

THE ARAB REPUBLIC OF EGYPT

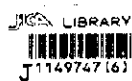
SOUTH SINAI GROUNDWATER RESOURCES STUDY

IN

THE ARAB REPUBLIC OF EGYPT

PORTFOLIO OF

HYDROGEOLOGICAL MAP



MARCH 1999

JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA)

SSS
CR(3)
99-062

THE ARAB REPUBLIC OF EGYPT

**SOUTH SINAI GROUNDWATER RESOURCES STUDY
IN
THE ARAB REPUBLIC OF EGYPT**

**PORTFOLIO OF
HYDROGEOLOGICAL MAP**

MARCH 1999

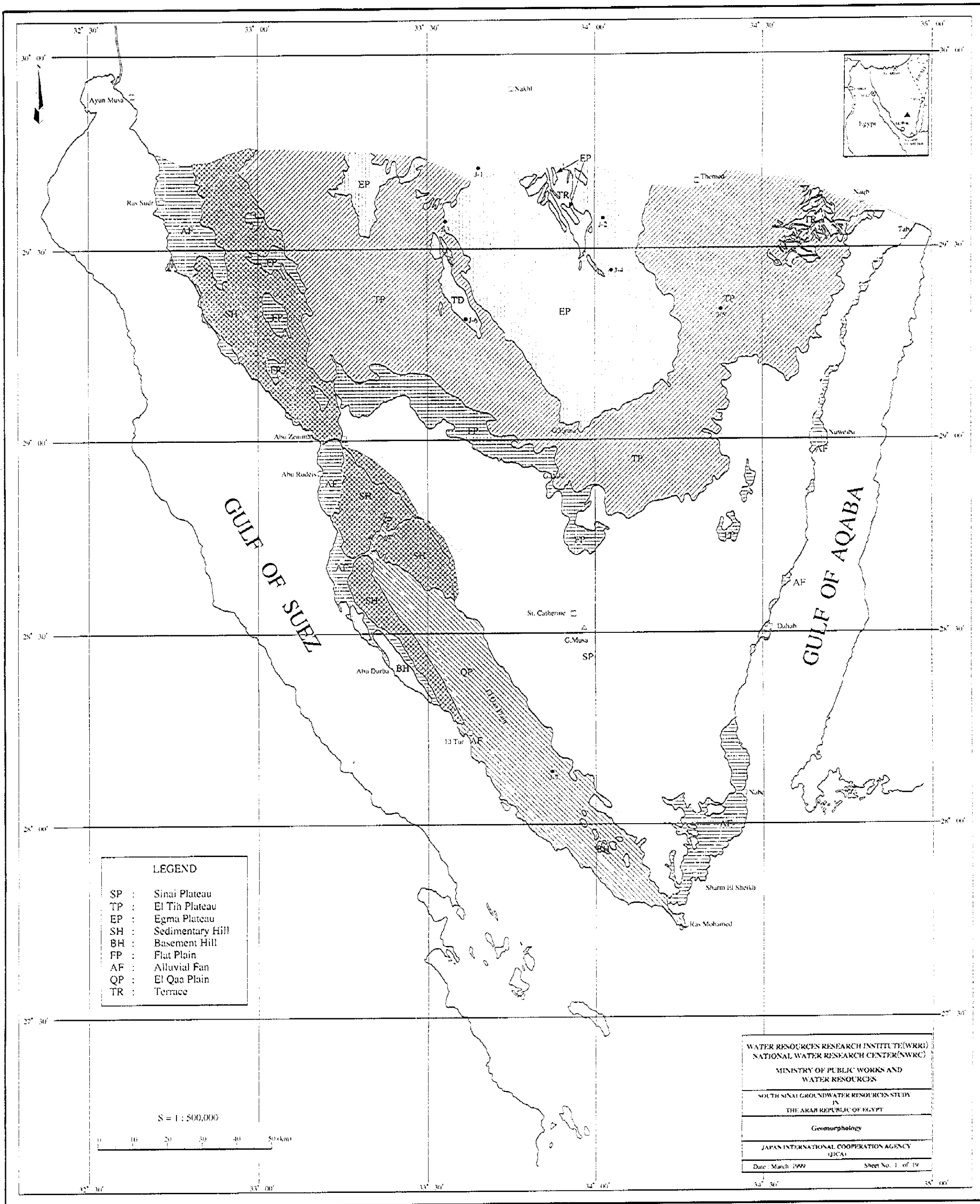
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1149727161

Portfolio of Hydrogeological Map

Table of Contents

- Geomorphology	1
- Location Map of Wells and Groundwater Sources	2
- Location Map of Test Well and Geophysical Survey	3
- Lineament	4
- Wadi Network and Catchment Areas	5
- Top Surface of Lower Cretaceous (m A.S.L)	6
- Isobath of Lower Cretaceous (m A.S.L)	7
- Isopach Map of Lower Cretaceous (m).....	8
- Groundwater Level of Lower Cretaceous (m B.G.L)	9
- Groundwater Level of Lower Cretaceous (m A.S.L)	10
- Groundwater Quality of Lower Cretaceous (TDS) Unit : mg/l	11
- Geological Cross Section	12
- Top Surface and Isopach of Upper Cretaceous	13
- Groundwater Level and Water Quality of Upper Cretaceous	14
- Geological Cross Section in El Qaa Plain	15
- Isobath and Isopach Map of Aquifer in El Qaa Plain	16
- Depth (m B.G.L) to Aquifer and Piezometric Head (m A.S.L) of Aquifer in El Qaa Plain	17
- Water Quality of Aquifer in El Qaa Plain	18
- Transmissivity and Hydraulic Conductivity Distribution in El Qaa Plain	19



LEGEND

SP	: Sinai Plateau
TP	: El Tih Plateau
EP	: Egma Plateau
SH	: Sedimentary Hill
BH	: Basement Hill
FP	: Flat Plain
AF	: Alluvial Fan
QP	: El Qaa Plain
TR	: Terrace

S = 1 : 500,000

0 10 20 30 40 50 km

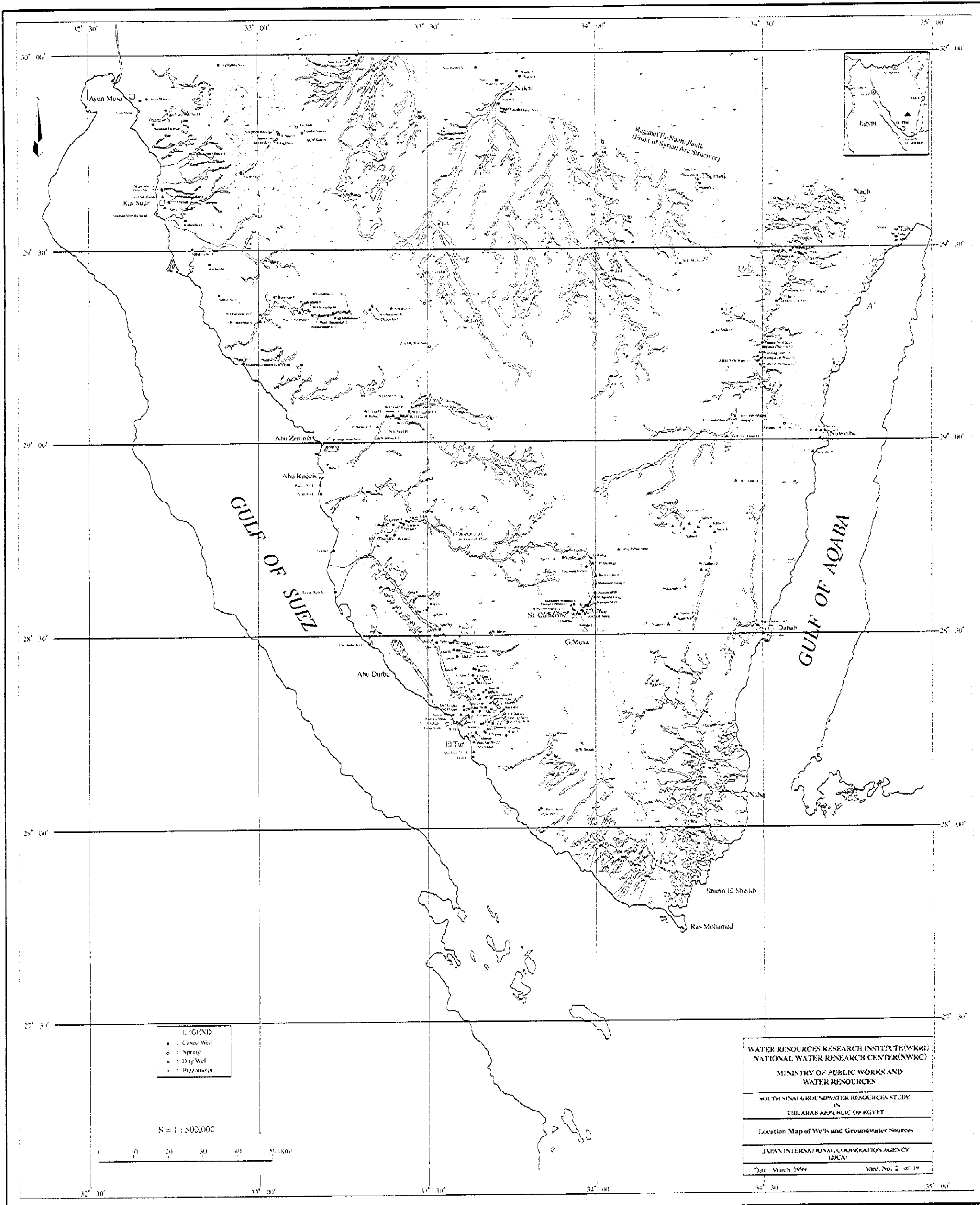
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 IN
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Geomorphology

