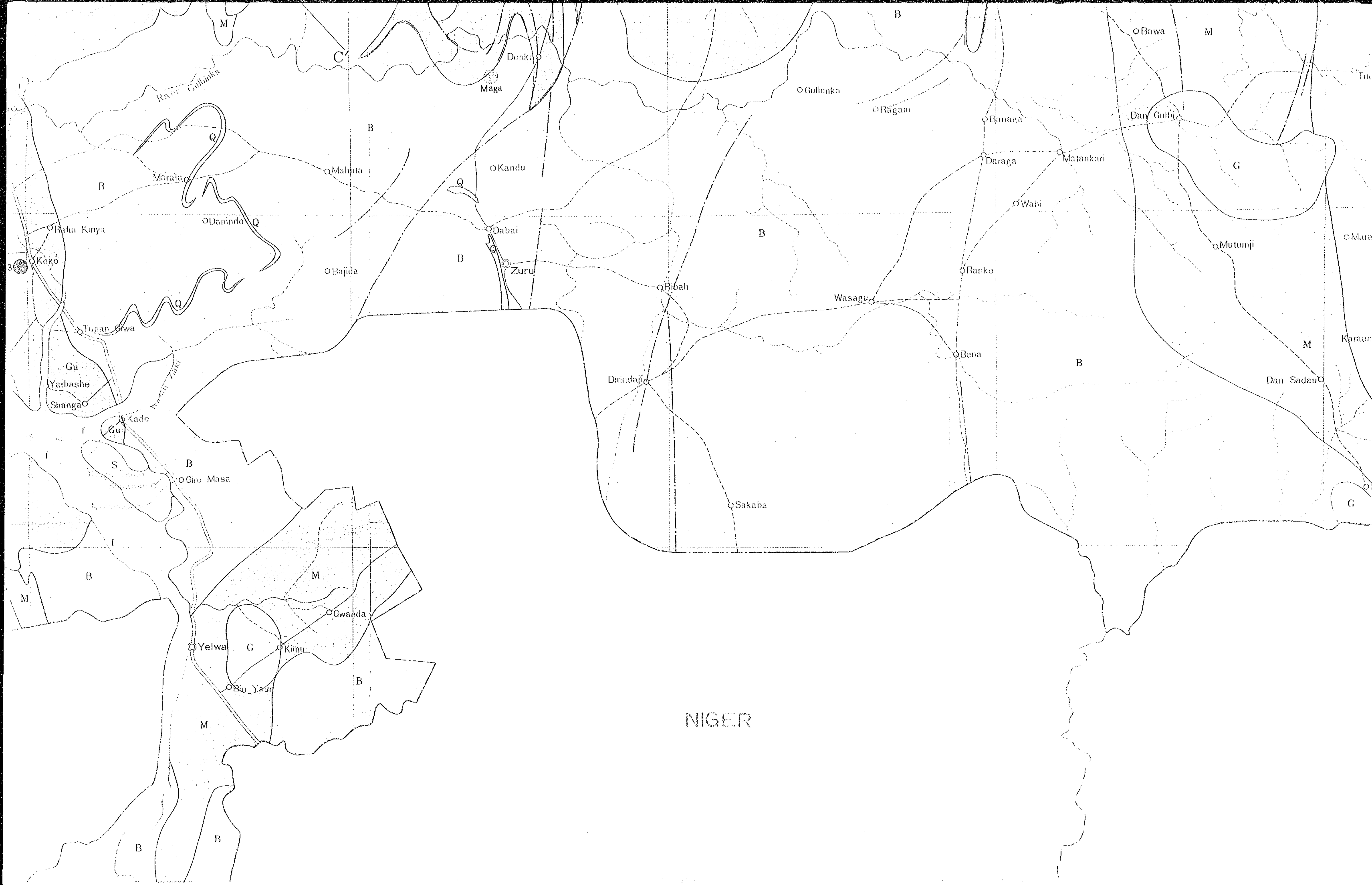

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Danindo
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Rafin Kiriya
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Koko
Mutumji
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Bajida
Zuru
Ranko
Ribah
Wasagu
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Tugan Giwa
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Yarbashe
Dirindaji
Dan Sadau
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6°00′
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7°00′
7°20′

KADUNA

Tertiary	Paleocene	Sokoto	
Cretaceous	Upper Cretaceous (Maestrichtian)	Rima	
	Lower Cretaceous		Unc
Pre-Cretaceous			U

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Lower Cretaceous
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DEV
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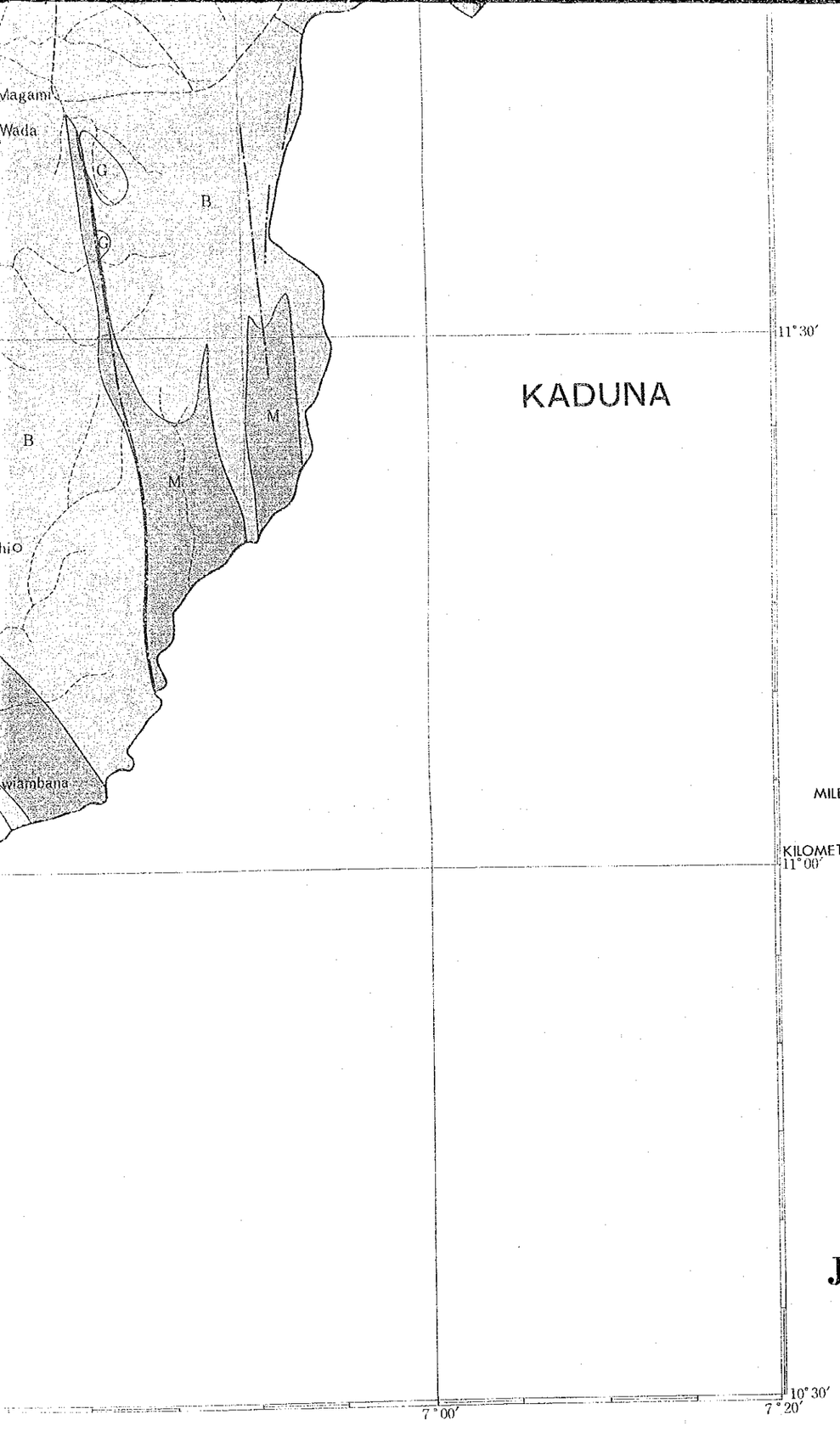
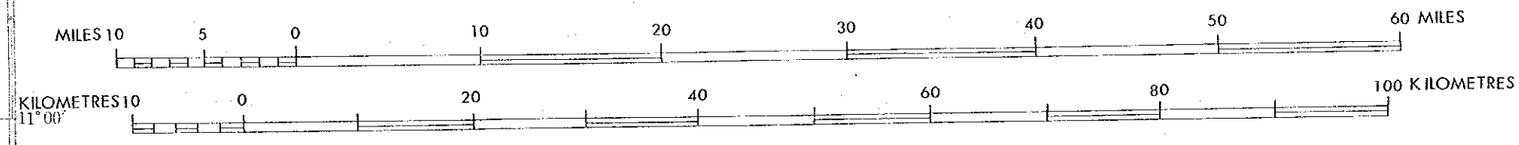


KADUNA

Tertiary	Paleocene	Sokoto	Kalambaina	0 to 160+	Semiconsolidated clayey limestone and marl, with some mudstone and plastic shale.	supplies of potable water to shallow wells and springs in the outcrop area. Formation is probably not productive at depth.
			Dange	0 to 140+	Semiconsolidated blue to grey, plastic shale, with phosphatic nodules and thin beds of limestone.	Yields little or no water to wells and boreholes. Forms confining bed for artesian water in underlying Wurno Formation.
Cretaceous	Upper Cretaceous (Maestrichtian)	Rima	Wurno	0 to 150+	Friable sandstone and sand inter-bedded with soft mudstone and shale.	Yields moderate supplies of potable water to boreholes under artesian pressure.
			Dukamaje	0 to 88	Dark-colored fossiliferous shale, with thin beds of limestone. Present only in northern part of the region.	Yields little or no water to wells and boreholes.
			Taloka	0 to 600+	Semiconsolidated fine to medium-grained sand, sandstone and shale, with lignite and mudstone.	Yields small to moderate supplies of potable water to boreholes. Under artesian pressure downdip.
			Unconformity (?)			
	Lower Cretaceous		Gundumi and Illo	0 to 1,000	Semiconsolidated fine to coerse-grained sand, with clay, sandy clay and conglomerate near the base.	Yields small to moderate supplies of potable unconfined water to wells on the outcrop area. Yields water under artesian pressure at depth.
			Unconformity			
Pre-Cretaceous			Basement Rock		Granite-gneiss, phyllite and quartzite.	Yields meager supplies of water to wells in outcrop area.

SCALE:- 1:500,000 OR 1-014 INCHES TO 8 MILES



THE STUDY FOR GROUNDWATER DEVELOPMENT IN SOKOTO STATE

JAPAN INTERNATIONAL COOPERATION AGENCY, 1990

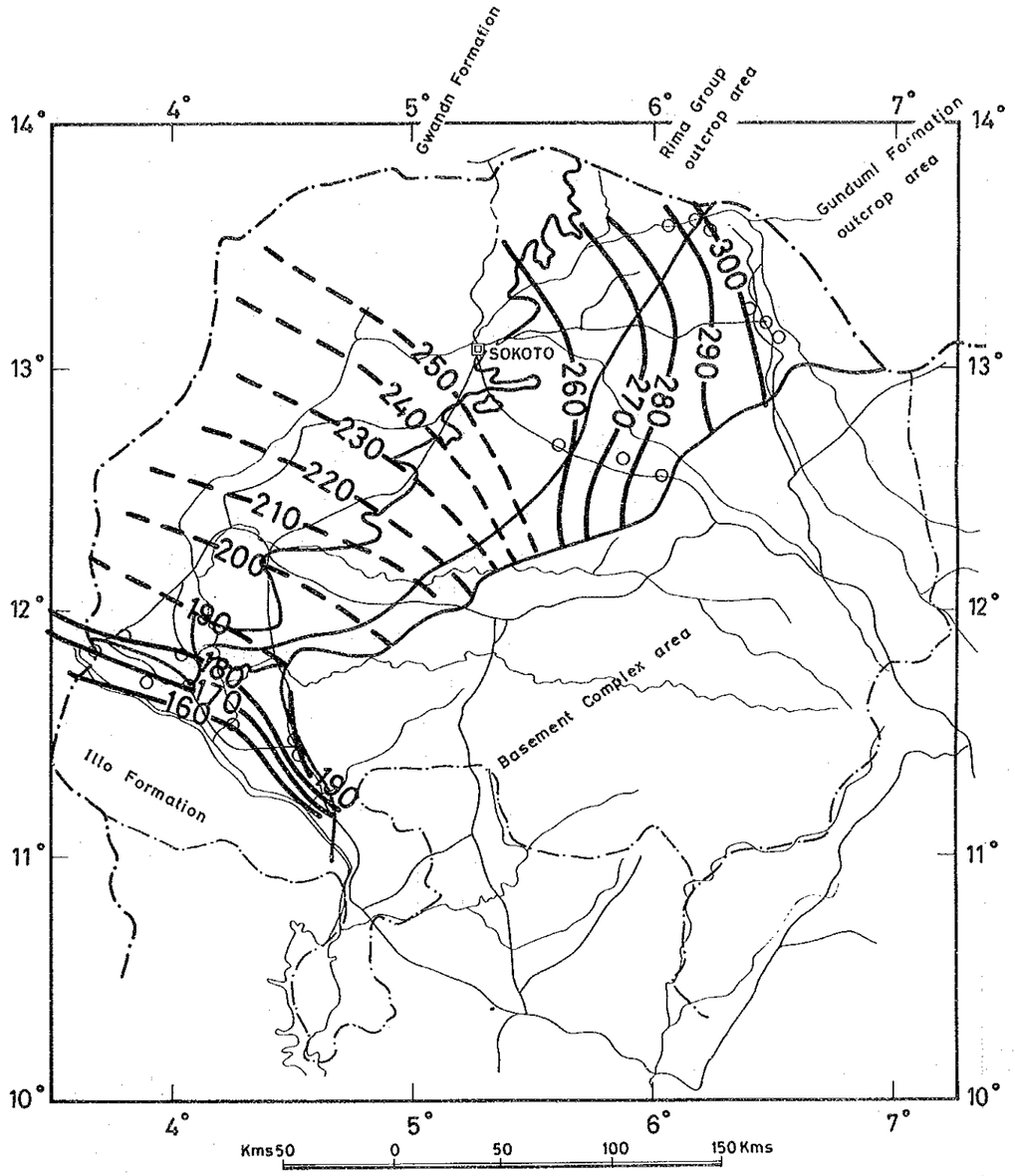


Fig.1-1 Gundumi Formation
(Above mean sea level in meter)

