

Fig.5-32 Composite map of anomalous areas of ground temperature and Hg - CO<sub>2</sub> geochemistry



## 6. 調査地域の地熱流体構造

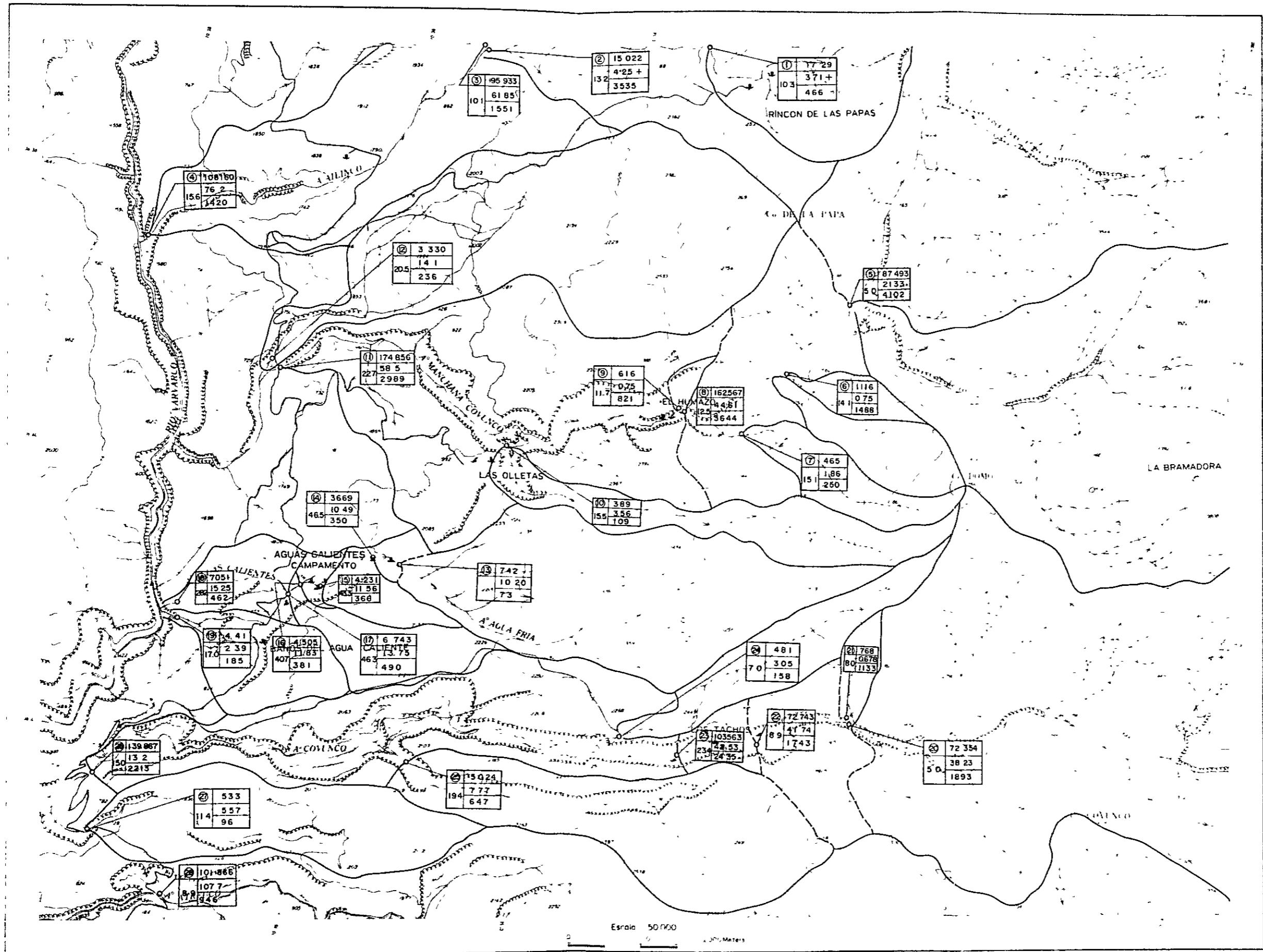


Fig.6-1 Location map of measurements of water discharge and calculations of specific rate of flow

LEGEND  
(REFERENCIAS)

No	rate of flow (Caudales)
Temp (°C)	Contributory area (área) km²
	Specific rate of flow (Caudales específico)



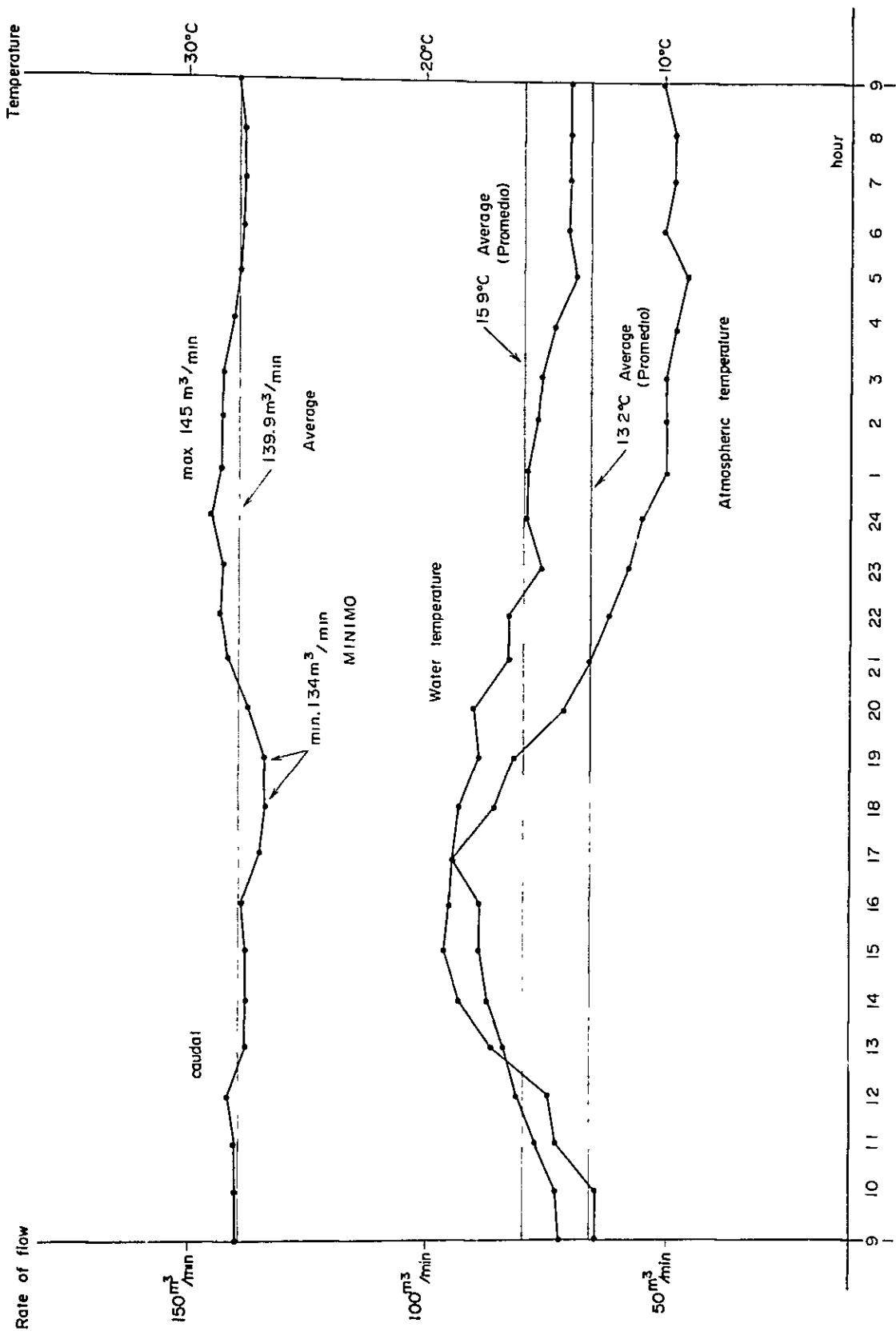


Fig.6-2 Daily variations of discharge, water temperature and atmospheric temperature