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Date: March 1999 Sheet No. 1 of 19

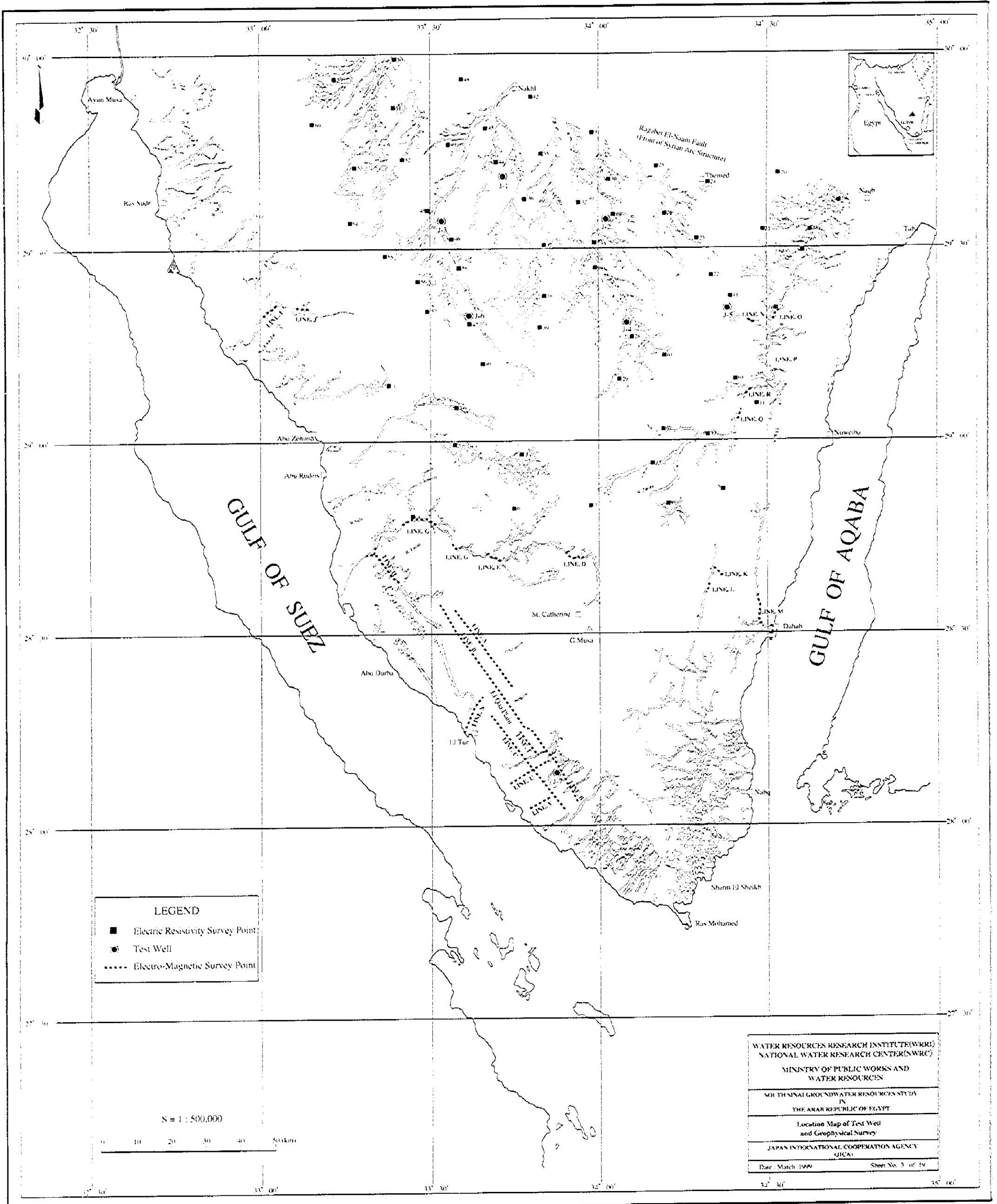


- LEGEND
- Cased Well
 - Spring
 - ▲ Dry Well
 - Piezometer

S = 1 : 500,000

0 10 20 30 40 50 (km)

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 IN
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 Location Map of Wells and Groundwater Sources
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 Date: March 1999 Sheet No. 2 of 19



LEGEND

- Electric Resistivity Survey Point
- Test Well
- Electro-Magnetic Survey Point

S = 1 : 500,000

0 10 20 30 40 50 km

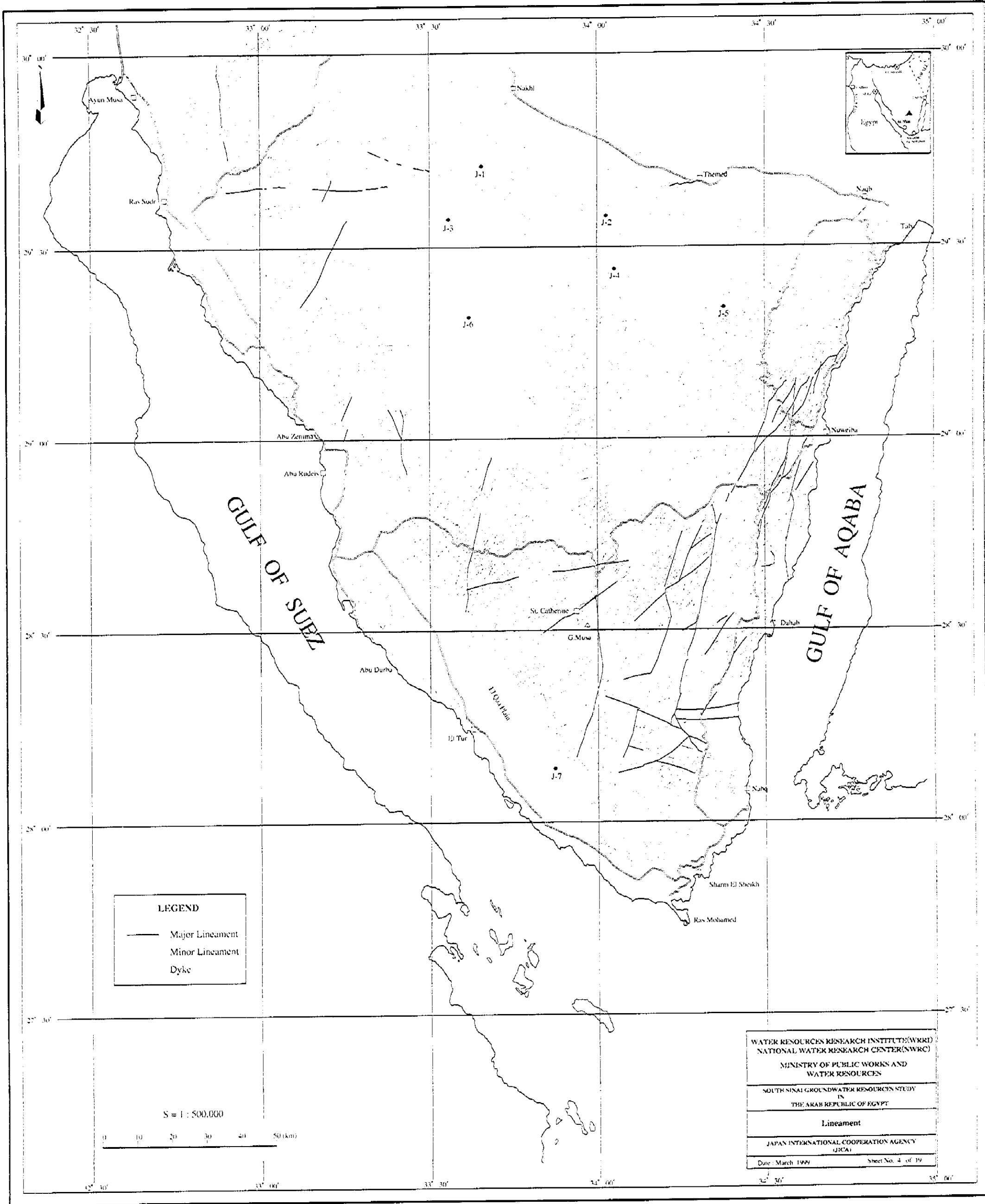
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Location Map of Test Well
 and Geophysical Survey

