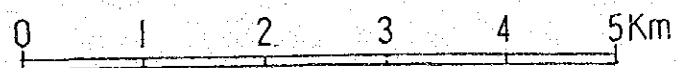
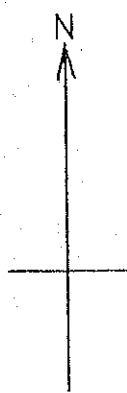
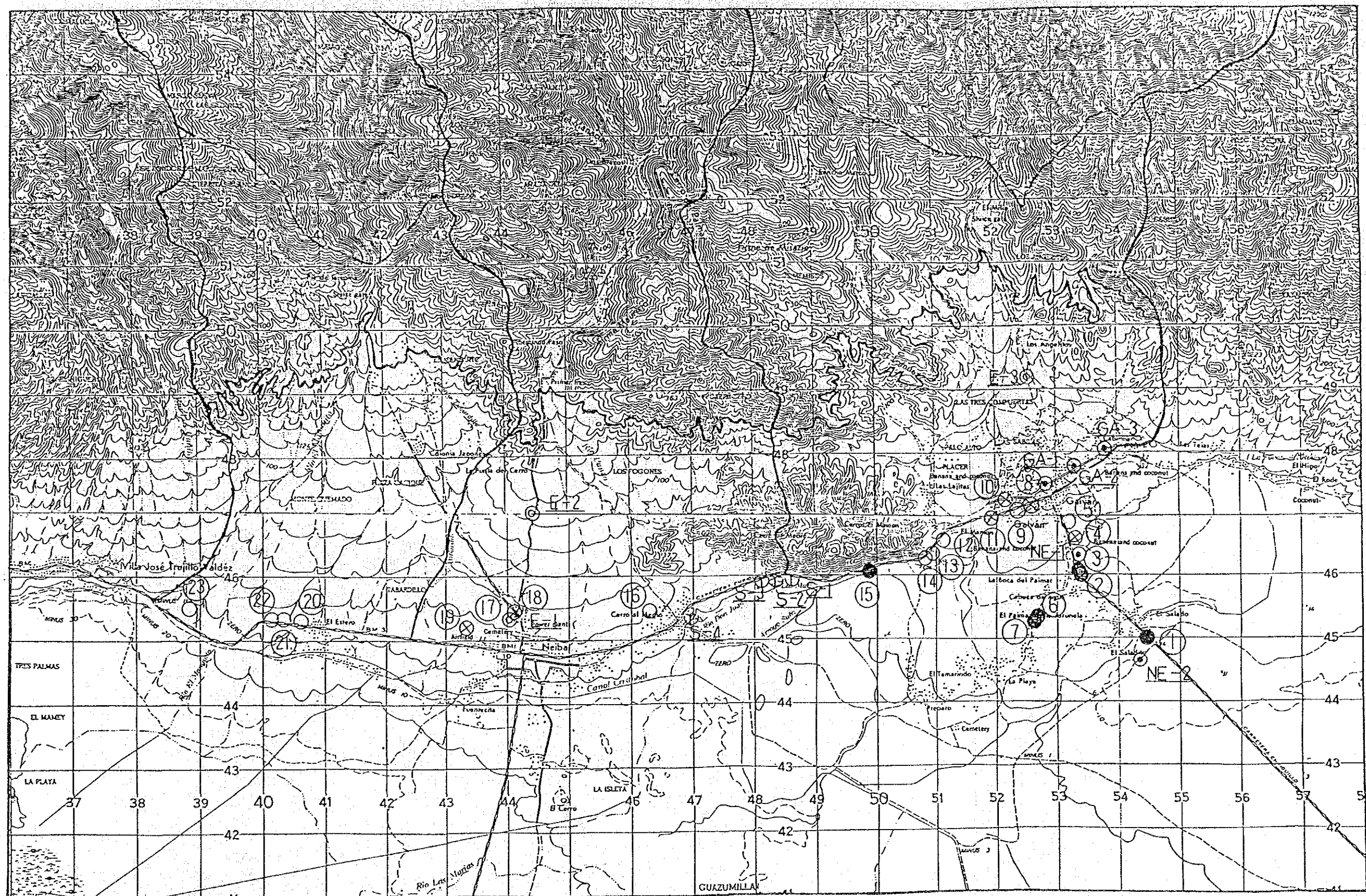


A N N E X

AN.1 LOCATION OF EXISTING WELLS



Legend

- | | | |
|------------------------|-------------|--------------|
| ● (1) Artesian flowing | ⊙ E-1 | ⊙ S-1 Spring |
| ○ Pumping | ⊙ By INDRHI | |
| ⊗ Not use (Only hole) | | |

AN.2 EXISTING WELLS IN GALVAN-NEIBA AREA, 1987

No.	Area	Well No.	Location		Possessor & Establishment		Eleva. (m)	Depth (m)		Quan. (l/s)	Pipe (inch)	Use	T (cm ² /s)	S	K (cm/s)	Remarks
			Coord.	Place				Well	W.L.							
1	GALVAN AREA	NE-544401	025450/204495	El Salado	CIRESS	1984	—	45.73	— (Arte.)	0.3+ (0.8)	12	D				
2		NE-534604	025335/204601	Galvan	INDRHI	—	8.58	—	— (Arte.)	— (5.6)	12 (PVC)	—	—			not use
3		NE-534603	025330/204603	"	"	—	11.63	—	— (Arte.)	2.1+ (8.3)	8 (PVC)	I	(966.4)	(2.0×10 ⁻⁴)		
4		NE-534602	025325/204655	"	"	—	15.59	39.63	— (3.77)	— (63.1)	12	—	(545.4)	(3.0×10 ⁻⁴)	(1.52×10 ⁻¹)	not use
5		NE-534601	025315/204680	"	"	1977	21.54	51.80	12.04 (9.93)	106.2 (55.0)	12	I, D	(594.9)		(1.42×10 ⁻¹)	
6		NE-524501	025265/204540	El Tamarindo	"	1974	3.72	51.80	— (Arte.)	— (2.8)	10	I, D				
7		NE-524502	025260/204525	"	"	1977	3.54	—	— (Arte.)	— (2.8)	12	I, D				
8		GA-524703	025255/204710	Galvan	"	—	—	—	24.74 (—)	— (—)	12	—				not use
9		GA-524701	—	"	"	—	38.54	—	18.44 (24.81)	59.3 (21.4)	12	I	1783		3.9×10 ⁻¹	
10		GA-524702	025215/204725	"	"	1984	34.17	68.60	22.94 (25.91)	— (101.1)	12	—	1482 (579.9)		3.24×10 ⁻¹ (1.36×10 ⁻¹)	not use
11		NE-514602	025195/204695	"	"	1977	30.06	—	18.41 (—)	— (61.1)	12	—	(293.6)			not use
12		NE-514601	025110/204655	El Mamon	"	1977	14.24	39.60	5.59 (6.04)	63.4 (29.4)	12	I	(442.3)	(4.5×10 ⁻³)	(1.32×10 ⁻¹)	
13		NE-504602	025095/204630	"	(Private)	—	7.89	—	— (1.50)	62.1 (—)	10	I, D				
14		NE-504601	025080/204625	"	(")	—	7.23	—	— (1.39)	— (—)	10	I, D				
15	NEIBA AREA	NE-494601	024985/204605	Cerro al Medio	(")	1978	4.15	— (Arte.)	— (—)	10	I, D					
16		NE-464501	024630/204545	"	INDRHI	—	—	—	— (12.15)	76.4 (—)	12	I, D				
17		NE-444501	024405/204530	Neiba	"	1972	22.90	77.13	— (31.15)	— (38.9)	8	I, D	(158.3)		(3.40×10 ⁻²)	
18		NE-444502	024410/204545	"	INAPA	1981	28.49	65.00	37.75 (36.00)	— (41.7)	12	—	501 (336.3)	(1.7×10 ⁻⁴)	1.81×10 ⁻¹ (1.16×10 ⁻¹)	not use
19		NE-434501	024335/204515	"	(Private)	1978	9.70	62.00	15.57 (13.34)	— (—)	12	—				not use
20		NE-404501	024060/204530	El Estero	INDRHI	1977	6.39	67.07	— (27.44)	74.0 (94.4)	8	I, D				
21		NE-404502	024030/204535	"	"	1974	8.09	76.20	25.78 (21.14)	— (69.4)	8	I, D	(179.8)		(3.30×10 ⁻²)	
22		NE-404503	024015/204535	"	"	1974	9.29	76.20	33.57 (22.65)	47.3 (27.8)	6	I, D	(495.0)	(7.1×10 ⁻⁴)	(9.20×10 ⁻²)	
23		NE-384501	023885/204555	Guayacanal	"	1978	-1.95	—	— (24.89)	80.0 (55.6)	8	I, D				

- Note
- (1) W.L.
 - Dynamic water level
 - () : Data of INDRHI
 - Arte : Artesian flowing
 - (2) Quan.
 - () : Data of INDRHI
 - (3) Use
 - D : Domestic
 - I : Irrigation
 - (4) T : Coefficient of Transmissibility
 S : Coefficient of Storage
 K : Coefficient of Permiability
 • () : Data of INDRHI

AN3-1 ELECTRICAL PROSPECTING SHEET

PROJECT: NEIBA VALLEY SALINE SOIL RECLAIMING PROJECT

PLACE: Neiba near the well (No 17)