Fig.1 Map of the Water Table Configuration observed 31/5/88 to 15/7/88

guration
15/7/88

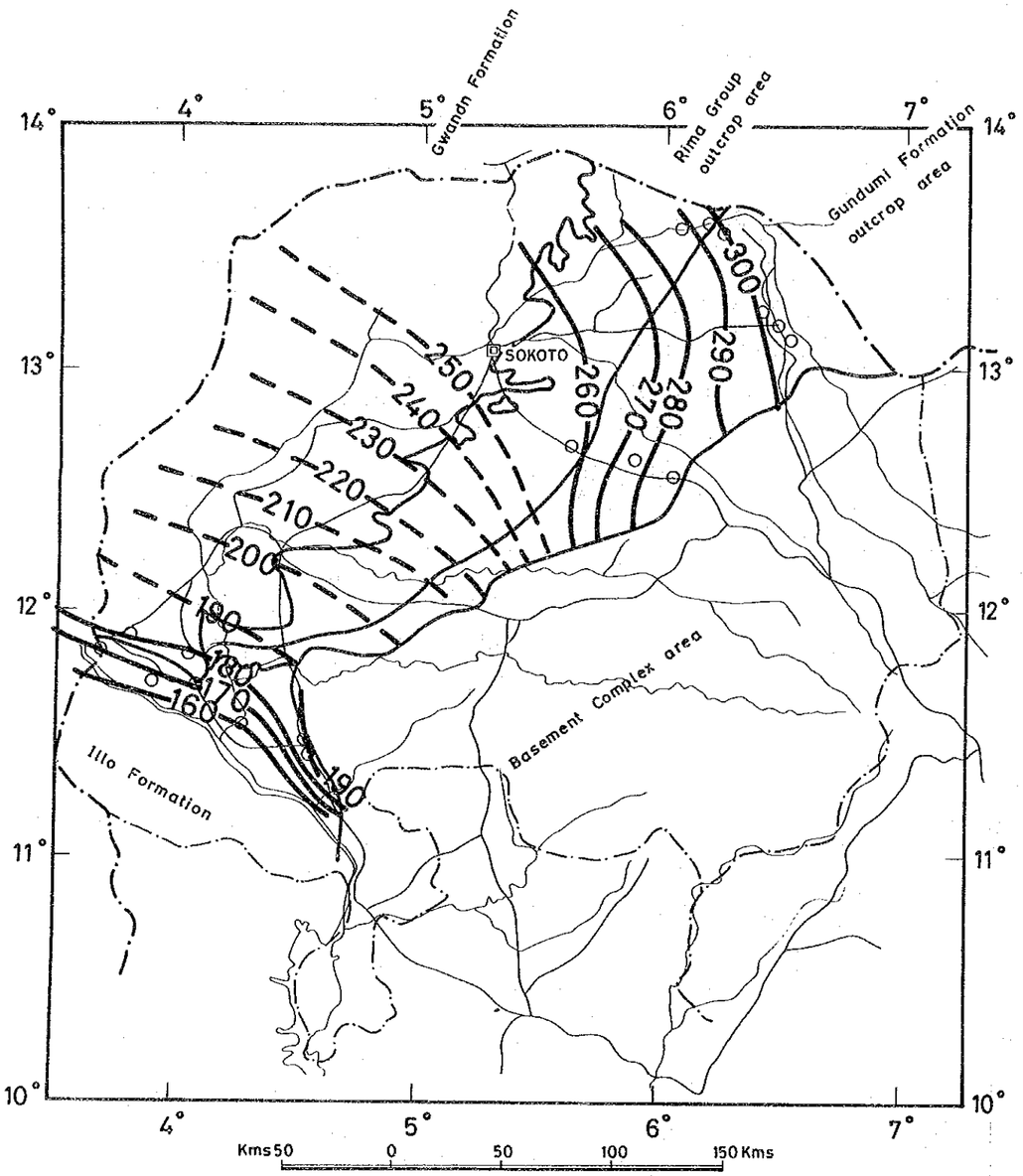


Fig.1-1 Gundumi Formation
(Above mean sea level in meter)

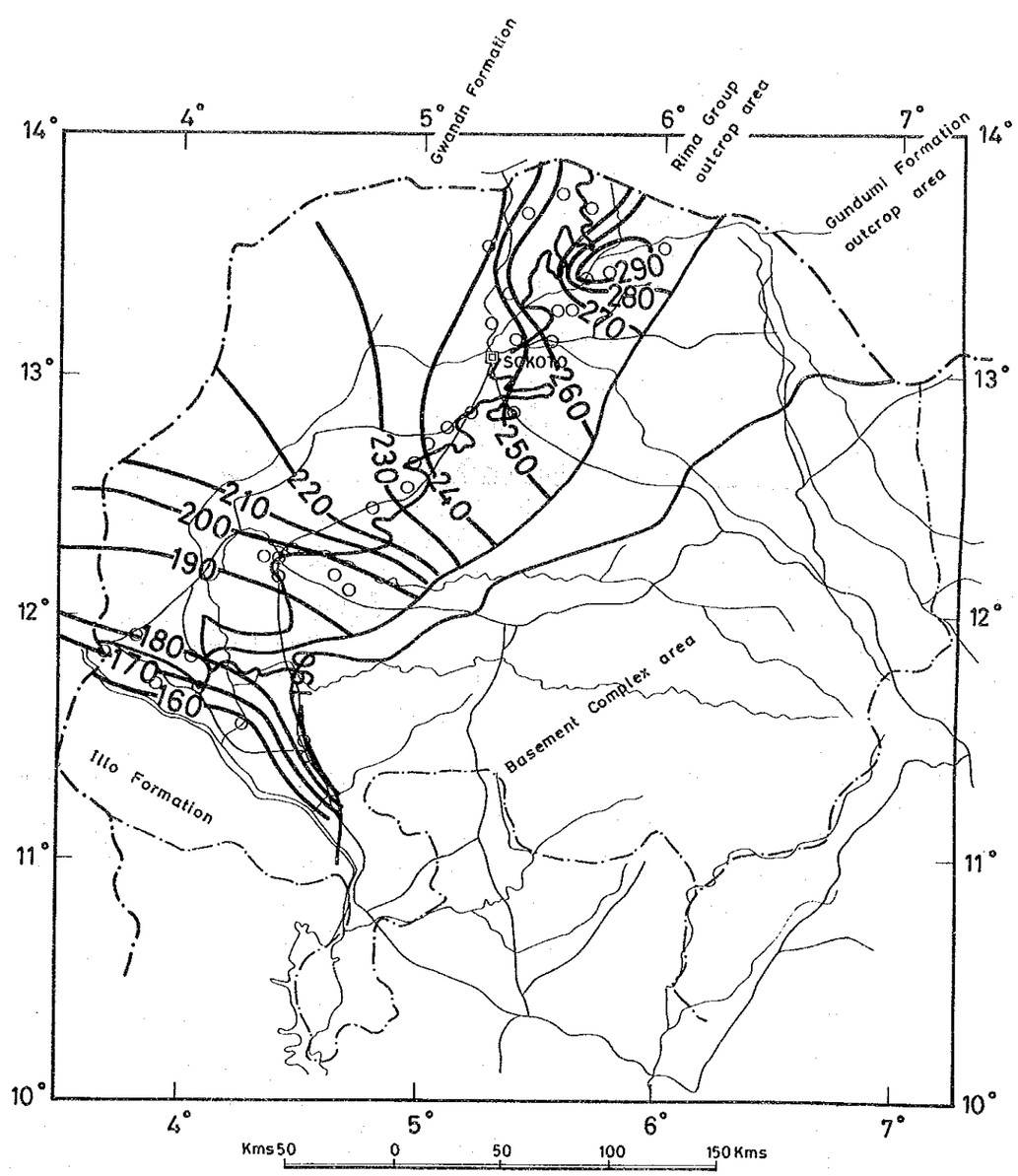


Fig.1-2 Rima Group
(Above mean sea level in meter)

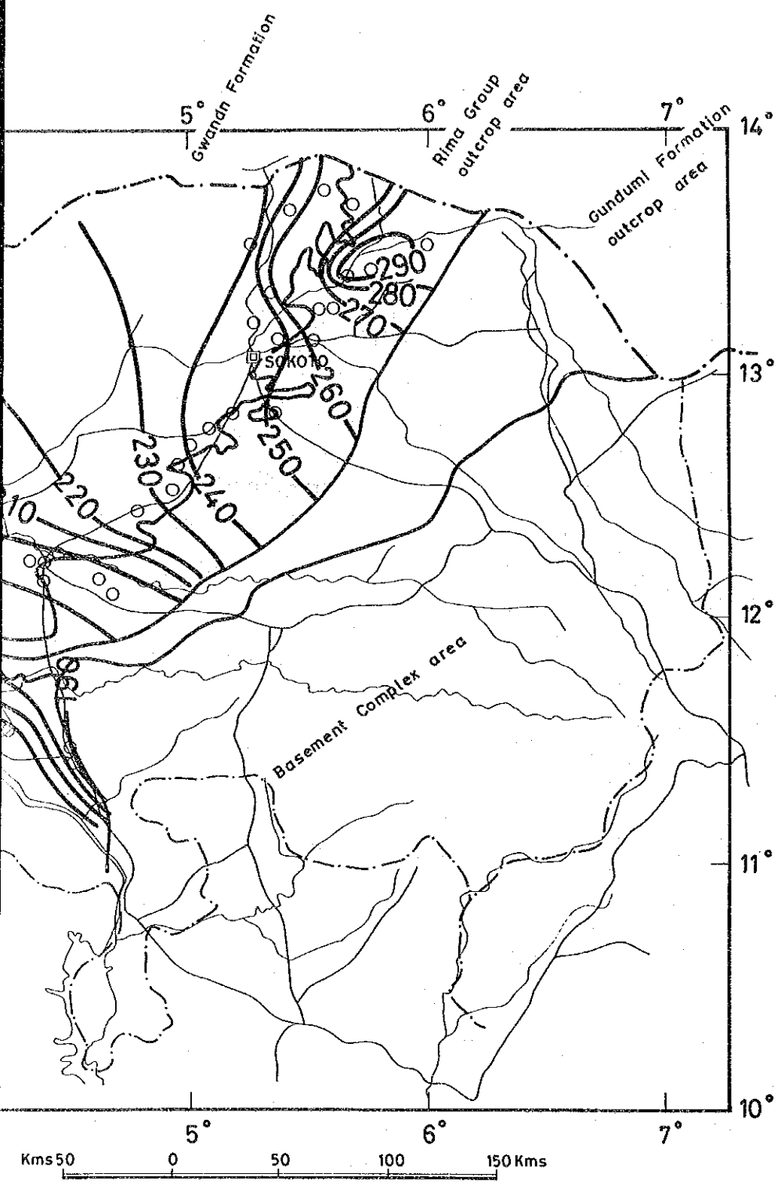


Fig.1-2 Rima Group
(Above mean sea level in meter)

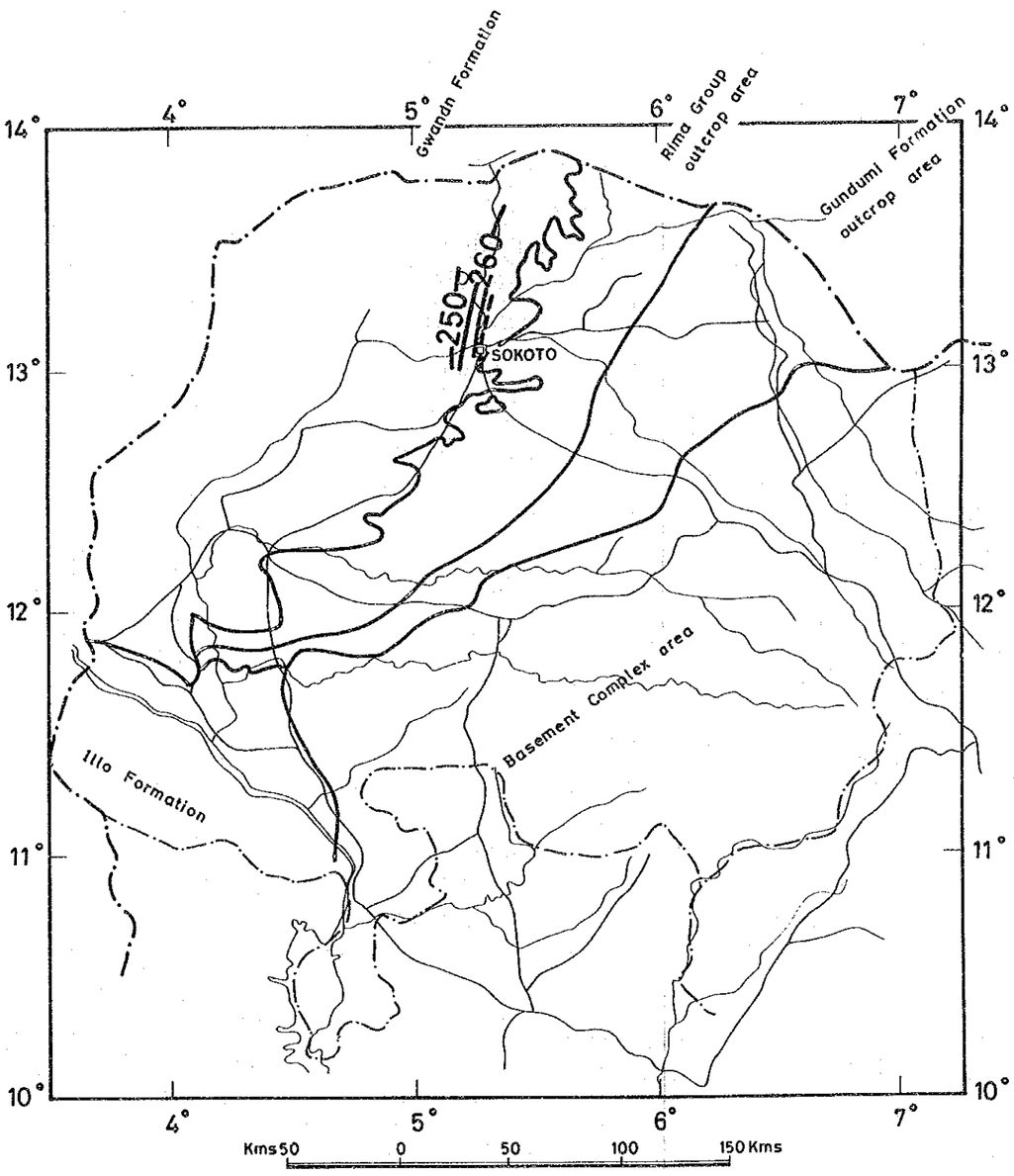
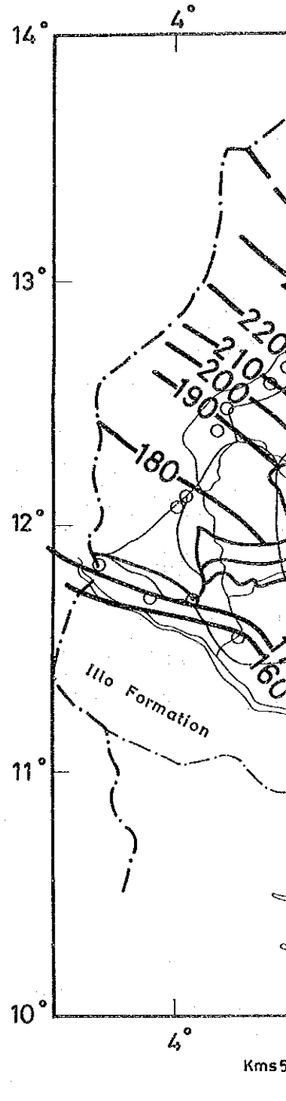