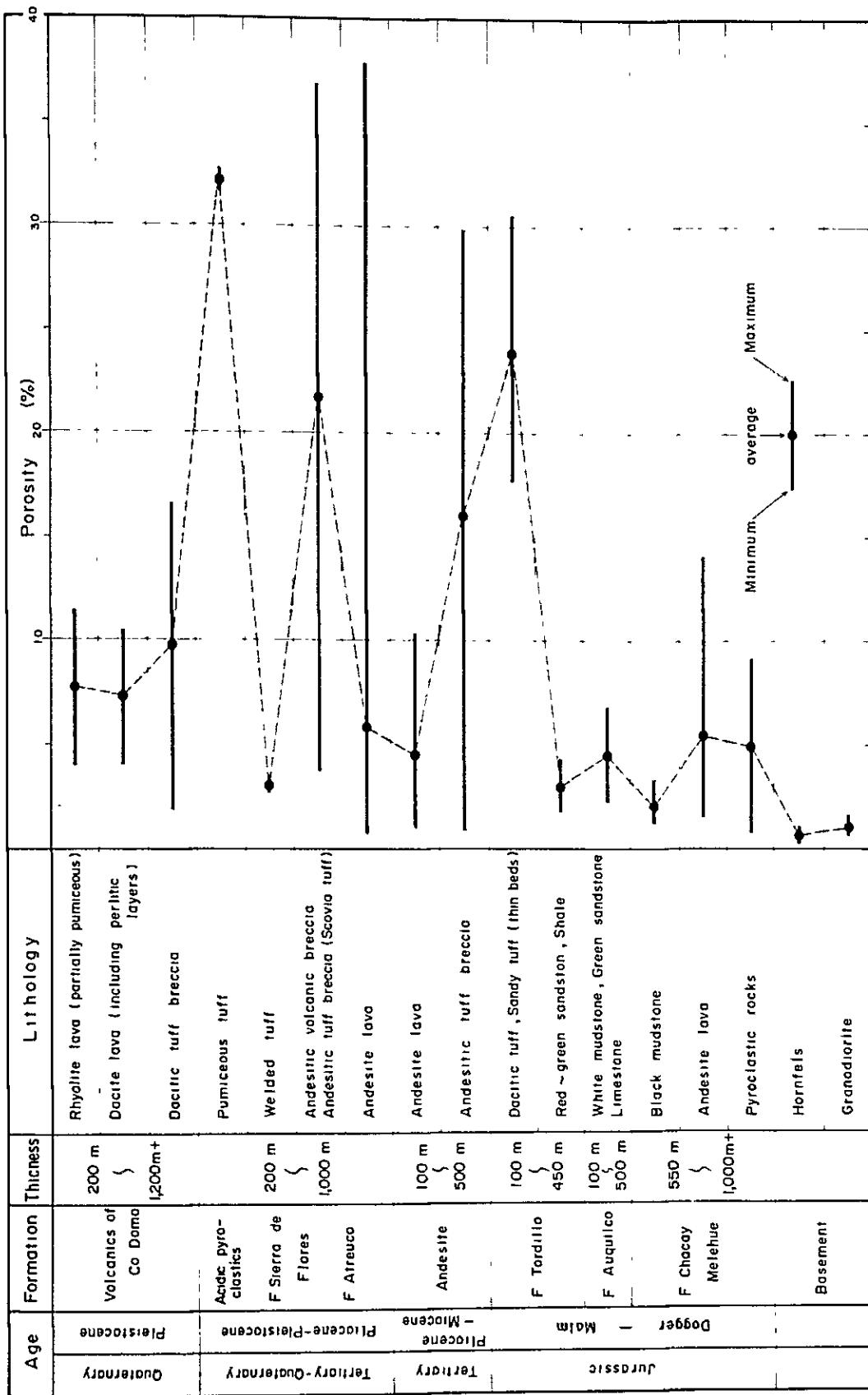


Fig.6-3 Schematic columnar section of effective porosity

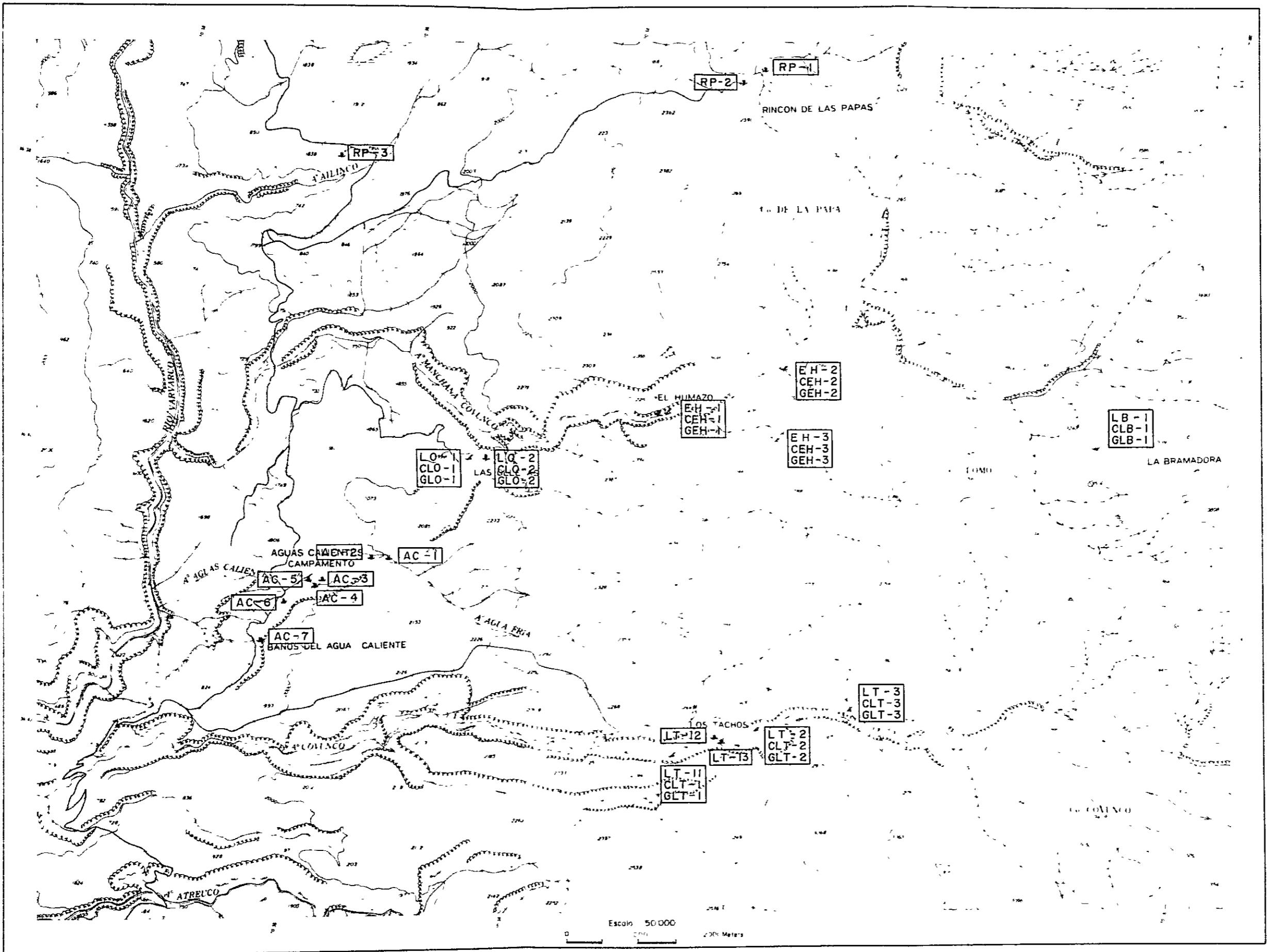


Fig.6-4 Location map of hot water, fumaloic gas and condensed water samplings



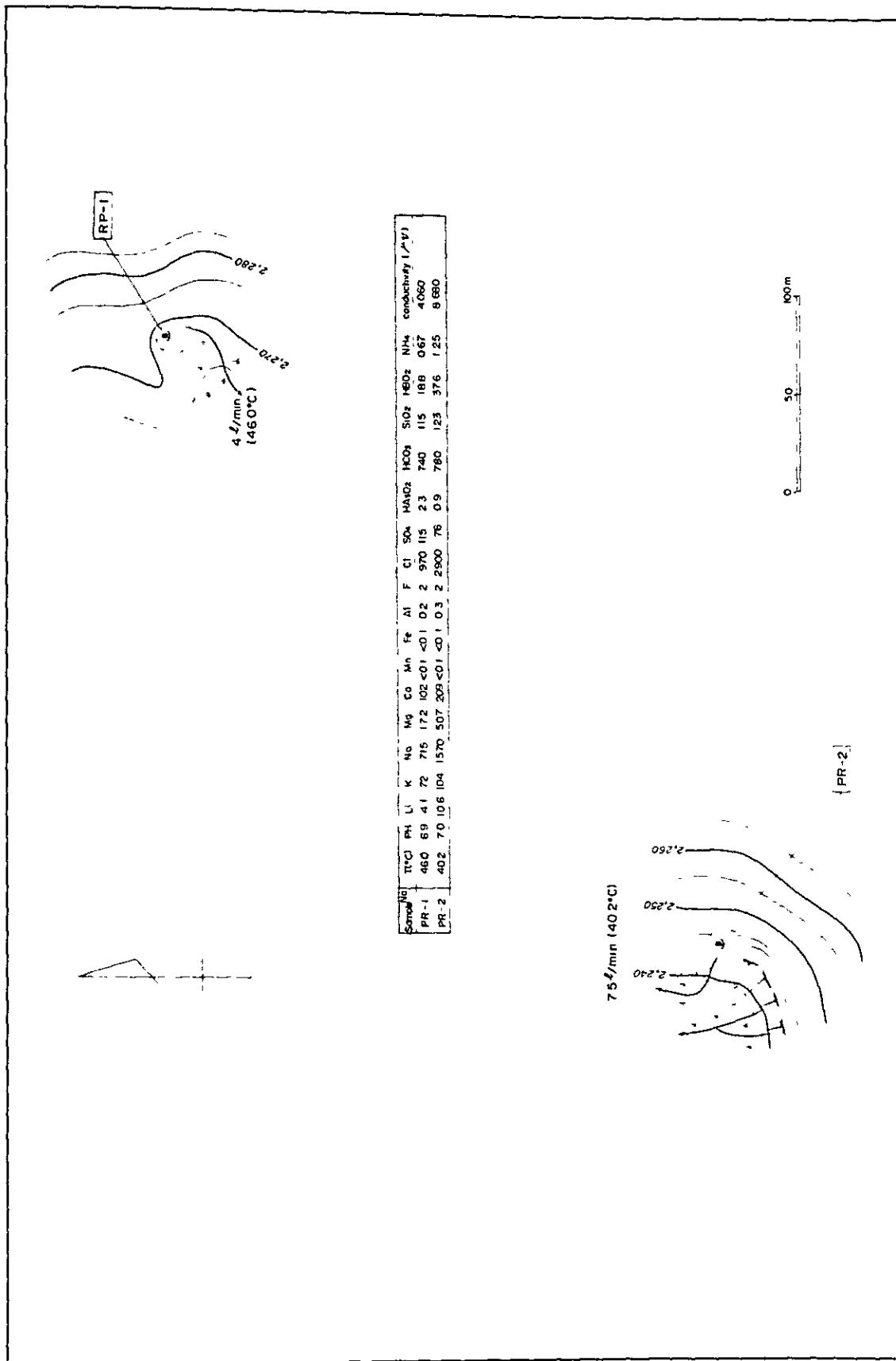


Fig. 6-5 Detailed sketch of geothermal manifestation (1) Rincon de Las Papas



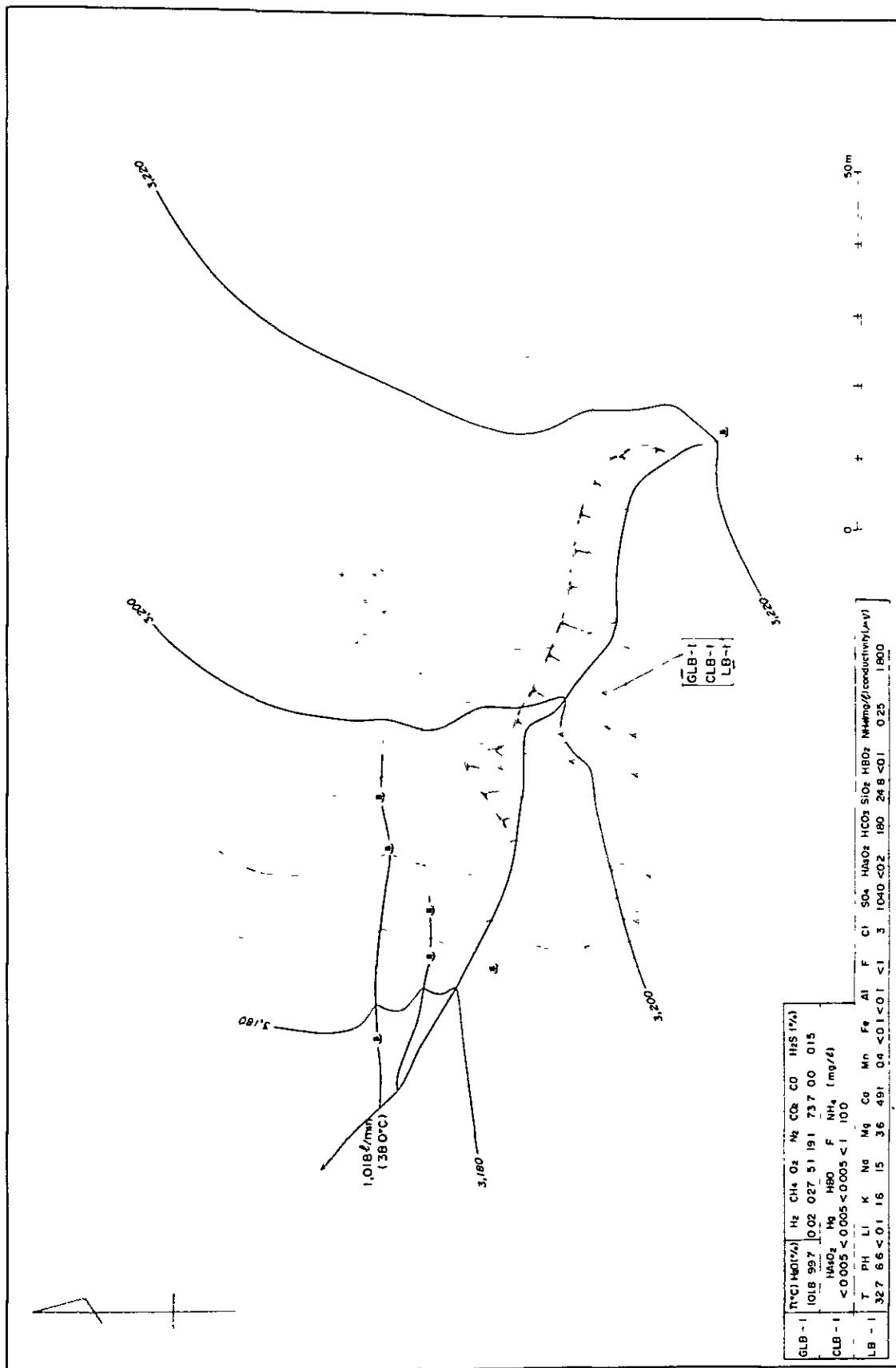


Fig.6-6 Detailed sketch of geothermal manifestation (2) La Bramadora



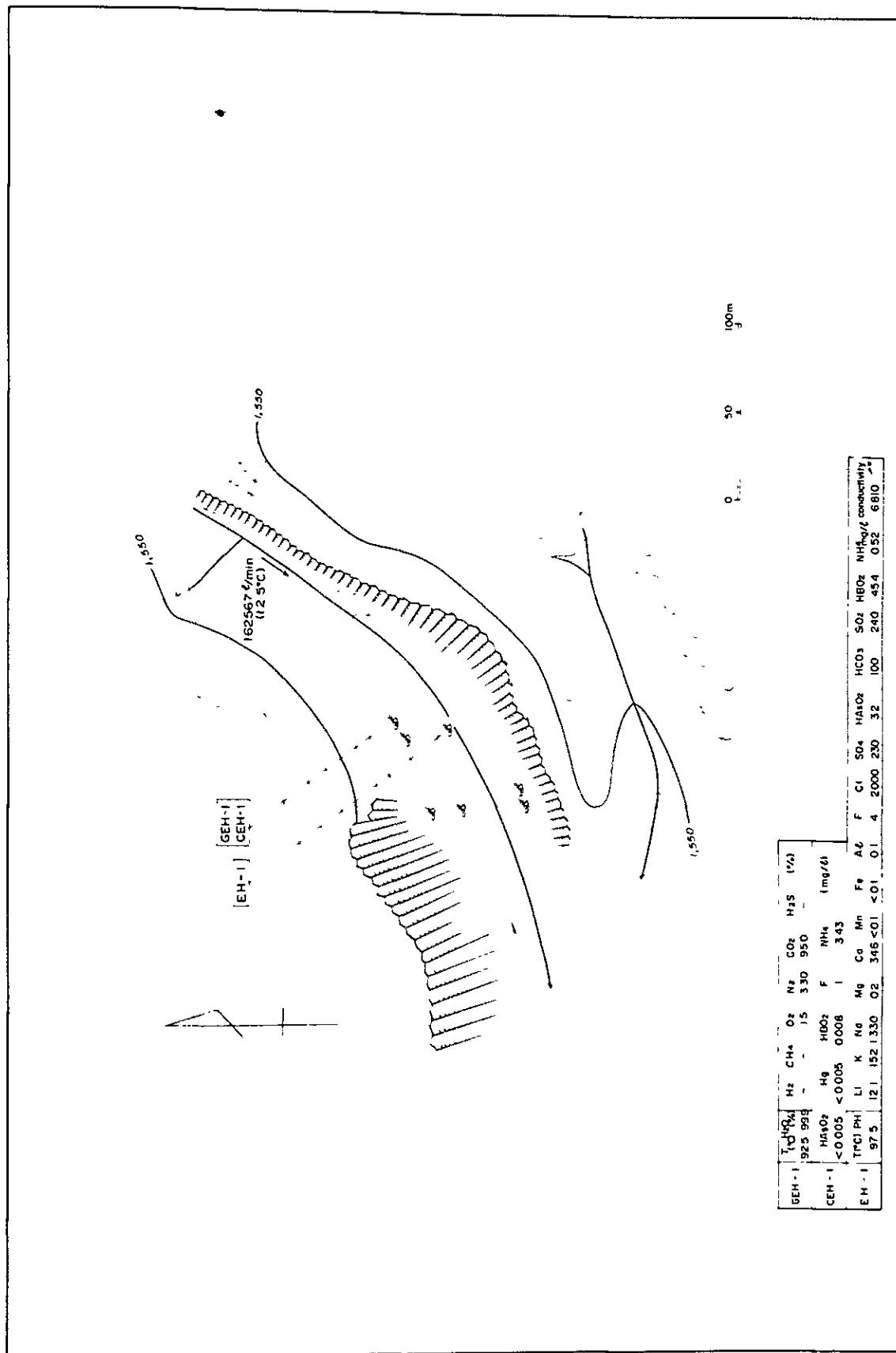


Fig.6-7 Detailed sketch of geothermal manifestation (3) El Humazo - 1



