.03	70.1	0.08	1590.0	269.0	3020.0	0.0	0.0	455.0	0.0	0.00	5791	79.5	85.2	0.00	0.0	0.0
hgpa	03/05/82	86	0.0	0.00	0.00	120.0	0.06	2970.0	495.0	5320.0	0.0	0.0	0.0	0.0	0.88	8906	148.0	150.0	0.00	0.0	0.0
hgpa	17/05/82	87	0.0	0.00	0.00	120.0	0.05	2990.0	500.0	5380.0	0.0	0.0	0.0	0.0	0.88	8991	149.0	152.0	0.00	0.0	0.0
hgpa	07/06/82	88	0.0	0.00	0.00	123.0	0.05	3120.0	525.0	5670.0	0.0	0.0	803.0	0.0	0.00	10241	155.0	160.0	0.00	0.0	0.0
hgpa	14/06/82	89	0.0	0.00	0.00	149.0	0.07	3200.0	513.0	5680.0	0.0	0.0	818.0	0.0	0.00	10360	160.0	160.0	0.00	0.0	0.0
hgpa	23/06/82	90	0.0	0.00	0.00	129.0	0.05	3210.0	520.0	5800.0	0.0	0.0	0.0	0.0	0.95	9660	160.0	164.0	0.00	0.0	0.0
hgpa	05/07/82	91	0.0	0.00	0.00	134.0	0.06	3150.0	525.0	5900.0	0.0	0.0	0.0	0.0	0.98	9710	157.0	166.0	0.00	0.0	0.0
hgpa	12/07/82	92	0.0	0.00	0.00	89.5	0.04	1880.0	306.0	3440.0	0.0	0.0	466.0	0.0	0.00	6570	94.1	97.0	0.00	0.0	0.0
hgpa	14/07/82	93	0.0	0.00	0.00	157.0	0.07	3300.0	536.0	6040.0	0.0	0.0	0.0	0.0	0.00	10033	165.0	170.0	0.00	0.0	0.0
hgpa	19/07/82	94	0.0	0.00	0.00	140.0	0.06	3240.0	535.0	6050.0	0.0	0.0	0.0	0.0	0.98	9966	162.0	171.0	0.00	0.0	0.0
hgpa	02/08/82	95	0.0	0.00	0.00	149.0	0.06	3260.0	565.0	6120.0	0.0	0.0	0.0	0.0	0.98	10095	164.0	173.0	0.00	0.0	0.0
hgpa	06/08/82	96	0.0	0.00	0.00	153.0	0.06	3400.0	560.0	6390.0	0.0	0.0	0.0	0.0	1.00	10504	170.0	180.0	0.00	0.0	0.0
hgpa	04/09/82	97	0.0	0.00	0.00	41.0	0.06	1250.0	143.0	2110.0	0.0	0.0	456.0	0.0	0.00	4409	60.1	59.5	0.00	0.0	0.0
hgpa	07/09/82	98	0.0	0.00	0.00	158.0	0.07	3420.0	565.0	6440.0	0.0	0.0	0.0	0.0	1.02	10584	171.0	182.0	0.00	0.0	0.0

Tab.2 / An.A (continued)
 Chemical analyses of HGPA liquid samples (mg/l)
 Note: 0.0 values = not determined

NAME	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D 018	D Deut	H3
			°C		meq/l											Cat.	An.				
																meq/l	meq/l	o oo	o oo	T.U.	