Fig.1-3 Kalambaina Formation
(Above mean sea level in meter)



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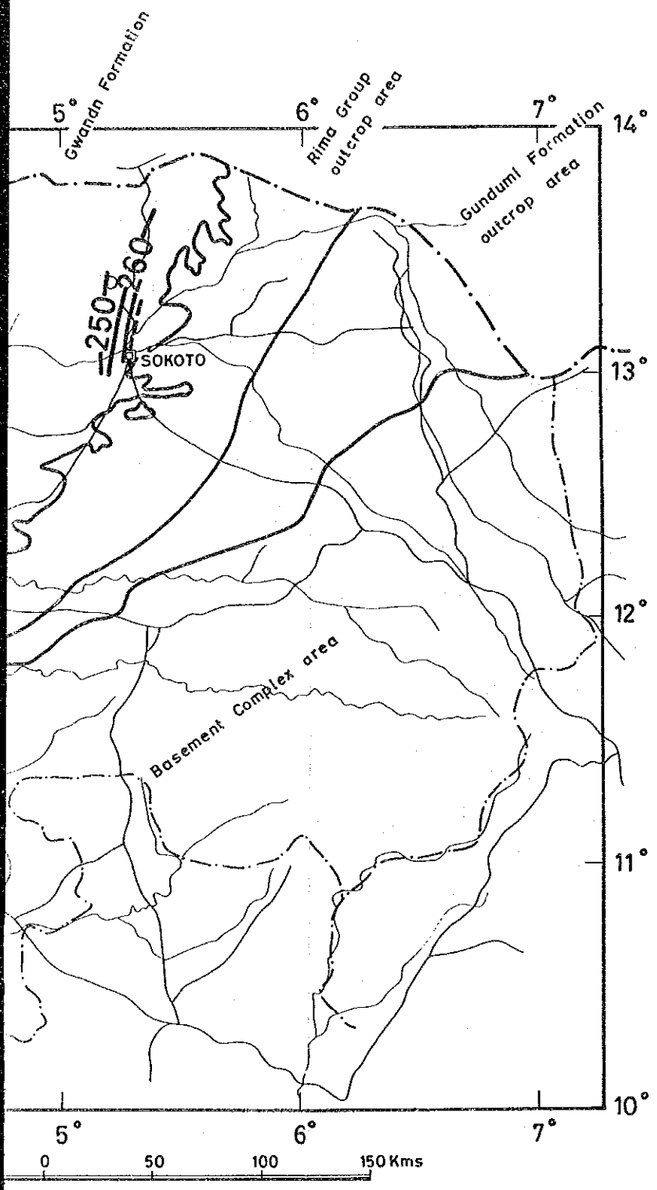


-3 Kalambaina Formation

(Above mean sea level in meter)

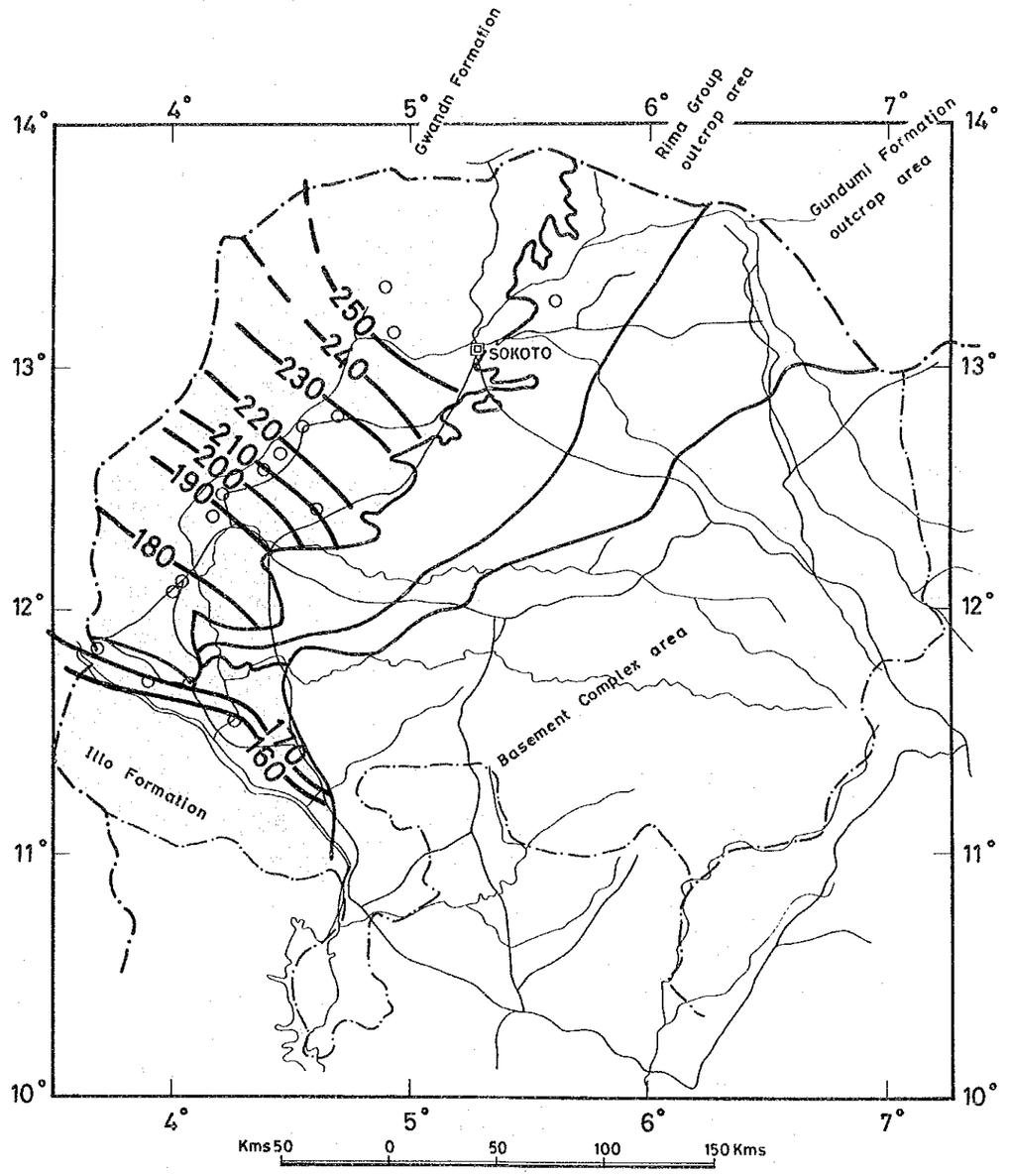


Fig.1-4 Gwandu Formation

(Above mean sea level in meter)

Fig.1 Map of the Water Table Configuration observed 31/5/88 to 15/7/88

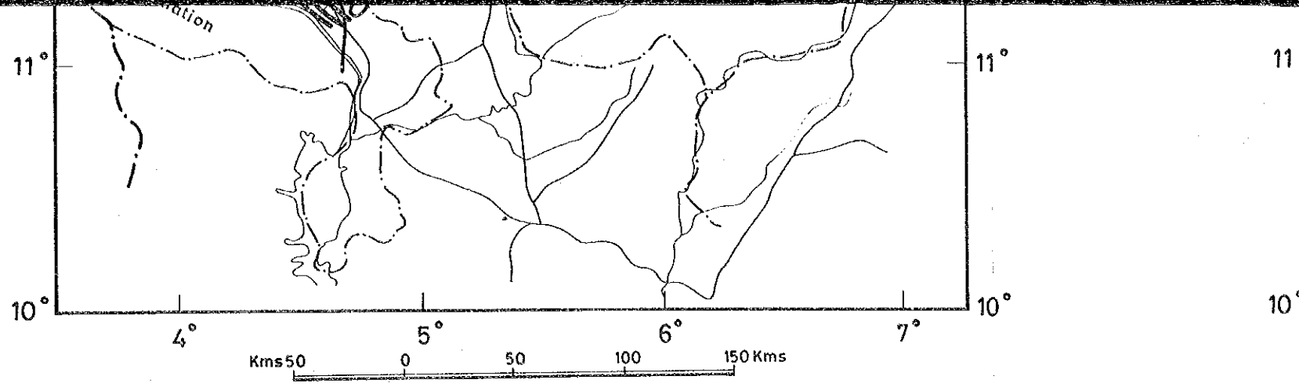


Fig.1-1 Gundumi Formation

(Above mean sea level in meter)