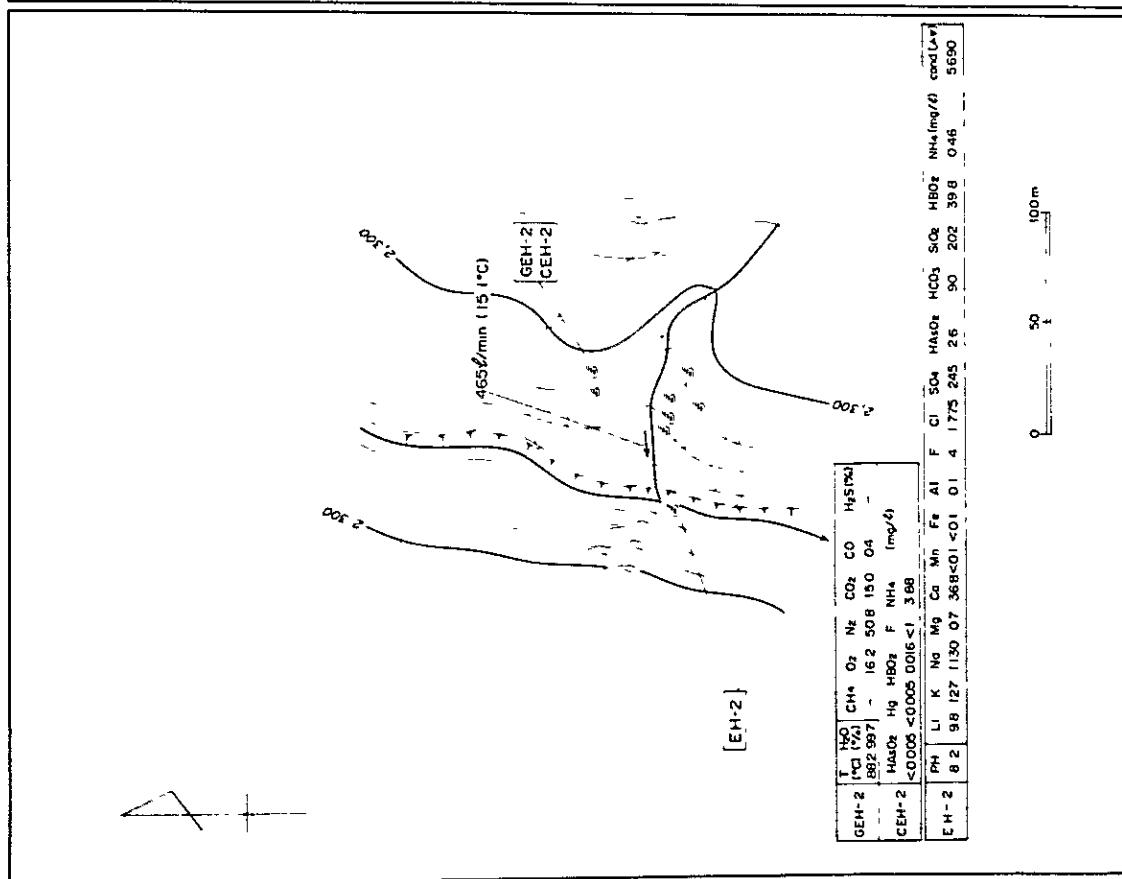


Fig.6-8 Detailed sketch of geothermal manifestation (4) El Humazo - 2

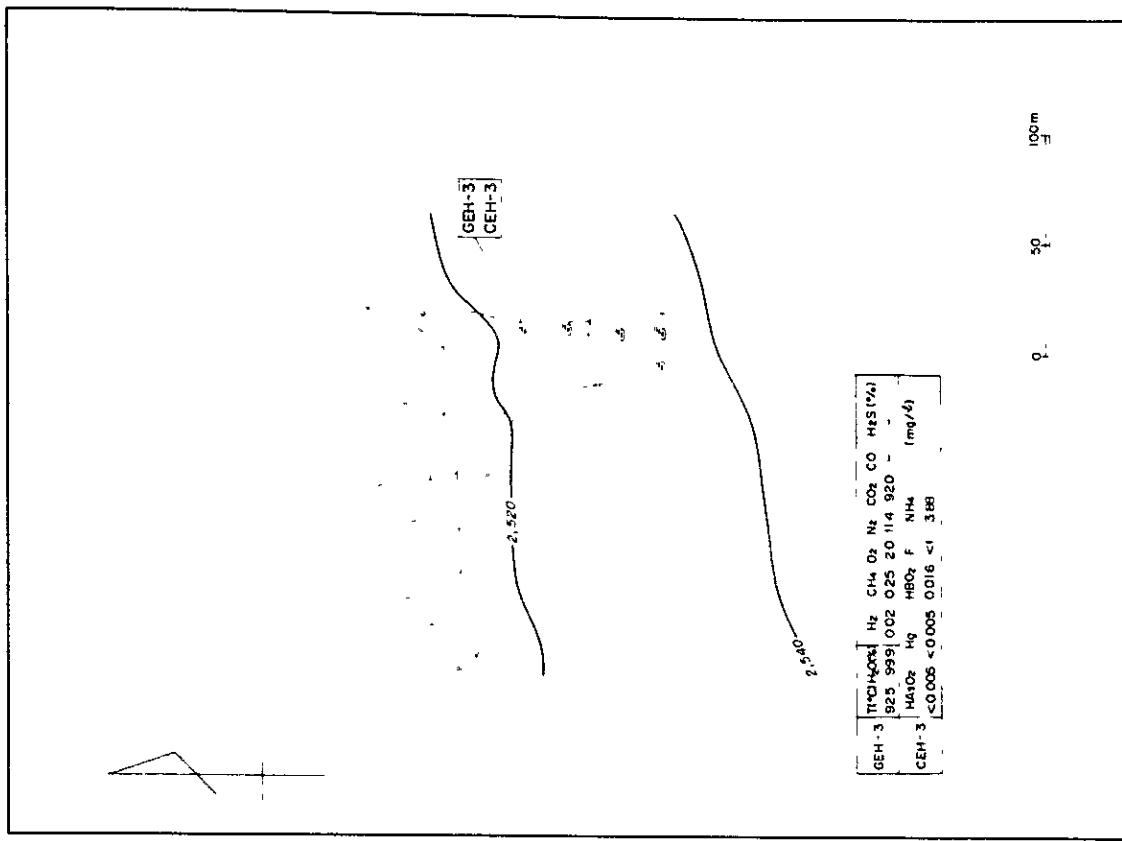


Fig.6-9 Detailed sketch of geothermal manifestation (5) El Humazo - 3



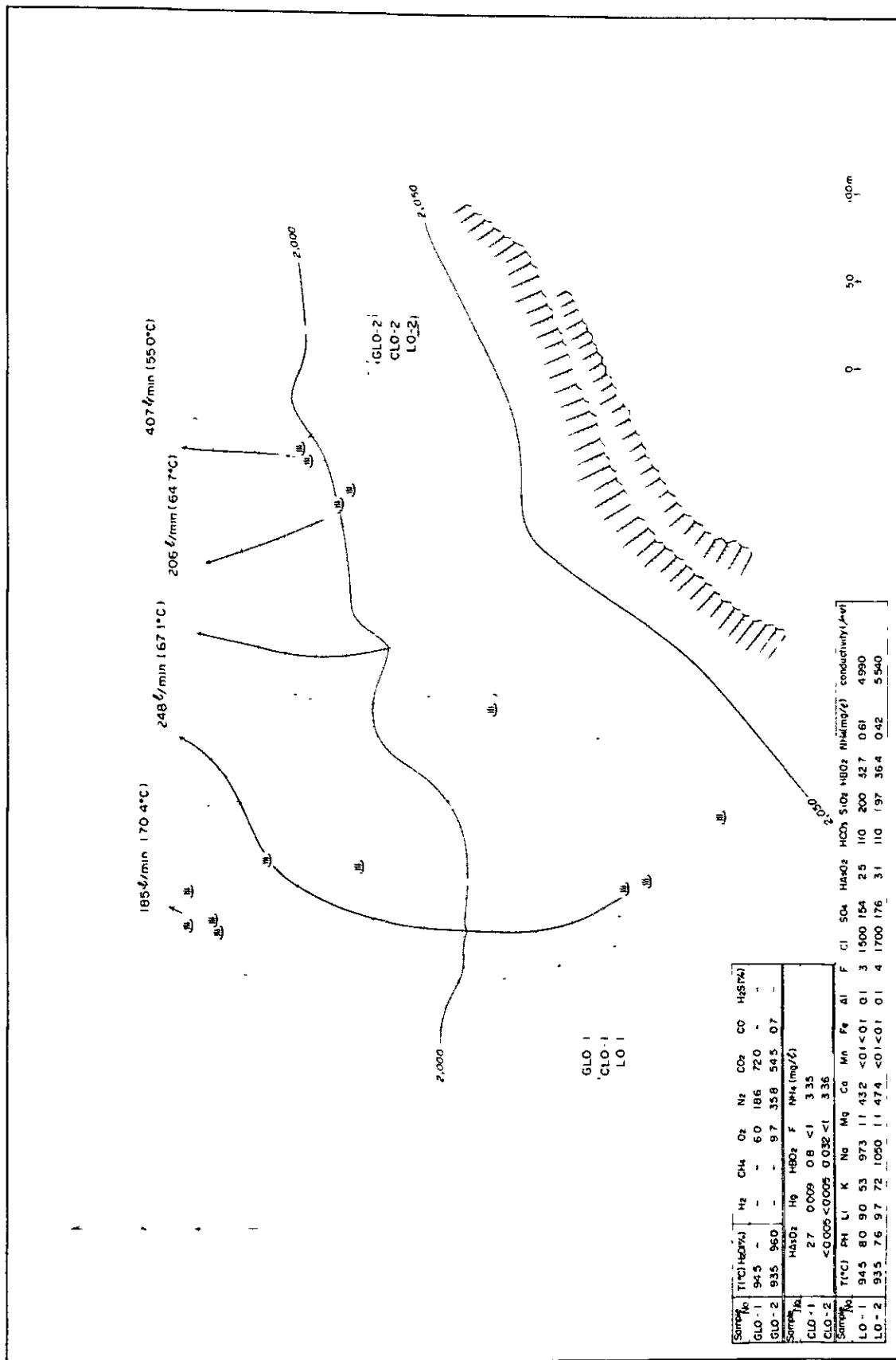


Fig.6-10 Detailed sketch of geothermal manifestation (6) Las Olletas



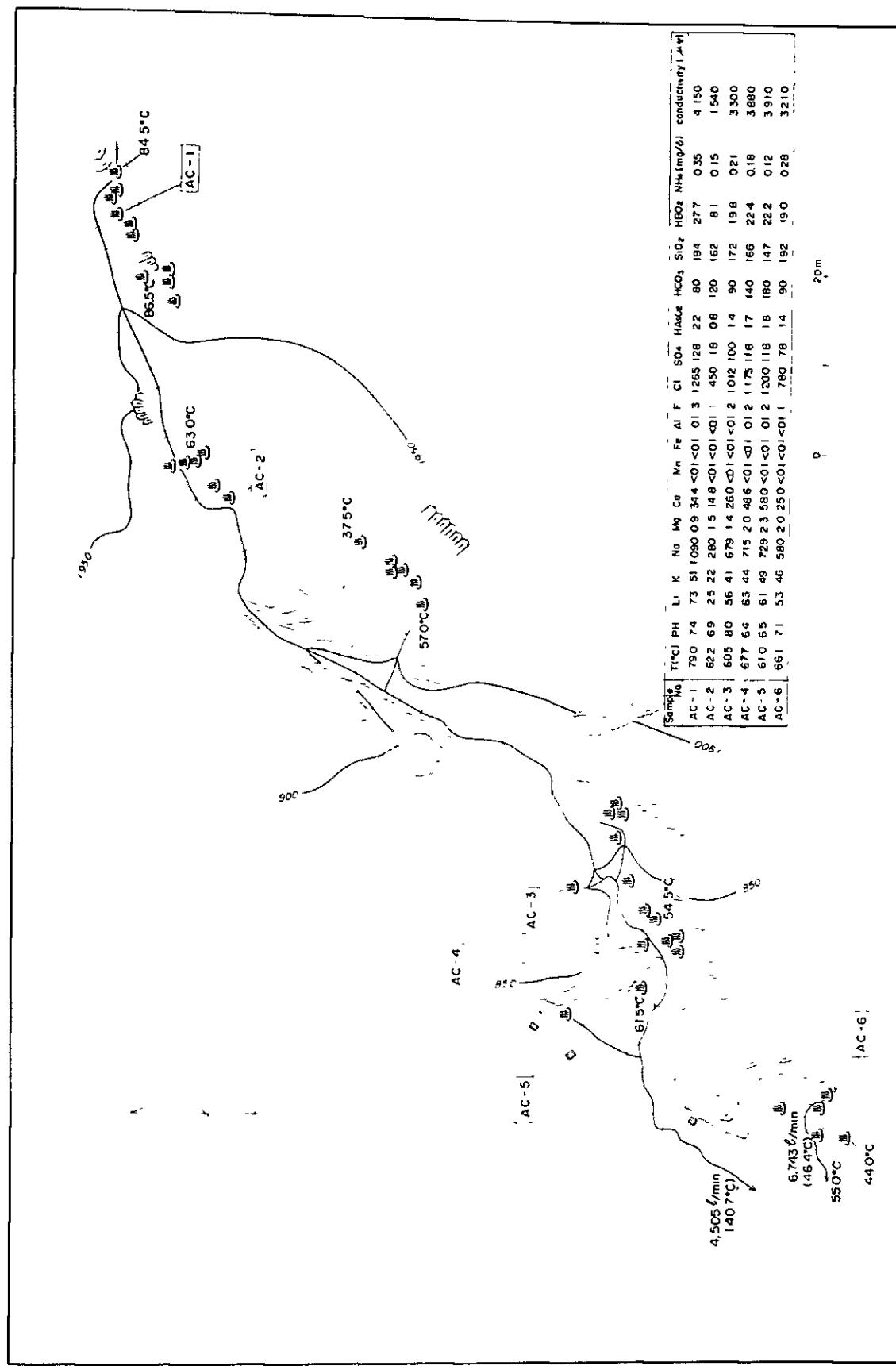


Fig.6-11 Detailed sketch of geothermal manifestation (7) Aguas Calientes



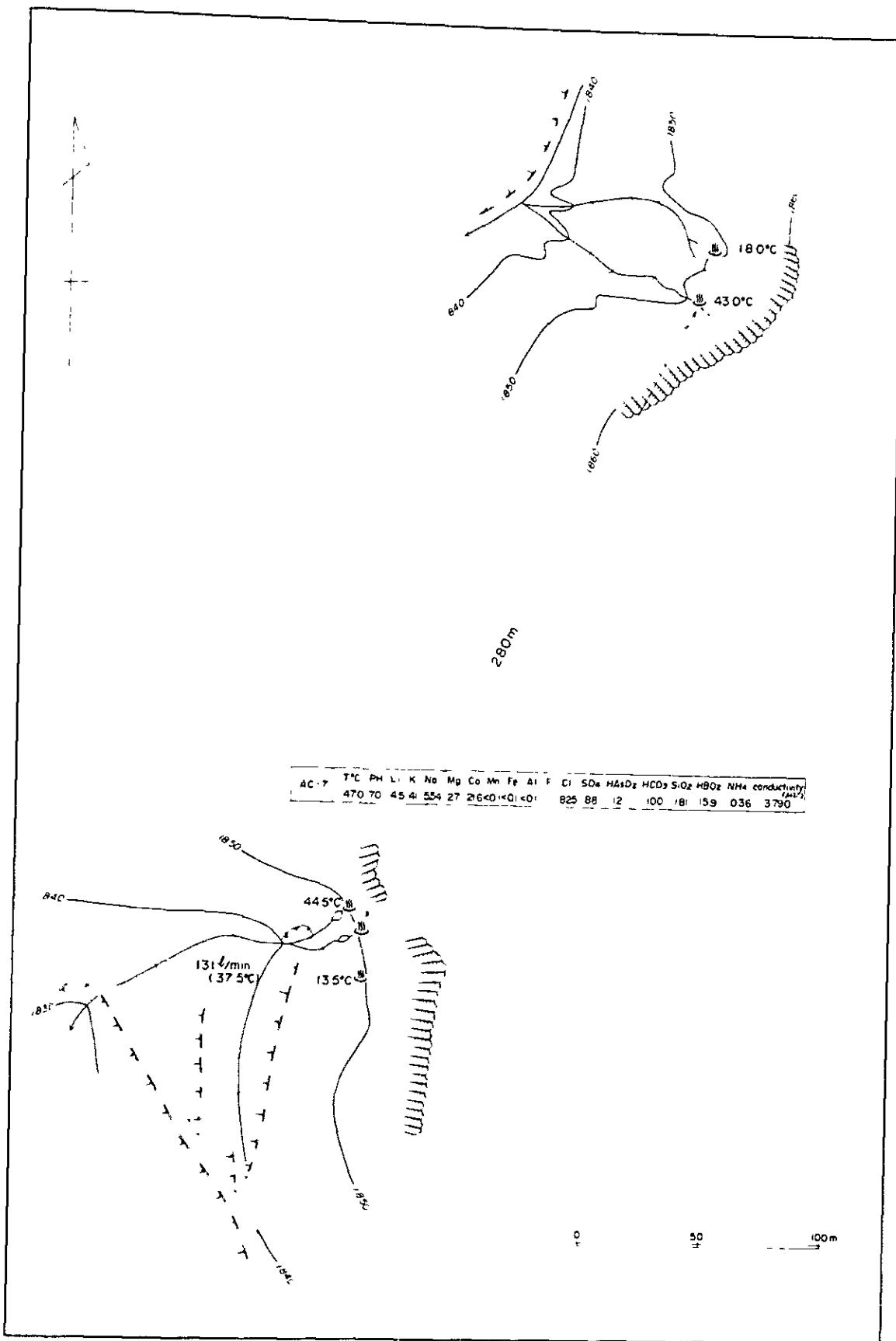


Fig.6-12 Detailed sketch of geothermal manifestation  
(8) Banos del Agua Caliente