hgpa	14/09/82	99	0.0	0.00	0.00	165.0	0.07	3420.0	605.0	6400.0	0.0	0.0	0.0	0.0	1.02	10591	173.0	181.0	0.00	0.0	0.0
hgpa	04/10/82	100	0.0	0.00	0.00	176.0	0.08	3590.0	620.0	6550.0	0.0	0.0	0.0	0.0	1.02	10937	181.0	185.0	0.00	0.0	0.0
hgpa	11/10/82	101	0.0	0.00	0.00	181.0	0.08	3590.0	615.0	6650.0	0.0	0.0	0.0	0.0	1.02	11037	181.0	188.0	0.00	0.0	0.0
hgpa	12/10/82	102	0.0	0.00	0.00	182.0	0.08	3650.0	610.0	6660.0	0.0	0.0	0.0	0.0	1.03	11103	184.0	188.0	0.00	0.0	0.0
hgpa	01/11/82	78	0.0	0.00	0.00	205.0	0.09	3650.0	585.0	6730.0	0.0	0.0	0.0	0.0	1.04	11171	184.0	190.0	0.00	0.0	0.0
hgpa	08/11/82	103	0.0	0.00	0.00	205.0	0.10	3720.0	620.0	6880.0	0.0	0.0	0.0	0.0	1.06	11426	188.0	194.0	0.00	0.0	0.0
hgpa	16/11/82	104	0.0	0.00	0.00	217.0	0.10	3940.0	650.0	7030.0	0.0	0.0	829.0	0.0	0.00	12666	199.0	198.0	0.00	0.0	0.0
hgpa	15/02/83	105	0.0	0.00	0.00	242.0	0.12	4020.0	665.0	7470.0	0.0	0.0	0.0	0.0	1.08	12398	204.0	211.0	0.00	0.0	0.0
hgpa	23/03/83	106	0.0	0.00	0.00	247.0	0.12	3980.0	630.0	7480.0	0.0	0.0	0.0	0.0	1.08	12338	202.0	211.0	0.00	0.0	0.0
hgpa	18/04/83	107	0.0	0.00	0.00	156.0	0.10	2880.0	366.0	4390.0	0.0	0.0	467.0	0.0	0.00	8672	142.0	124.0	0.00	0.0	0.0
hgpa	04/05/83	108	0.0	0.00	0.00	270.0	0.15	4220.0	675.0	7970.0	0.0	0.0	805.0	0.0	0.00	13940	214.0	225.0	0.00	0.0	0.0
hgpa	24/05/83	109	0.0	0.00	0.00	268.0	0.16	4120.0	685.0	7990.0	0.0	0.0	0.0	0.0	1.12	13064	210.0	225.0	0.00	0.0	0.0
hgpa	09/06/83	110	0.0	0.00	0.00	269.0	0.14	4480.0	660.0	8000.0	0.0	0.0	0.0	0.0	1.13	13410	225.0	226.0	0.00	0.0	0.0
hgpa	05/07/83	111	0.0	0.00	0.00	275.0	0.16	4270.0	685.0	8280.0	0.0	0.0	0.0	0.0	1.11	13511	217.0	234.0	0.00	0.0	0.0
hgpa	28/07/83	112	0.0	0.00	0.00	309.0	0.14	4610.0	622.0	0.0	0.0	0.0	0.0	0.00	5541	232.0	0.0	0.00	0.0	0.0	
hgpa	31/07/83	113	0.0	0.00	0.00	0.0	0.16	4660.0	695.0	8320.0	0.0	0.0	0.0	0.0	1.11	13676	221.0	235.0	0.00	0.0	0.0
hgpa	05/08/83	114	0.0	0.00	0.00	280.0	0.16	4600.0	675.0	8220.0	0.0	0.0	0.0	0.0	1.08	13776	231.0	232.0	0.00	0.0	0.0
hgpa	12/08/83	115	0.0	0.00	0.00	306.0	0.15	5030.0	639.0	8090.0	0.0	0.0	0.0	0.0	0.00	14065	250.0	228.0	0.00	0.0	0.0
hgpa	20/09/83	116	0.0	0.00	0.00	321.0	0.18	5980.0	718.0	8560.0	0.0	0.0	0.0	0.0	0.00	15579	295.0	241.0	0.00	0.0	0.0
hgpa	31/10/83	117	0.0	0.00	0.00	320.0	0.18	4450.0	791.0	8930.0	0.0	0.0	0.0	0.0	1.22	14492	230.0	252.0	0.00	0.0	0.0
hgpa	05/12/83	118	0.0	0.00	0.00	319.0	0.21	4650.0	763.0	8830.0	24.0	0.0	825.0	0.0	0.00	15411	238.0	250.0	0.00	0.0	0.0
hgpa	06/01/84	119	0.0	0.00	0.00	377.0	0.22	4750.0	808.0	9060.0	0.0	0.0	0.0	0.0	1.26	14996	246.0	256.0	0.00	0.0	0.0
hgpa	12/01/84	121	25.0	6.60	0.31	358.0	0.26	4930.0	756.0	8970.0	24.0	18.9	0.0	24.6	1.10	15154	252.0	254.0	0.00	0.0	0.0
hgpa	14/05/84	122	0.0	0.00	0.00	414.0	0.31	4710.0	724.0	8840.0	0.0	0.0	0.0	0.0	1.20	14690	244.0	249.0	0.00	0.0	0.0
hgpa	26/06/84	123	0.0	0.00	0.00	489.0	0.25	4840.0	773.0	8900.0	15.0	0.0	885.0	0.0	0.00	15902	255.0	251.0	0.00	0.0	0.0
hgpa	28/11/84	124	0.0	0.00	0.00	399.0	0.20	5420.0	733.0	9510.0	4.5	0.0	913.0	0.0	0.00	16980	274.0	268.0	0.00	0.0	0.0
hgpa	21/02/85	125	0.0	0.00	0.00	430.0	0.40	5280.0	735.0	9560.0	0.0	0.0	0.0	0.0	0.00	16005	270.0	270.0	0.00	0.0	0.0

Tab.3 / An.A
 Chemical analyses of water samples with low chloride content
 Values in mg/l
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS	TDS	D O18	D Deut	H3
				°C		meq/l											meq/l	Cat.	An.	o/oo	o/oo	T.U.