POINT NO: E - 1

ELEVATION: 23 m

DATE: 30/9/'87

NOTE: _____

AB/2 (m)	MN/2 (m)	K (m)	R (Ω)	ρ_a (Ω·m)		AB/2 (m)	MN/2 (m)	K (m)	R (Ω)	ρ_a (Ω·m)	
1.5	0.5	6.28	36.3	227.96		40	5	494.6	0.360	178.06	
1.75	0.5	8.83	28.0	247.24		50	5	777.2	0.214	166.32	
2	0.5	11.78	21.5	253.27		60	5	1123	0.130	146.00	
2.5	0.5	18.84	15.37	289.57		50	15	238.1	0.691	164.53	
3	0.5	27.49	10.45	287.27		60	15	353.3	0.416	146.97	
4	0.5	49.46	6.80	336.33		75	15	565.2	0.211	119.26	
5	0.5	77.72	4.71	366.06		100	15	1023	0.081	82.97	
6	0.5	112.3	3.13	351.50		125	15	1612	0.044	70.93	
5	1.5	23.81	11.73	279.29		150	15	2332	0.031	72.53	
6	1.5	35.33	7.61	268.86		175	15	3182	0.009	27.43	
7.5	1.5	56.52	4.17	235.69		150	50	628.4	0.106	66.48	
10	1.5	102.3	2.21	226.08		175	50	883.1	0.066	57.84	
12.5	1.5	161.2	1.433	231.00		200	50	1178	0.065	76.00	
15	1.5	233.2	1.024	240.84		250	50	1884			
17.5	1.5	318.2	0.899	286.06		300	50	2749			
15	5	62.84	3.43	215.54		400	50	4946			
17.5	5	88.31	2.55	225.19		500	50	7772			
20	5	117.8	1.737	206.62		600	50	11230			
25	5	188.4	1.176	221.56		750	50	17580			
30	5	274.9	0.802	220.47		1000	50	31320			

$$K = \frac{\pi}{4} \cdot \frac{(\overline{AB})^2 - (\overline{MN})^2}{\overline{MN}}$$

AN3-2 ELECTRICAL PROSPECTING SHEET

PROJECT: NEIBA VALLEY SALINE SOIL RECLAIMING PROJECT

PLACE: Neiba along Panzo road

POINT NO: E-2 ELEVATION: 105 m DATE: 21/10/87

NOTE: _____

AB/2 (m)	MN/2 (m)	K (m)	R (Ω)	ρ_a (Ω·m)		AB/2 (m)	MN/2 (m)	K (m)	R (Ω)	ρ_a (Ω·m)	
1.5	0.5	6.28	98	615.44		40	5	494.6	0.40	197.84	
1.75	0.5	8.83	61	538.63		50	5	777.2	0.21	163.21	
2	0.5	11.78	42	494.76		60	5	1123	0.14	157.22	
2.5	0.5	18.84	27	508.68		50	15	238.1	0.70	166.67	
3	0.5	27.49	22.9	629.52		60	15	353.3	0.45	158.99	
4	0.5	49.46	13.1	647.93		75	15	565.2	0.253	143.0	
5	0.5	77.72	16.1	1251.3		100	15	1023	0.143	146.29	
6	0.5	112.3	6.0	673.8		125	15	1612	0.101	162.81	
5	1.5	23.81	23.9	569.06		150	15	2332	0.05	116.6	
6	1.5	35.33	15.9	561.74		175	15	3182	0.041	130.46	
7.5	1.5	56.52	8.9	503.03		150	50	628.4	0.185	116.25	
10	1.5	102.3	10.8	1104.8		175	50	883.1	0.100	88.31	
12.5	1.5	161.2	11.3	1821.9		200	50	1178	0.080	94.24	
15	1.5	233.2	3.6	839.52		250	50	1884	0.031	58.40	
17.5	1.5	318.2	3.3	1050.1		300	50	2749			
15	5	62.84	6.8	427.31		400	50	4946			
17.5	5	88.31	8.2	724.14		500	50	7772			
20	5	117.8	2.9	341.62		600	50	11230			
25	5	188.4	3.3	621.72		750	50	17580			
30	5	274.9	0.85	233.67		1000	50	31320			

$$K = \frac{\pi}{4} \cdot \frac{(\overline{AB})^2 - (\overline{MN})^2}{\overline{MN}}$$

AN.3-3 ELECTRICAL PROSPECTING SHEET

PROJECT: NEIBA VALLEY SALINE SOIL RECLAIMING PROJECT

PLACE: Galvan along Majagual road

POINT NO: E-3

ELEVATION: 120 m

DATE: 22/10/'87

NOTE: _____

AB/2 (m)	MN/2 (m)	K (m)	R (Ω)	ρ _a (Ω·m)		AB/2 (m)	MN/2 (m)	K (m)	R (Ω)	ρ _a (Ω·m)	
1.5	0.5	6.28	27.4	172.07		40	5	494.6	0.177	87.54	
1.75	0.5	8.83	22.3	196.91		50	5	777.2	0.102	79.27	
2	0.5	11.78	16.8	197.90		60	5	1123	0.063	70.75	
2.5	0.5	18.84	10.8	203.47		50	15	238.1	0.32	76.19	
3	0.5	27.49	7.7	211.67		60	15	353.3	0.199	70.31	
4	0.5	49.46	4.6	229.82		75	15	565.2	0.116	65.56	
5	0.5	77.72	3.4	264.25		100	15	1023	0.073	74.68	
6	0.5	112.3	2.8	314.44		125	15	1612	0.035	56.42	
5	1.5	23.81	9.7	230.96		150	15	2332	0.022	51.30	
6	1.5	35.33	7.0	247.31		175	15	3182	0.013	41.37	
7.5	1.5	56.52	4.3	243.04		150	50	628.4	0.070	43.99	
10	1.5	102.3	1.96	200.51		175	50	883.1	0.039	34.44	
12.5	1.5	161.2	1.10	177.32		200	50	1178	0.033	38.87	
15	1.5	233.2	0.63	146.92		250	50	1884			
17.5	1.5	318.2	0.40	127.28		300	50	2749			
15	5	62.84	1.93	121.28		400	50	4946			
17.5	5	88.31	1.19	105.09		500	50	7772			
20	5	117.8	0.80	94.24		600	50	11230			
25	5	188.4	0.46	86.66		750	50	17580			
30	5	274.9	0.31	85.22		1000	50	31320			

$$K = \frac{\pi}{4} \cdot \frac{(\overline{AB})^2 - (\overline{MN})^2}{\overline{MN}}$$

ANGLE'S CURVE (VE) No. 5 (DAS 247012)

Chow's method

$f(x) = \frac{S}{\Delta S} = \frac{0.1}{0.004} = 25$

$\lambda = \frac{1}{f(x)} = \frac{1}{25} = 0.04$

$Q_{max} = 0.786 \times 8.10 \times 10^2$

$\lambda = \frac{1.47 - 5}{0.1788 \text{ (sec)}} = 1783$

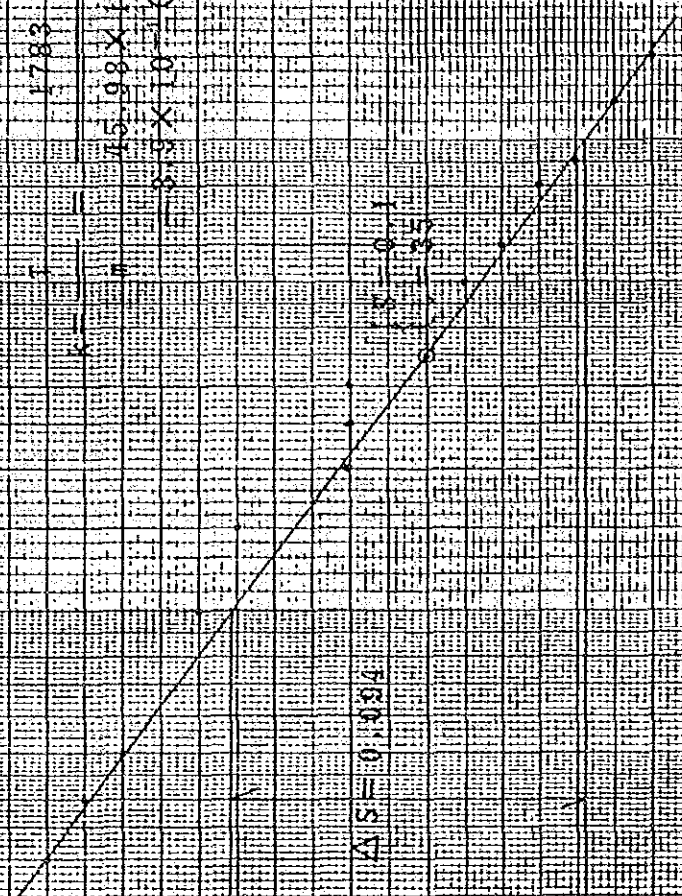
$\lambda = \frac{15.98 \times 10^2}{5.9 \times 10} = 271$

$\lambda = \frac{1783}{271} = 6.58$

SCHE

$\Delta S = 0.004$

$\lambda = 25$



ANG 2 S - FEM CURVE (Well No. 10 (GAS 24702))

The loss method

$$Q = V(A) =$$

$$1. \text{ m}^2 \cdot \text{s}$$

$$= 0.796 \times 10^{-4} \times 0.6$$

$$= 0.0385$$

$$= 0.1483 (\text{m}^2/\text{sec}) = 1.483 (\text{cm}^2/\text{sec})$$

Approx

S

$$= 4 \times 10^{-4} \times 0.1483 \times 10^{-2}$$

$$= 0.0593 = 5.93 \times 10^{-3}$$

$$= 483$$

$$K = 45.77 \times 10^3$$

$$= 3.24 \times 10^{-3} (\text{cm}^2/\text{sec})$$

$$V(H) = 0.6$$

$$V = 0.6$$

$$S = 0.0385$$

$$C_p \cdot V = 300 (\text{m}^2/\text{min})$$

$$= 3 (\text{m}^2/\text{sec})$$

S(m)