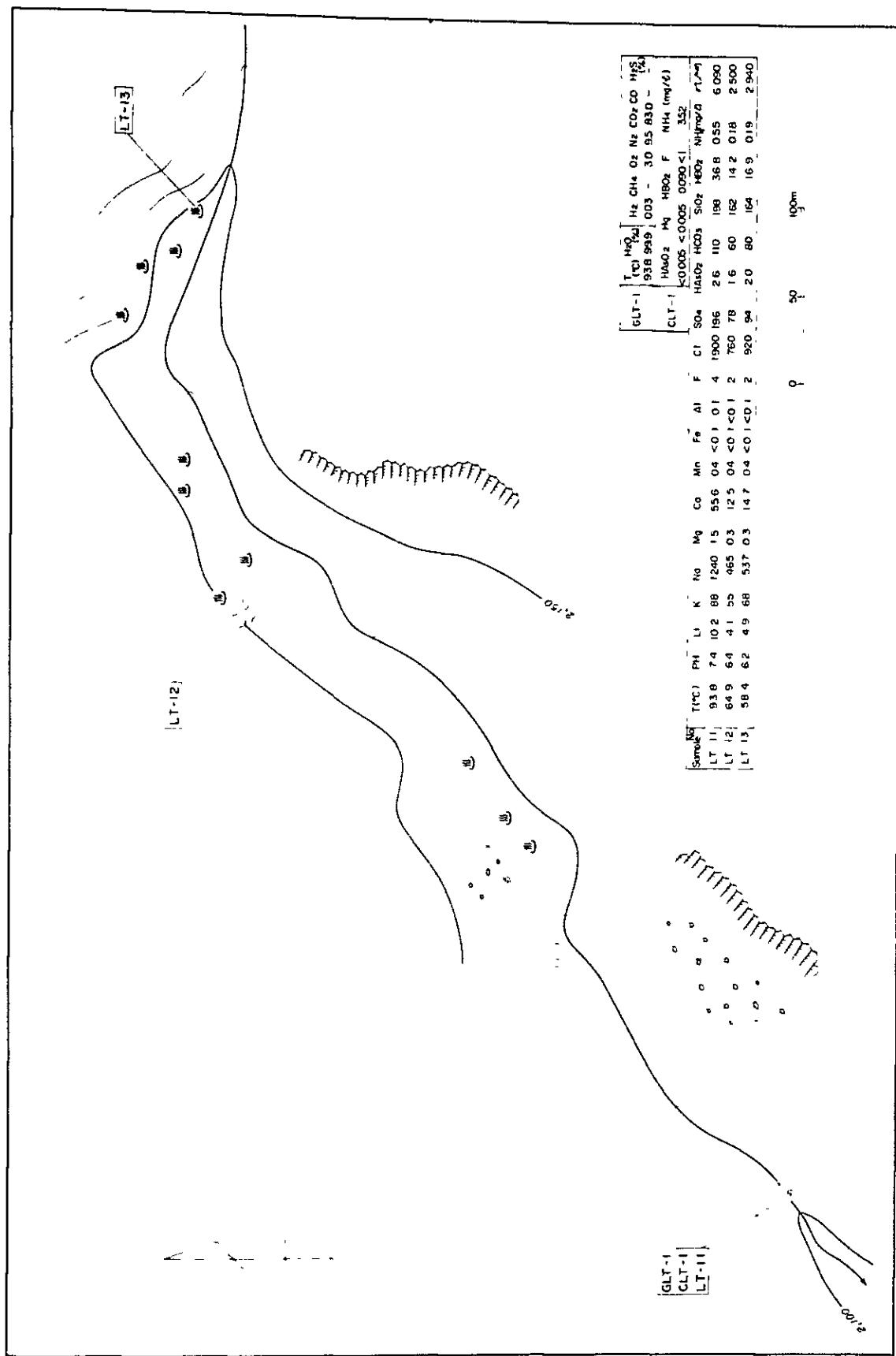


Fig.6-13 Detailed sketch of geothermal manifestation (9) Los Tachos - 1



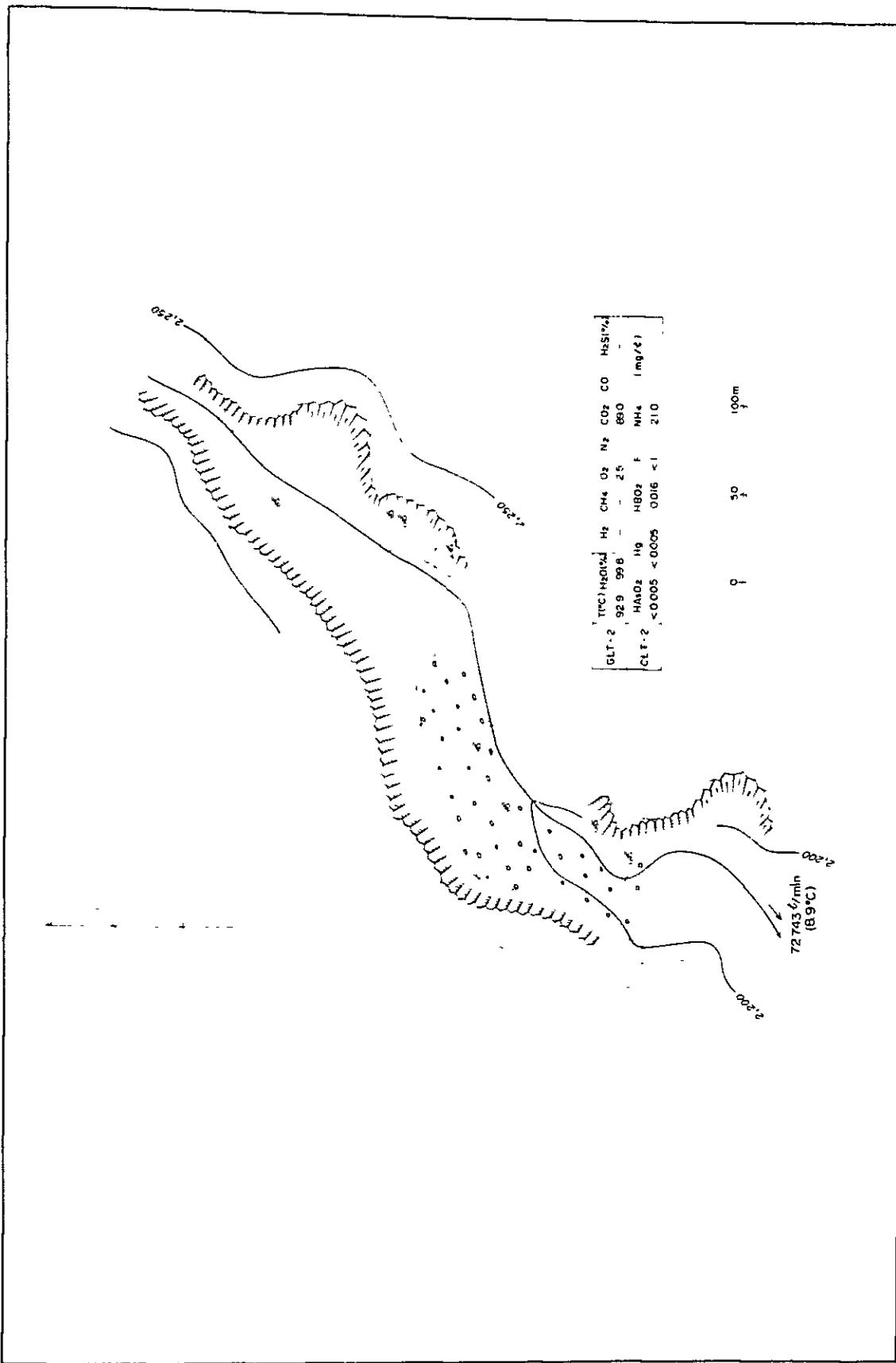


Fig. 6-14 Detailed sketch of geothermal manifestation (10) Los Tachos - 2



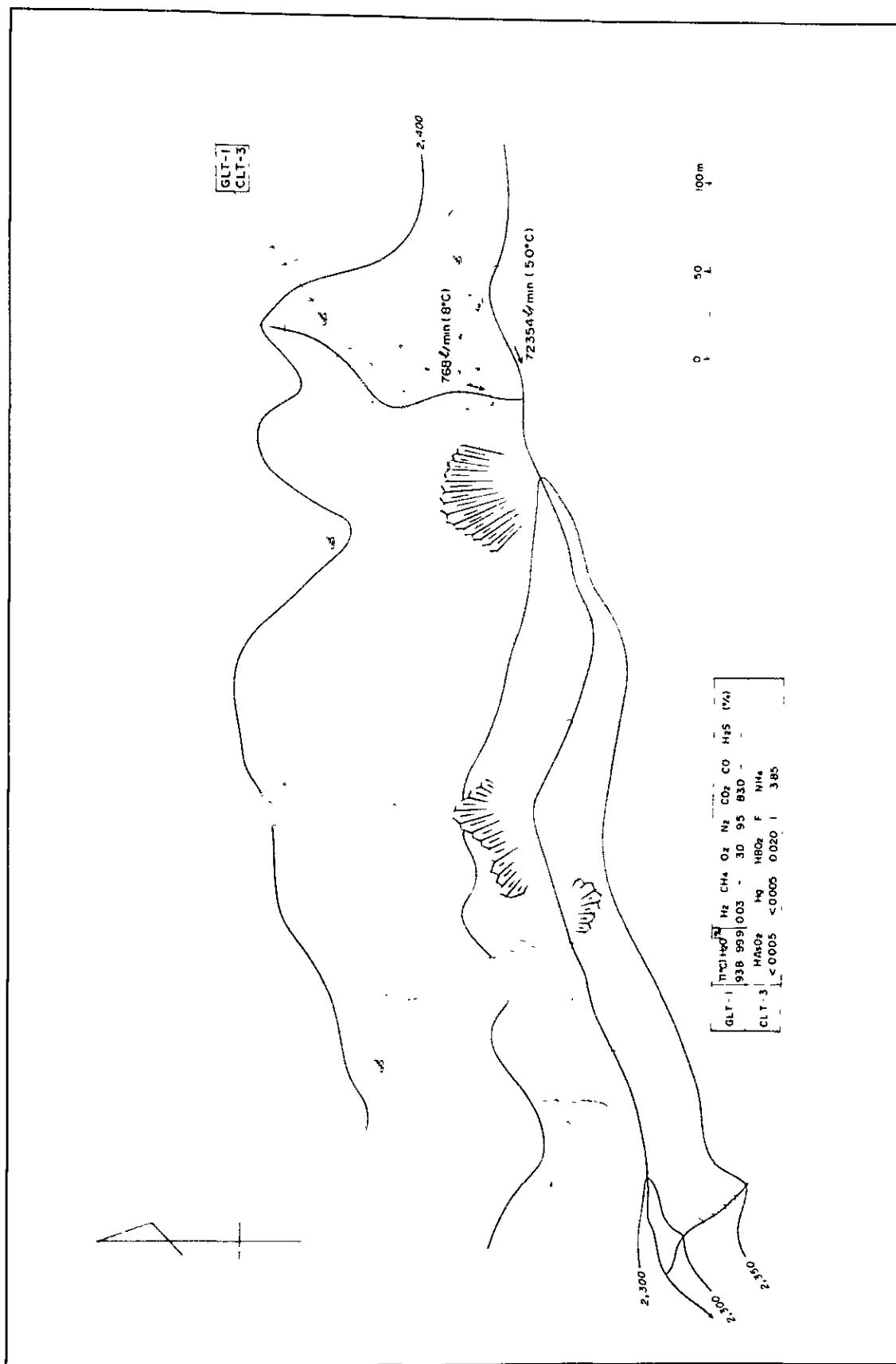


Fig. 6-15 Detailed sketch of geothermal manifestation (11) Los Tachos - 3



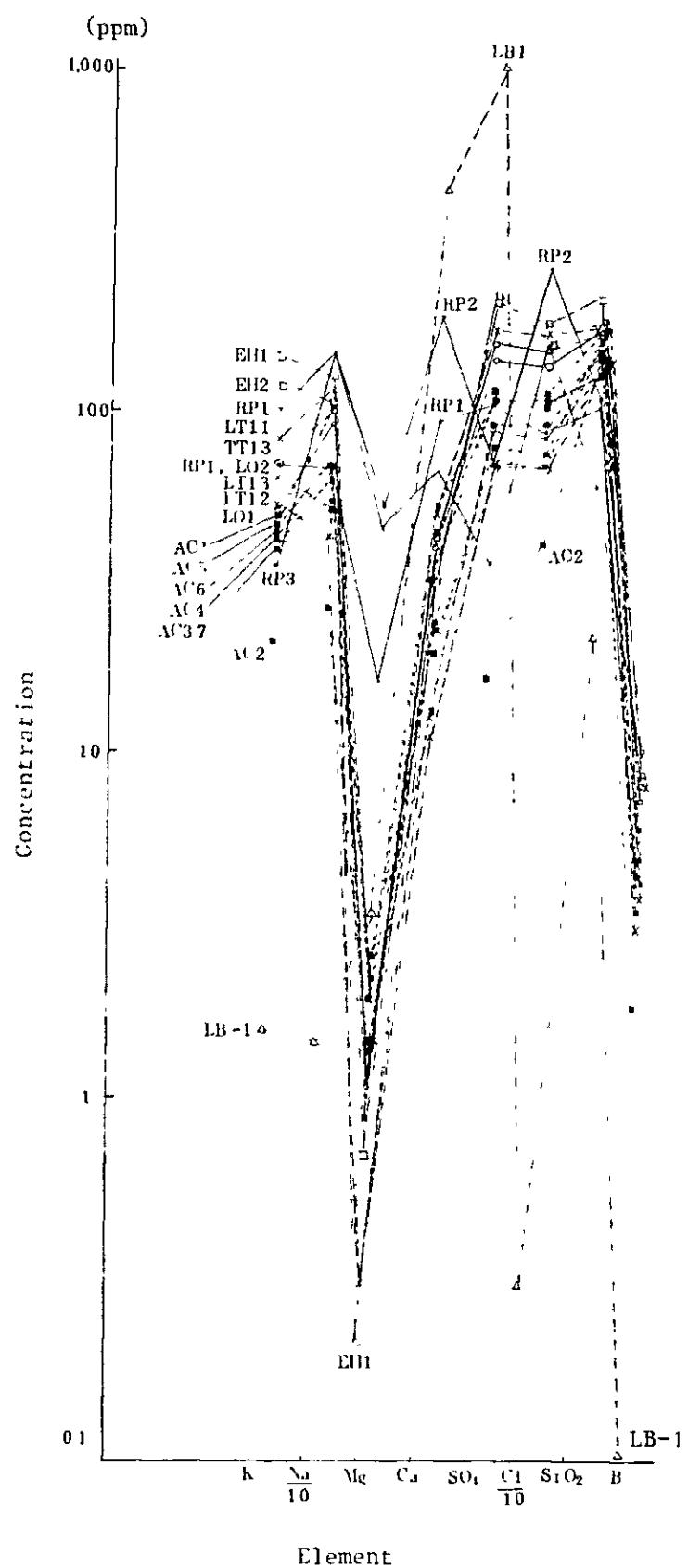


Fig.6-16 Main chemical compositions of hot water



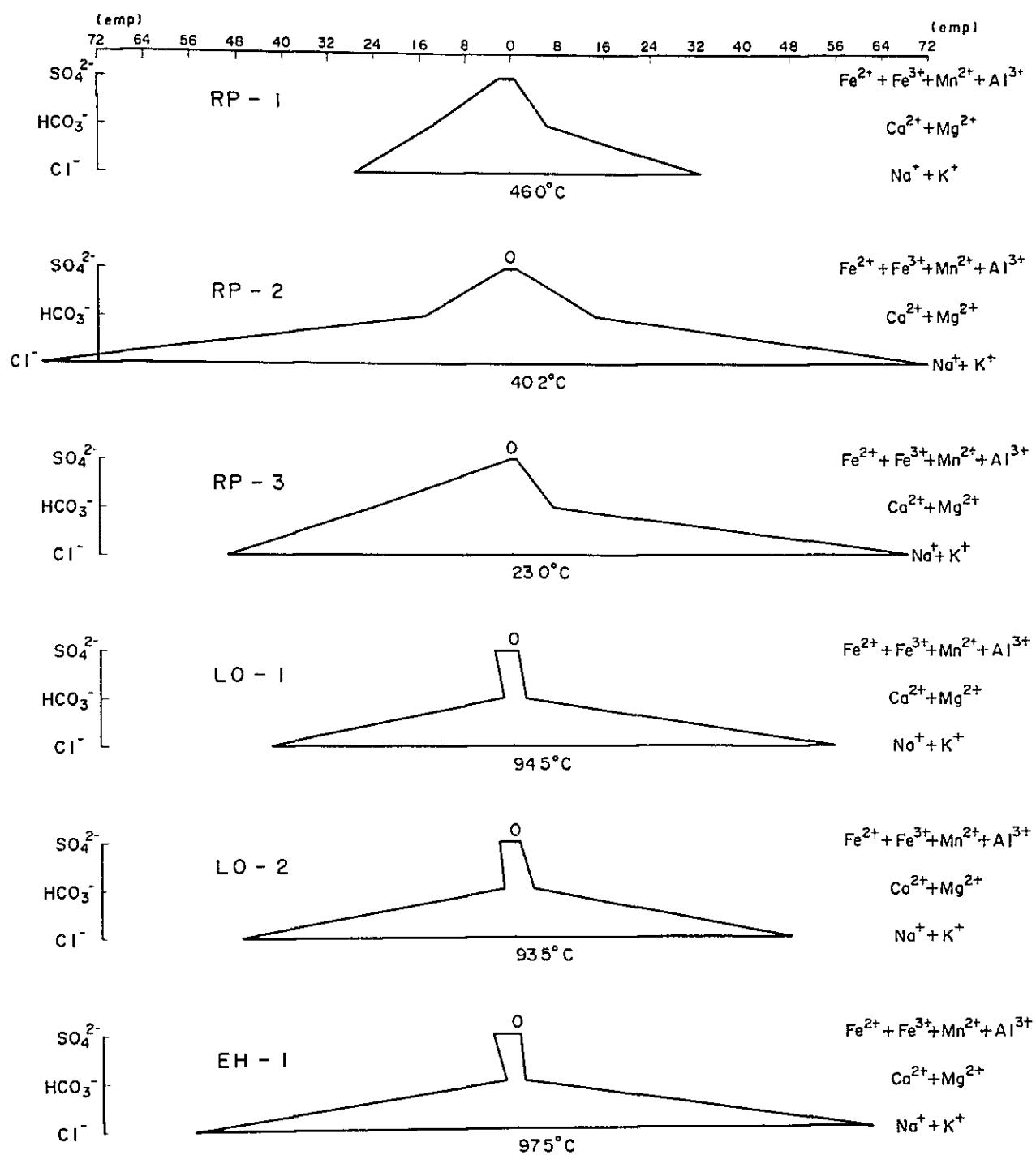