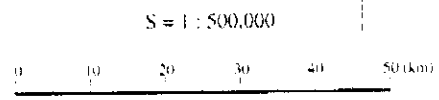
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LEGEND

- Major Lineament
- Minor Lineament
- - - Dyke



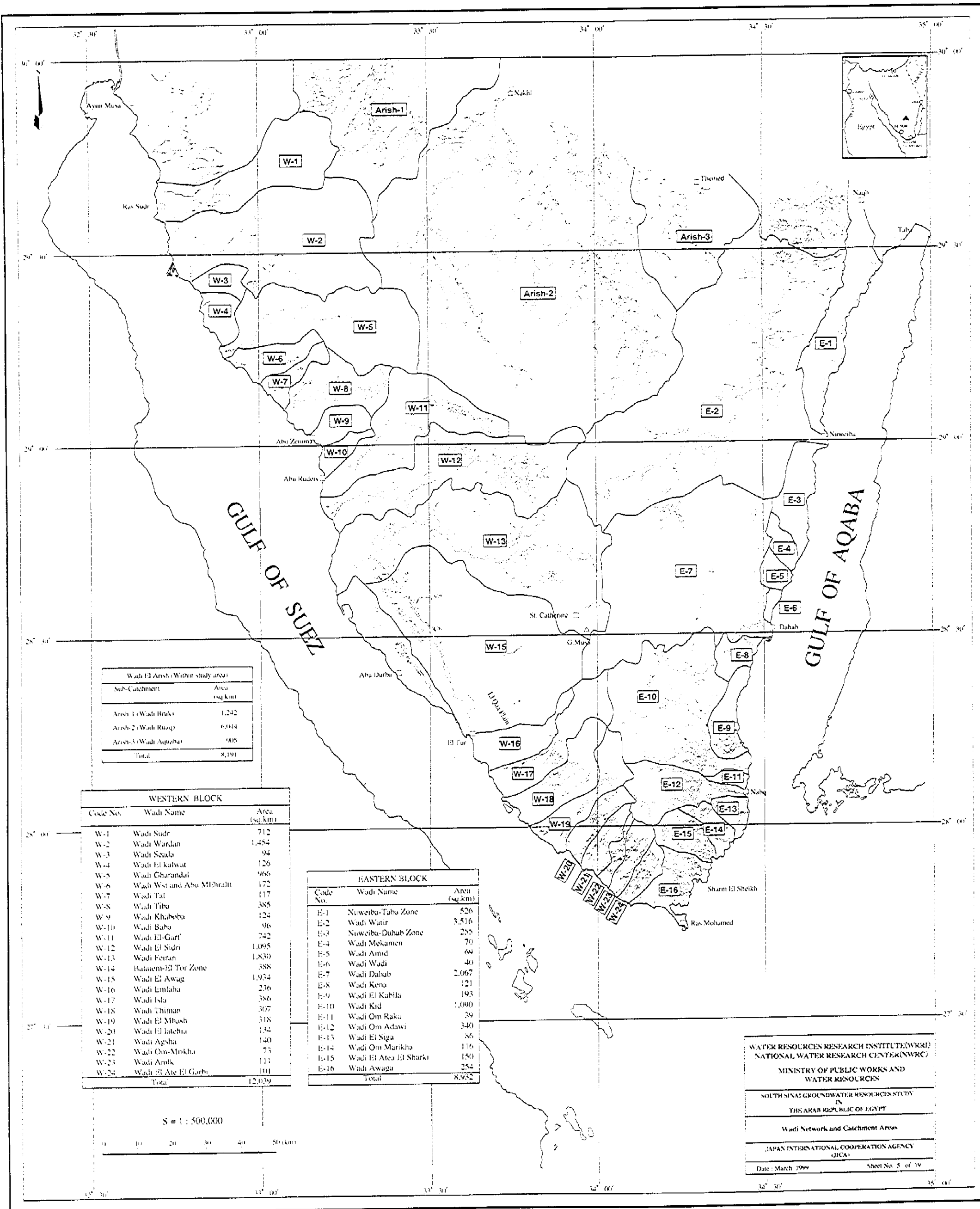
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Lineament

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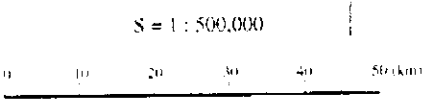
Date: March 1999 Sheet No. 4 of 19



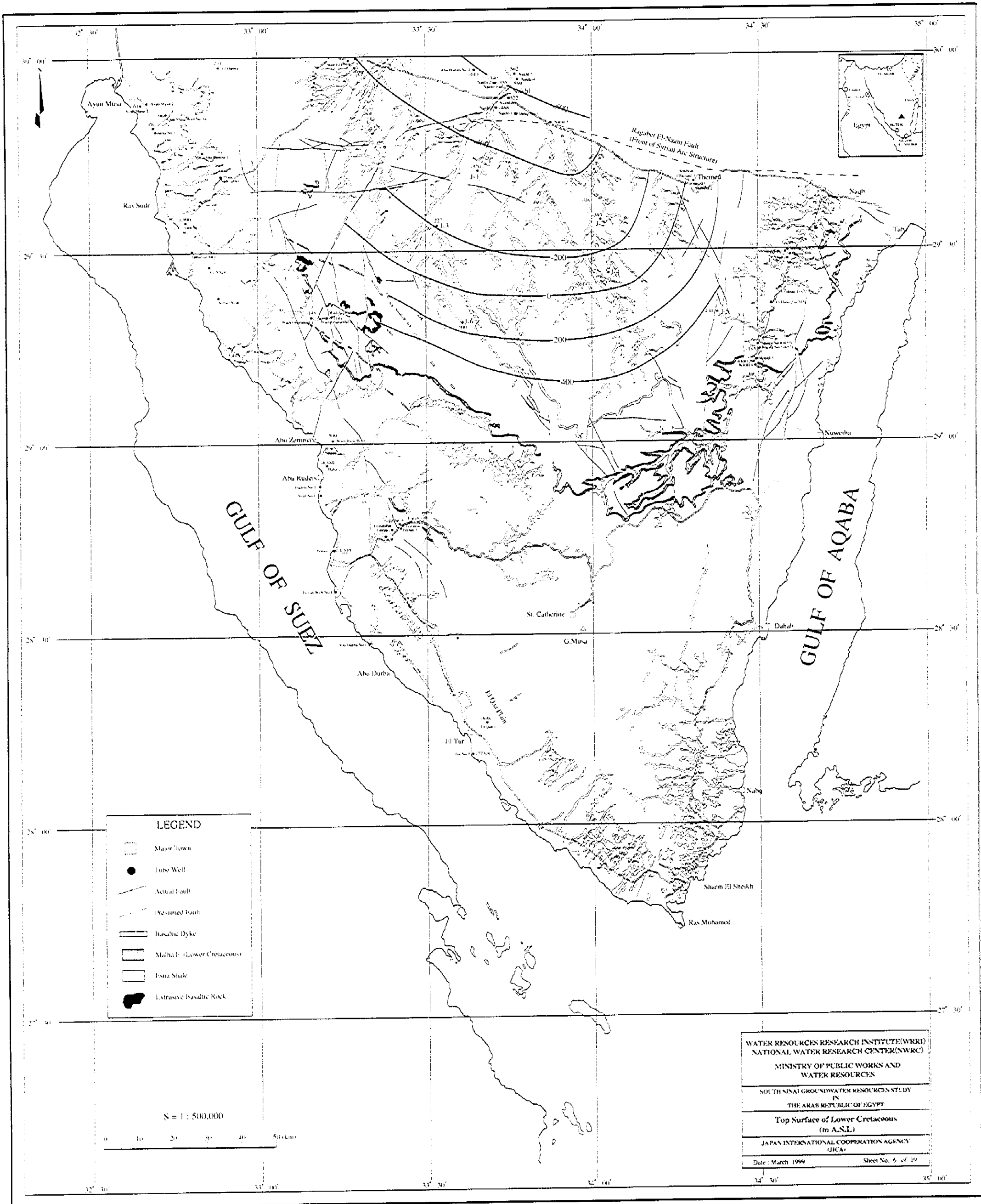
Wadi El Arish (Within study area)	
Sub-Catchment	Area (sq.km)
Arish 1 (Wadi Brak)	1,242
Arish 2 (Wadi Rhaq)	6,944
Arish 3 (Wadi Aqaba)	905
Total	8,191

WESTERN BLOCK		
Code No.	Wadi Name	Area (sq.km)
W-1	Wadi Sudr	712
W-2	Wadi Wardan	1,454
W-3	Wadi Saada	94
W-4	Wadi El Kabwat	126
W-5	Wadi Gharandal	966
W-6	Wadi Wst and Abu Mithrait	172
W-7	Wadi Tal	117
W-8	Wadi Tibu	385
W-9	Wadi Khababa	124
W-10	Wadi Baba	96
W-11	Wadi El-Garf	742
W-12	Wadi El Sidri	1,095
W-13	Wadi Ferran	1,830
W-14	Balaem-El Tor Zone	388
W-15	Wadi El Awag	1,934
W-16	Wadi Lmlaha	236
W-17	Wadi Isla	386
W-18	Wadi Thiman	307
W-19	Wadi El Mhush	318
W-20	Wadi El Iateha	134
W-21	Wadi Agsha	140
W-22	Wadi Om-Mrikha	73
W-23	Wadi Amik	111
W-24	Wadi El Ate El Garbi	101
Total		12,039