Fig.2 Aquifer Thickness

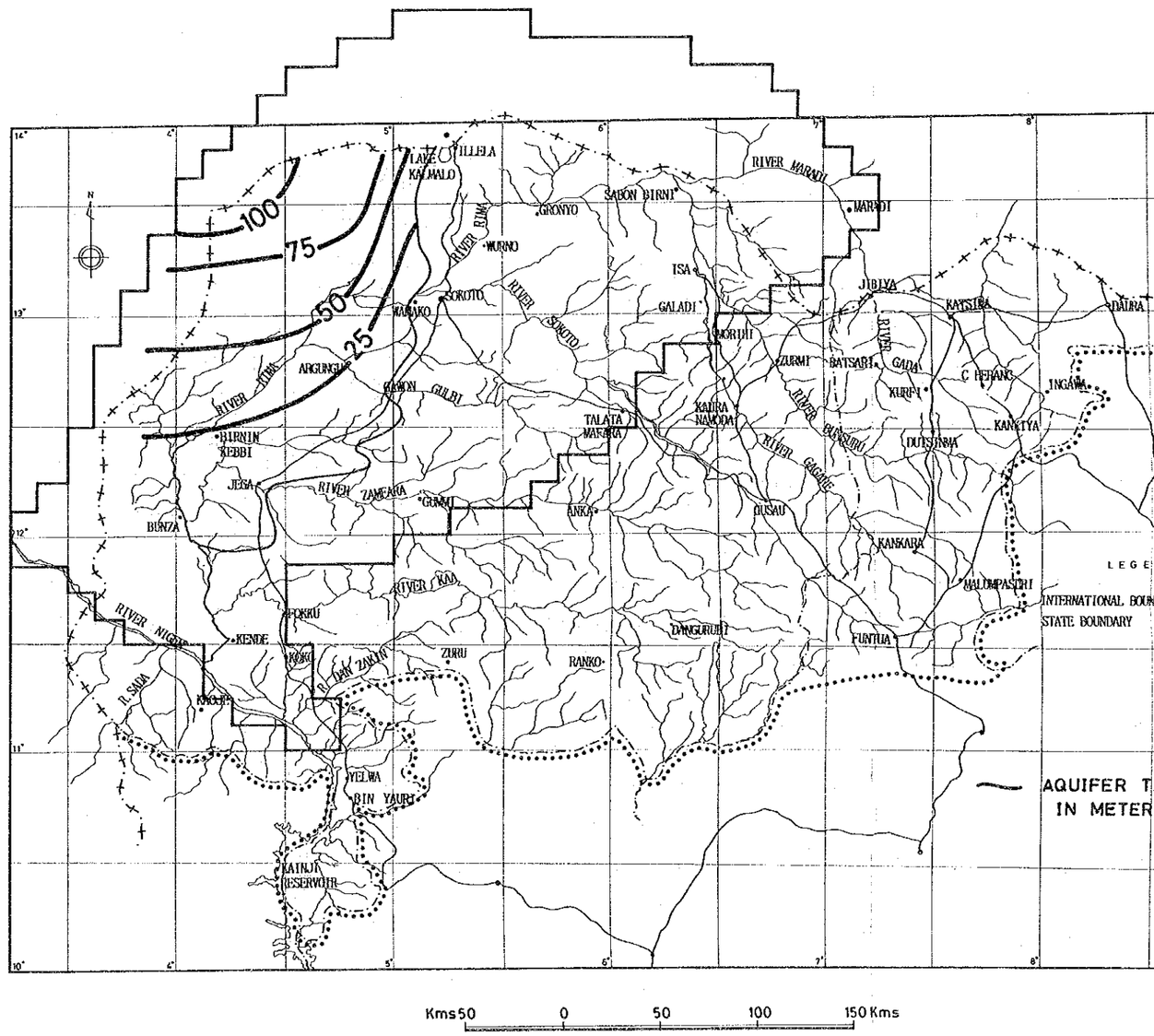


Fig.2-1 The Gwandu Confined Aquifer

uration
5/7/88

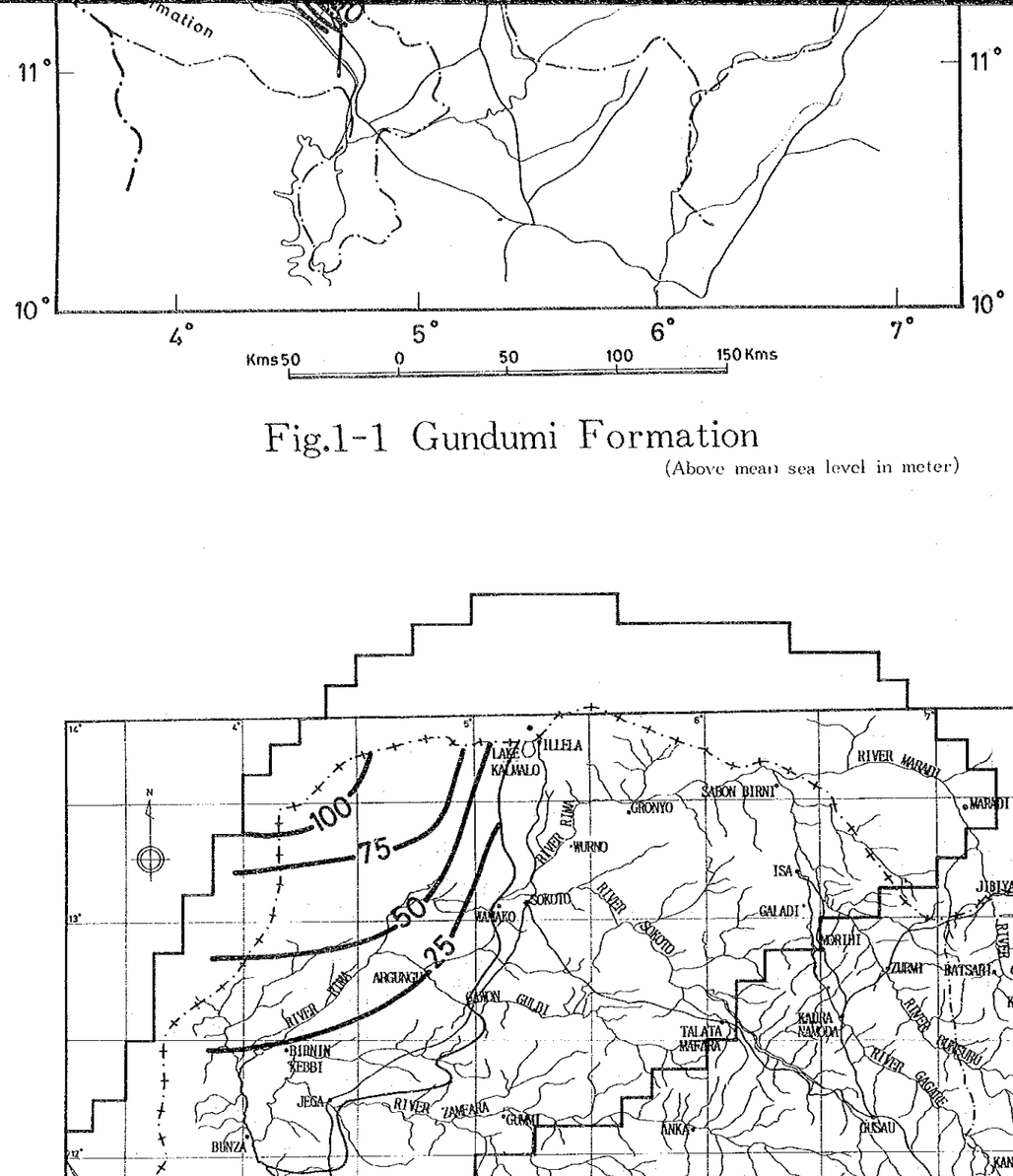


Fig.1-1 Gundumi Formation
(Above mean sea level in meter)

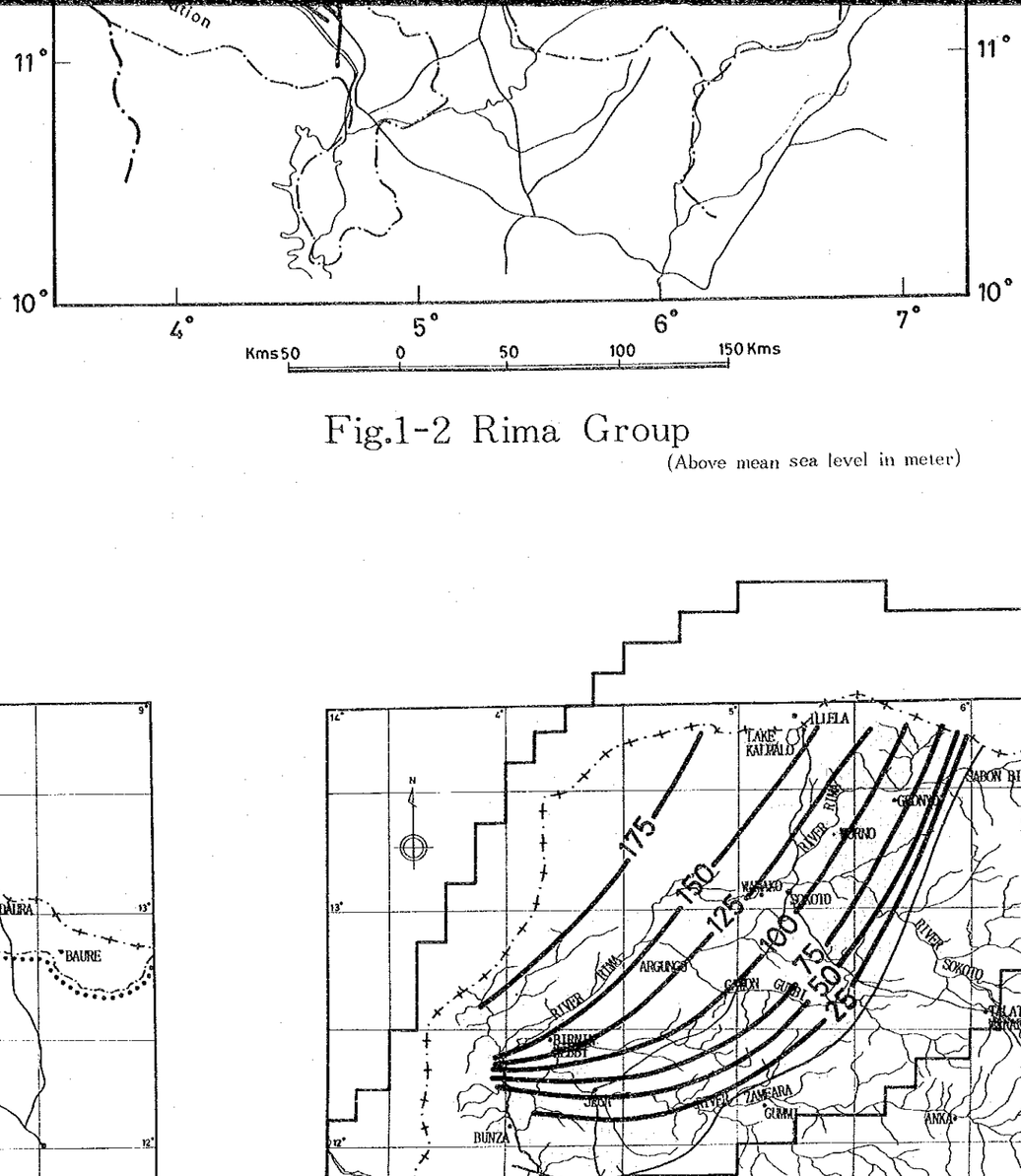


Fig.1-2 Rima Group
(Above mean sea level in meter)

ckness

Fig.2-1 The Gwandu Confined Aquifer

Fig.2-2 The Rima Con

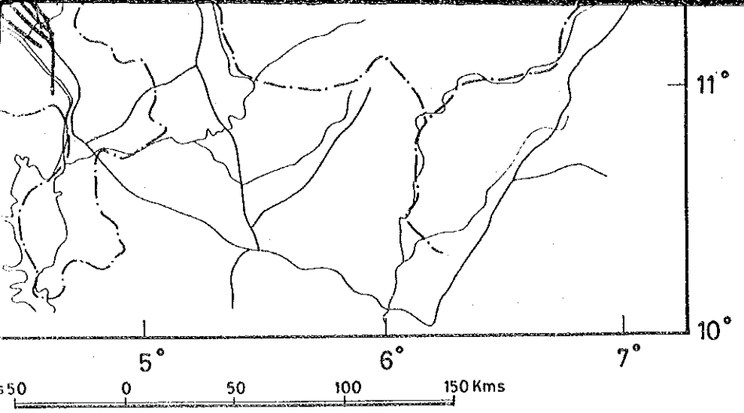


Fig.1-2 Rima Group
(Above mean sea level in meter)

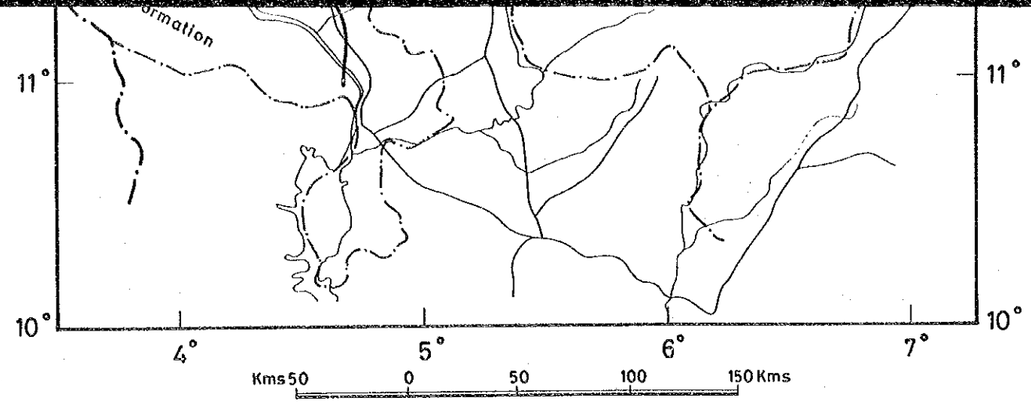
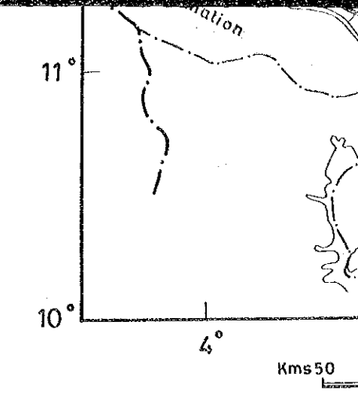


Fig.1-3 Kalambaina Formation
(Above mean sea level in meter)



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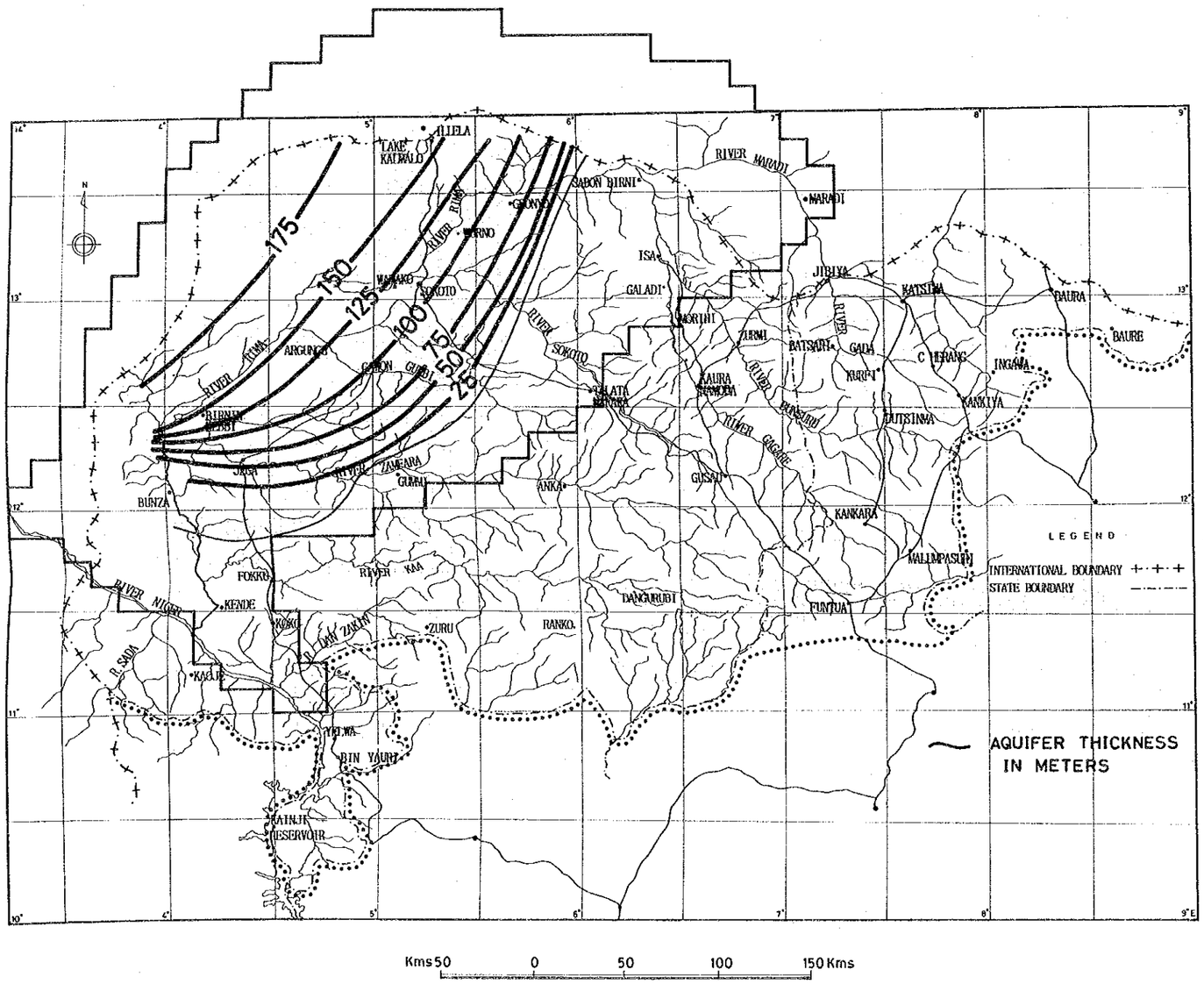