KANOELEHUA_2	420306	31/12/78	10a	21.0	6.20	0.52	7.8	5.00	17.0	2.2	28.0	5.0	31.7	38.5	0.0	0.00	155	1.6	1.4	0.00	0.0	0.0
KANOELEHUA_3	420307	31/12/72	11	26.0	7.20	0.63	8.4	2.90	6.5	1.8	6.5	2.6	38.4	55.0	0.0	0.00	122	1.0	0.9	0.00	0.0	0.0
KANOELEHUA_3	420307	31/12/78	11a	23.0	7.20	0.63	7.6	4.60	15.0	2.1	24.5	2.6	38.4	36.4	0.0	0.00	131	1.5	1.4	0.00	0.0	0.0
KEAAU_1(9_3)	380201	31/12/73	14	24.5	7.40	0.48	5.6	1.80	6.0	2.0	3.4	6.2	29.3	37.7	0.0	0.00	92	0.7	0.7	0.00	0.0	0.0
KEAAU_2	380202	31/12/78	15a	19.2	7.40	0.60	4.8	2.50	6.8	1.8	3.6	10.0	36.6	33.5	0.0	0.00	100	0.8	0.9	0.00	0.0	0.0
KEAAU_MILL_1	380203	31/12/78	16a	19.4	7.80	0.48	4.8	2.50	6.3	1.8	2.5	10.0	29.3	27.8	0.0	0.00	95	0.8	0.8	0.00	0.0	0.0
KEAAU_MILL_2	380204	31/12/78	17	19.7	7.40	0.52	4.8	2.50	6.3	1.8	3.3	10.0	31.7	36.7	0.0	0.00	97	0.8	0.8	0.00	0.0	0.0
KEAAU_MILL_2	380204	31/12/72	17a	22.0	7.40	0.52	5.5	3.30	5.2	2.1	4.0	5.5	31.7	36.0	0.0	0.00	93	0.8	0.7	0.00	0.0	0.0
KEAAU_MILL_3	380205	31/12/78	18	19.7	7.40	0.50	6.1	3.20	7.1	2.1	3.9	10.0	30.5	33.5	0.0	0.00	96	0.9	0.8	0.00	0.0	0.0
KEAAU_MILL_3	380205	31/12/72	18a	22.0	7.40	0.50	5.5	3.30	5.2	2.1	4.0	5.5	30.5	36.0	0.0	0.00	92	0.8	0.7	0.00	0.0	0.0
HAWN_SHORES1	318501	31/12/74	2	21.5	7.70	0.68	3.9	3.80	13.0	3.2	14.0	5.1	41.5	51.9	0.0	0.00	137	1.1	1.2	0.00	0.0	0.0
HAWN_SHORES2	318502	31/12/74	3	0.0	7.60	0.74	3.9	4.50	19.0	3.5	28.0	7.0	45.2	49.0	0.0	0.00	162	1.5	1.7	0.00	0.0	0.0
NANALEHU_1	033501	31/12/75	26	19.0	7.80	0.55	6.4	4.60	11.0	1.5	10.0	13.0	33.6	43.0	0.0	0.00	123	1.2	1.1	0.00	0.0	0.0
OLAA_SHAFT+7	370201	12/12/12	30	0.0	0.00	0.00	4.8	3.50	8.7	1.8	7.3	8.4	32.9	21.0	0.0	0.00	89	1.0	0.9	0.00	0.0	0.0
OLAA_SHAFT+7	370201	31/12/74	30d	23.0	7.00	0.50	6.0	2.70	5.8	2.4	4.0	5.5	30.5	40.0	0.0	0.00	97	0.8	0.7	0.00	0.0	0.0
PAHALA+SHAFT	112801	31/12/73	32	19.0	7.20	0.53	6.6	3.60	7.2	1.0	3.5	10.0	32.3	42.0	0.0	0.00	107	1.0	0.8	0.00	0.0	0.0
PAHOA1*	298601	01/11/82	33	21.0	0.00	0.64	4.5	3.10	16.7	9.3	4.9	13.0	51.3	39.0	0.0	0.00	142	1.4	1.2	0.00	0.0	0.0
PAHOA2	298602	31/12/74	34	23.0	6.40	0.63	3.9	2.40	16.0	3.2	5.8	13.0	38.4	55.0	0.0	0.00	138	1.2	1.1	0.00	0.0	0.0