EASTERN BLOCK		
Code No.	Wadi Name	Area (sq.km)
E-1	Nuweiba-Taba Zone	526
E-2	Wadi Watir	3,516
E-3	Nuweiba-Dahab Zone	255
E-4	Wadi Mekamen	70
E-5	Wadi Amid	69
E-6	Wadi Wadi	40
E-7	Wadi Dahab	2,067
E-8	Wadi Kena	121
E-9	Wadi El Kabila	193
E-10	Wadi Kid	1,090
E-11	Wadi Om Raka	39
E-12	Wadi Om Adawi	340
E-13	Wadi El Siga	86
E-14	Wadi Om Marikha	116
E-15	Wadi El Ate El Sharki	150
E-16	Wadi Awaga	254
Total		8,952



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 Wadi Network and Catchment Areas
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 Date : March 1999 Sheet No. 5 of 19



LEGEND

- Major Town
- Tube Well
- Actual Fault
- - - Presumed fault
- ▬ Basaltic Dyke
- ▭ Malha F. (Lower Cretaceous)
- Esna Shale
- Extrusive Basaltic Rock

S = 1 : 500,000

0 10 20 30 40 50 km

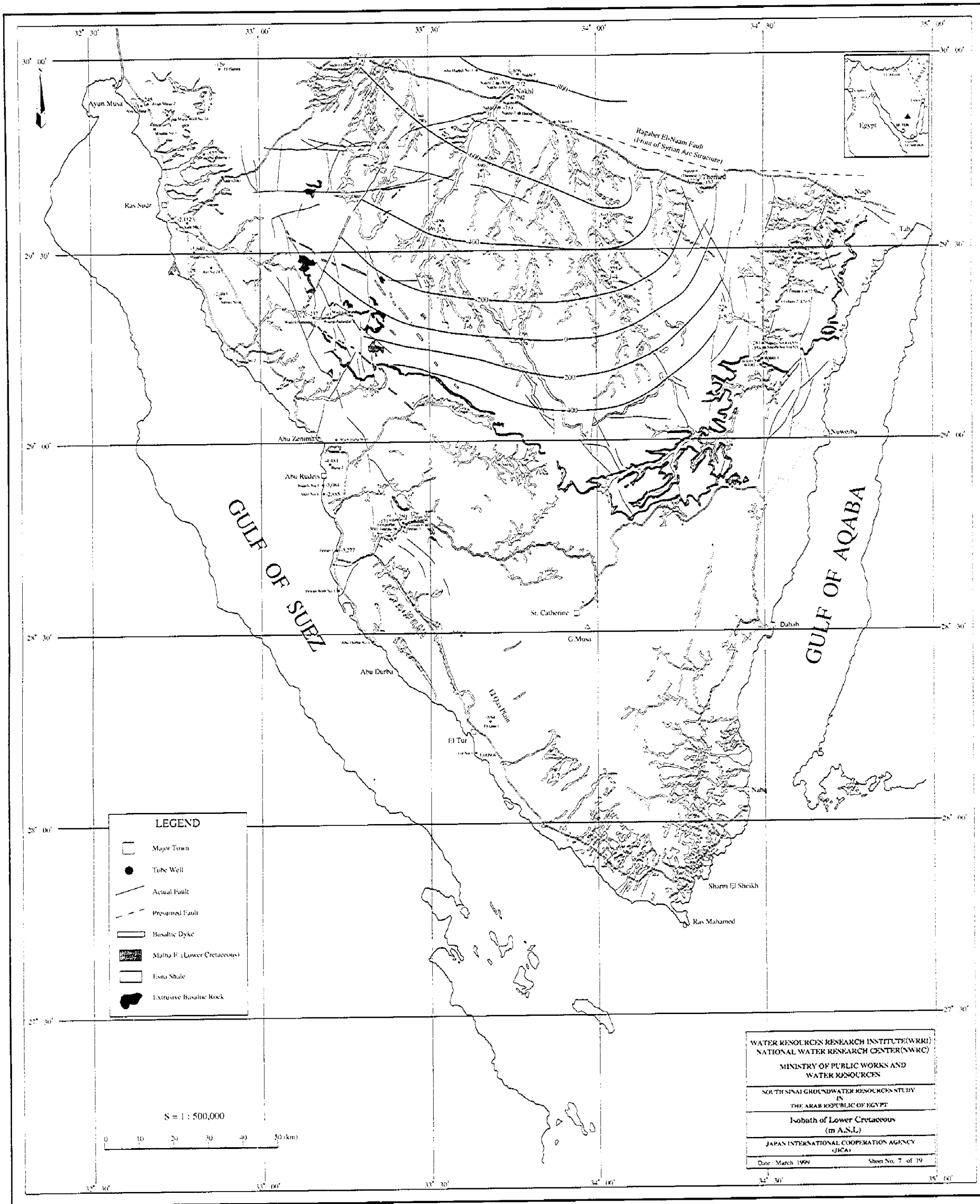
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 IN
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Top Surface of Lower Cretaceous
 (m A.S.L.)

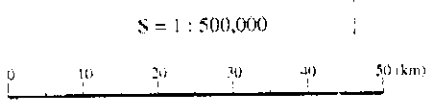
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Date: March 1999 Sheet No. 6 of 19



LEGEND

- Major Town
- Tube Well
- Actual Fault
- - - Presumed Fault
- ▬ Basaltic Dyke
- ▨ Malha F. (Lower Cretaceous)
- Esna Shale
- Extrusive Basaltic Rock



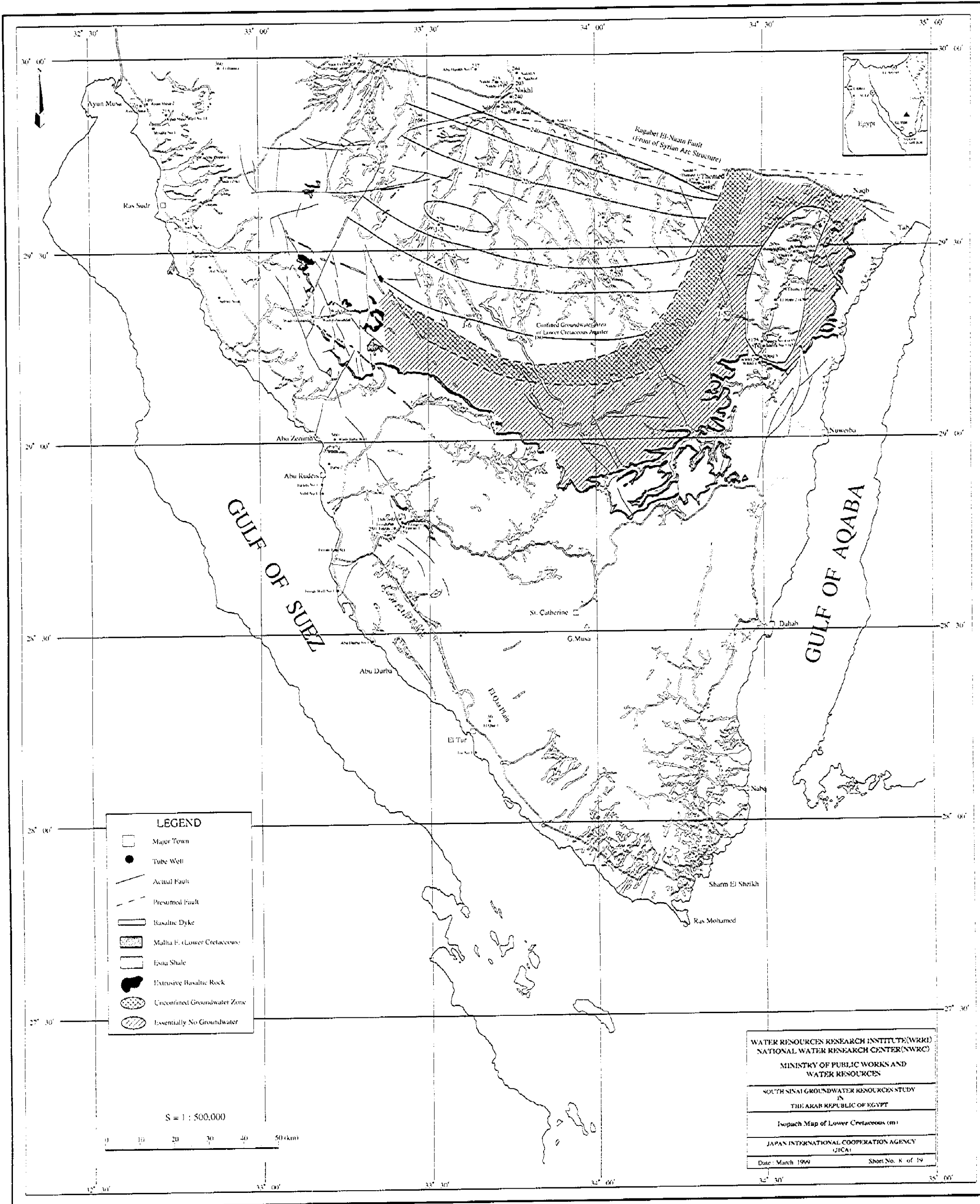
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 IN
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**Isobath of Lower Cretaceous
 (m A.S.L.)**