Fig.6-17(1) Hexadiagrams of main chemical compositions of hot water



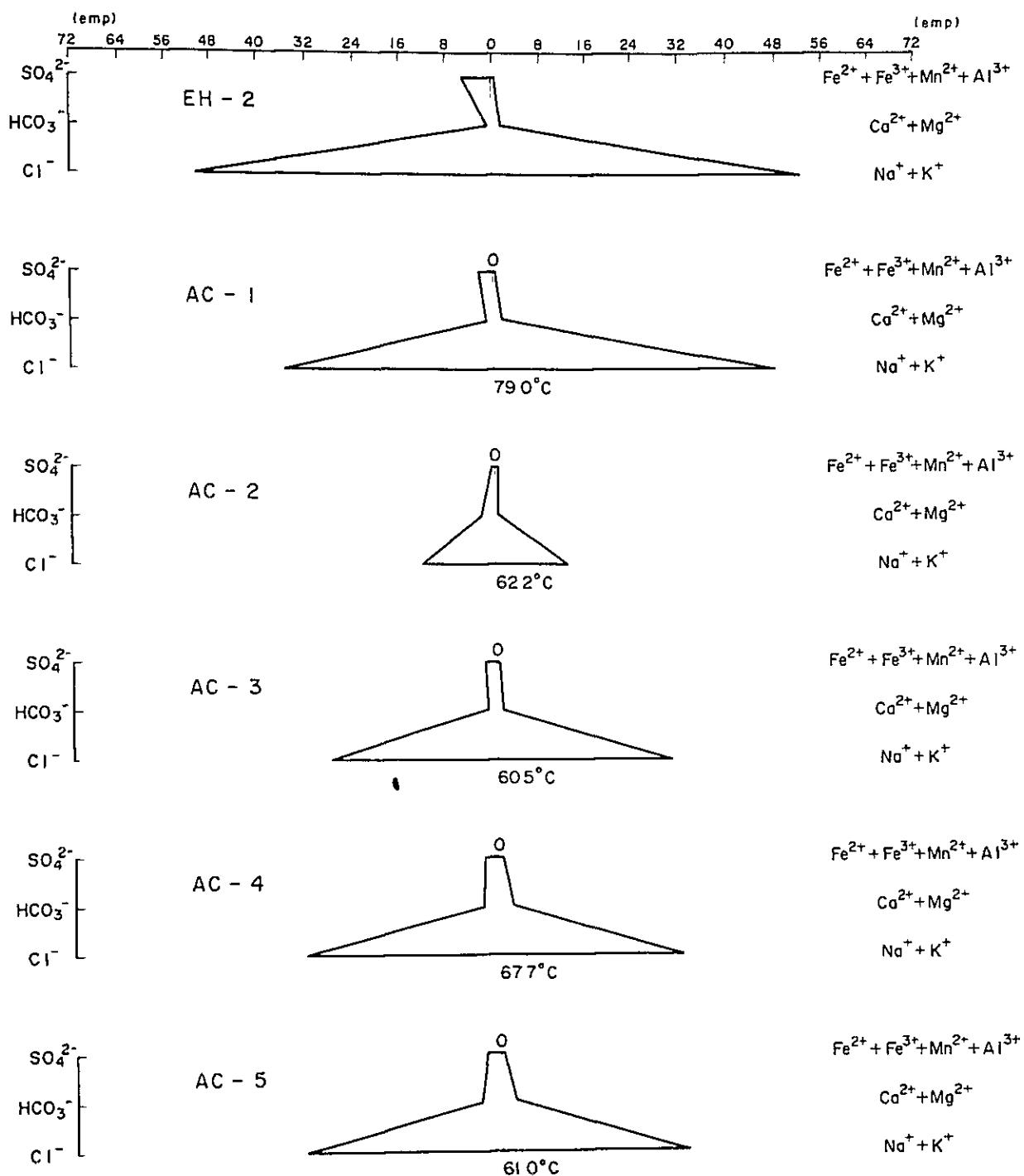


Fig.6-17(2) Hexadiagrams of main chemical compositions of hot water



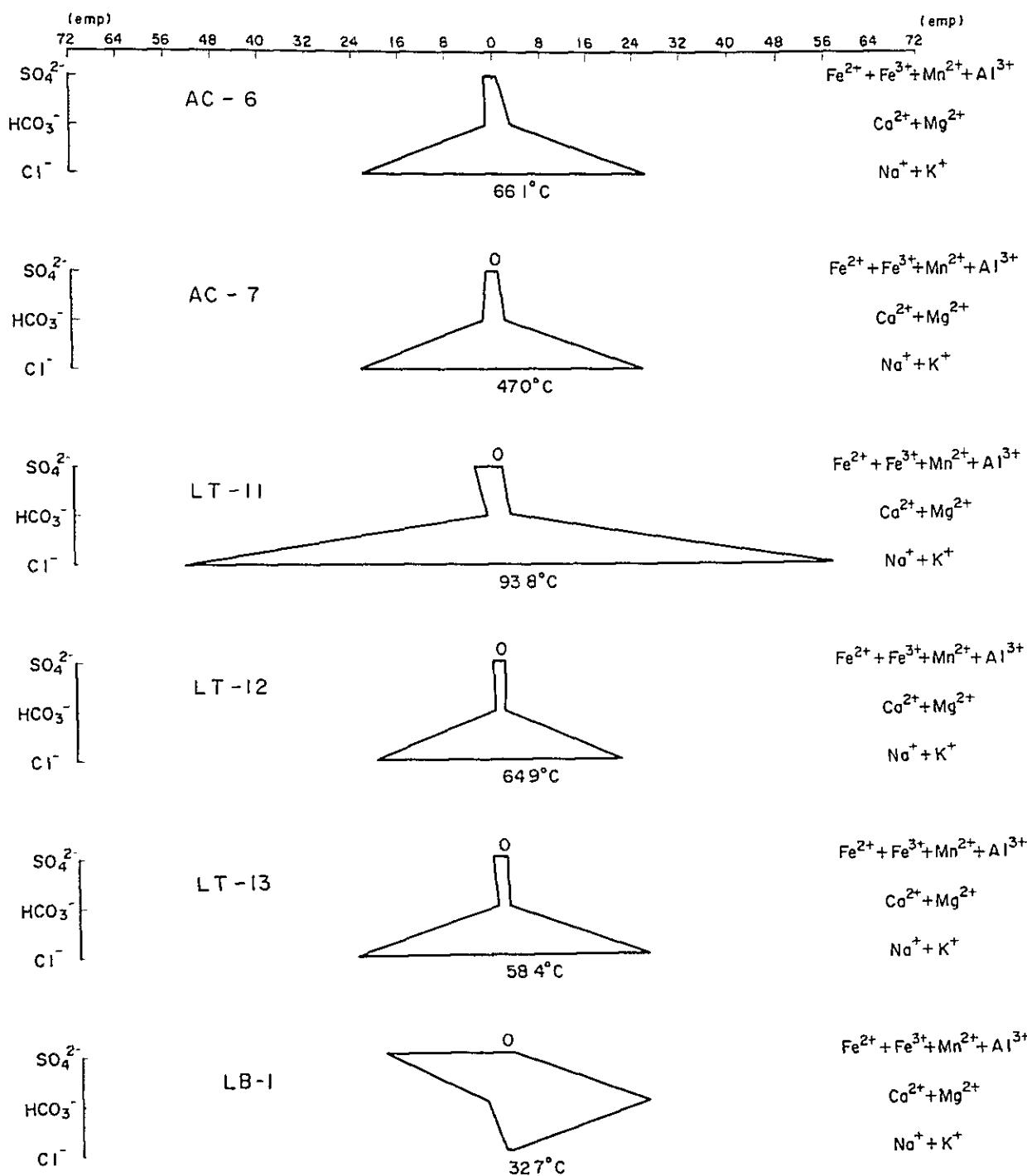
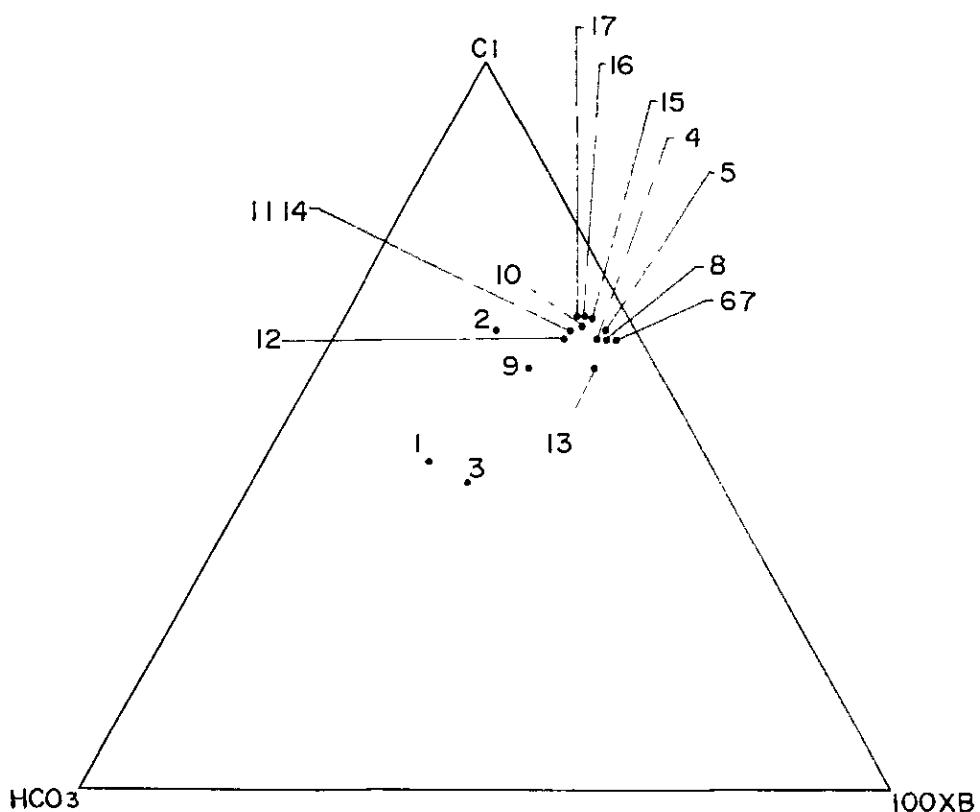


Fig.6-17(3) Hexadiagrams of main chemical compositions of hot water





1	RP-1	7	EH-2	13	AC-6
2	RP-2	8	AC-1	14	AC-7
3	RP-3	9	AC-2	15	LT-11
4	LO-1	10	AC-3	16	LT-12
5	LO-2	11	AC-4	17	LT-13
6	EH-1	12	AC-5		