Fig.2-2 The Rima Confined Aquifer

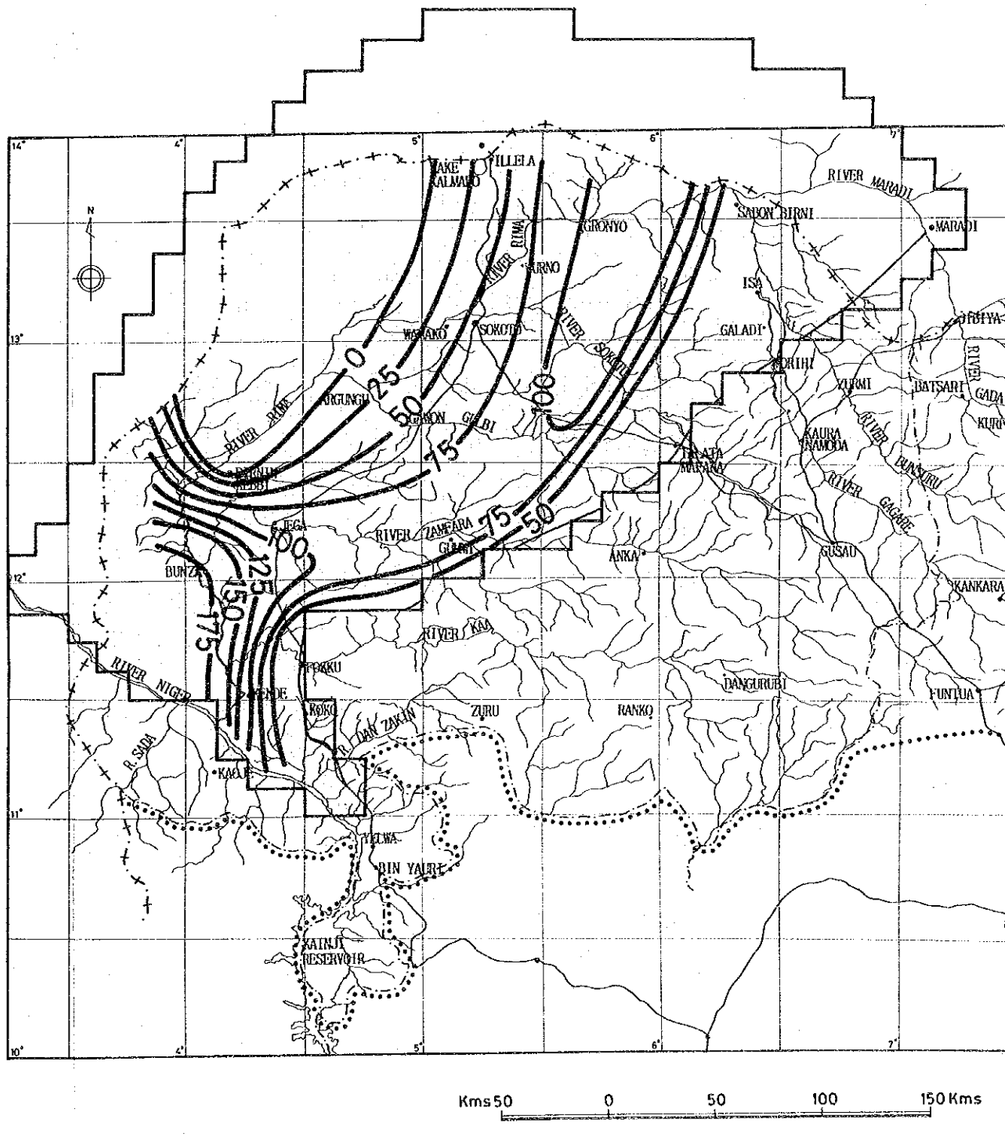
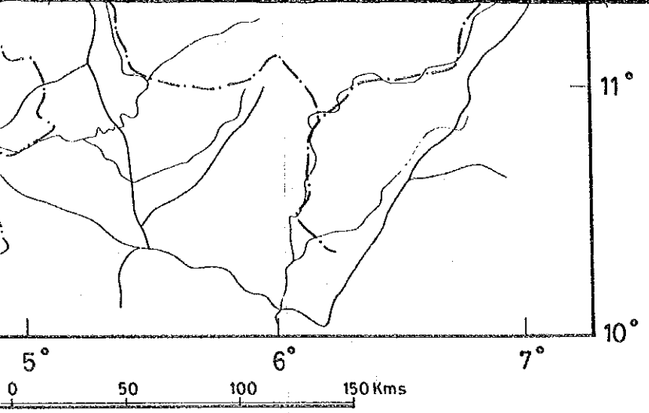


Fig.2-3 The Gundumi Confined Aqu



Kalambaina Formation
(Above mean sea level in meter)

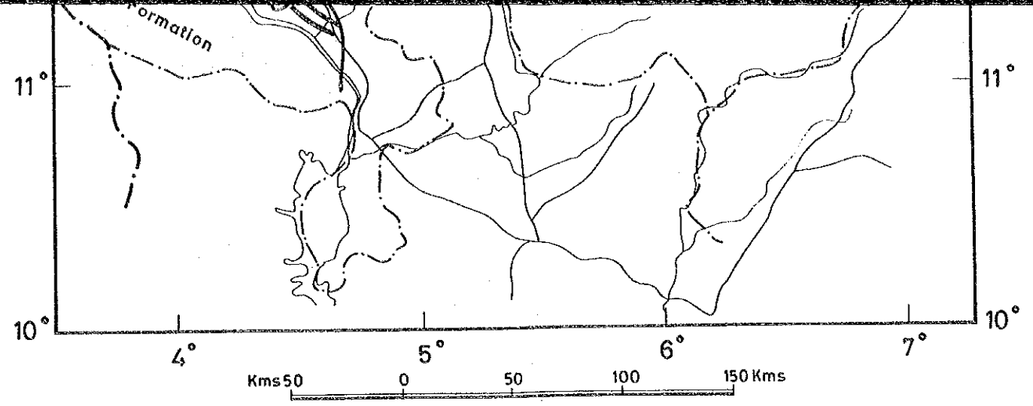


Fig.1-4 Gwandu Formation
(Above mean sea level in meter)

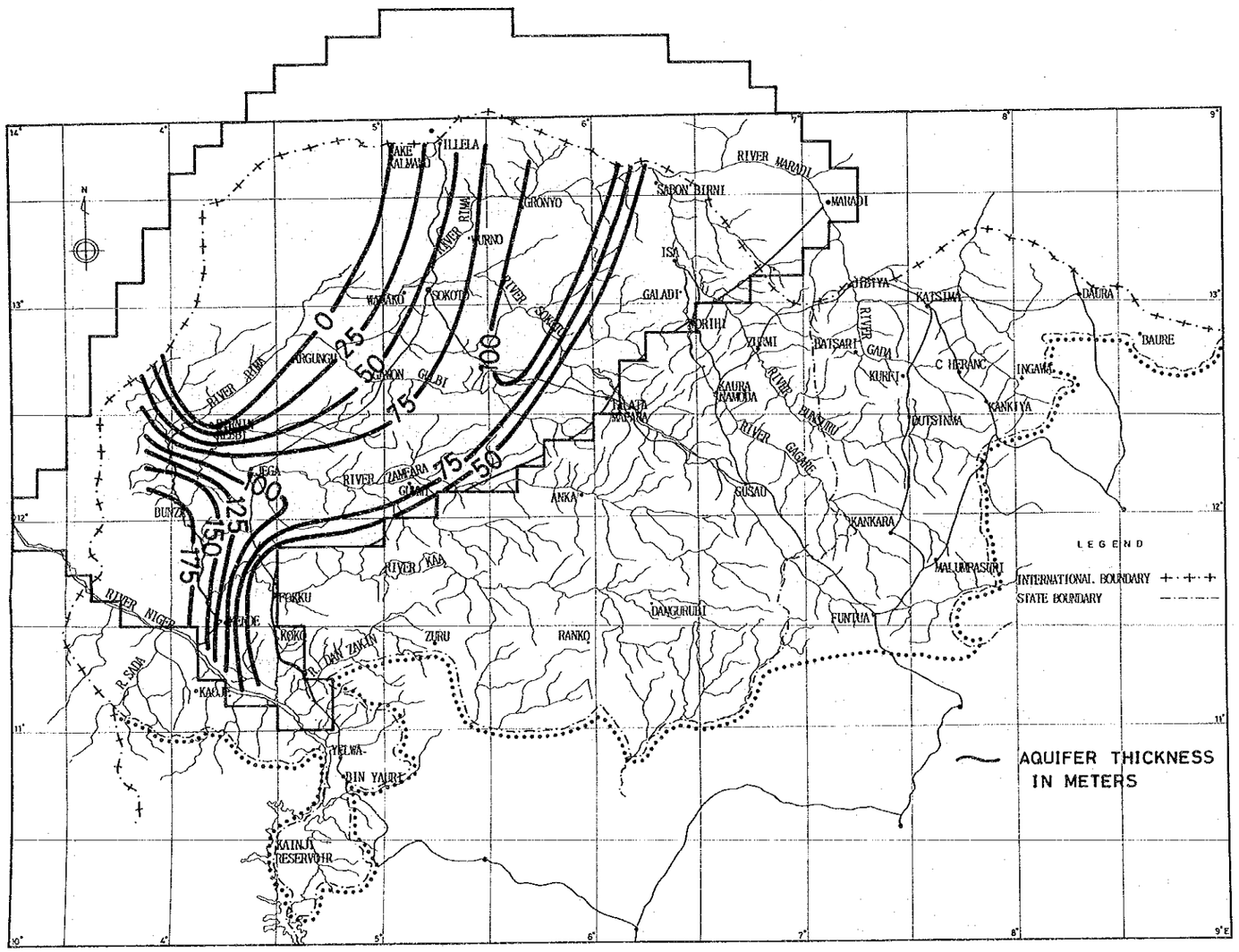


Fig.2 Aquifer Thickness

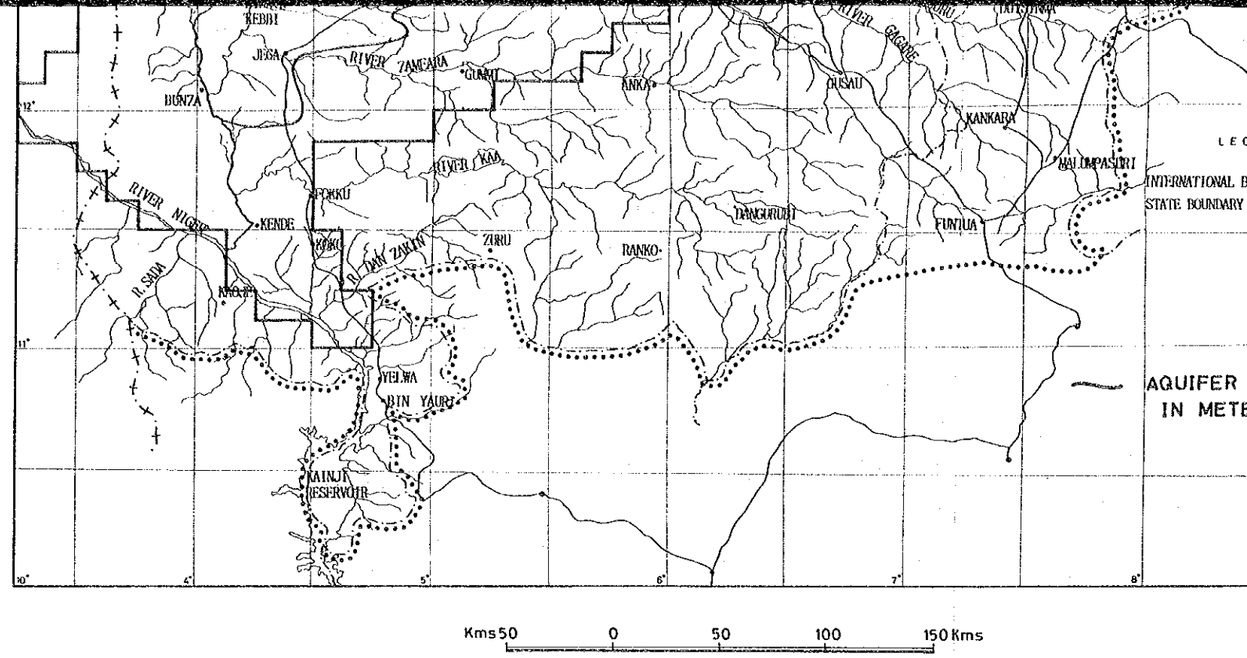
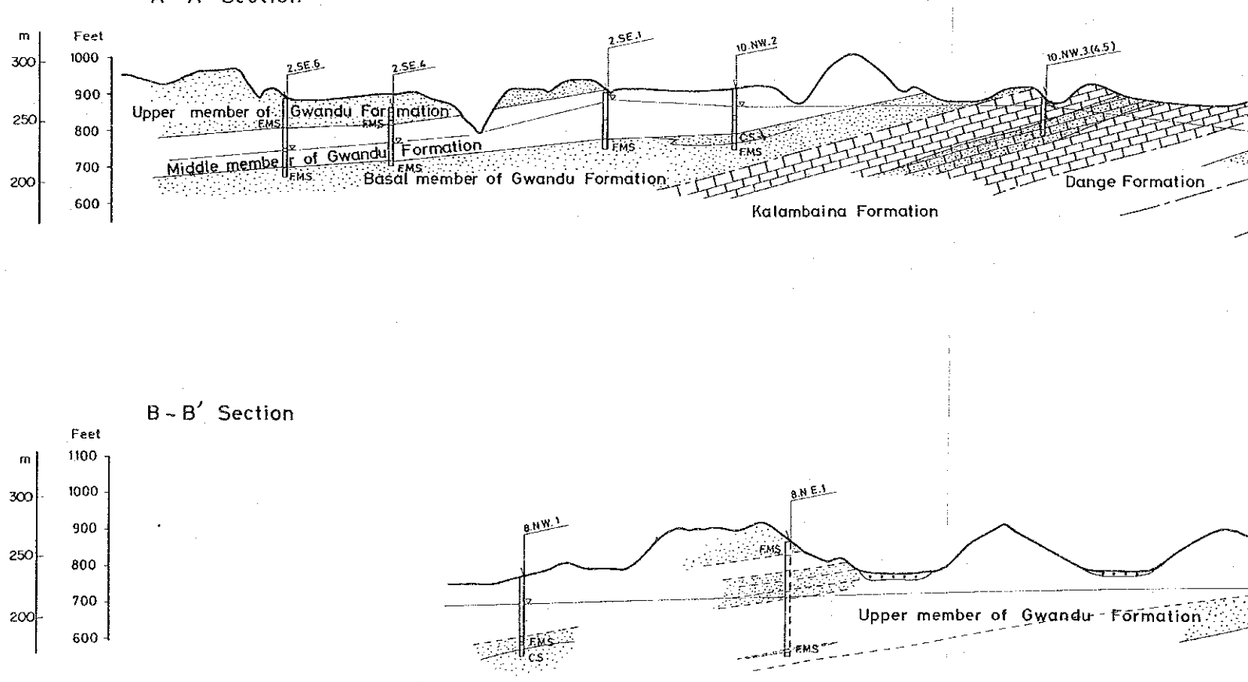