0-0

100

1000

10000

100000

1000000

10000000

100000000

1000000000

10000000000

100000000000

1000000000000

10000000000000

100000000000000

1000000000000000

10000000000000000

100000000000000000

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AN655S-1P2/1 CURVE (Vp1) NO.18 (R1445502)

THICKNESS (mm)

ρ (kg)

ρ (kg)

$0.0736 \times 10^{-6} \times 1$

0.050 (mm/sec) $\times 50$ (mm/sec)

ρ (kg) = 1.0

ρ (kg) = 0.29

$S = 0.1$

$\rho \times V = 970$ (m³/min)

$\rho \times V = 7.83$ (m³/sec)

S(m)

1

500

27.845×10^3

1.81×10^{-1} (cm/sec)

0.05

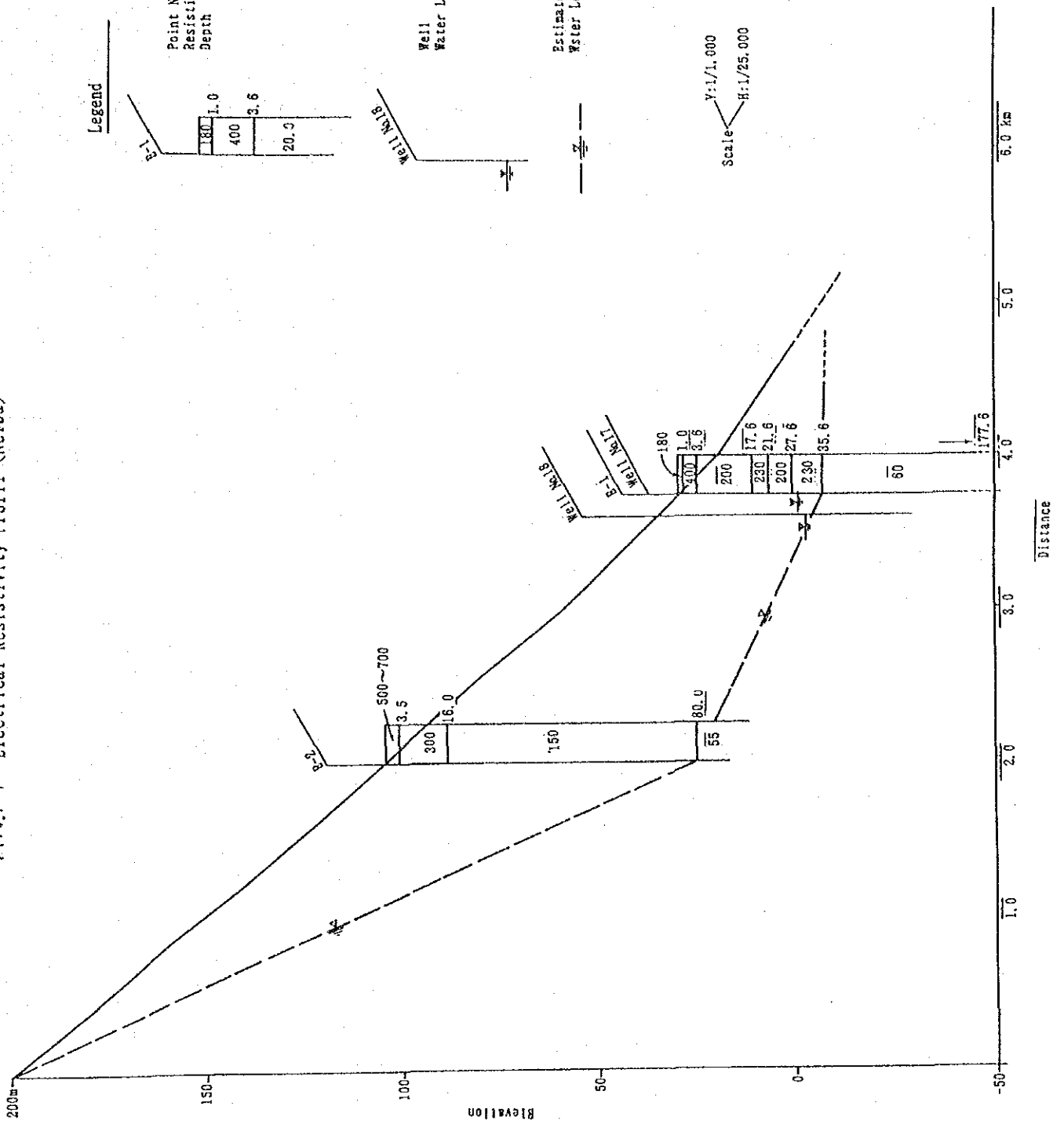
100

1000

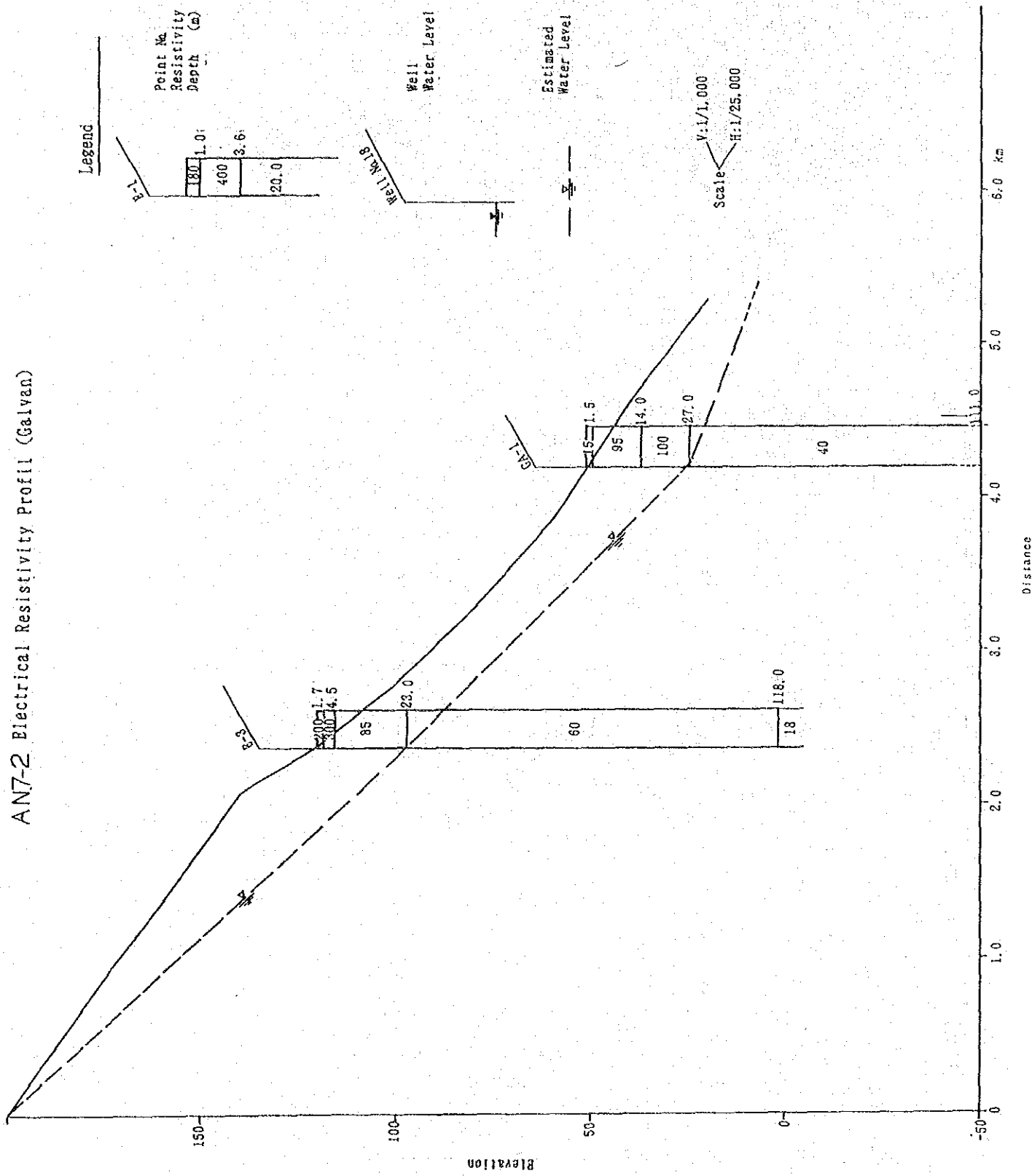
10000

$\rho \times V$ (m³/min)

AN.7-1 Electrical Resistivity Profil (Neiba)