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Date : March 1999 Sheet No. 7 of 19



LEGEND

- Major Town
- Tube Well
- Actual Fault
- - - Presumed Fault
- ▬ Basaltic Dyke
- ▨ Malta F. (Lower Cretaceous)
- ▩ Esna Shale
- Extrusive Basaltic Rock
- Unconfined Groundwater Zone
- Essentially No Groundwater

S = 1 : 500,000

0 10 20 30 40 50 (km)

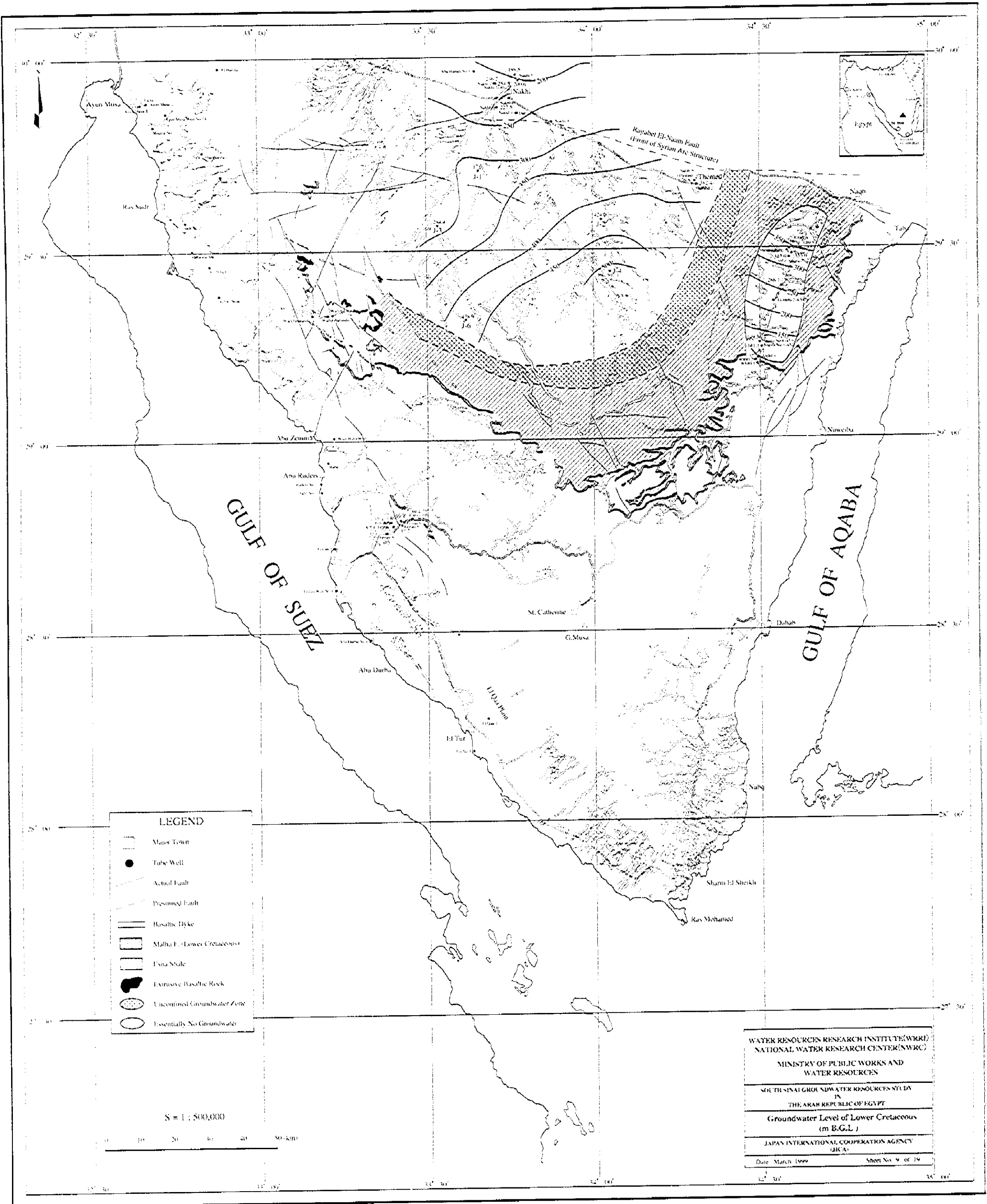
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 IN
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Isopach Map of Lower Cretaceous (m)

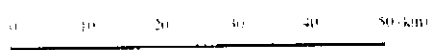
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Date: March 1999 Sheet No. 8 of 14



- LEGEND**
- Major Town
 - Tube Well
 - Actual Fault
 - - - Presumed Fault
 - || Basaltic Dyke
 - ▨ Malha F. (Lower Cretaceous)
 - ▩ Esna Shale
 - Extrusive Basaltic Rock
 - Unconfined Groundwater Zone
 - Essentially No Groundwater

S = 1 : 500,000



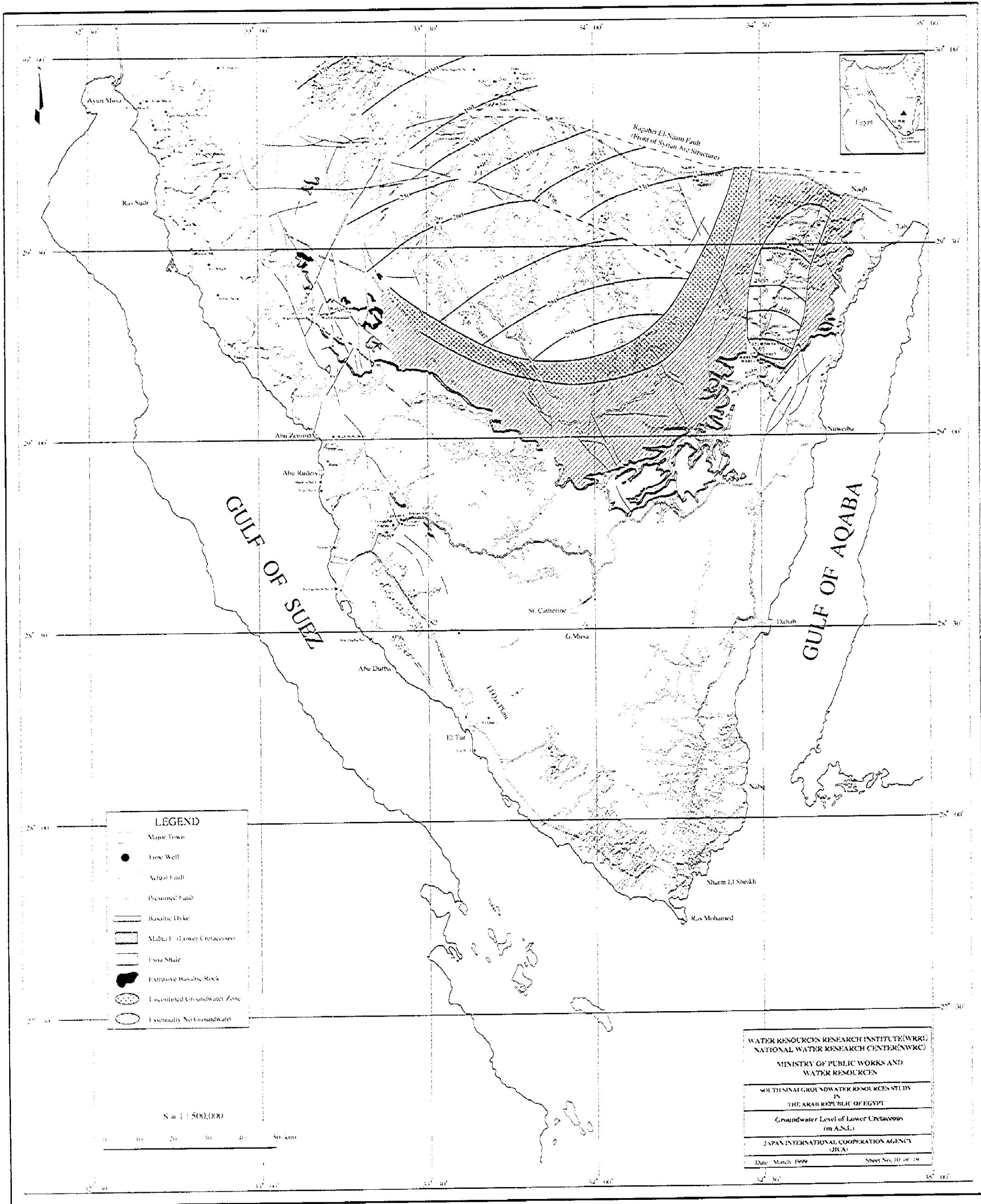
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 IN
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Groundwater Level of Lower Cretaceous
 (m B.G.L.)