Fig.2-1 The Gwandu Confined Aquifer



ckness

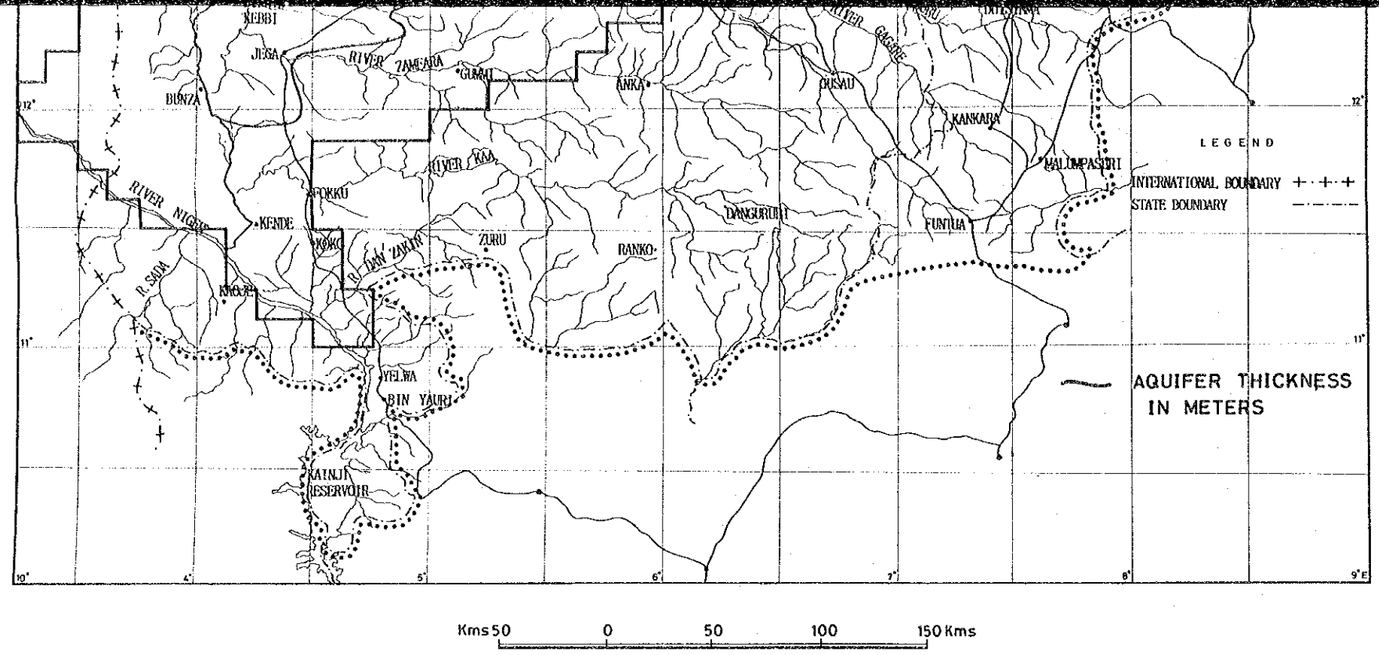


Fig.2-1 The Gwandu Confined Aquifer

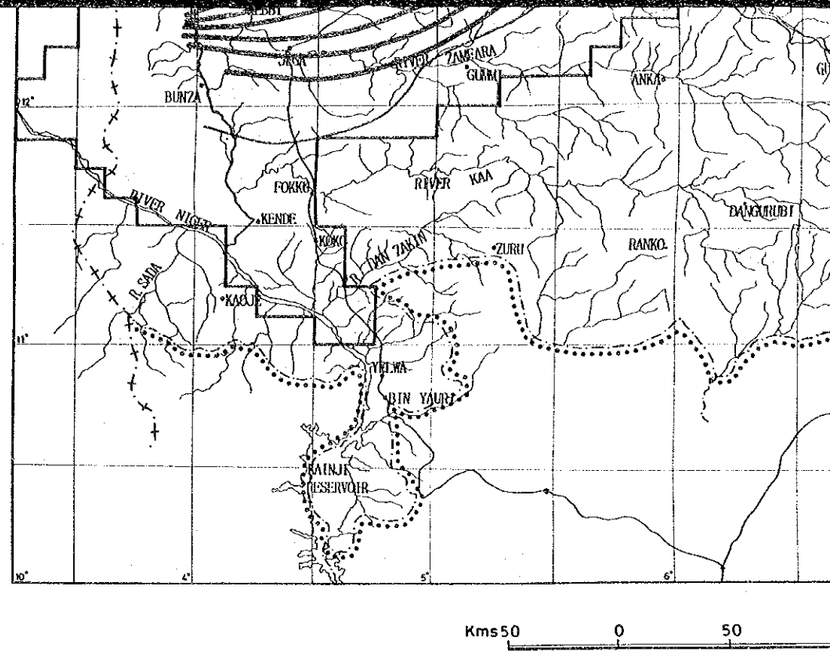
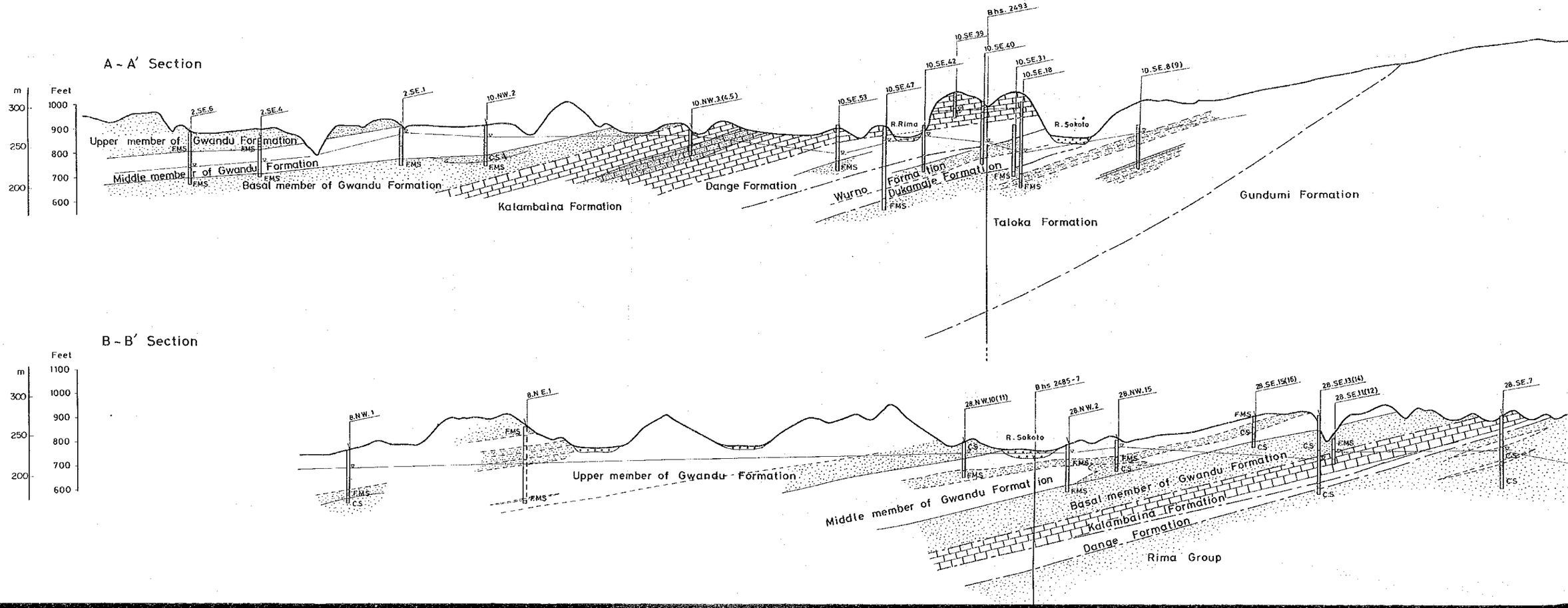


Fig.2-2 The Rima Con



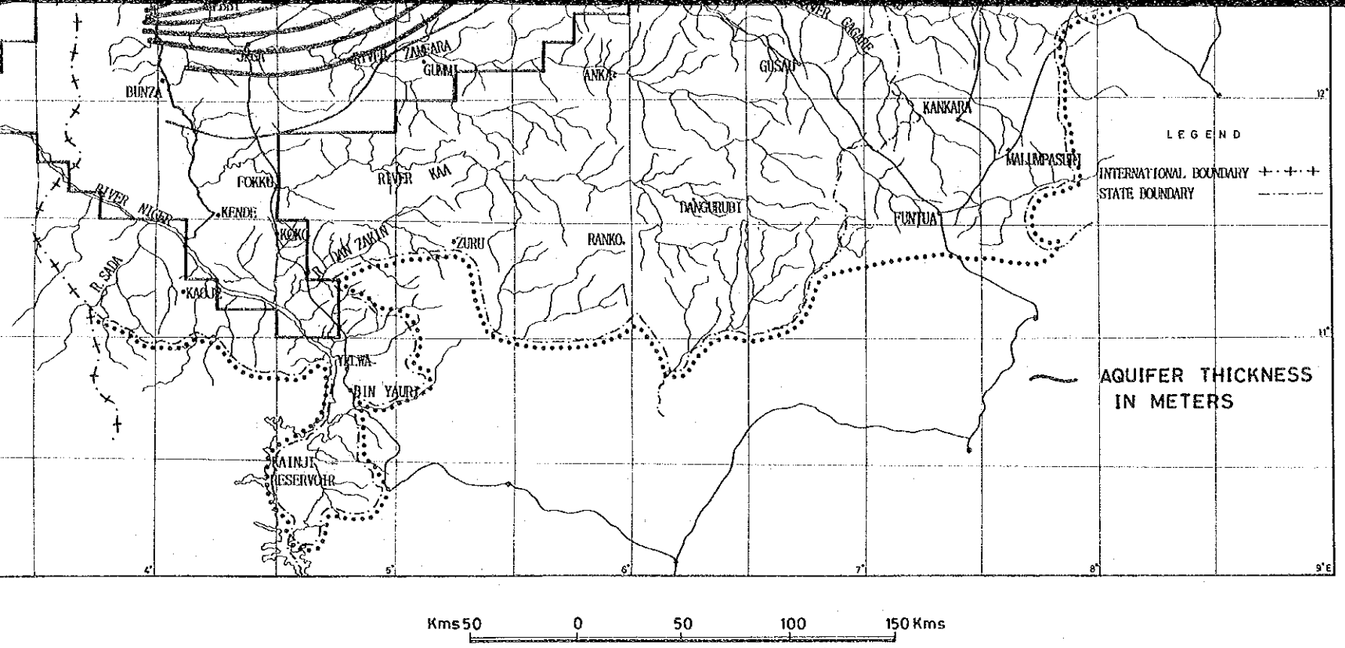


Fig.2-2 The Rima Confined Aquifer

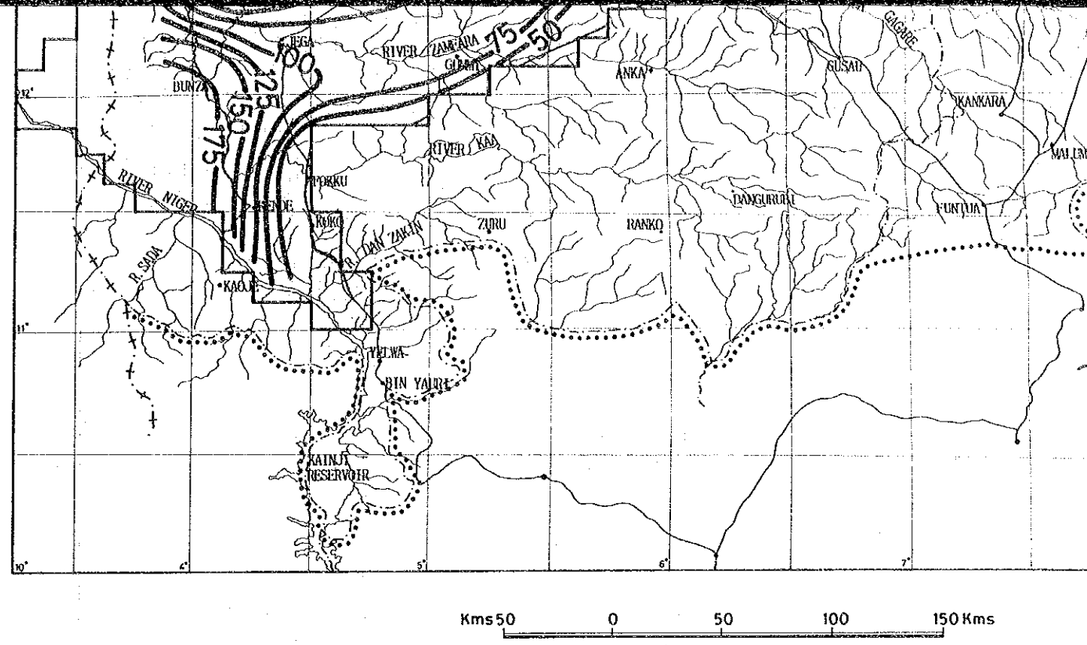
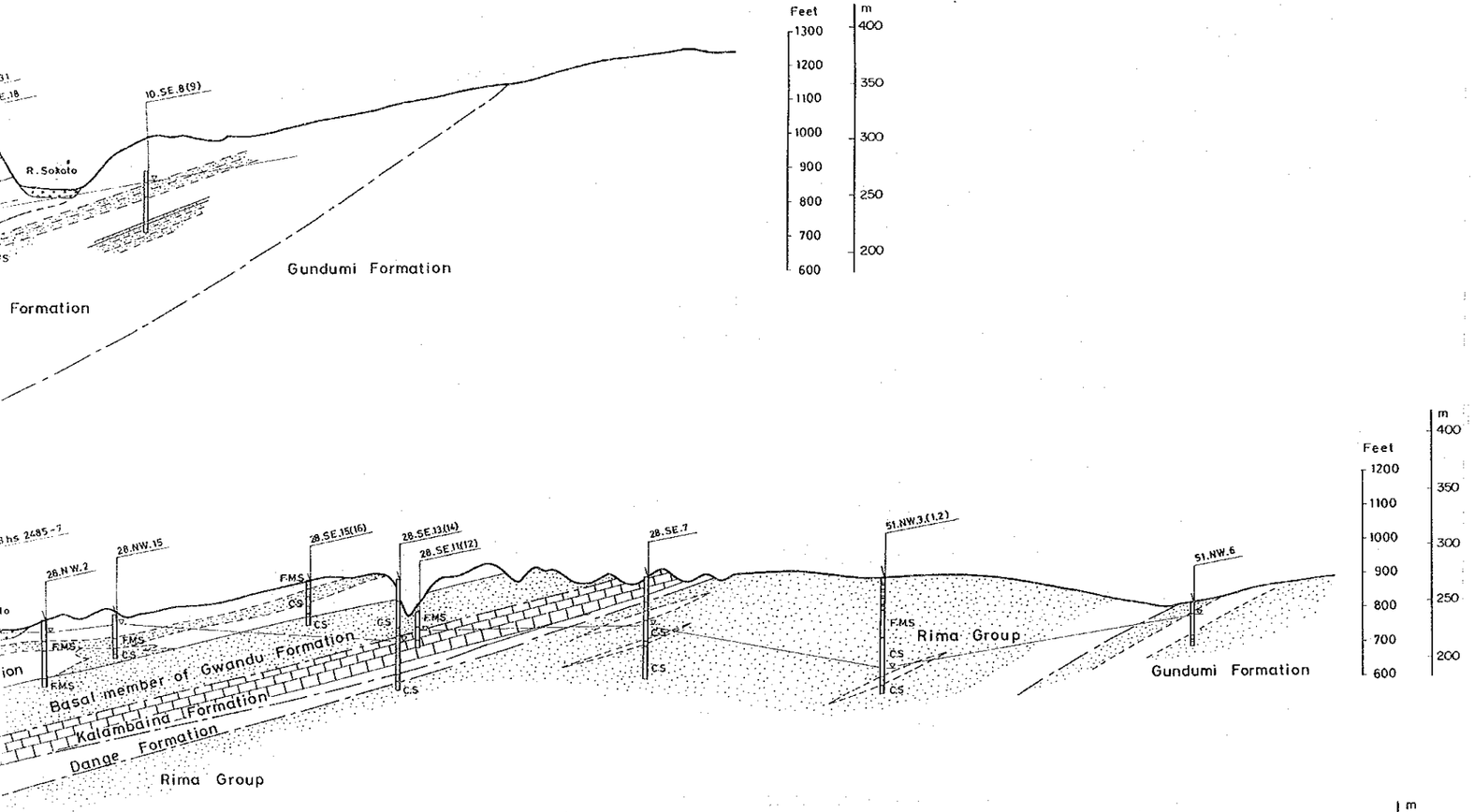
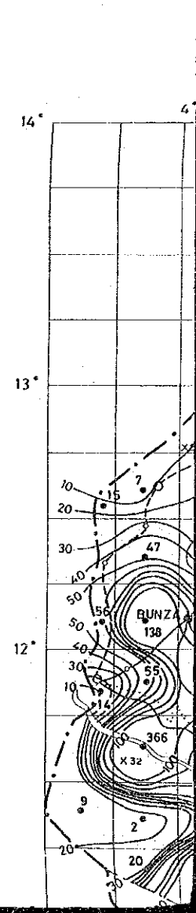