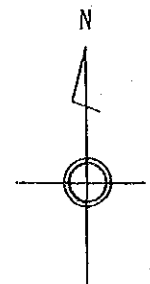
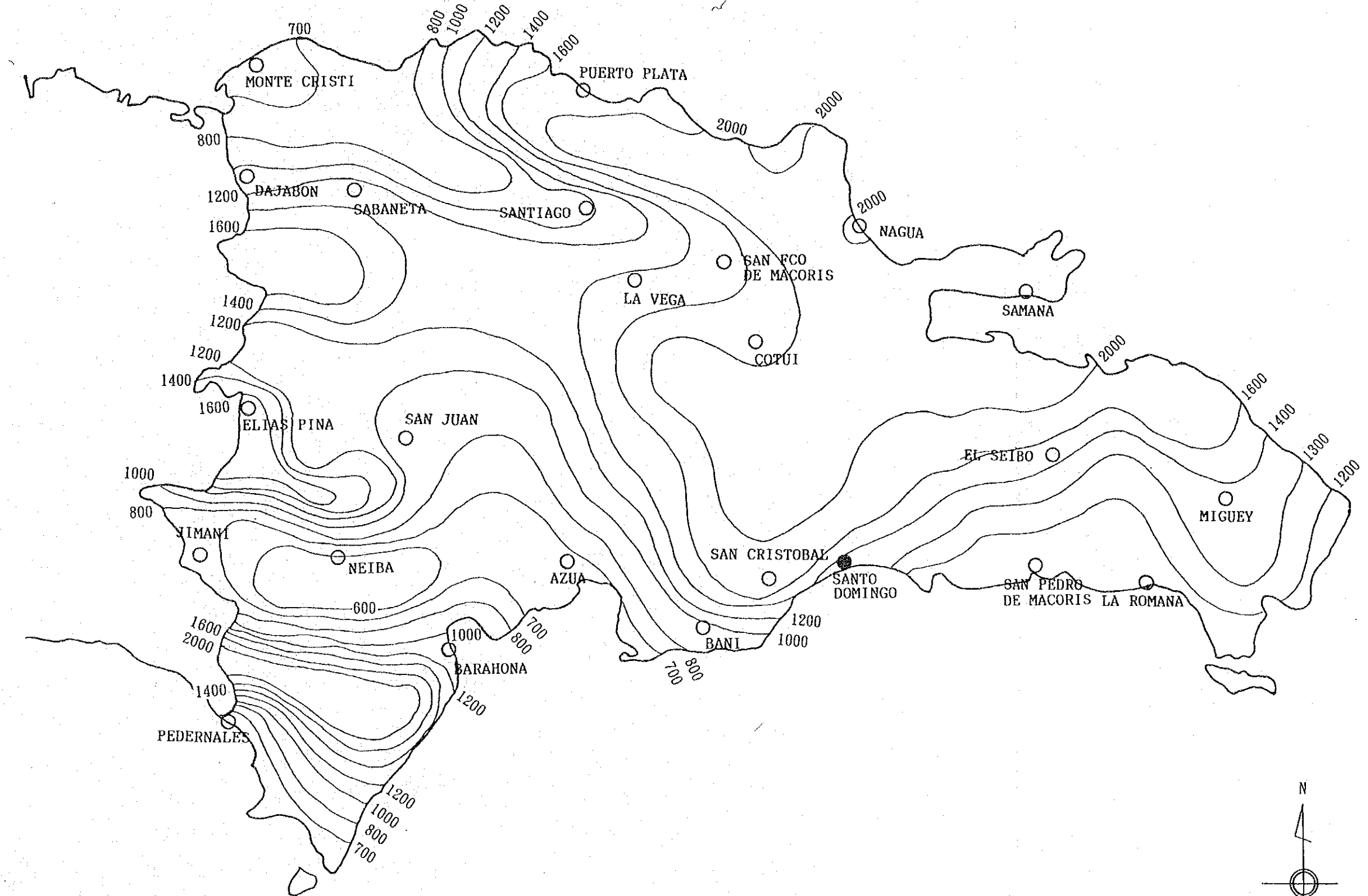
AN7-2 Electrical Resistivity Profil (Galvan)



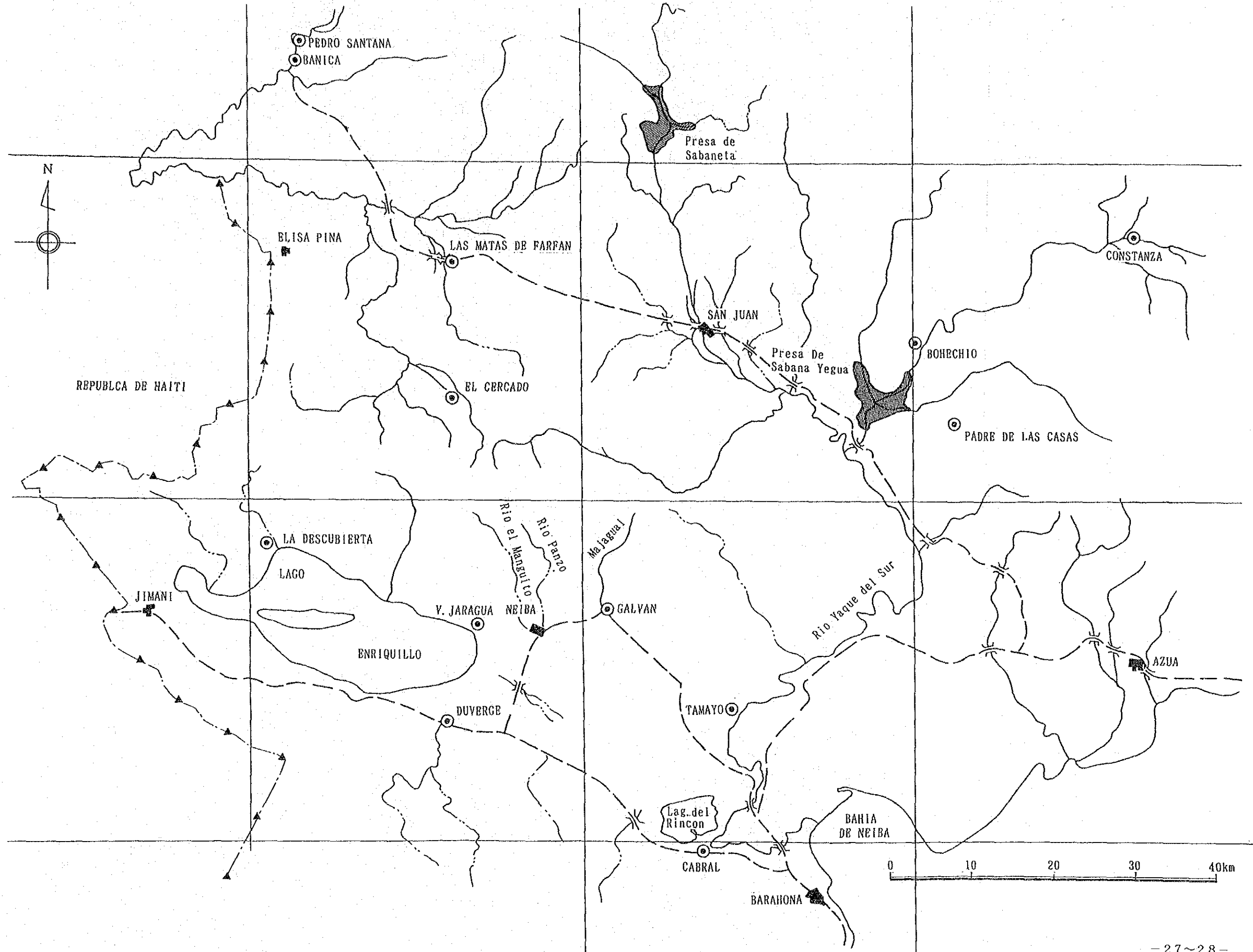
AN.8 Plan of Dams

		Majagual Dam	Manguito Dam
Runoff Discharge(year)		$29,300 \times 10^3 \text{ m}^3$	$29,000 \times 10^3 \text{ m}^3$
Total Reservoir Capacity		$3,150 \times 10^3 \text{ m}^3$	$2,340 \times 10^3 \text{ m}^3$
Dam	Type	Rockfill Dam	Concrete Gravity Dam
	Height	50m	65m
	Crest Length	244m	160m
	Volume	$728 \times 10^3 \text{ m}^3$	$230 \times 10^3 \text{ m}^3$

REPUBLICA DOMINICANA
AN.9 LLUVIA MEDIA ANUAL EN (MMS)
1931-1980
SECRETARIA DE ESTADO DE AGRICULTURA



ANIO MAPA DE OBRAS HIDRAULICAS-CANALES Y PRESAS



AN117 MONTHLY RAINFALL

STATION: LOS GUINEOS

MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	REMARKS
1978	-	28.7	125.8	202.5	261.6	248.4	118.4	186.9	235.8	168.4	99.5	13.1	1669.1	
1979	9.6	71.0	140.2	82.8	308.9	338.9	298.1	201.6	347.7	218.5	107.7	5.4	2130.4	
1980	17.9	15.7	22.6	108.3	313.8	170.1	60.5	411.4	169.6	103.4	18.8	22.8	1434.9	
1981	48.8	74.8	92.4	54.9	491.1	-	322.5	277.4	35.7	175.0	74.2	-	1646.8	
1982	169.0	84.0	31.4	-	157.3	-	209.3	88.3	111.6	-	-	-	850.9	
1983	-	0.7	88.0	148.6	257.4	125.6	65.1	251.6	166.3	137.0	56.1	35.8	1331.8	
1984	76.8	120.3	51.7	134.7	340.0	304.6	283.4	74.4	252.8	194.2	1.6	37.1	1871.6	
1985	-	69.8	100.7	110.8	162.5	36.0	114.0	175.0	71.8	168.2	69.6	11.6	1090.1	
1986	97.8	1.0	55.8	681.3	145.8	173.9	63.2	194.1	174.9	135.1	97.4	16.3	1836.6	
1987	26.6	19.3	58.2	84.8	277.9	184.0	47.3	71.8	-	-	-	-	769.9	
AVERAGE	63.8	48.5	76.7	178.7	271.6	197.7	158.2	193.3	174.0	162.5	65.6	20.3	1610.9	SUMMATION OF AVERAGE VALUES