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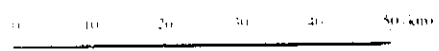
Date: March 1999 Sheet No. 9 of 19



LEGEND

- Major Town
- Tube Well
- Actual Fault
- Presumed Fault
- Basaltic Dyke
- Malha F. (Lower Cretaceous)
- Usna Shale
- Extensive Basaltic Rock
- Uncontrolled Groundwater Zone
- Essentially No Groundwater

S = 1 : 500,000



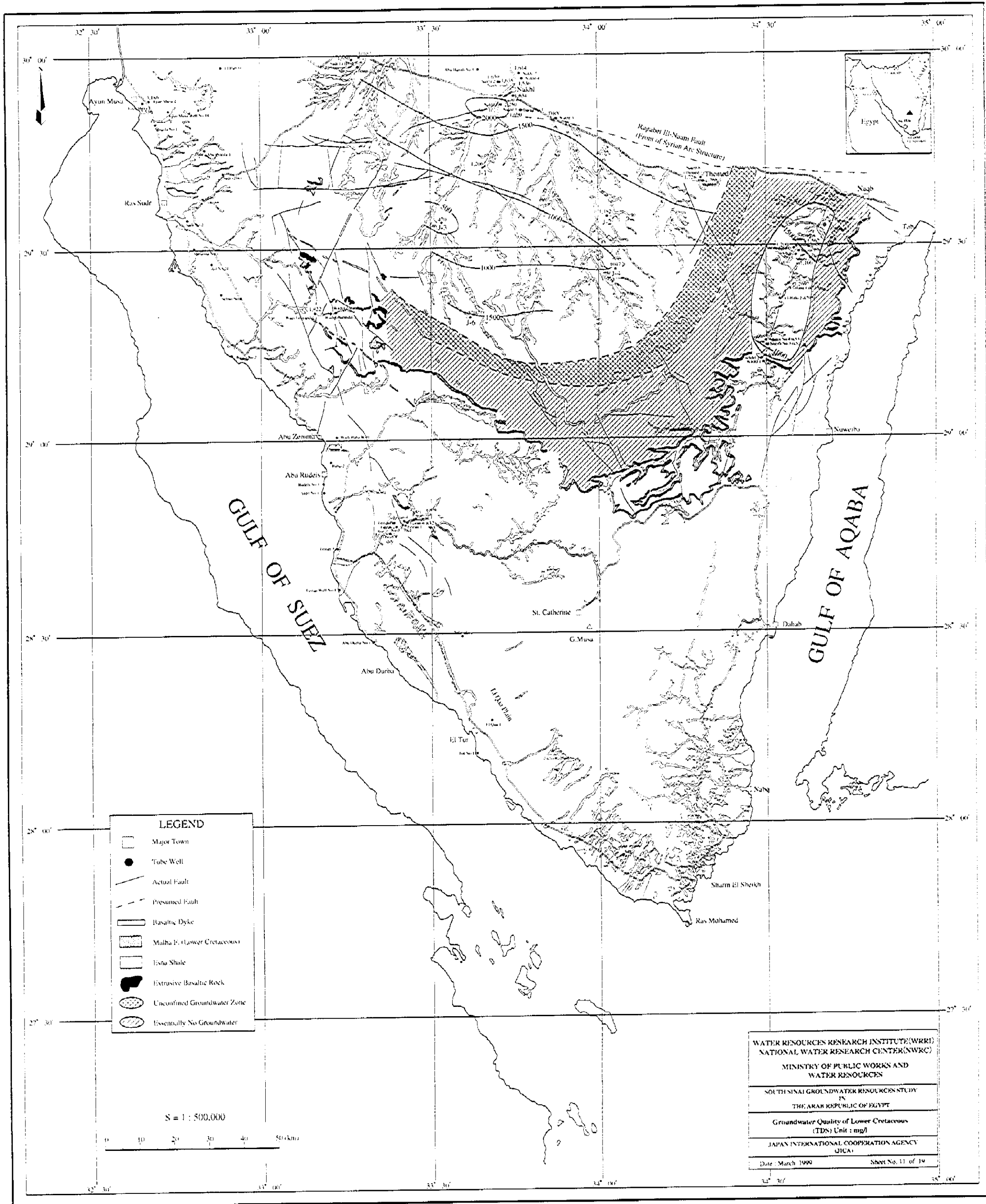
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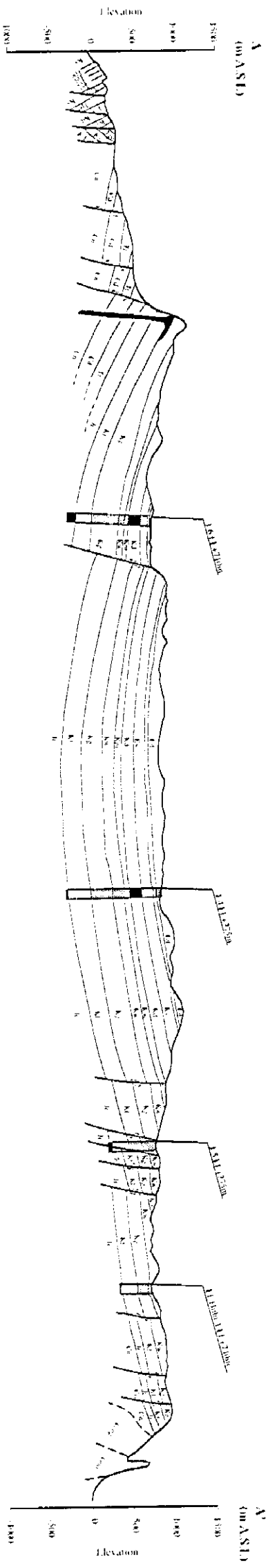
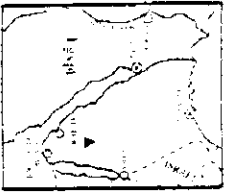
SOUTH SINAI GROUNDWATER RESOURCES STUDY
 IN
 THE ARAB REPUBLIC OF EGYPT

Groundwater Level of Lower Cretaceous
 (m A.S.L.)

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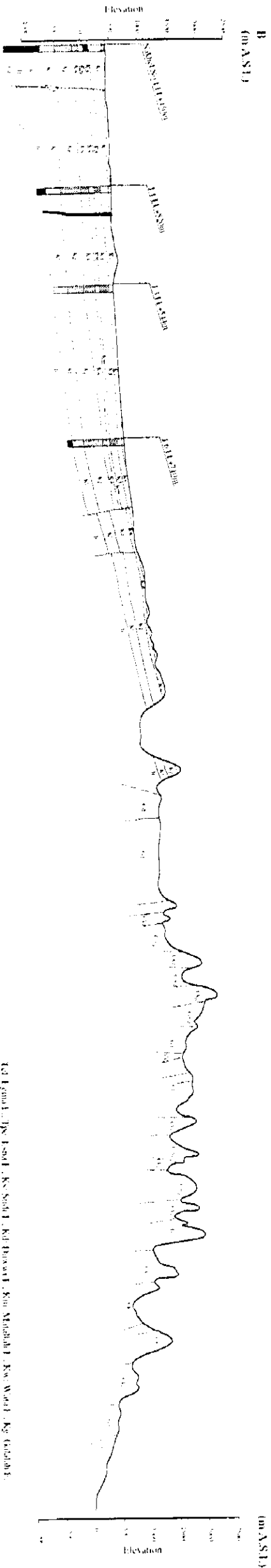
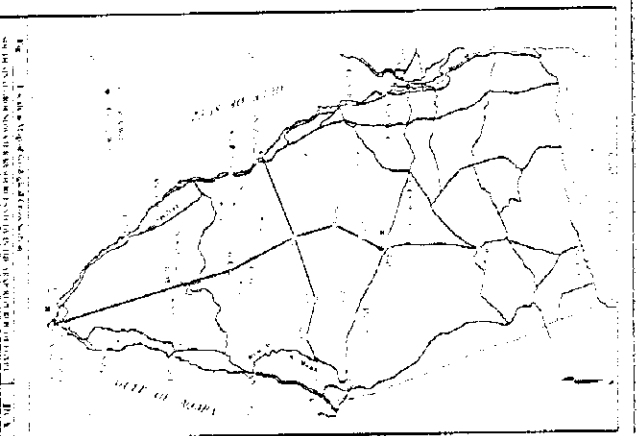
Date: March 1999 Sheet No. 10 of 19





Geological Cross Section (A - A')

Ed. Egan, F. J. Egan, K. S. Sadi, K. M. Dore, K. M. Madihi, K. M. Ward, K. S. Gidani,
 K. M. Madihi, F. J. Egan, F. J. Egan, F. J. Egan, F. J. Egan, F. J. Egan,
 Descriptive Notes: Geology, Madagascar, C. G. Geological Survey, Madagascar