PAHOA2	298602	12/12/12	34a	0.0	0.00	0.00	3.3	3.30	16.5	3.4	6.0	12.5	51.3	52.0	0.0	0.00	149	1.2	1.3	0.00	0.0	0.0
PANAWEA_1	400301	31/12/78	36a	20.0	7.50	0.60	6.4	2.60	5.5	1.4	3.4	10.0	36.6	36.4	0.0	0.00	102	0.8	0.9	0.00	0.0	0.0
PAPAIKOU	470601	31/12/78	38b	20.0	7.30	1.00	9.5	5.00	6.9	1.4	2.1	10.0	61.0	34.2	0.0	0.00	131	1.2	1.3	0.00	0.0	0.0
PEPEEKEO_SUG	500501	31/12/72	39	21.0	7.20	0.98	12.0	10.00	7.8	0.6	12.0	17.0	59.8	45.0	0.0	0.00	165	1.8	1.7	0.00	0.0	0.0
PIIHONUA	430601	31/12/78	40a	17.8	8.00	0.61	5.0	3.40	8.4	2.2	1.4	10.0	37.2	40.6	0.0	0.00	108	1.0	0.9	0.00	0.0	0.0
WAIAKEA_TH_2	420302	31/12/78	46a	28.0	7.00	0.66	6.6	3.30	9.2	1.6	10.4	2.5	40.3	36.5	0.0	0.00	110	1.0	1.0	0.00	0.0	0.0
WAIAKEA_TH_3	420303	31/12/72	47	23.5	7.10	0.58	6.0	3.60	7.4	1.8	7.5	2.0	35.4	36.0	0.0	0.00	100	1.0	0.8	0.00	0.0	0.0

Tab.4 / An.A
 Chemical analyses of water samples with high chloride cont.
 Sub-group (A). Values in mg/l
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS Cat.	TDS An.	D O18	D Deut	H3
				°C		meq/l											meq/l	meq/l	o/oo	o/oo	T.U.	
HONUPO_1	053302	31/12/72	5	19.0	7.10	0.55	20.0	44.00	320.0	14.0	580.0	86.0	33.6	43.0	0.0	0.00	1141	18.9	18.7	0.00	0.0	0.0
HONUPO_2	063201	31/12/72	6	19.0	7.30	0.58	17.0	33.00	245.0	11.0	440.0	66.0	35.4	41.0	0.0	0.00	889	14.5	14.4	0.00	0.0	0.0
HONUPO_3	053303	31/12/72	7	19.0	7.00	0.55	18.0	38.00	272.0	12.0	500.0	75.0	33.6	43.0	0.0	0.00	992	16.2	16.2	0.00	0.0	0.0
KAPOHO_CS	308001	12/12/12	12	25.0	7.70	9.00	80.0	51.00	73.0	10.5	84.0	6.8	546.7	41.0	0.0	0.00	893	11.6	11.5	0.00	0.0	0.0
KAPOHO_CS	308001	31/12/74	12a	25.0	6.50	4.39	60.0	31.00	80.0	7.0	170.0	19.0	267.9	58.0	0.0	0.00	693	9.2	9.6	0.00	0.0	0.0
KAPOHO_LSW	308101	06/01/75	13c	36.8	7.42	0.79	23.0	28.00	238.0	13.6	303.0	204.0	48.2	71.3	0.0	0.00	929	14.2	13.6	-5.29	0.0	0.0
KAPOHO_LSW	308101	22/07/75	13d	33.5	7.75	0.72	12.5	27.20	223.0	16.8	316.0	211.0	43.9	0.0	0.0	0.00	850	13.0	14.0	0.00	0.0	0.0
KAPOHO_LSW*	308101	11/11/11	13	35.6	7.10	0.75	16.5	24.10	231.0	15.2	450.0	62.7	45.8	62.7	0.0	0.00	908	13.2	14.7	0.00	0.0	0.0