AN11-2 MONTHLY RAINFALL

STATION: NEIBA

MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	REMARKS
1968	3.2	13.9	8.8	6.7	33.7	35.5	44.4	21.4	45.0	21.9	13.5	39.4	287.4	
1969	2.3	2.6	1.9	29.6	98.6	106.6	16.5	53.8	53.6	57.7	42.4	39.8	500.4	
1970	23.8	52.2	7.8	18.1	73.3	32.5	53.9	108.0	48.8	174.2	54.0	5.0	657.6	
1971	10.0	9.9	70.3	28.7	60.0	20.5	22.9	104.6	54.6	51.1	3.1	—	435.0	
1972	0.5	—	97.8	160.6	112.4	118.6	6.1	40.4	50.7	31.8	4.9	18.1	641.0	
1973	14.5	7.7	8.9	32.6	9.2	15.7	31.2	28.7	201.2	79.8	3.7	2.8	436.0	
1974	2.0	59.6	16.2	85.1	82.8	27.6	41.2	53.9	108.3	67.6	26.8	4.9	576.0	
1975	1.1	2.5	10.9	36.4	103.9	16.8	2.9	27.7	74.8	52.8	72.9	40.8	443.5	
1976	18.1	5.3	34.1	41.5	15.4	81.8	1.2	64.5	198.0	107.4	20.3	25.6	613.0	
1977	3.2	4.0	—	49.5	241.0	31.9	8.1	133.0	110.5	47.8	109.4	17.5	755.9	
1978	32.1	131.2	110.3	47.1	27.7	146.2	0.5	54.3	11.7	153.2	13.9	—	728.2	
1979	2.7	25.9	79.9	8.0	79.4	105.4	130.5	90.8	199.4	123.9	97.8	8.1	951.8	
1980	3.6	1.1	10.0	22.3	187.2	3.9	26.2	198.1	39.7	52.5	10.4	2.1	557.1	
AVERAGE	9.0	26.3	38.1	43.6	86.9	57.6	29.7	75.3	92.0	78.6	36.4	18.6	592.1	SUMMATION OF AVERAGE VALUES

AN. 12 CLIMATIC DATA

NEIBA (1979~1980)

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	AVERAGE
Temperature (°C)	MAX.	31.0	31.3	31.2	31.6	33.0	33.0	32.9	32.1	32.5	32.0	30.9		32.0
	MIN.	19.3	19.6	19.9	21.4	22.4	23.0	22.5	22.5	22.7	21.2	19.3		21.4
	MEAN	25.2	25.4	25.5	26.5	27.7	28.0	27.7	27.2	27.2	27.6	26.6		26.7
Evaporation (A Pan) (mm)	169.8	183.2	207.8	215.6	222.0	192.6	220.5	207.3	161.1	172.5	151.0	131.0	2,234.4	
Relative Humidity (%)	63.1	64.6	65.5	67.1	68.1	70.6	68.9	69.7	71.9	70.6	68.9	68.7		68.1
Wind Velocity (m/s)	0.8	0.9	0.9	1.0	1.0	0.6	0.9	0.8	0.7	0.6	0.5	0.4		0.8

AN13-1 MAJAGUAL RIVER

Discharge Records

DATE	STAGE	DISCHARGE (m ³ /s)	REMARKS
6-'76	0.09	0.133	MILLO GALVAN
3-'78	0.12	0.541	"
4-'78	0.11	0.547	"
5-'78	0.10	0.598	"
12-'78	0.12	0.876	"
9-'79	—	1.913	"
11-'79	—	2.978	"
11-'79	—	2.473	"
5-12-'79	—	2.500	"
23-4-'80	—	1.307	"
13-7-'80	—	1.172	"
7-8-'80	—	1.547	"
23-10-'80	—	1.270	"
12-2-'81	—	1.281	"
8-6-'81	—	2.593	"
8-2-'82	—	1.042	"
8-6-'82	—	1.247	"
4-'84	—	0.736	"
25-2-'86	—	0.701	"

AN13-2 PANZO RIVER

Discharge Records

DATE	STAGE	DISCHARGE (m ³ /s)	REMARKS
8-6-'76	—	0.036	DOS BRAZOS
8-3-'78	—	0.213	DOS BRAZOS
9-5-'78	0.74	0.238	DOS BRAZOS
5-2-'79	0.60	0.217	PIJOTE
11-1-'80	—	0.393	PIJOTE
23-4-'80	—	0.288	PIJOTE
13-7-'80	—	0.177	PIJOTE
12-2-'81	—	0.090	PIJOTE
12-2-'82	—	0.080	PIJOTE
7-4-'82	—	0.455	PIJOTE
8-6-'82	—	0.352	PIJOTE
21-10-'82	—	0.346	PIJOTE

AN133 MANGUITO RIVER

Discharge Records

DATE	STAGE	DISCHARGE (m ³ /s)	REMARKS
8-11-'79	—	1.285	AGUAO ARRIBA TOMA CANAL
5-12-'79	—	0.780	CANAL EL MANGUITO
10-1-'80	—	0.269	EL MANGUITO NEYBA
7-8-'80	—	3.575	PLAZA CACIQUE
7-8-'80	—	0.097	CANAL EL MANGUITO
23-9-'80	—	0.752	PLAZA CACIQUE
23-10-'80	—	0.449	" "
17-11-'80	—	0.264	CANAL EL MANGUITO
16-12-'80	—	0.292	PLAZA CACIQUE
12-2-'81	—	0.239	EL MANGUITO
8-6-'81	—	5.219	CANAL EL MANGUITO
8-6-'81	—	0.215	" " "
13-2-'82	—	0.688	JUAN DE SENO EL MANGUITO
8-6-'82	—	0.303	PLAZA CACIQUE
8-6-'82	—	0.289	" "
19-3-'86	—	0.316	PLAZA CACIQUE
23-4-'86	—	0.377	EL MANGUITO
25-6-'86	—	1.220	PLAZA CACIQUE
4-9-'87	—	0.316	PLAZA CACIQUE

AN141 YAQUE DEL SUR RIVER

Discharge Records at PALO ALTO (E.L. 6. 0)

MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DES
1968	1.77	0.55	0.39	0.36	6.49	25.11	33.01	18.37	43.28	22.71	24.29	20.31
1969	6.61	2.66	1.18	13.91	40.47	27.27	35.49	25.85	57.52	51.29	28.19	21.59
1970	12.15	8.78	2.37	1.19	12.91	36.79	NIL	27.29	16.68	26.26	NIL	NIL
1971	NIL	NIL	NIL	NIL	NIL	15.40	NIL	NIL	NIL	49.03	NIL	11.74
1972	8.45	3.61	3.19	8.15	25.96	44.57	42.44	26.45	38.48	45.47	16.93	10.54
1973	6.83	3.42	12.92	1.03	2.65	23.35	16.87	26.79	39.81	91.46	27.41	9.79
1974	3.91	3.81	8.07	4.82	17.27	14.76	4.16	4.61	68.88	71.97	32.14	26.02
1975	5.63	2.41	1.69	0.57	4.20	3.36	6.09	12.44	42.53	22.63	61.36	48.29
1976	12.77	4.72	2.80	3.83	3.81	9.21	3.79	10.86	28.72	69.11	11.39	5.46
1977	2.33	1.41	0.84	1.57	16.51	8.04	1.58	6.81	36.55	31.46	45.53	12.50
1978	7.22	1.58	1.01	21.94	27.76	47.42	33.56	27.21	26.89	52.40	31.18	3.14
1979	1.11	0.47	2.06	1.46	51.45	82.83	39.33	38.21	80.55	67.89	56.28	35.95
1980	28.08	17.49	2.55	4.67	16.18	20.86	48.05	22.41	12.11	23.04	3.89	NIL
1981	13.40	8.93	6.59	3.96	44.16	57.84	76.23	28.60	21.32	47.01	28.27	15.04
1982	10.60	10.35	12.31	12.56	22.99	22.00	14.02	8.35	13.98	7.15	3.94	5.84
1983	NIL	NIL	7.21	6.35	6.06	8.47	6.82	5.73	5.25	12.28	7.10	4.78
1984	4.85	2.72	3.53	1.90	3.00	7.42	2.53	3.48	10.96	13.44	7.70	6.49
1985	3.96	4.06	3.61	2.73	6.52	2.86	2.95	4.48	3.44	7.32	28.35	13.09
1986	9.91	8.95	5.39	9.63	26.62	21.55	4.45	6.31	4.82	14.00	4.76	3.61
MEAN												

AN14-2 YAQUE DEL SUR RIVER

Discharge Records at VILLAR PANDO (E.L. 263)

MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEB
1959	-	12.67	10.94	25.43	45.59	30.76	35.21	39.51	53.18	46.75	74.65	57.46
1960	26.06	20.73	33.26	74.86	78.47	102.72	104.79	100.49	69.10	76.91	62.73	58.83
1961	26.36	21.00	25.47	22.20	43.18	89.48	71.71	49.52	49.14	127.65	98.72	54.90
1962	29.16	18.60	13.36	22.93	49.63	70.68	31.58	44.80	49.27	55.43	52.36	26.54
1963	19.45	12.37	11.72	23.44	56.53	60.66	46.92	61.07	84.42	62.24	1.98	-
1964	9.90	6.33	12.23	17.95	13.17	28.03	23.13	33.99	52.70	49.91	28.73	20.54
1965	15.13	10.92	8.31	7.37	30.71	33.19	33.53	42.12	41.15	45.27	39.36	26.66
1966	20.79	12.19	12.03	13.73	31.61	32.66	39.49	31.99	28.67	51.72	47.14	29.39
1967	17.37	14.41	11.09	12.02	12.71	20.44	14.06	19.70	23.82	29.90	25.12	15.62
1968	11.93	10.46	9.48	8.85	20.11	56.02	48.33	39.57	56.88	29.86	39.56	21.27
1969	8.52	3.76	3.02	18.35	34.43	17.44	36.35	32.85	69.43	63.54	39.41	23.61
1970	19.99	12.66	12.44	5.75	42.01	162.31	126.56	149.63	242.32	204.48	154.44	107.08
1971	-	-	-	-	-	-	-	-	-	-	160.53	104.50
1972	34.47	50.82	43.45	34.90	132.23	71.95	59.43	52.56	65.74	77.14	38.67	28.45
1973	54.27	50.86	35.92	14.84	13.03	36.57	32.97	48.80	64.73	96.23	38.46	23.32
1974	15.17	14.46	20.73	16.86	25.76	29.00	19.42	24.33	98.75	83.44	46.68	34.31
1975	15.92	11.83	8.75	6.22	15.89	16.00	22.37	35.27	63.92	51.16	81.65	38.34
1976	17.36	13.28	9.45	10.79	11.64	15.25	13.01	20.14	37.03	56.21	22.92	18.18
1977	10.69	8.31	6.18	8.59	15.83	8.91	8.89	17.30	38.25	37.35	48.23	21.83
1978	14.23	8.35	7.57	29.07	30.94	45.58	39.17	34.24	42.96	62.08	35.37	16.50
1979	8.60	7.17	9.74	8.77	63.26	103.99	47.42	61.94	388.98	53.92	47.18	40.08
1980	37.52	37.19	30.23	25.73	31.98	30.61	42.91	-	-	-	-	-
MEAN	21.04	16.29	15.22	18.35	36.31	48.29	40.78	42.73	73.43	61.87	53.81	34.88

AN16-1 WATER QUALITY

SURFACE WATER (1/2)

Sampling Site	Date Sampled	PH	EC mmho	Ca me/l	Mg me/l	Na me/l	K me/l	CO ₂ me/l	HCO ₃ me/l	SO ₄ me/l	Cl me/l	SAR	Classification
1 Rio Yaque del Sur Santana Intake	30/9/87	7.8	0.80	3.14	1.96	2.82		0.00	4.20	2.33	1.59	1.8	C ₃ S ₁
	27/10/87	7.9	0.57	2.69	1.05	1.80		0.80	3.00	0.88	0.97	1.3	C ₂ S ₁
2 Rio Yaque del Sur Penon Pump Station	1/10/87	7.6	0.90	3.53	2.74	3.17		0.00	4.60	2.80	2.13	1.8	C ₃ S ₁
	28/10/87	7.6	0.52	2.30	1.16	1.69		0.00	3.80	1.22	0.78	1.3	C ₂ S ₁
3 Laguna Rincon	1/10/87	8.2	7.0	3.43	12.84	53.03	2.14	1.00	6.00	10.46	52.40	18.6	
	28/10/87	7.9	7.0	3.55	12.58	53.17		1.00	6.00	14.17	48.83	18.7	
4 Drenaje Guaraguo Up-stream	30/9/87	7.6	1.2	3.43	3.43	4.54		0.00	6.40	3.25	2.37	2.5	C ₃ S ₁
	27/10/87	7.8	1.10	3.17	3.55	4.17		0.00	6.40	2.45	2.15	2.3	C ₃ S ₁
5 Drenaje Guaraguo Down-stream	30/9/87	7.6	1.6	3.82	3.82	8.16	0.69	0.00	5.90	5.60	4.50	4.2	C ₃ S ₁
	28/10/87	7.8	1.3	3.55	3.75	5.60		0.00	5.80	3.74	3.46	2.9	C ₃ S ₁
6 Drenaje Gros Up-stream	30/9/87	7.9	4.4	6.37	10.29	26.94	0.50	0.40	2.95	5.55	27.20	9.3	C ₄ S ₃
	28/10/87	7.8	4.1	7.70	11.60	21.40		0.00	3.70	5.10	30.00	6.9	C ₄ S ₃
7 Drenaje Gros Down-stream	30/9/87	8.0	3.9	6.08	9.11	23.41	0.52	0.60	5.20	24.15	3.13	8.5	C ₄ S ₃
	28/10/87	7.4	5.8	2.88	1.44	53.08		0.00	0.60	11.45	45.98	36.1	
8 Rio Las Marias	1/10/87	7.8	2.7	4.02	5.78	16.40	0.54	0.00	6.60	7.80	12.03	7.4	C ₂ S ₁
	28/10/87	7.8	5.0	6.91	8.45	34.14		0.00	6.80	3.11	40.09	12.3	C ₄ S ₄
9 Cano Ramillo	1/10/87	7.8	3.0	4.70	6.57	18.43		0.00	6.40	7.8	15.62	7.8	C ₄ S ₂
	28/10/87	7.8	3.8	5.76	6.91	24.79		0.00	6.40	3.00	28.50	9.8	C ₄ S ₃
10 Rio Majagual	30/9/87	7.7	0.30	1.34	1.06	0.57	0.12	0.00	2.70	0.00	0.34	0.5	C ₂ S ₁
	27/10/87	7.7	0.33	2.21	0.77	0.29		0.00	2.70	0.20	0.40	0.2	C ₂ S ₁
11 Rio Panzo	30/10/87	7.6	0.27	1.67	0.88	0.15	0.10	0.00	2.40	0.00	0.33	0.1	C ₂ S ₁
	27/10/87	7.7	0.28	1.92	0.58	0.17		0.00	2.20	0.22	0.33	0.2	C ₂ S ₁

WATER QUALITY

SURFACE WATER (2/2)

Sampling Site	Date Sampled	PH	EC mmho	Ca me/l	Mg me/l	Na me/l	K me/l	CO ₃ me/l	HCO ₃ me/l	SO ₄ me/l	Cl me/l	SAR	Classification
12 Rio Manguito	30/10/87	7.7	0.29	1.67	0.68	0.52		0.00	2.40	0.05	0.46	0.5	C ₂ S ₁
	27/10/87	7.6	0.30	1.92	0.67	0.38		0.00	2.40	0.15	0.45	0.3	C ₂ S ₁
13 Lago Enriqueillo	1/10/87	8.1	70	13.40	132.60	690.20	23.10	0.80	7.10	102.00	733.32	80.8	
	28/10/87	8.0	78	17.28	178.72	577.00		2.60	3.40	52.00	722.00	58.3	
14 Lateral Neiba	1/10/87	7.8	1.5	3.26	2.79	8.35	0.40	0.00	6.00	5.35	3.63	4.8	C ₃ S ₁
	28/10/87	7.8	1.5	3.36	2.69	8.80		0.00	6.00	5.45	3.55	5.1	C ₃ S ₁

AN16-2 WATER QUALITY

SPRING AND WELL

Sampling Site	Date Sampled	PH	EC mmho	Ca me/l	Mg me/l	Na me/l	K me/l	CO ₂ me/l	HCO ₃ me/l	SO ₄ me/l	C1 me/l	SAR	Classification
A Spring Julio Vasques	30/9/87	7.4	0.62	2.94	2.74	0.56		0.00	4.50	1.18	0.56	0.3	C ₂ S ₁
	27/10/87	8.0	0.58	2.78	2.12	0.84		0.40	4.10	1.15	0.15	0.5	C ₂ S ₁
B Spring Las Marias	30/9/87	7.4	0.58	2.65	2.15	0.94	0.14	0.00	4.70	0.45	0.64	0.6	C ₂ S ₁
	27/10/87	7.9	0.52	2.88	1.82	0.45		0.80	1.20	2.35	0.84	0.3	C ₂ S ₁
C Spring Don Juan	30/9/87	7.5	0.66	2.65	2.62	0.33	0.19	0.00	5.50	0.00	1.12	0.2	C ₂ S ₁
	27/10/87	7.8	0.70	2.59	3.55	0.79		0.00	5.60	0.28	1.12	0.5	C ₂ S ₁
D Spring Cheon Mamey	30/9/87	7.1	0.59	3.92	1.37	0.61	0.12	0.00	5.00	0.14	0.79	0.4	C ₂ S ₁
	28/10/87	7.2	0.46	2.78	1.25	0.52		0.00	3.70	0.29	0.60	0.4	C ₂ S ₁
E Well No. 1 El Salado	30/10/87	7.8	0.42	0.78	1.18	2.20	0.40	0.00	3.70	0.04	0.45	2.2	C ₂ S ₁
	28/10/87	7.8	0.33	1.92	0.77	0.58		0.00	2.90	0.04	0.38	0.5	C ₂ S ₁
F Well No. 3 Galvan	30/9/87	7.0	0.62	3.63	2.20	0.32	0.12	0.00	5.60	0.00	0.60	0.2	C ₂ S ₁
	28/10/87	6.9	0.62	4.03	1.54	0.57		0.00	5.60	0.04	0.56	0.3	C ₂ S ₁
G Well No. 5 Galvan	30/9/87	6.9	0.70	4.13	2.21	0.59	0.12	0.00	6.20	0.11	0.72	0.3	C ₂ S ₁
	28/10/87	6.9	0.70	4.22	2.31	0.40		0.00	6.20	0.16	0.63	0.2	C ₂ S ₁
H Well No. 12 Galvan	30/9/87	7.0	0.76	3.26	2.79	1.47	0.18	0.00	6.80	0.08	0.72	0.8	C ₂ S ₁
	28/10/87	6.8	0.76	4.22	2.50	0.80		0.00	6.60	0.39	0.61	0.4	C ₂ S ₂
I Well No. 16 Galvan	30/9/87	7.0	0.56	3.26	1.83	0.45	0.12	0.00	4.80	0.06	0.74	0.3	C ₂ S ₁
	28/10/87	7.0	0.57	3.65	1.53	0.46		0.00	4.60	0.44	0.66	0.3	C ₂ S ₁
J Well No. 17 Neiba	30/9/87	6.9	0.60	2.78	1.64	1.52	0.12	0.00	4.80	0.10	1.07	1.0	C ₂ S ₁
	28/10/87	6.9	0.60	4.22	1.16	0.56		0.00	4.80	0.27	0.93	0.3	C ₂ S ₁
K Well Batey 2	1/10/87	7.5	1.83	1.44	3.84	12.82	0.40	0.00	7.50	4.83	6.01	7.9	C ₃ S ₂
	28/10/87	7.8	1.80	1.44	3.84	12.54		0.00	6.00	5.45	3.55	7.9	C ₃ S ₂