Fig.2-3 The Gundumi Confined Aquifer





Alluvial deposit in fadama (silt, sand and gravel) Aquifer

Fine to coarse sand and sandstone Aquifer, Aquitard

Clayey sand and sandy clay Aquitard , Aquicluid

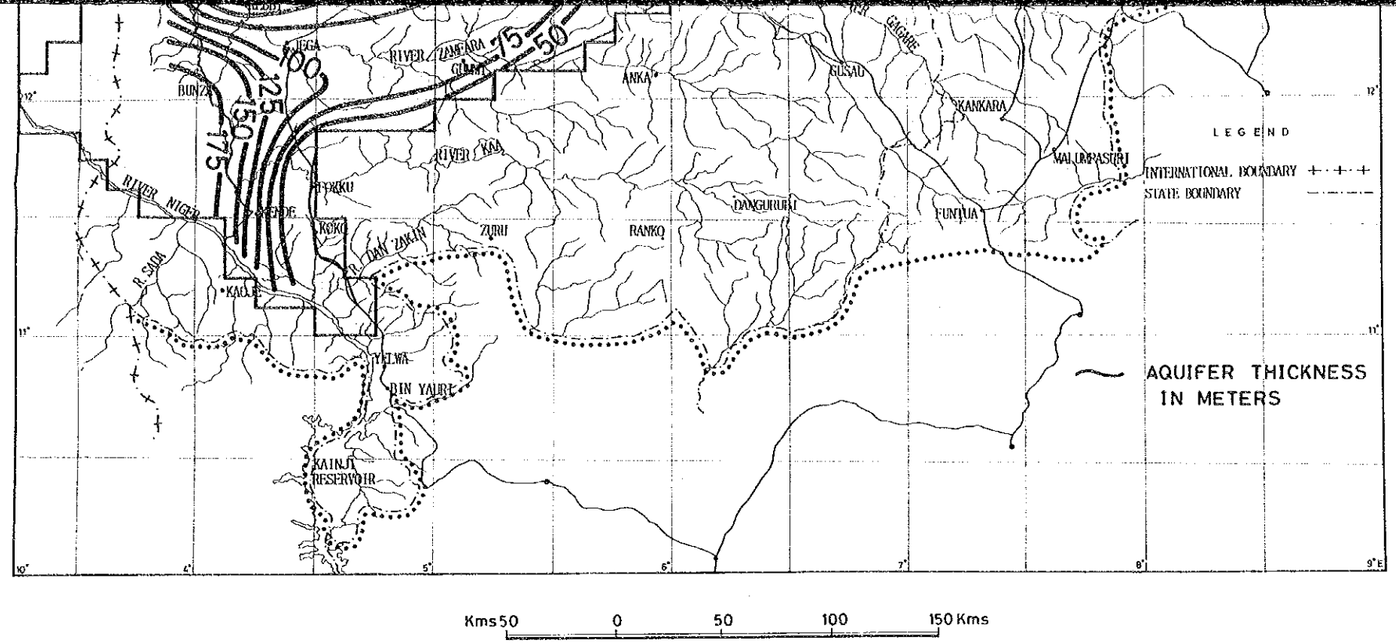
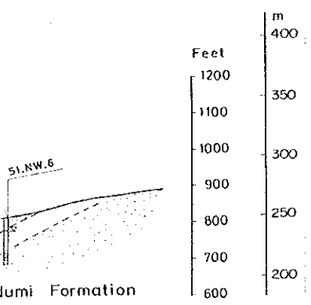


Fig.2-3 The Gundumi Confined Aquifer



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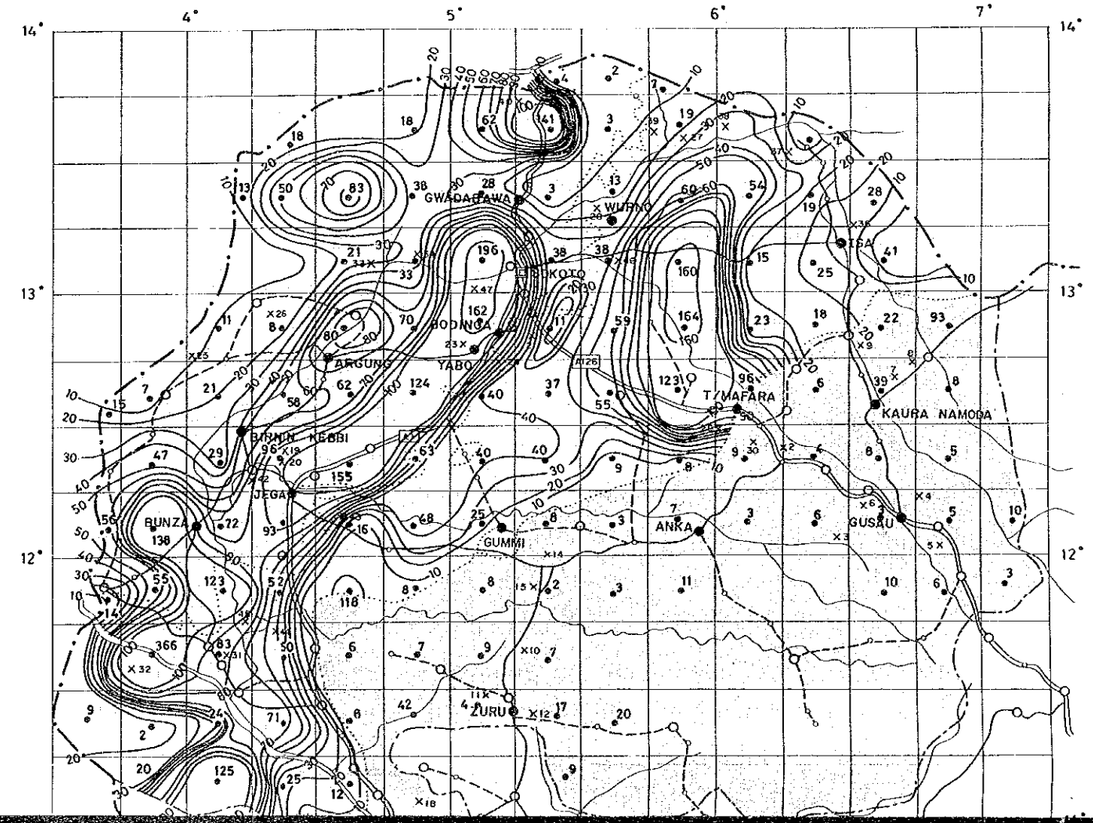
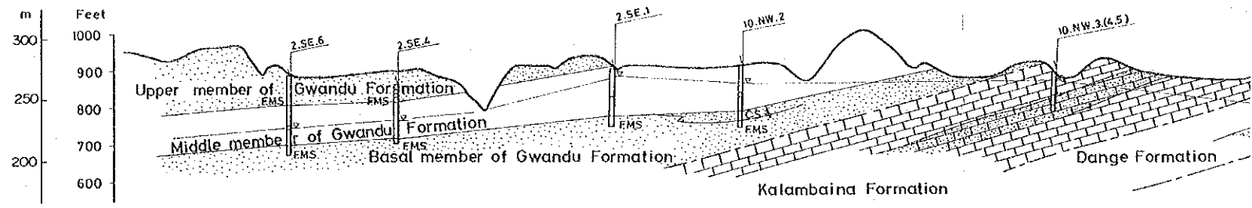
Clayey sand and sandy clay Aquitard , Aquicluid



A ~ A′ Section



B ~ B′ Section

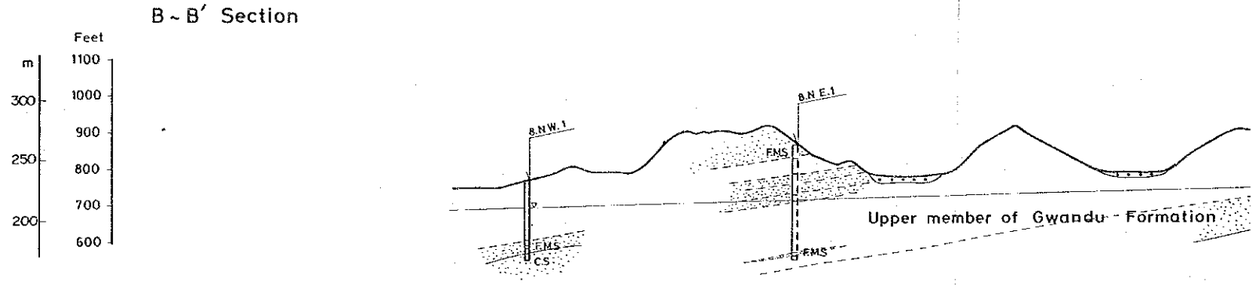
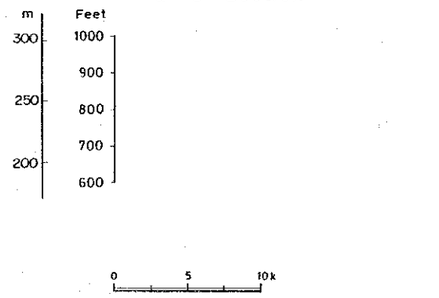
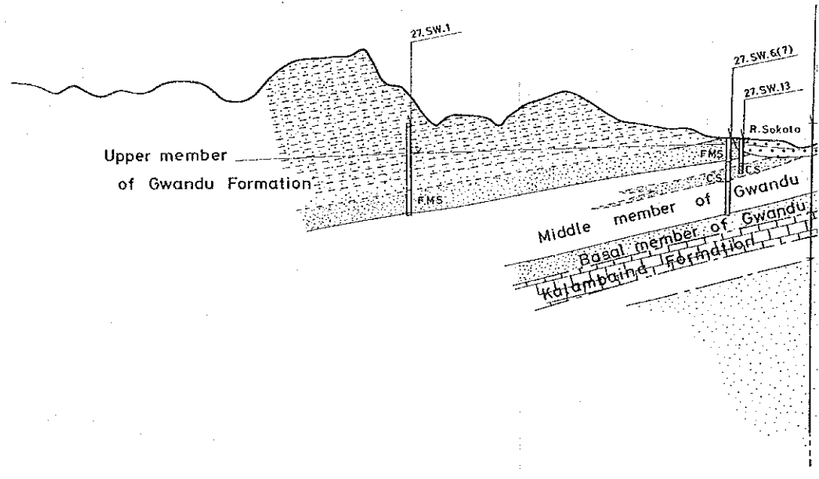


Fig.3 Hydrogeological Cross Section of the Sokoto Basin

(Map Showing Principal Aquifers and Confinig Layers)