KEAAU_ORCH_1	390001	31/12/74	19	18.5	7.10	0.47	7.8	7.70	38.0	3.8	64.0	14.0	28.7	39.0	0.0	0.00	203	2.8	2.6	0.00	0.0	0.0
KEAAU_ORCH_1	390001	31/12/78	19a	18.5	7.10	0.47	8.1	7.80	41.0	3.5	66.6	10.0	28.7	38.5	0.0	0.00	224	2.9	2.6	0.00	0.0	0.0
KEAAU_ORCH_2	390002	31/12/74	20a	19.5	6.80	0.58	8.9	13.60	90.0	5.6	156.0	25.0	35.4	33.0	0.0	0.00	368	5.6	5.5	0.00	0.0	0.0
KEAAU_ORCH_2	390002	31/12/78	20	19.5	6.80	0.58	8.8	9.70	54.0	4.0	88.4	10.0	35.4	30.5	0.0	0.00	299	3.7	3.3	0.00	0.0	0.0
KEAUOHANA1	248701	21/07/75	21d	20.8	7.05	0.60	5.9	5.60	78.8	5.0	120.0	28.6	36.6	0.0	0.0	0.00	281	4.3	4.6	-6.33	0.0	18.0
KEAUOHANA1	248701	06/01/75	21c	28.5	7.68	0.62	5.3	6.60	89.6	5.2	132.0	37.2	37.8	44.5	0.0	0.00	358	4.8	5.1	-5.42	0.0	16.7
KEAUOHANA_1	248701	31/12/74	21a	24.0	7.30	0.55	6.6	3.30	54.0	3.8	70.0	22.0	33.6	41.0	0.0	0.00	235	3.0	3.0	0.00	0.0	0.0
KEAUOHANA_1*	248701	01/11/82	21	24.0	0.00	0.67	12.4	3.80	64.0	5.0	106.0	22.0	42.1	41.0	0.0	0.00	296	3.8	4.1	0.00	0.0	0.0
NINOLE_A	083102	30/12/74	27	18.0	7.30	0.55	13.0	18.00	100.0	5.9	180.0	29.0	33.6	43.0	0.0	0.00	423	6.6	6.2	0.00	0.0	0.0
NINOLE_B	083103	31/12/74	28	21.0	6.90	0.68	13.2	18.00	89.0	5.2	166.0	28.0	41.5	48.0	0.0	0.00	409	6.1	6.0	0.00	0.0	0.0
NINOLE_GU_TH	083101	31/12/72	29	18.0	7.30	0.56	9.2	12.00	80.0	4.4	130.0	24.0	34.2	41.0	0.0	0.00	335	5.0	4.7	0.00	0.0	0.0
PULAMA	210201	31/12/63	41	25.8	7.50	0.71	15.9	31.20	170.0	8.5	345.0	65.1	43.3	72.4	0.0	0.00	752	11.0	11.8	0.00	0.0	0.0
PUNALUU	083001	31/12/72	42	19.0	7.10	0.45	9.6	16.00	118.0	5.5	205.0	37.0	27.5	32.0	0.0	0.00	451	7.1	7.0	0.00	0.0	0.0
WAIKEA_4	420304	31/12/78	45a	21.0	7.20	0.61	7.8	5.90	25.0	2.4	39.8	2.6	37.2	37.6	0.0	0.00	159	2.0	1.8	0.00	0.0	0.0

Tab.5 / An.A
 Chemical analyses of water samples with high chloride cont.
 Sub-group (B). Values in mg/l
 Note: 0.0 values = not determined

NAME	USGS N.	DATE	CODE	TFD.	pHFD.	AlkFD.	Ca	Mg	Na	K	Cl	SO4	HCO3	SiO2	H3BO3	Li	TDS	TDS Cat.	TDS An.	D 018	D Deut	H3
				°C		meq/l												meq/l	meq/l	o/oo	o/oo	T.U.