AN.17 CHEMICAL PROPERTIES OF SOILS

Soil Series	Pit No.	Depth cm	PH 1:2	EC mmho/cm	Soluble Salts						SO ₄ ²⁻ me/l	CEC me/100g	Ex. Na me/100g	Ex. K me/100g	CaCO ₃ %
					Ca ²⁺ +Mg ²⁺ me/l	Na ⁺ me/l	K ⁺ me/l	CO ₃ ²⁻ me/l	HCO ₃ ⁻ me/l	Cl ⁻ me/l					
E Sa	1	0~25	8.4	90	320	540	0.08	0.0	2.0	420	100	23.6	0.4	0.4	11.8
		25~52	8.5	70	220	472	0.09	0.0	1.0	483	100	19.6	1.4	0.4	13.8
		52~100	8.9	41	150	236	0.12	0.0	3.6	241	65	19.4	1.1	0.3	14.4
		100~185	8.7	50	160	313	0.07	0.0	3.0	356	85	24.4	4.5	0.4	15.0
		185~220±	8.6	44	180	230	0.07	0.0	1.6	289	100	29.6	5.1	0.4	13.0
Ta	2	0~45	8.4	35	110	206	0.09	0.0	1.6	267	75	20.0	4.1	0.7	15.0
		45~80	8.4	30	100	155	0.12	0.0	1.0	200	55	28.6	2.3	0.5	13.8
		80~150	8.4	30	90	183	0.10	0.0	1.4	195	89	40.0	2.5	0.4	18.2
		150~200	8.3	29	100	166	0.13	0.0	1.0	214	70	30.0	0.1	0.4	15.0
		200~220+	8.3	35	100	218	0.13	0.0	2.0	223	75	31.0	7.2	0.4	12.4
Oj	3	0~35	8.3	30	110	154	0.12	0.0	1.6	156	94	30.8	4.1	0.6	17.8
		35~75	8.3	30	85	206	0.14	0.0	1.6	223	75	24.0	4.5	0.3	53.8
		75~85	8.4	29	90	172	0.13	0.0	2.0	160	100	25.0	2.5	0.3	8.4
		85~120	8.3	18	90	92	0.15	0.0	2.2	134	45	21.0	0.7	0.2	9.4
		120~200	8.7	16	30	103	0.15	0.0	3.0	111	47	20.0	0.9	0.3	9.8
Ta	4	0~75	8.1	60	220	342	0.16	0.0	2.2	445	96	24.8	2.9	0.3	20.4
		75~100	8.3	35	170	160	0.12	0.0	1.6	156	60	31.6	4.4	0.3	26.4
		100~160	8.2	28	110	167	0.12	0.0	1.8	138	76	30.0	4.9	0.2	18.2
		160~220+	8.4	25	87	135	0.10	0.0	2.0	169	40	35.0	3.4	0.2	16.4
		0~50	8.1	10	65	33	0.10	0.0	1.6	67	25	36.4	1.0	0.6	29.2
LGr	5	50~120	8.1	15	85	55	0.09	0.0	1.2	89	38	34.8	1.3	0.4	17.9
		120~180	8.1	19	70	67	0.08	0.0	3.0	123	40	32.4	1.5	0.3	16.4
		180~220+	8.4	10	50	41	0.12	0.0	2.0	71	25	16.6	2.0	0.2	10.4

CHEMICAL PROPERTIES OF SOILS

2/3

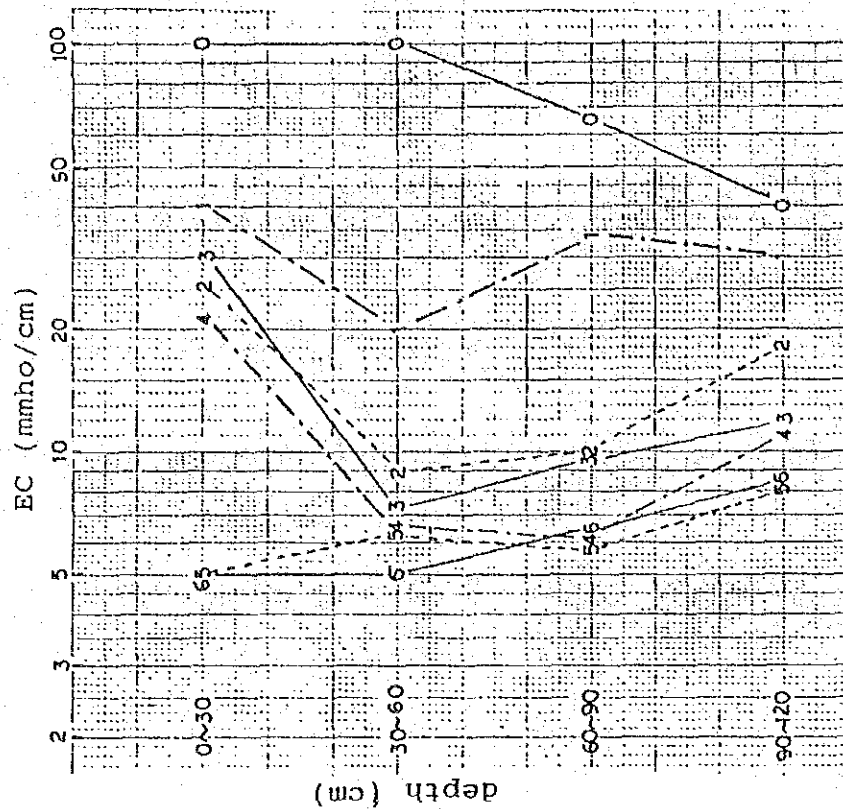
Soil Series	Pit No.	Depth cm	PH 1:2	E.C mmho/cm	Soluble Salts							SO ₄ ²⁻ me/l	CEC me/100g	Ex. Na me/100g	Ex. K me/100g	CaCO ₃ %
					Ca ⁺⁺ +Mg ⁺⁺ me/l	Na ⁺ me/l	K ⁺ me/l	CO ₃ ²⁻ me/l	HCO ₃ ⁻ me/l	Cl ⁻ me/l						
E Sa	6	0~40	8.6	45	140	284	0.16	0.0	2.6	317	100	27.4	1.5	0.4	20.0	
		40~70	8.8	35	100	230	0.14	0.0	1.6	223	85	21.6	2.9	0.6	21.2	
		70~190	8.9	22	40	166	0.18	0.0	2.0	143	65	15.4	2.5	0.3	10.4	
		190~220	8.8	40	150	212	0.18	0.0	1.8	178	159	20.1	1.4	0.3	9.8	
E Ca	7	0~40	7.8	54	210	212	0.12	0.0	2.0	445	75	23.6	2.5	0.5	11.8	
		40~80	8.0	45	180	200	0.16	0.0	1.6	356	50	22.2	2.0	0.6	13.8	
		80~100	8.2	30	150	129	0.08	0.0	1.0	178	85	13.2	1.3	0.2	10.4	
Ga	8	0~25	8.3	1								27.2	0.4	0.3	23.8	
		25~80	8.3	1								26.6	0.7	0.2	23.0	
		80~110	8.3	0.9								23.4	0.9	0.2	13.0	
		110~160	8.3	1								23.2	0.7	0.2	17.0	
Oj	9	160~220	8.3	1.9								20.0	1.5	0.2	59.0	
		0~30	8.0	10	54	43	0.16	0.0	1.0	72	4	19.2	1.0	0.2	10.4	
		30~120	8.2	28	110	135	0.16	0.0	2.0	223	30	15.4	2.5	0.2	11.8	
E Sa	10	120~	8.0	45	200	206	0.19	0.0	1.8	356	87	15.0	2.8	0.2	15.0	
		0~41	7.9	96	400	448	1.21	0.0	2.0	720	110	30.0	0.8	0.3	13.0	
		41~62	8.2	58	170	336	1.09	0.0	2.0	500	39	22.0	1.2	0.2	13.0	
		62~100	8.2	62	191	336	1.04	0.0	1.6	450	97	24.0	0.6	0.1	16.4	
		100~145	8.1	45	129	291	2.20	0.0	1.0	350	105	24.0	1.7	0.2	13.0	
Ta	11	145~250	8.2	50	145	284	0.92	0.0	1.6	400	89	24.0	0.6	0.3	9.8	
		0~25	7.7	100	400	486	1.00	0.0	0.5	800	105	30.0	1.4	0.3	13.0	
		25~45	7.9	88	400	436	7.14	0.0	0.5	750	108	24.0	1.4	0.3	13.0	
		45~80	8.0	64	170	336	6.26	0.0	1.0	500	60	24.0	2.1	0.3	13.0	
		80~108	8.0	50	150	313	4.60	0.0	1.4	400	68	32.0	1.7	0.3	6.4	
		108~150	8.0	45	100	298	4.08	0.0	1.5	380	48	26.0	1.7	0.4	20.0	