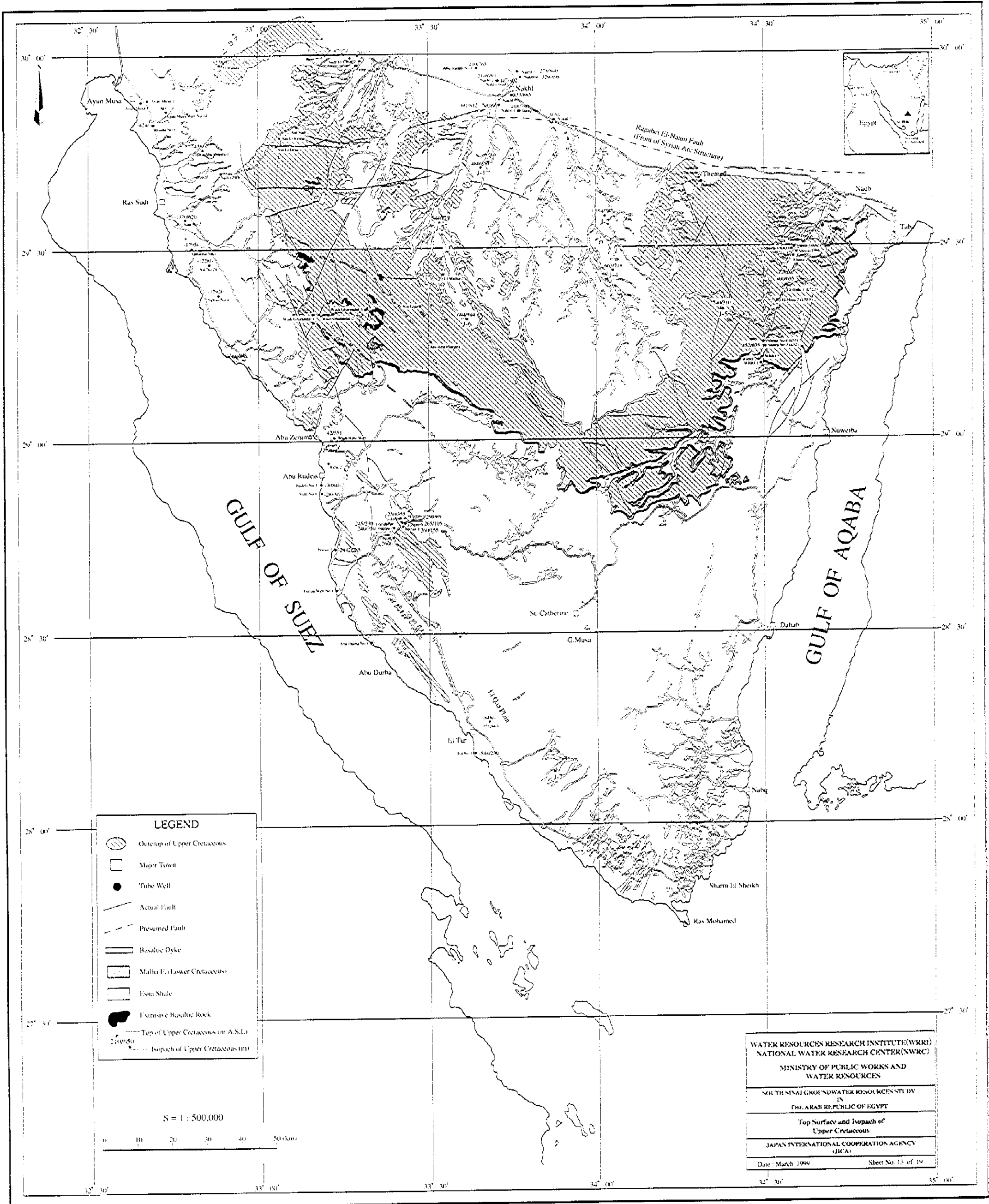
Geological Cross Section (B - B')

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 Descriptive Notes: Geology, Madagascar, C. G. Geological Survey, Madagascar

MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)
 MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)
 MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)

MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)
 MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)
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MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)
 MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)
 MAHARAJA RAJESWARACHANDRAN (H. H. H. H.)



LEGEND

- Outcrop of Upper Cretaceous
- Major Town
- Tube Well
- Actual Fault
- Presumed Fault
- Basaltic Dyke
- Malha F. (Lower Cretaceous)
- Esna Shale
- Extrusive Basaltic Rock
- Top of Upper Cretaceous (m A.S.L.)
- Isopach of Upper Cretaceous (m)

S = 1 : 500,000

0 10 20 30 40 50 (km)

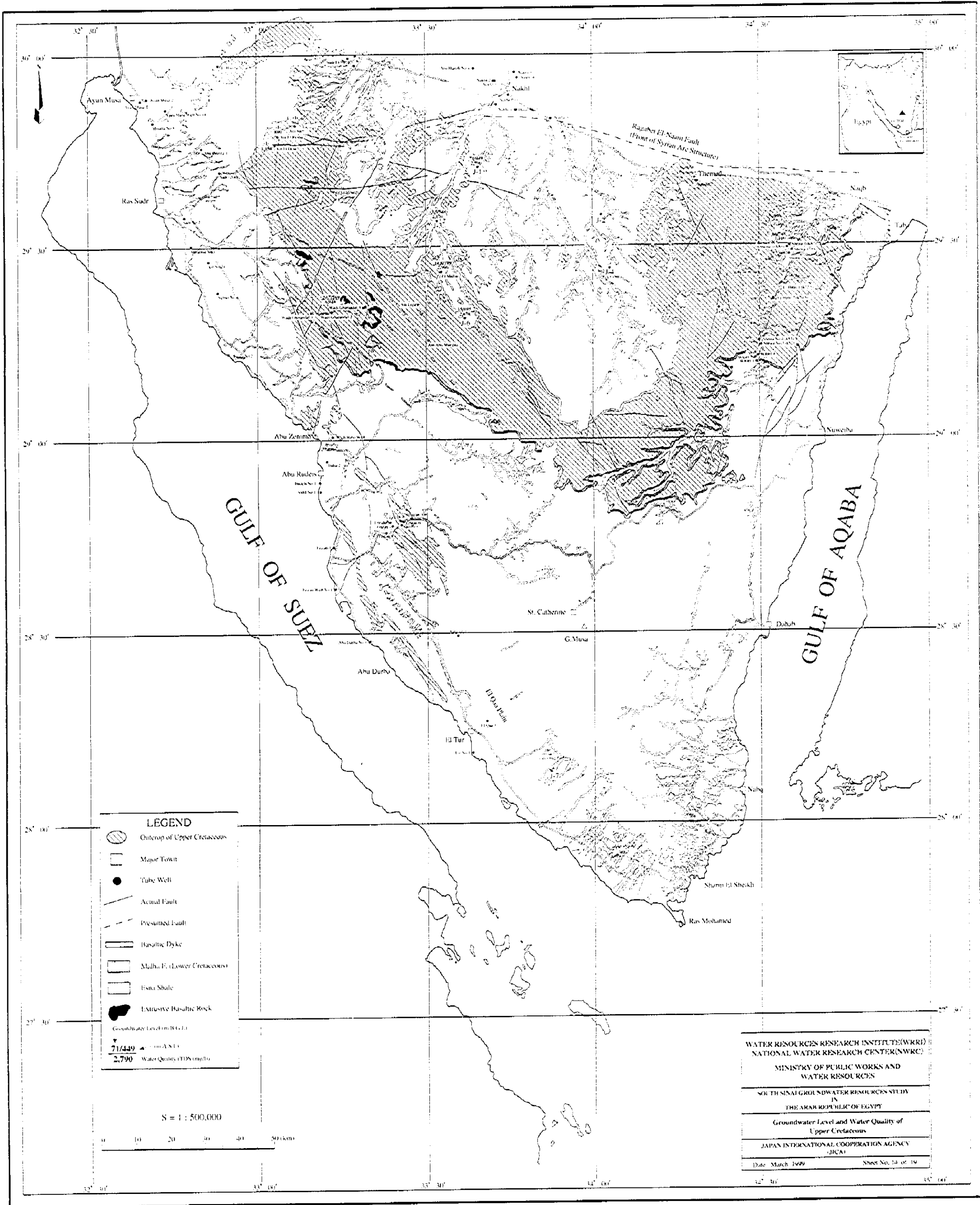
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 IN
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Top Surface and Isopach of
 Upper Cretaceous

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Date: March 1999 Sheet No. 13 of 19



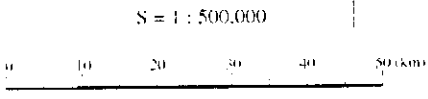
LEGEND

- Outcrop of Upper Cretaceous
- Major Town
- Tube Well
- Actual Fault
- Presumed Fault
- Basaltic Dyke
- Malha F. (Lower Cretaceous)
- Esna Shale
- Extrusive Basaltic Rock