C ~ C′ Section

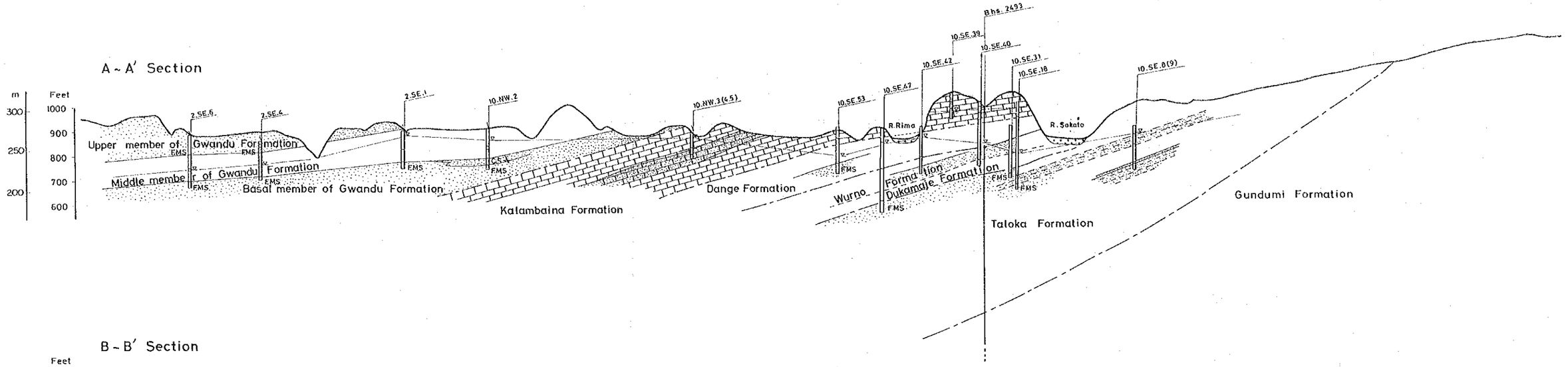




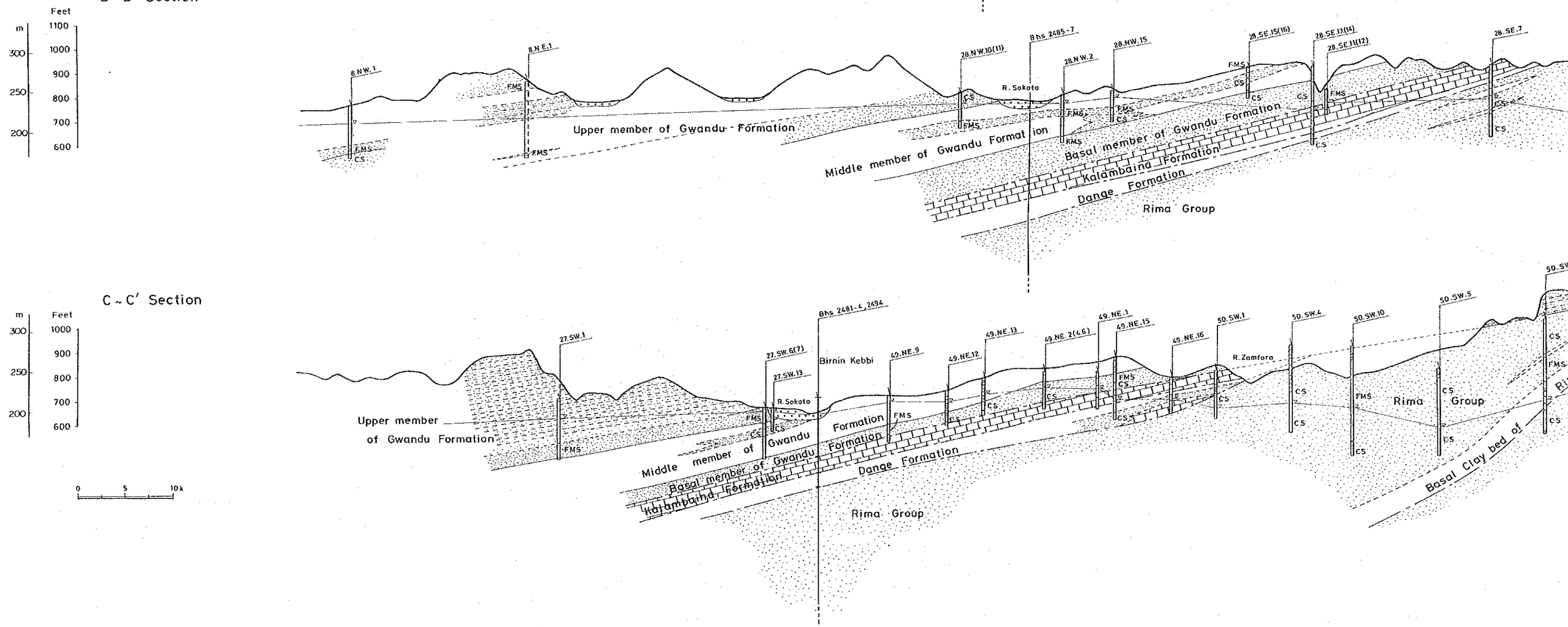
Basin

rs)

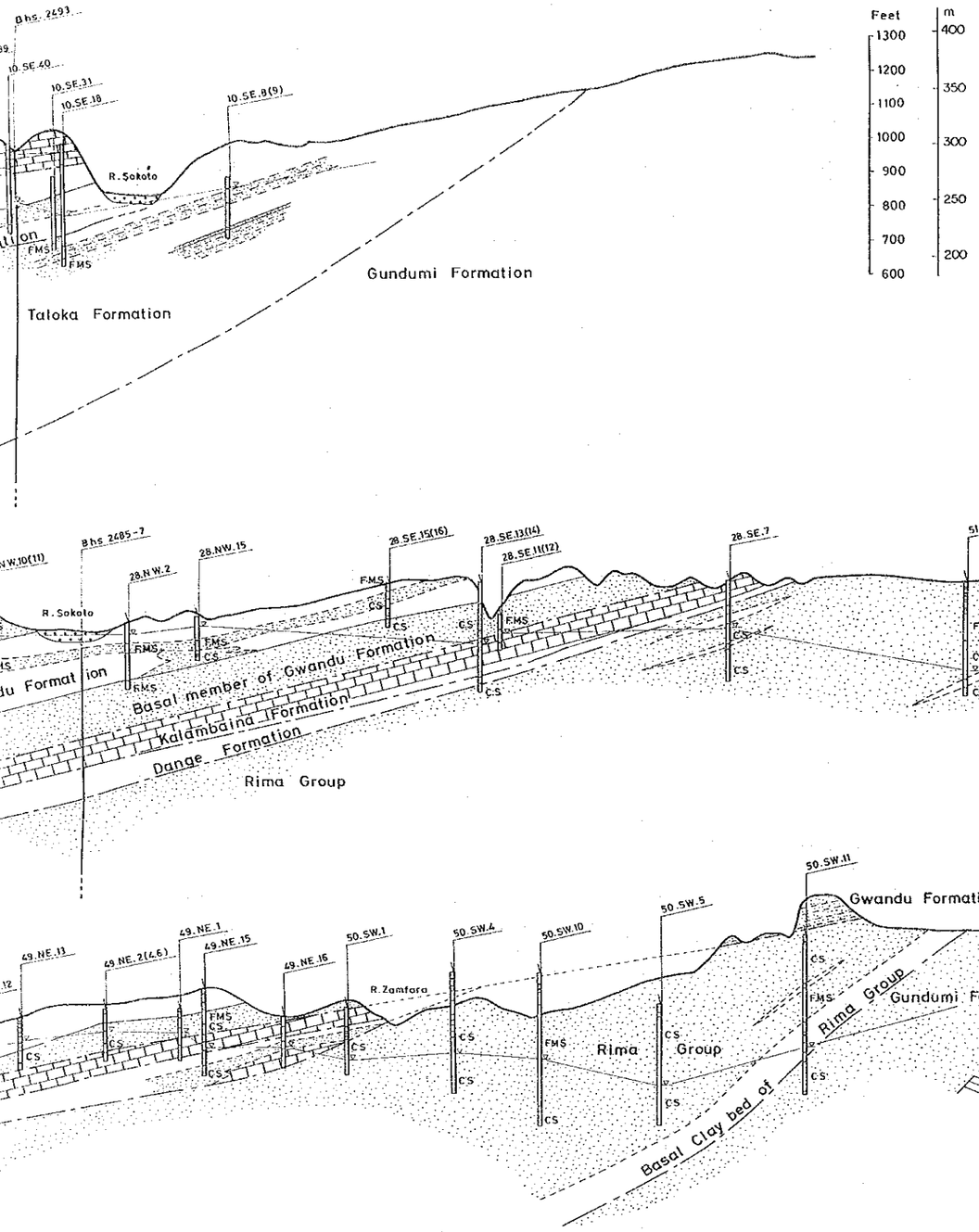
A ~ A' Section

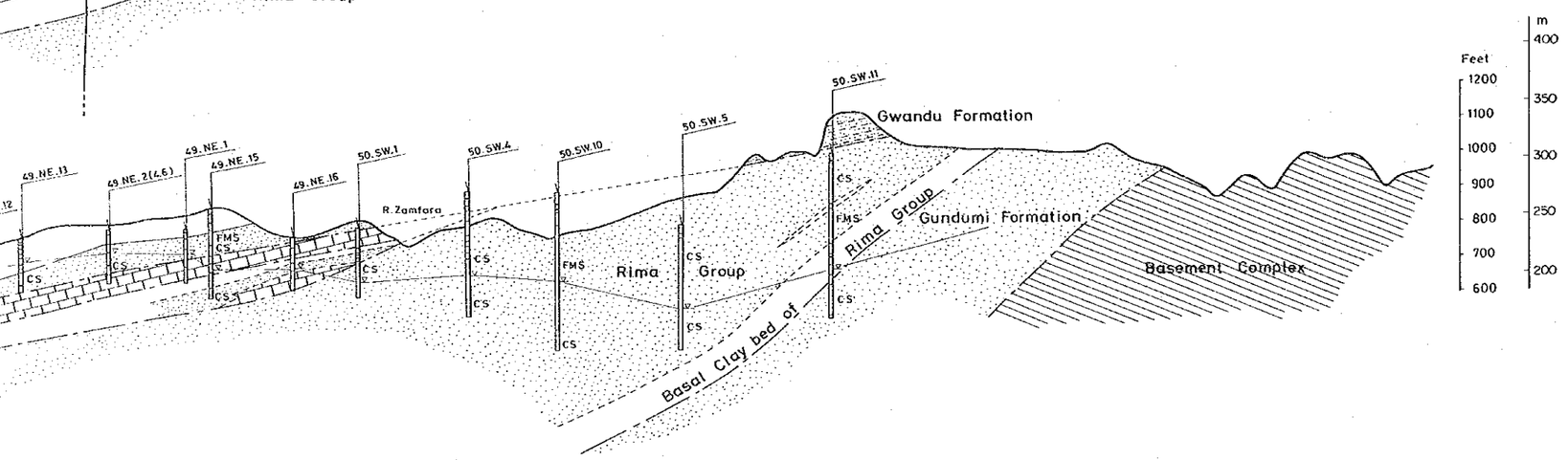


B ~ B' Section



C ~ C' Section





- Alluvial deposit in fadama (silt, sand and gravel) Aquifer
- Fine to coarse sand and sandstone Aquifer, Aquitard
- Clayey sand and sandy clay Aquitard , Aquicluid
- Clayey limestone and marl, with some mudstone and shale Aquifer, Aquitard
- Clay, silt, mudstone and shale, with sandy clay Aquifuge (confining layer)
- Basement Complex Aquifuge (~ Aquicluid)
- Water table

Borehole No.

- F.M.S Fine to medium sand
- C.S Coarse sand
- L.S Limestone

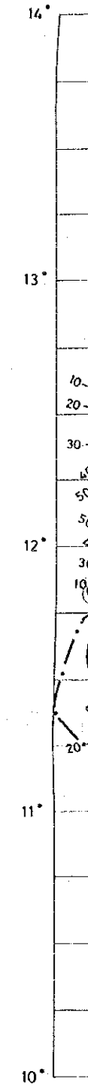
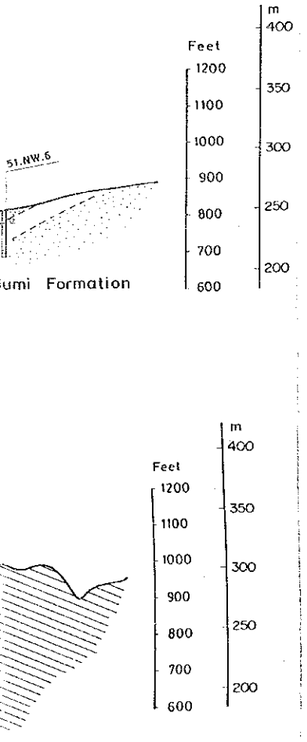


Fig.4



Alluvial deposit in fadama (silt, sand and gravel) Aquifer

Fine to coarse sand and sandstone Aquifer, Aquitard

Clayey sand and sandy clay Aquitard , Aquicluid

Clayey limestone and marl, with some mudstone and shale Aquifer, Aquitard

Clay, silt, mudstone and shale, with sandy clay Aquifuge (confining layer)

Basement Complex Aquifuge (~Aquicluid)

Water table

Borehole No.

F.M.S Fine to medium sand

C.S Coarse sand

L.S Limestone

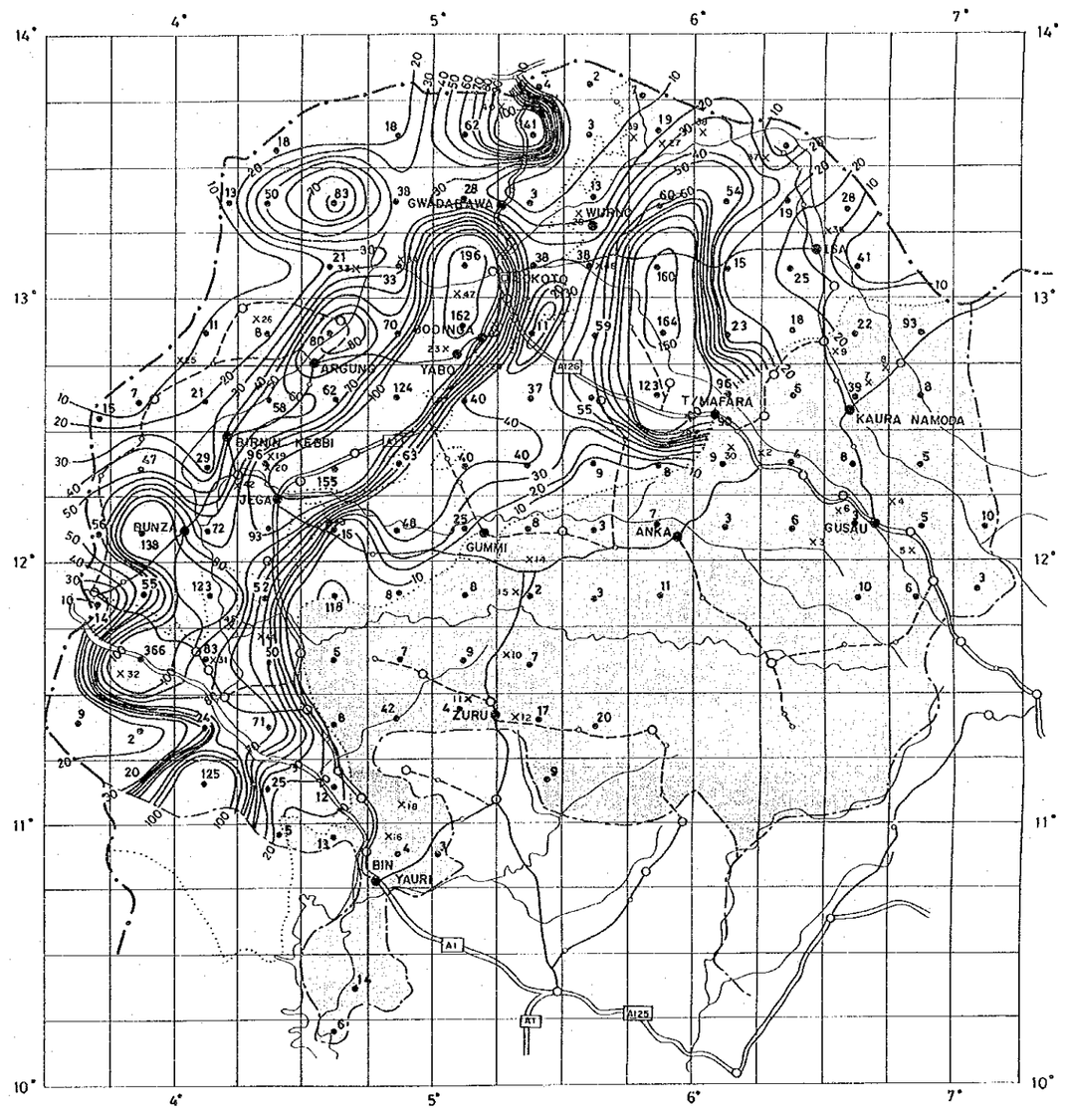


Fig.4 Average Specific Capacity of the Existing Boreholes

(Unit : m^3/day/m)