Fig.6-18 Diagram of Cl -  $\text{HCO}_3$  - B contents of hot water

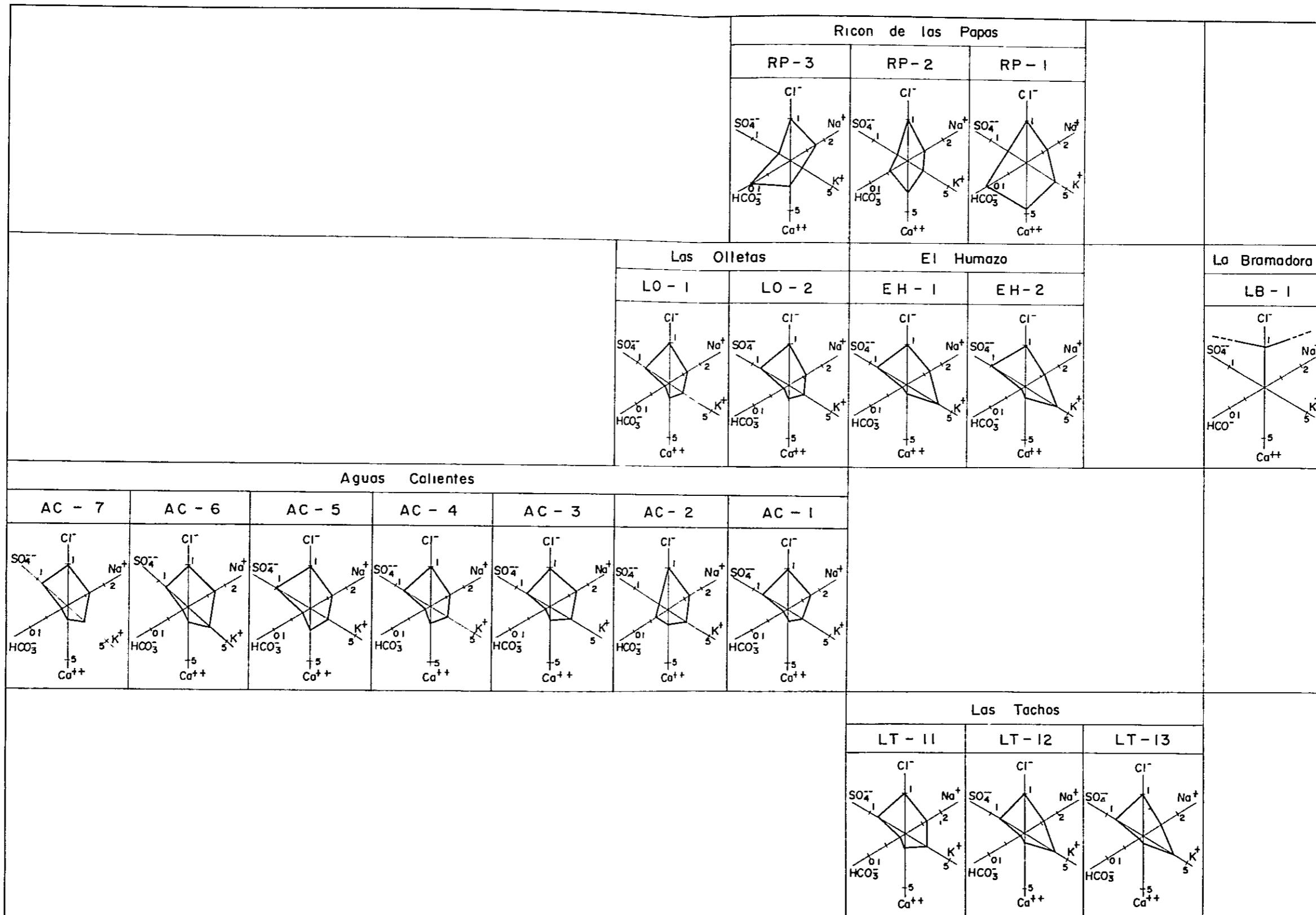
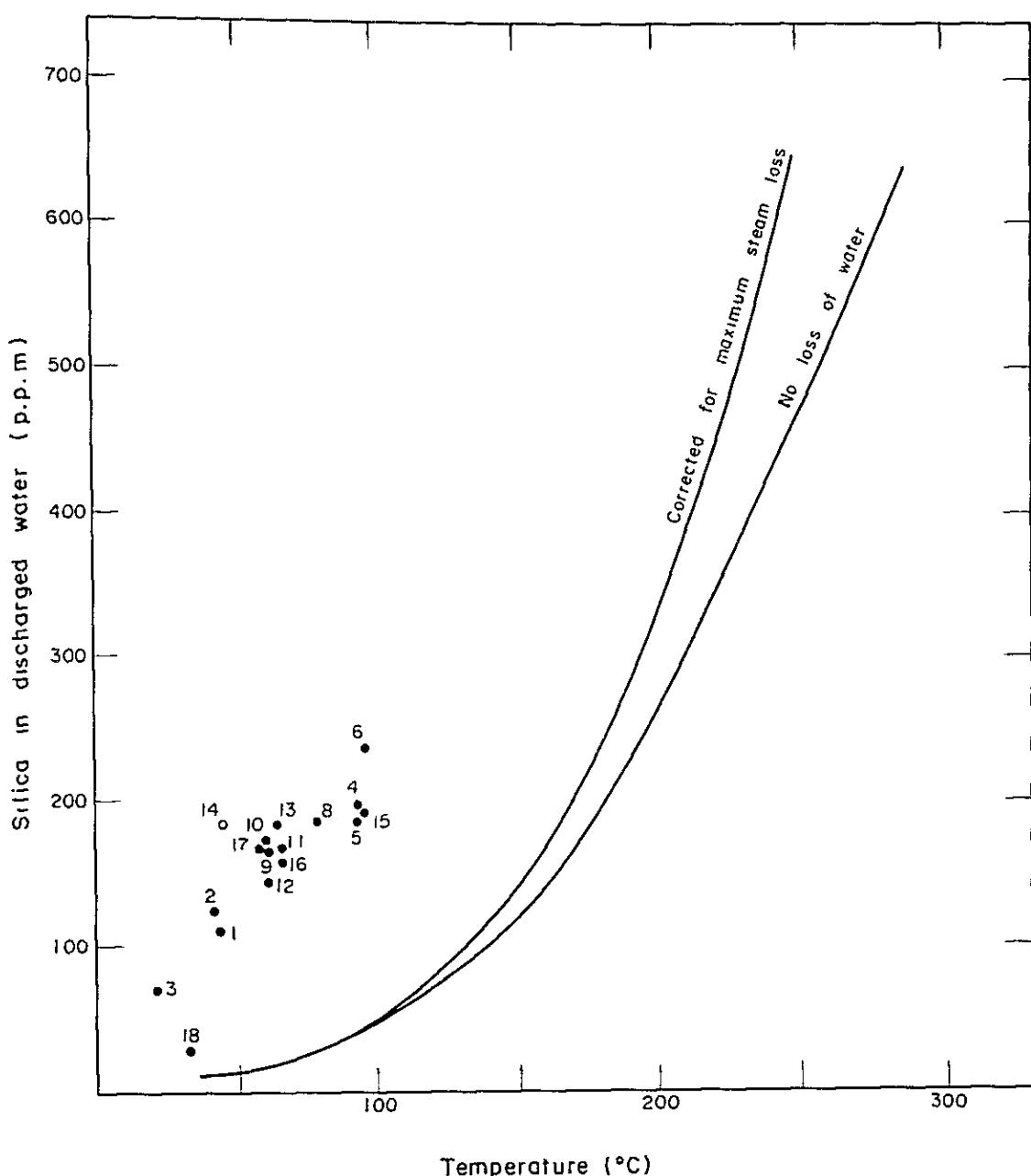


Fig.6-19 Comparative diagrams of ion - concentration index between sea water and hot water

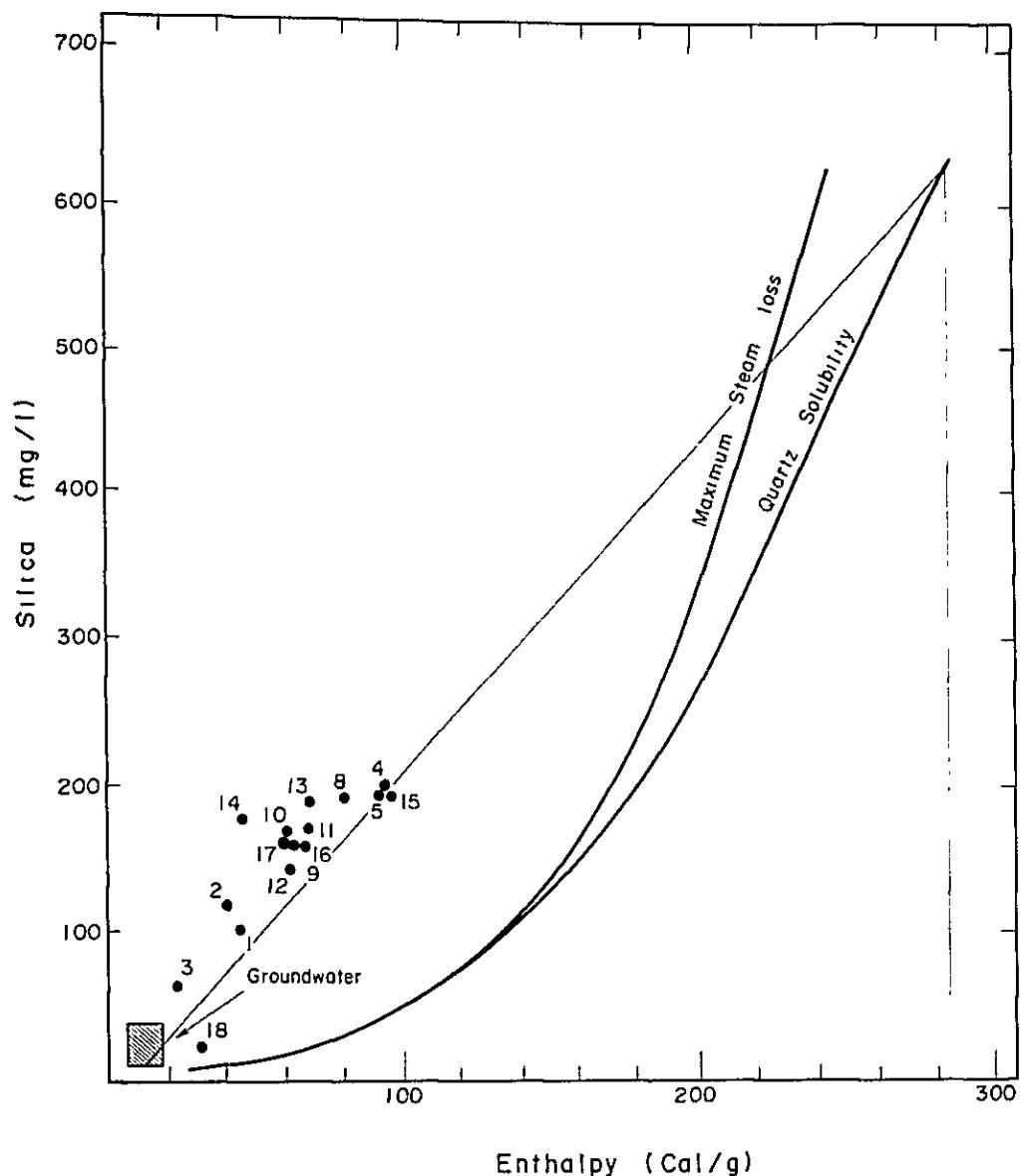




Rincón de las Papas		Las Olletas		El Humazo		Aguas Calientes		Los Tachos		La Bramadora	
No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No
1	RP - 1	4	LO - 1	6	EH - 1	8	AC - 1	15	LT - 11	18	LB
2	" - 2	5	" - 2		" - 2	9	" - 2	16	" - 12		
3	" - 3					10	" - 3	17	" - 13		
-	-	-	-	-	-	11	" - 4				
-	-	-	-	-	-	12	" - 5				
-	-	-	-	-	-	13	" - 6				
-	-	-	-	-	-	14	" - 7				

Fig.6-20 Silica - geochemical geothermometer

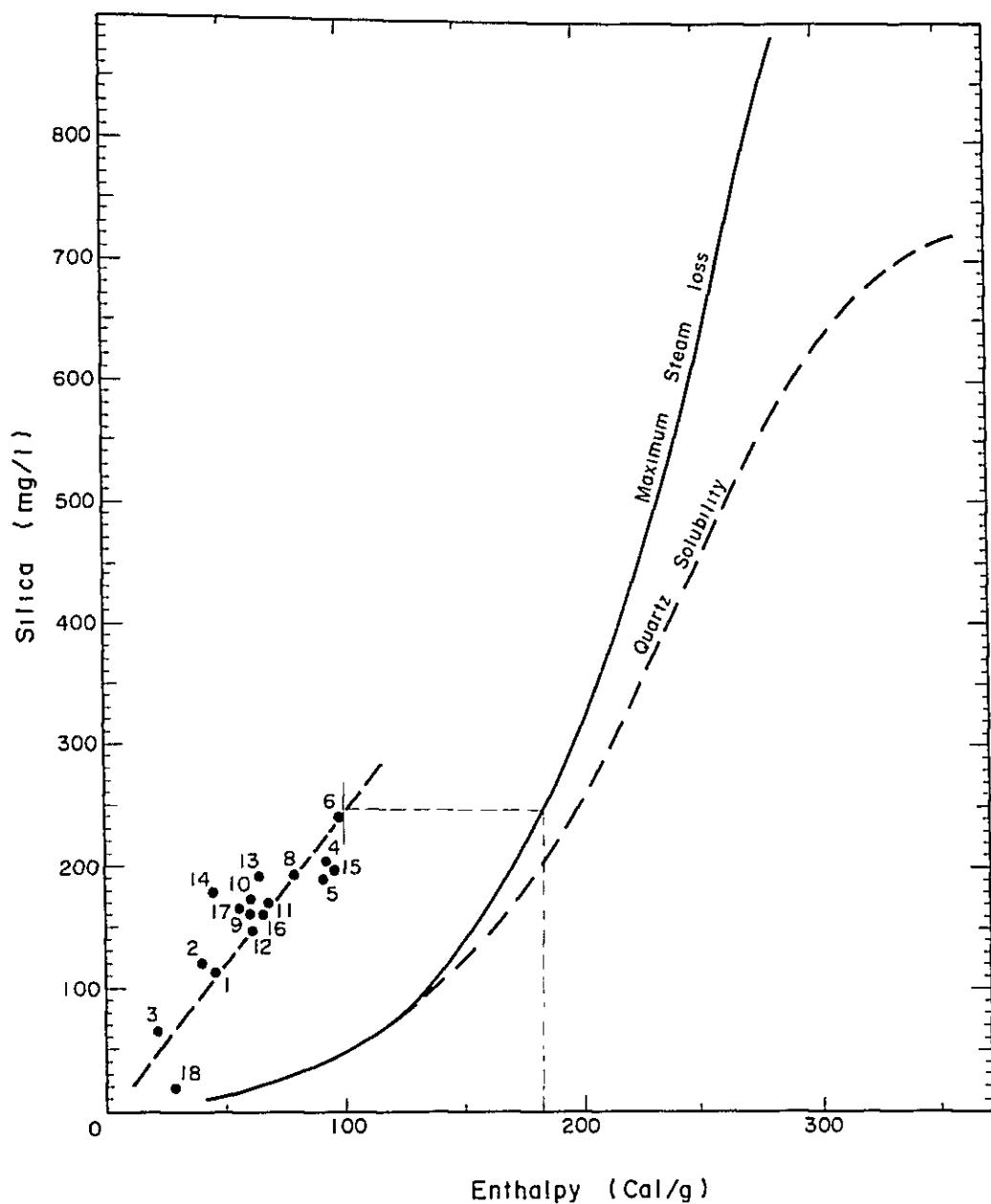




Rincón de los Popas		Las Olleras		El Humazo		Agua Calientes		Los Tachos		La Bramadora	
No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No
1	RP - 1	4	LO - 1	6	EH - 1	8	AC - 1	15	LT - 11	18	LB
2	" - 2	5	" - 2		" - 2	9	" - 2	16	" - 12		
3	" - 3					10	" - 3	17	" - 13		
						11	" - 4	-	-		
						12	" - 5	-	-		
						13	" - 6	-	-		
						14	" - 7	-	-		