ALLISON	288101	01/07/82	1	38.0	0.00	2.16	84.0	102.00	1190.0	68.0	2040.0	69.0	131.8	24.0	0.0	0.00	3709	66.1	61.1	0.00	0.0	0.0
GTW3	298201	21/07/75	G3h	74.0	1.40	0.33	71.0	62.50	1740.0	158.0	2980.0	317.0	0.0	0.0	0.0	0.00	5330	88.4	90.7	0.00	0.0	0.0
GTW3	298201	07/01/75	G3g	93.0	6.85	0.50	76.8	52.00	2050.0	190.0	3270.0	314.0	30.5	96.6	0.0	0.00	6080	102.0	99.3	-4.66	0.0	10.3
GTW3	298201	31/12/75	G3e	93.0	6.80	0.00	81.0	59.00	2000.0	195.0	3410.0	335.0	0.0	96.6	0.0	0.00	6177	101.0	103.0	0.00	0.0	0.0
GTW3	298201	11/11/11	G3f	89.0	6.40	0.49	78.9	55.50	2030.0	193.0	3680.0	325.0	29.9	156.0	0.0	0.00	6548	102.0	111.0	0.00	0.0	0.0
GTW3	298201	01/11/82	G3	93.0	0.00	0.00	283.0	137.00	2760.0	300.0	5260.0	335.0	29.9	97.0	0.0	0.00	10075	153.0	156.0	0.00	0.0	0.0
HGPA	288301	12/01/84	HG*	358.0	6.60	0.31	358.0	0.26	4930.0	756.0	8970.0	24.0	18.9	836.0	24.6	1.10	15154	252.0	254.0	0.00	0.0	0.0
HONUPO_MILL	053301	31/12/74	8	19.0	7.00	0.61	33.0	86.00	680.0	24.0	1240.0	169.0	37.2	43.0	0.0	0.00	2312	38.9	39.1	0.00	0.0	0.0
ISAAC_HALE_S	210202	07/01/75	23	36.0	7.75	0.92	32.4	200.00	2020.0	86.0	3530.0	507.0	55.5	81.5	0.0	0.00	6512	108.0	111.0	0.00	0.0	8.5
KS_1A	288302	31/10/85	KS1A*	346.0	0.00	0.00	920.0	2.00	10000.0	2700	21000.0	12.0	732.2	200.0	62.9	8.70	35748	550.0	605.0	0.00	0.0	0.0
LANIPUNA6	288305	08/08/84	L6*	168.0	0.00	0.00	1480.0	14.00	8230.0	408.0	15400.0	430.0	2349.2	133.0	19.4	0.00	28464	443.0	482.0	0.00	0.0	0.0
LANIPUNA6	288305	03/08/84	L6a*	168.0	0.00	0.00	1390.0	14.00	7750.0	397.0	14400.0	430.0	2989.8	137.0	20.0	0.00	27528	418.0	464.0	0.00	0.0	0.0
LANIPUNA6	288305	09/08/84	L6b*	168.0	0.00	0.00	1520.0	15.00	8380.0	420.0	15600.0	403.0	2044.1	135.0	19.4	0.00	28536	452.0	482.0	0.00	0.0	0.0
MALAMA_KI	278301	07/01/75	25c	52.2	7.02	2.40	66.8	210.00	2100.0	109.0	3810.0	471.0	146.4	101.0	0.0	0.00	7014	115.0	120.0	-4.57	0.0	15.6
MALAMA_KI	278301	22/07/75	25d	0.0	7.45	2.10	117.0	293.00	2890.0	149.0	5120.0	598.0	128.1	0.0	0.0	0.00	9297	159.0	159.0	-5.08	0.0	8.6
MALAMA_KI	278301	01/07/83	25	55.0	3.47	4.29	293.0	295.00	3330.0	218.0	5380.0	681.0	0.0	59.0	0.0	0.00	10256	189.0	166.0	0.00	0.0	0.0
SEAWATER	/	/	SW	0.0	0.00	0.25	450.0	1290.00	9600.0	398.0	19500.0	2200.0	0.0	4.0	0.0	0.00	33442	556.0	596.0	0.00	0.0	0.0
WAIAKEA	430402	31/12/72	44	19.5	7.20	1.39	340.0	800.00	7200.0	240.0	12500.0	1630.0	84.8	33.0	0.0	0.00	22829	402.0	388.0	0.00	0.0	0.0