CHEMICAL PROPERTIES OF SOILS

Soil Series	Pit No.	Depth cm	PH 1:2	EC mmho/cm	Soluble Salts							CEC me/100g	Ex. Na me/100g	Ex. K me/100g	CaCO ₃ %	
					Ca ²⁺ +Mg ²⁺ me/l	Na ⁺ me/l	K ⁺ me/l	CO ₃ ²⁻ me/l	HCO ₃ ⁻ me/l	Cl ⁻ me/l	SO ₄ ²⁻ me/l					
Bp	12	0~30	8.6	3	10	14	1.00	0.0	1.5	20	4	36	1.5	0.3	30.0	
		30~68	8.5	1.5									36	1.2	0.2	43.4
		68~100	8.2	1.0									40	1.1	0.3	33.2
LGr	13	0~30	7.7	2.2	10	9	1.21	0.0	2.0	15	5	20	0.5	0.2	3.2	
		30~70	7.9	3.9	20	15	2.73	0.0	3.0	30	7	20	0.7	0.2	3.2	
		70~125	7.9	10	75	23	1.21	0.0	1.0	70	21	20	1.4	0.2	13.0	
		125~170	8.0	15	106	39	2.44	0.0	1.0	125	23	20	0.5	0.3	9.8	
ECa	14	0~23	8.1	70	220	460	1.93	0.0	1.0	500	128	20	0.7	0.3	16.4	
		23~55	8.1	50	190	277	2.30	0.0	1.5	400	85	24	1.4	0.2	20.0	
		55~83	8.4	40	130	218	2.73	0.0	2.0	300	55	36	1.8	0.2	13.0	
		83~120	8.4	30	179	83	1.69	0.0	2.0	200	45	26	1.5	0.2	16.4	
		120~250	8.4	38	100	257	1.15	0.0	3.0	300	45	26	0.5	0.3	16.4	
Ta	15	0~30	8.3	100	328	568	1.15	0.0	3.0	800	80	26	1.4	0.3	16.4	
		30~60	8.6	70	182	424	1.18	1.0	2.0	600	75	27	0.8	0.2	20.0	
		60~90	8.6	45	134	277	1.30	1.2	1.7	300	89	28	1.7	0.2	20.0	
		90~200	8.7	47	161	271	1.00	0.0	3.0	350	97	28	1.3	0.2	16.4	
Ta	16	0~45	8.8	62	100	500	1.21	0.0	1.5	450	110	28	0.7	0.2	13.0	
		45~100	9.1	33	80	230	2.73	0.0	1.5	300	35	26	0.5	0.3	13.0	
		100~145	9.1	20	50	121	1.69	0.0	1.5	100	66	20	1.2	0.2	9.8	
E Sa	17	0~25	7.8	150	700	692	8.82	0.0	0.5	1125	105	18	2.0	0.3	9.8	
		25~90	8.2	63	206	412	4.25	0.0	1.5	420	113	16	2.1	0.3	13.0	
		90~140	8.2	70	234	460	2.59	0.0	1.5	600	108	16	0.7	0.2	13.0	
		140~220	8.2	50	200	277	5.21	0.0	1.2	350	97	20	0.9	0.1	16.4	

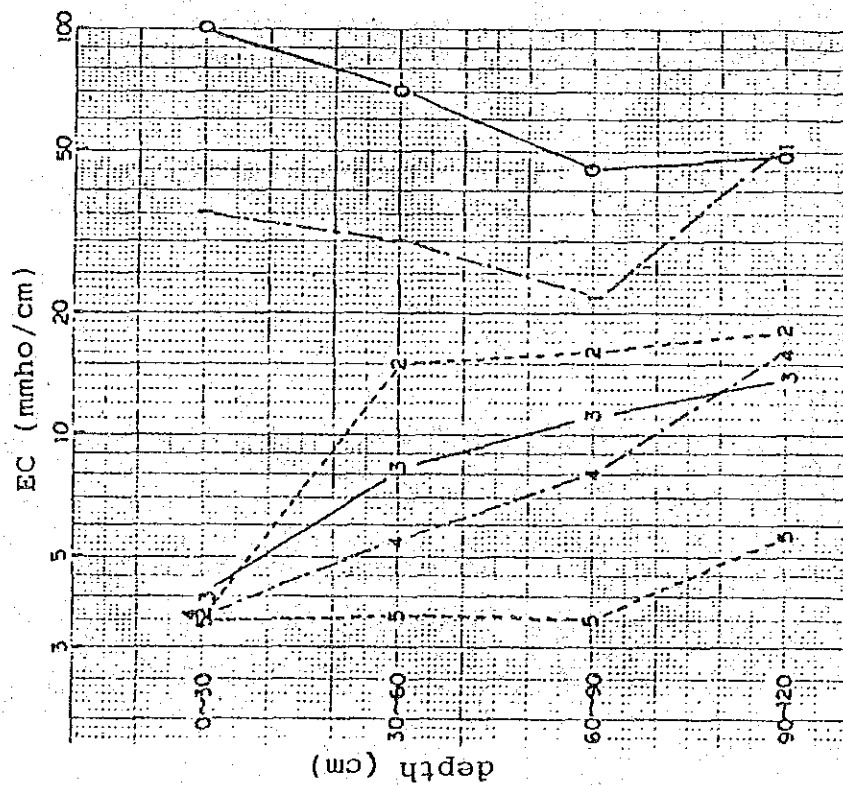
AN.18 EC of Soil at Various Depths After Leaching

Soils: El Salado series



laboratory test

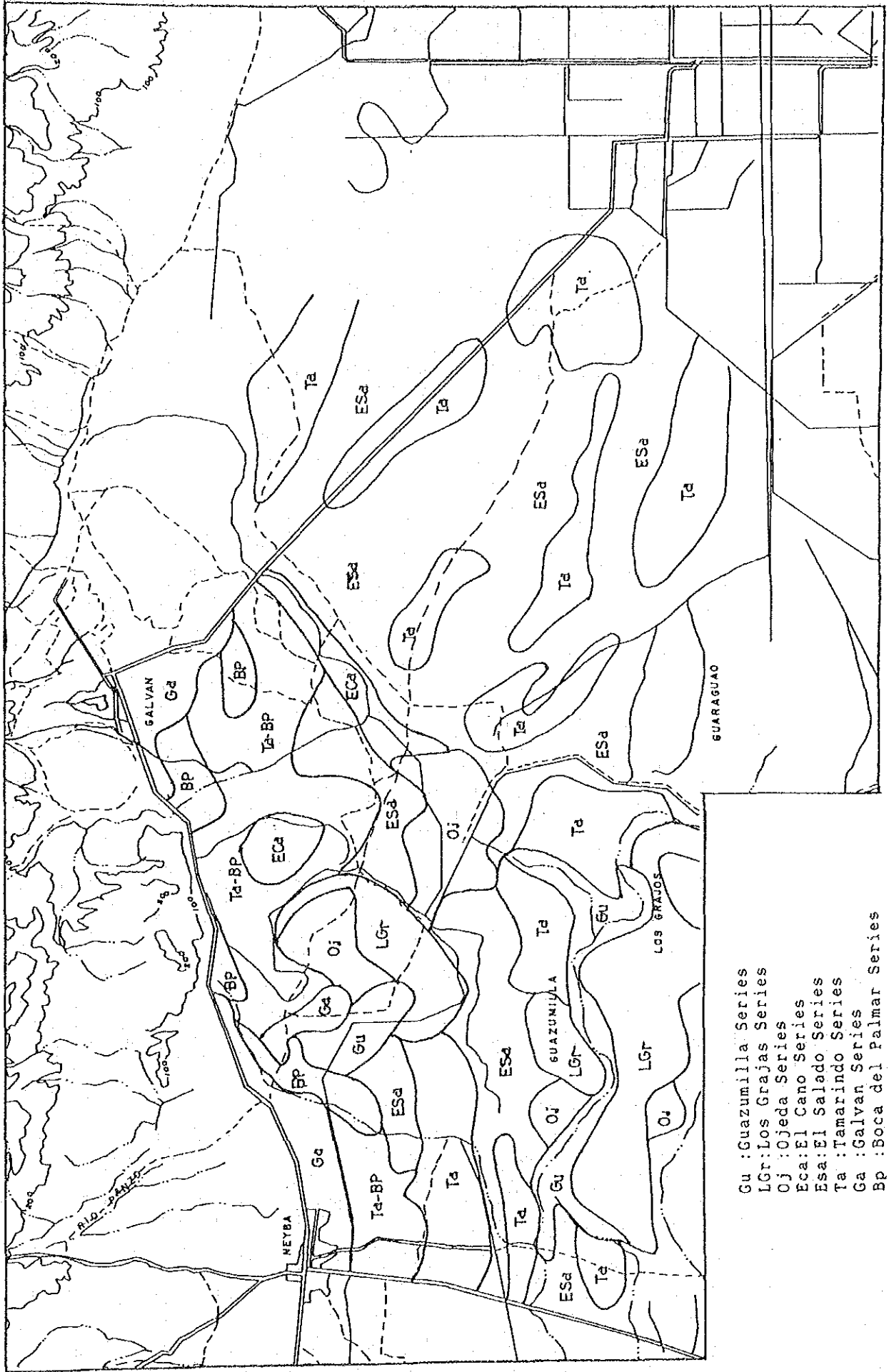
- 0 — 0
- 1 - - 1
- 2 2
- 3 — 3
- 4 - - - 4
- 5 5
- 6 — 6
- 90cm
- 120cm
- 150cm
- 180cm



field test

water depth of leaching

AN19 Soils Map



- Gu : Guazumilla Series
- LGr : Los Grajas Series
- Oj : Ojeda Series
- Eca : El Cano Series
- Esa : El Salado Series
- Ta : Tamarindo Series
- Ga : Galvan Series
- Bp : Boca del Palmar Series