Fig.6-21 Silica - geochemical geothermometer  
(mixing model 1-1)

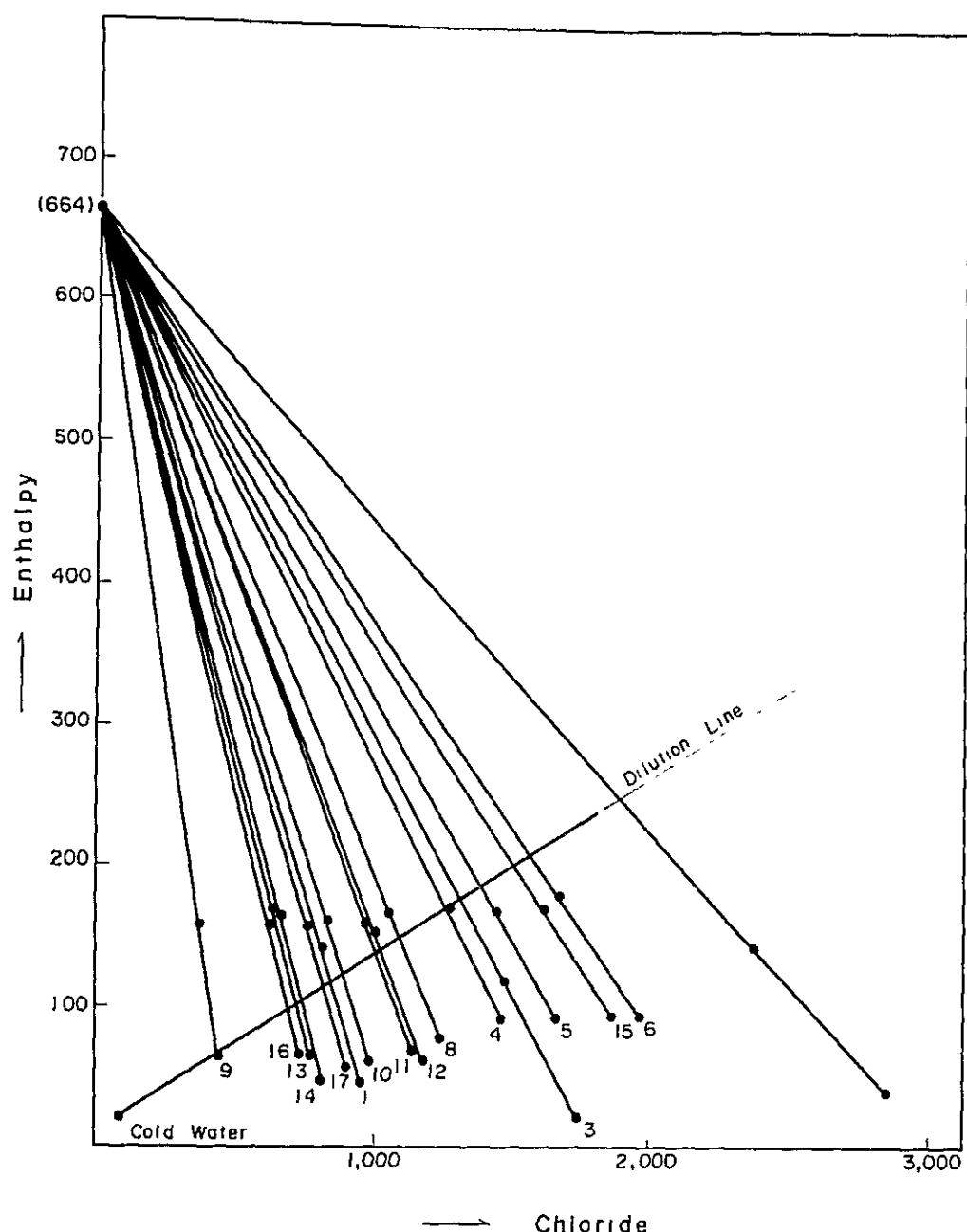




Rincón de las Papas		Los Olletas		El Humazo		Aguas Calientes		Los Tachos		La Bromadura	
No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No
1	RP - 1	4	LO - 1	6	EH - 1	8	AC - 1	15	LT - 11	18	LB
2	" - 2	5	" - 2	"	" - 2	9	" - 2	16	" - 12		
3	" - 3					10	" - 3	17	" - 13		
						11	" - 4				
						12	" - 5				
						13	" - 6				
						14	" - 7				

Fig.6-22 Silica - geochemical geothermometer  
(mixing model 1 - 2)





Rincón de los Papas		Las Olletas		El Humazo		Aguas Calientes		Los Tachos		La Bromadura	
No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No	No	Sample No
1	RP - 1	4	LO - 1	6	EH - 1	8	AC - 1	15	LT - 11	18	LB
2	" - 2	5	" - 2		" - 2	9	" - 2	16	" - 12		
3	" - 3					10	" - 3	17	" - 13		
						11	" - 4				
						12	" - 5				
						13	" - 6				
						14	" - 7				

Fig.6-23 Silica - geochemical geothermometer  
(mixing model 2)

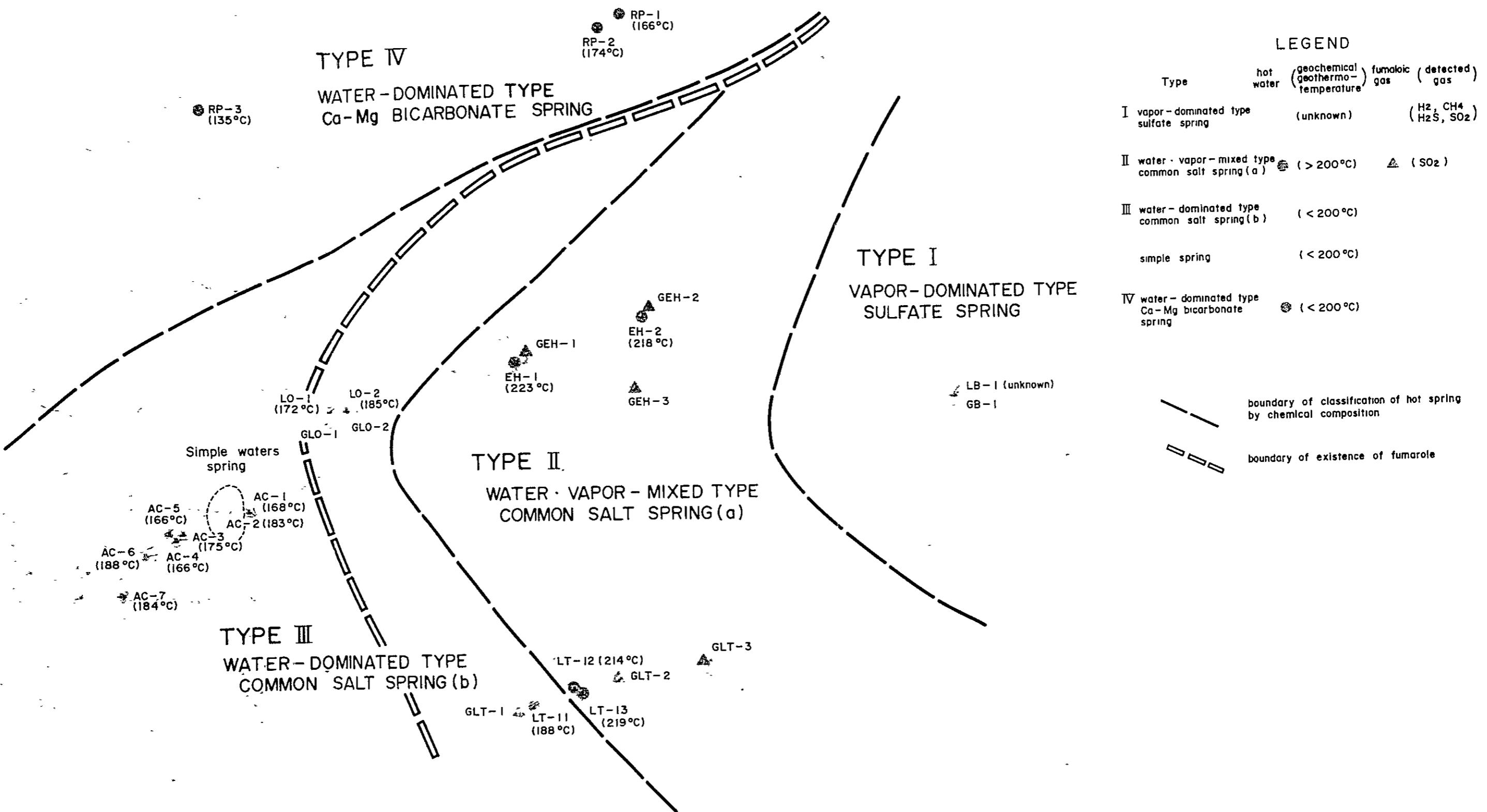
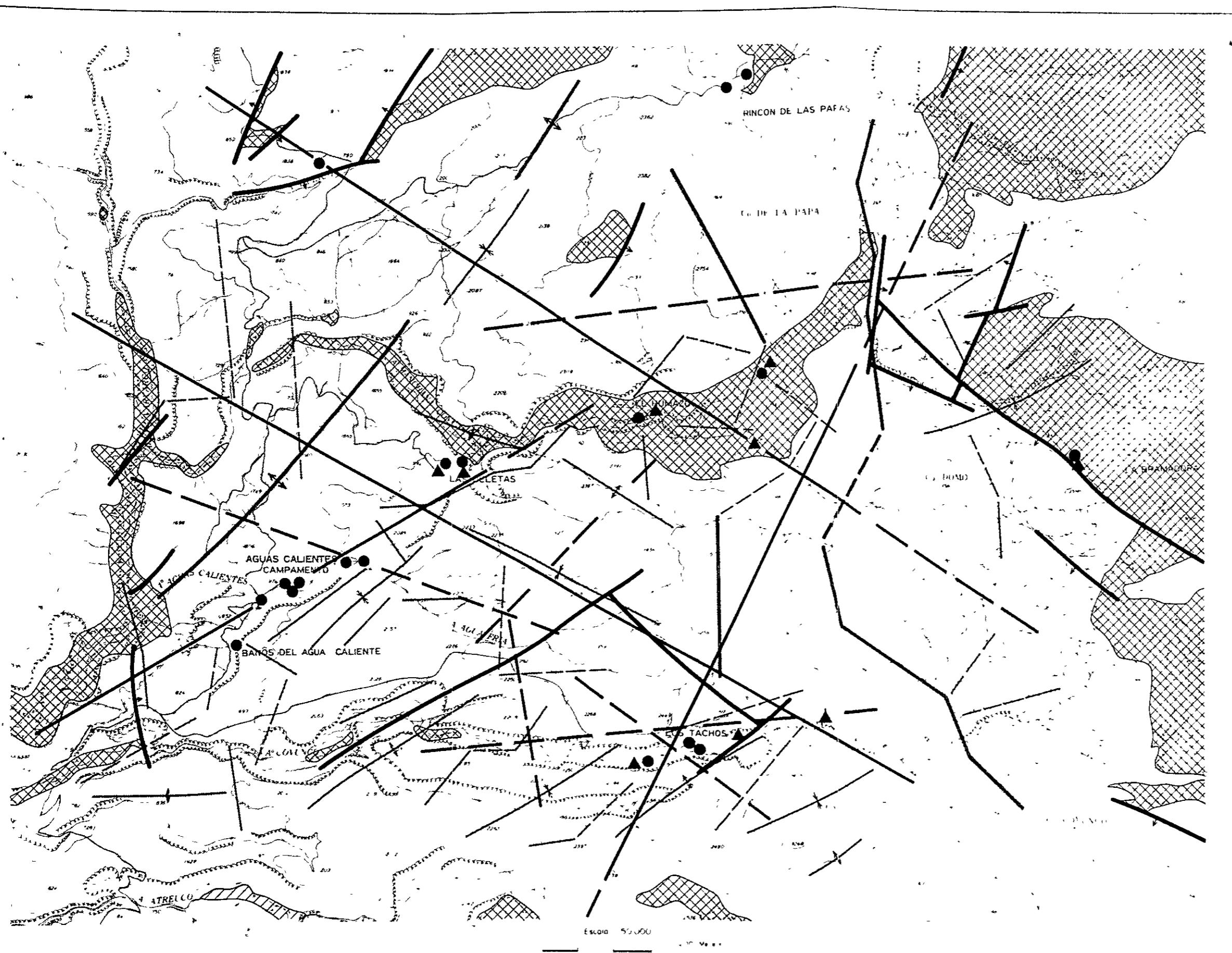


Fig.6-24 Composite map of zoning of hot spring - fumarole and geochemical geothermo-temperature



## 7. 地 热 構 造 モ デ ル



### LEGEND

#### (Geology)

basement & Mesozoic formation

fault

#### (Gravity)

high gravity area

low gravity area

gravimetric lineament ( distinct )

gravimetric lineament ( indistinct )

gravimetric anticline

gravimetric syncline

#### (Ground temperature & Geochemistry)

trend of anomalies ( distinct )

trend of anomalies ( indistinct )

concentration

#### (Geothermal manifestation)

hot spring

fumarole

classification of hot spring by chemical composition

existence of fumarole

geothermal temperature ( geothermo-temperature )

### LEGEND

classification of hot spring by chemical composition

existence of fumarole

dominated type  
fate spring ( unknown )

vapor-mixed type  
mon salt spring ( a ) ( $> 200^{\circ}\text{C}$ )

vapor-dominated  
mon salt spring ( b ) ( $< 200^{\circ}\text{C}$ )

Mg bicarbonate spring ( $< 200^{\circ}\text{C}$ )

chemistry area

al ground temperature

concentration

concentration

distinct

indistinct

nitrate zone

te-zone

high

low

Fig.7-1 Synthetic interpretation map of geologic structure

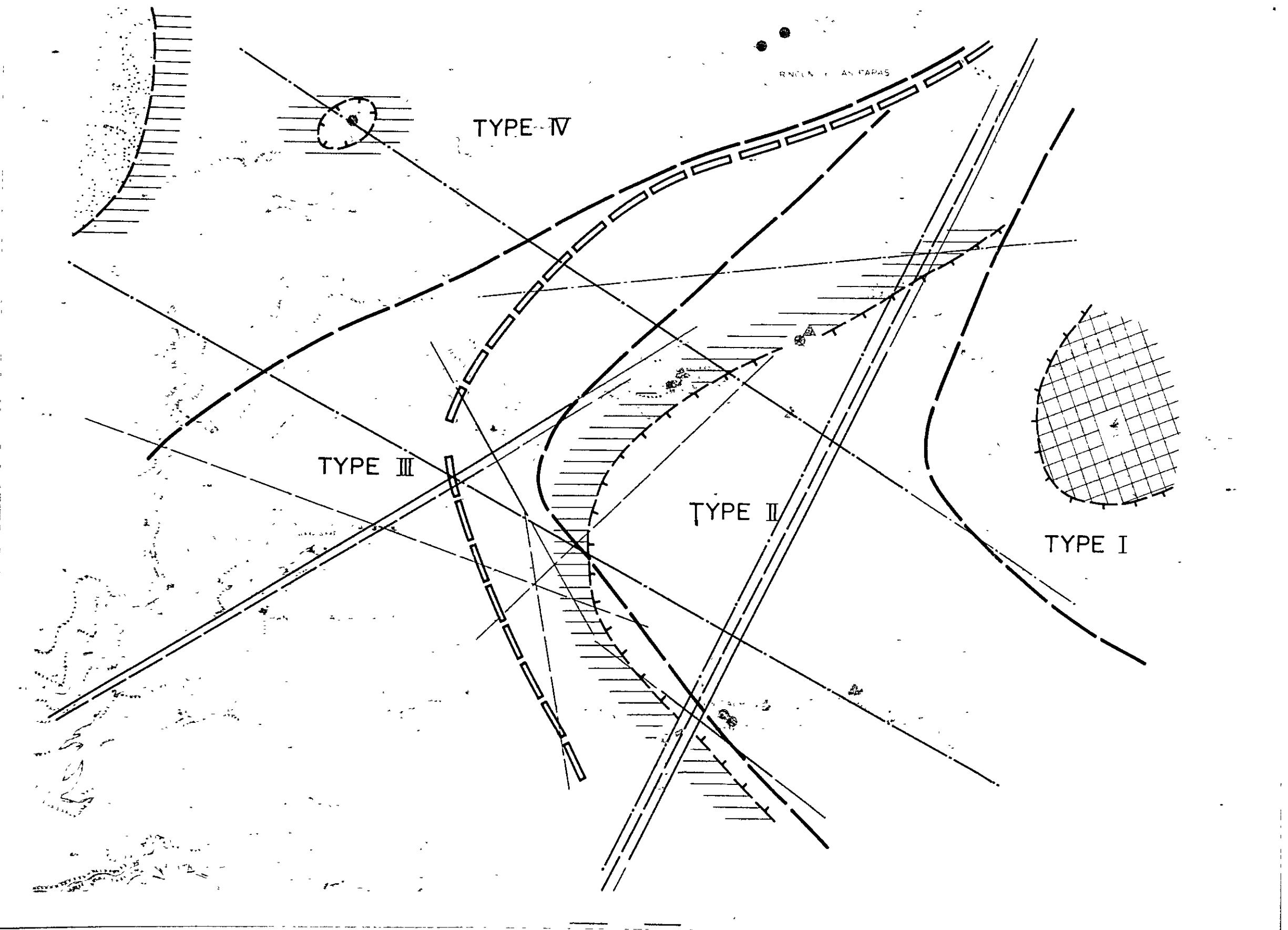


Fig.7-2 Synthetic interpretation map of heat flow structure

#### LEGEND

##### (Geothermal manifestation)

— boundary of classification of hot spring by chemical composition

— boundary of existence of fumarole

##### (hot water)(fumeroic)gas

##### (geochemical geothermo-temperature)

I vapor-dominated type sulfate spring (unknown)

II water-vapor-mixed type common salt spring (a) (> 200°C)

III water-dominated common salt spring (b) (< 200°C)

IV water-dominated type Ca-Mg bicarbonate spring (< 200°C)

##### (Ground temperature & Geochemistry)

trend of anomalous area

— residual ground temperature

— Hg-concentration

— CO<sub>2</sub>-concentration

{ thick — distinct  
thin — indistinct }

##### (Alteration)

— kaoline-alunite zone

— kaoline zone

— montmorillonite-crystobalite zone

— opal zone

(temperature)

high

low

W ←

→ E

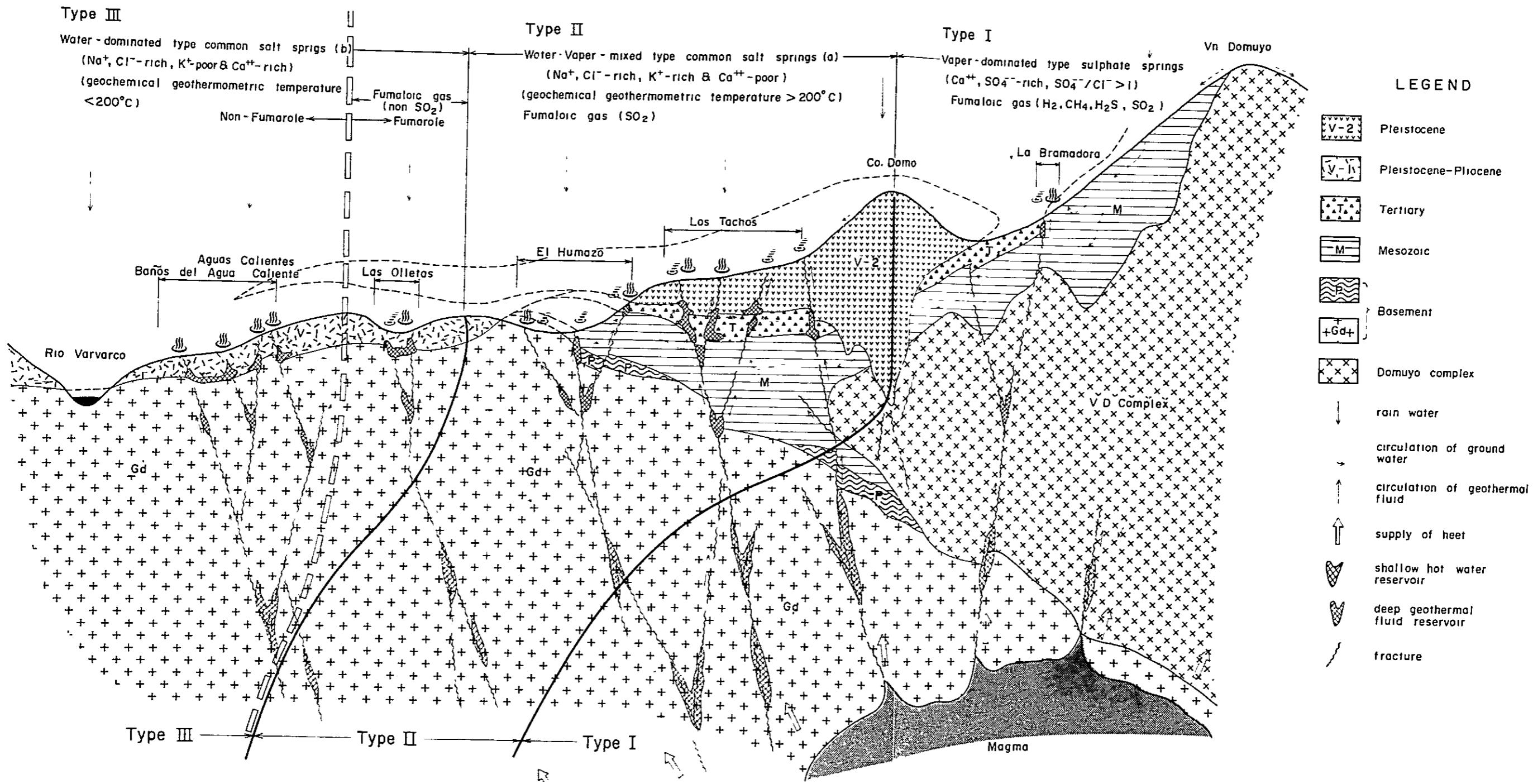


Fig.7-3 Model of circulation mechanism of geothermal fluid and geothermal reservoir structure (1)

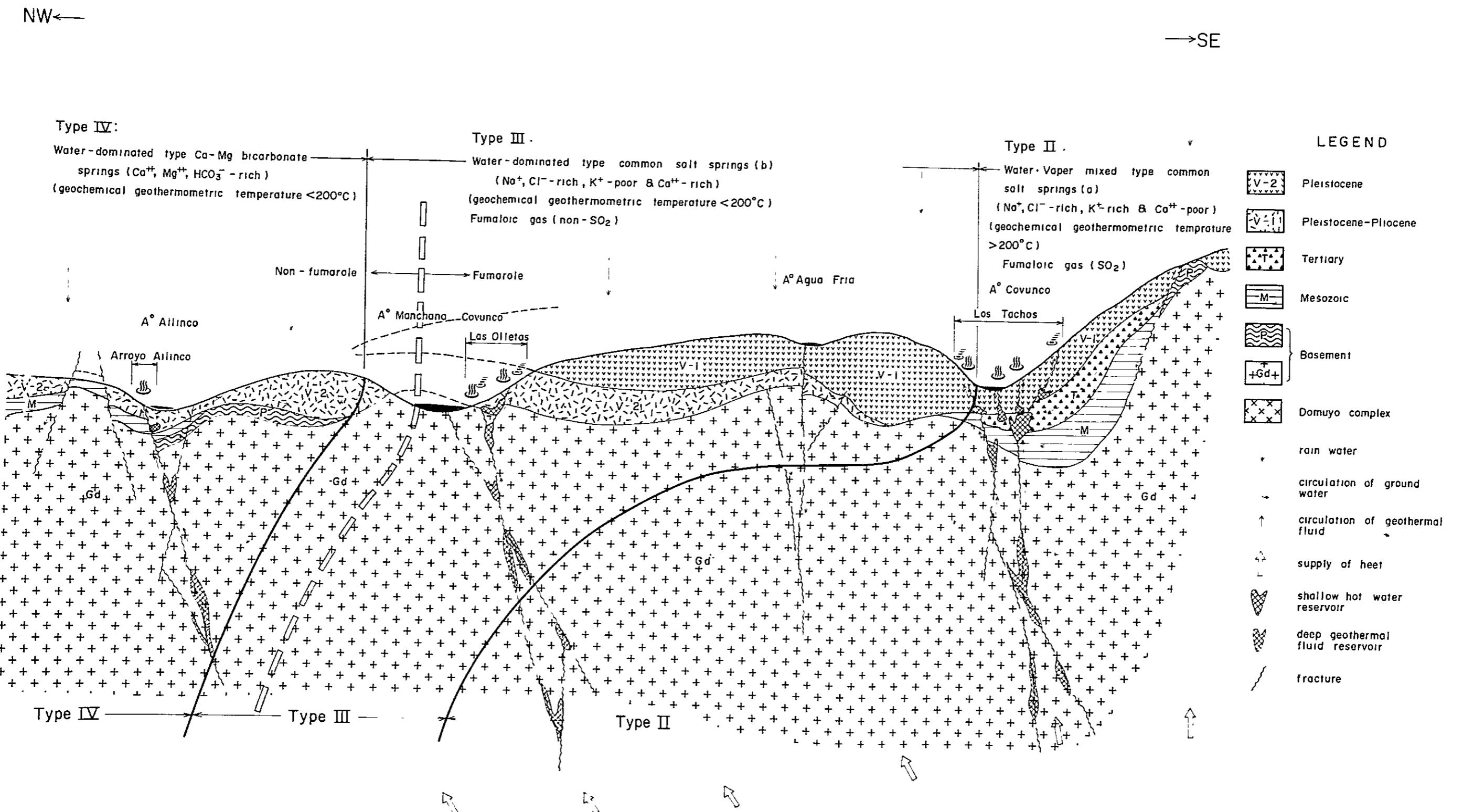


Fig.7-4 Model of circulation mechanism of geothermal fluid and geothermal reservoir structure (2)



## 8. 総括

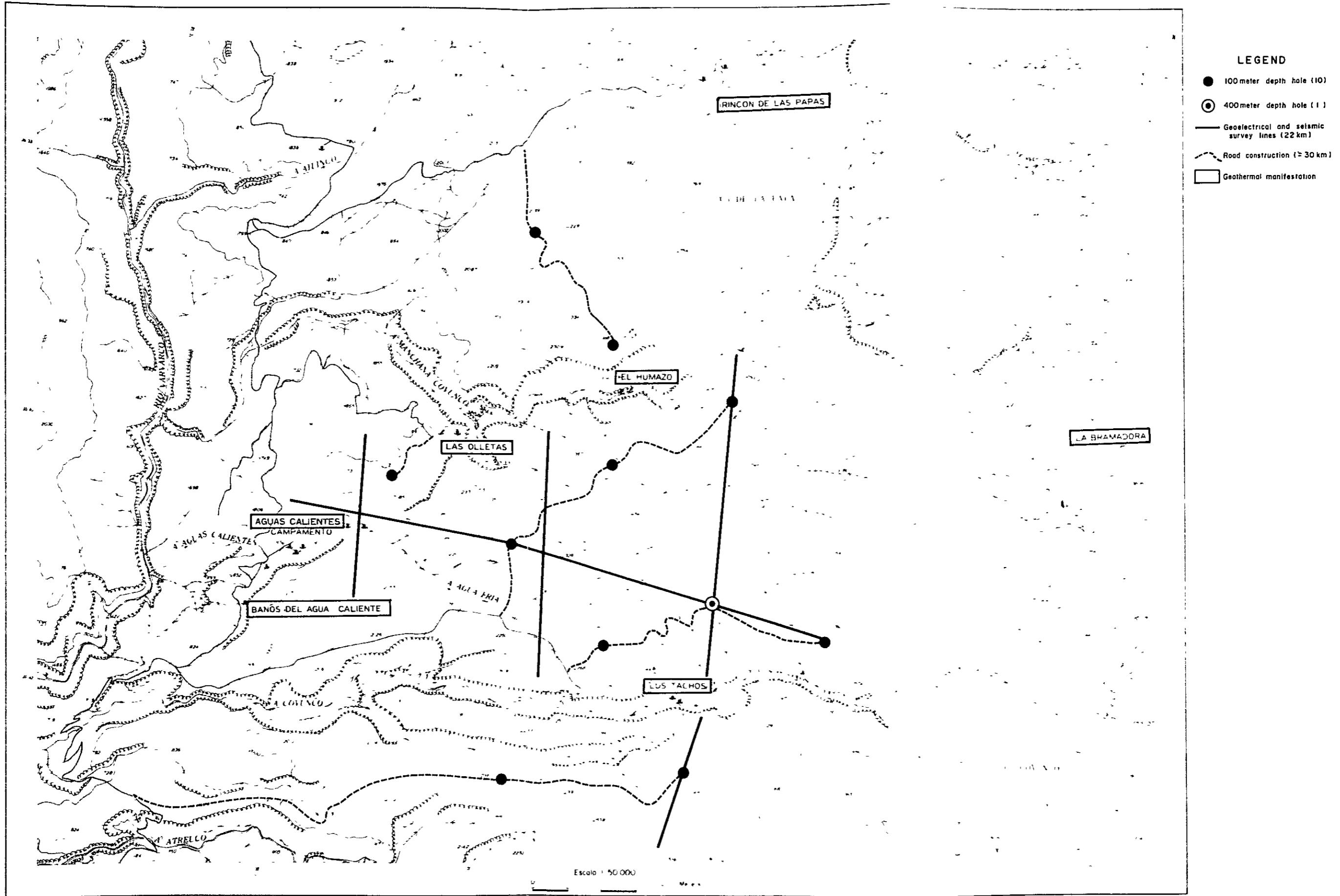


Fig.8-1 Proposed working plan of the third phase survey