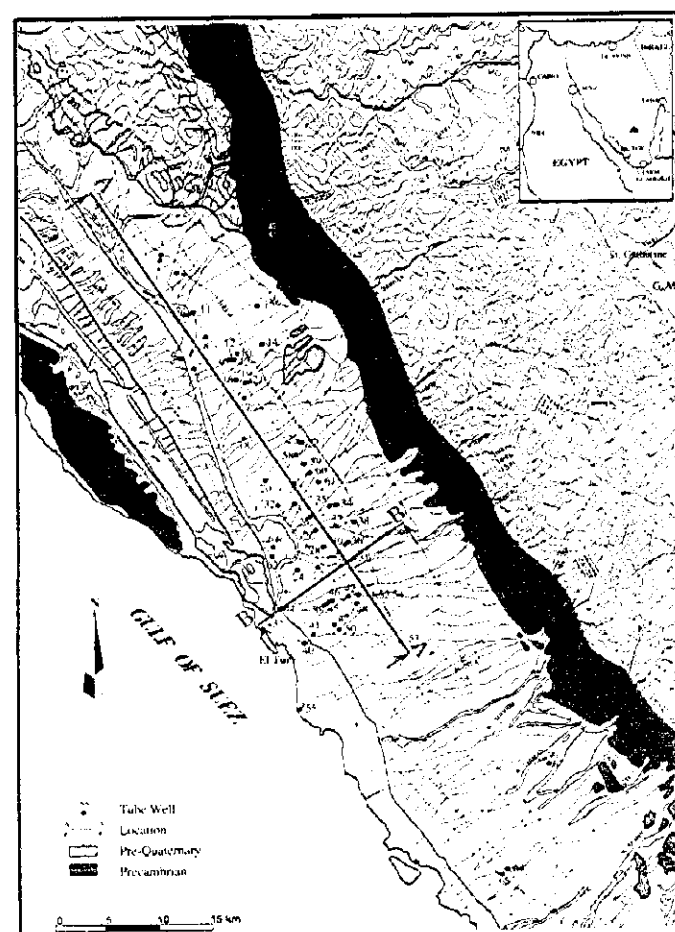
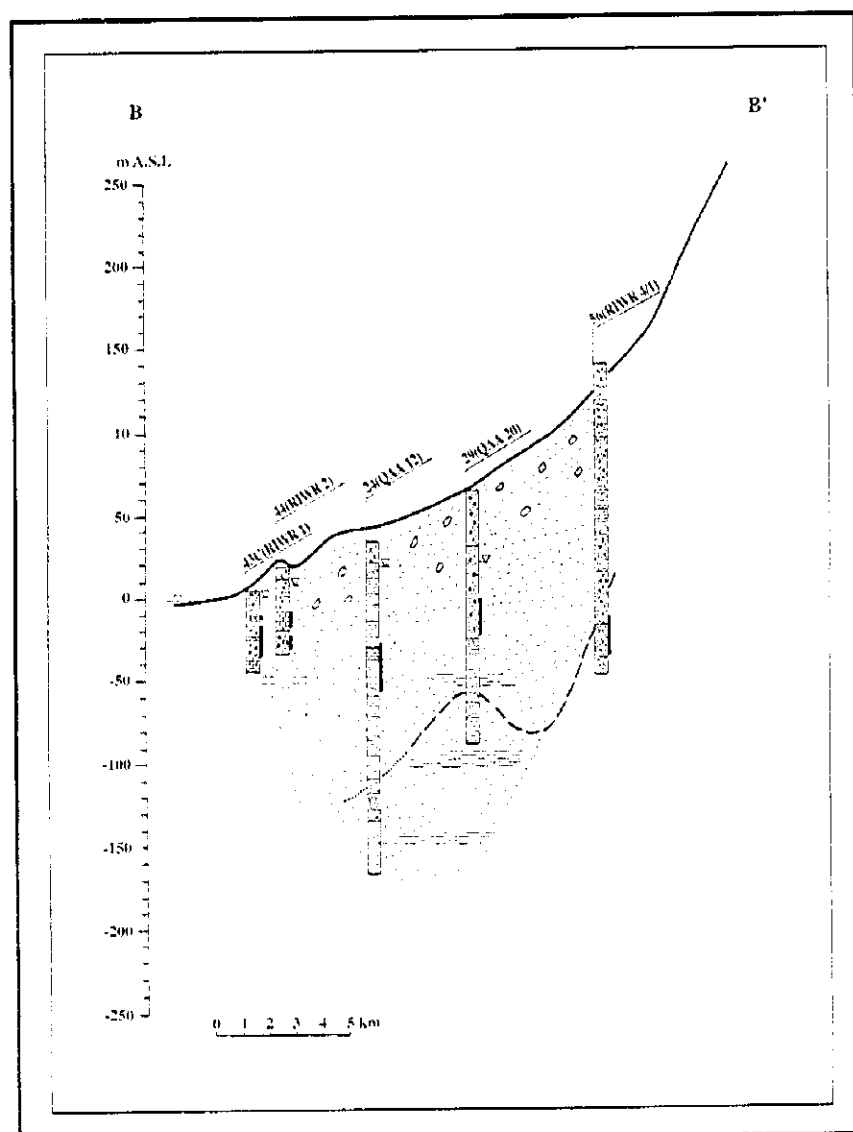
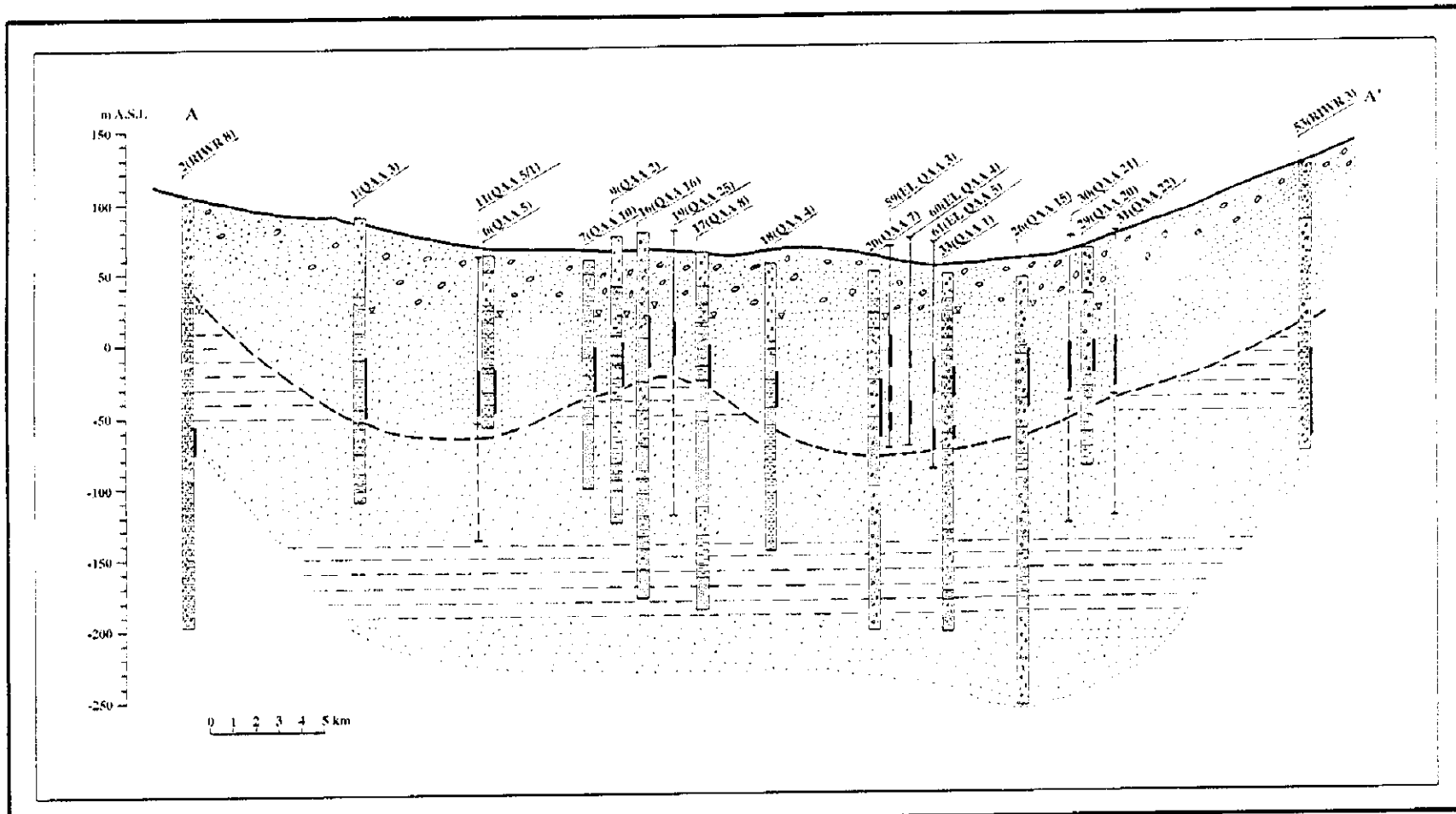
Groundwater Level (m B.G.L.)

71/449 ← 100 A.S.U.

2,790 Water Quality (TDS mg/l)

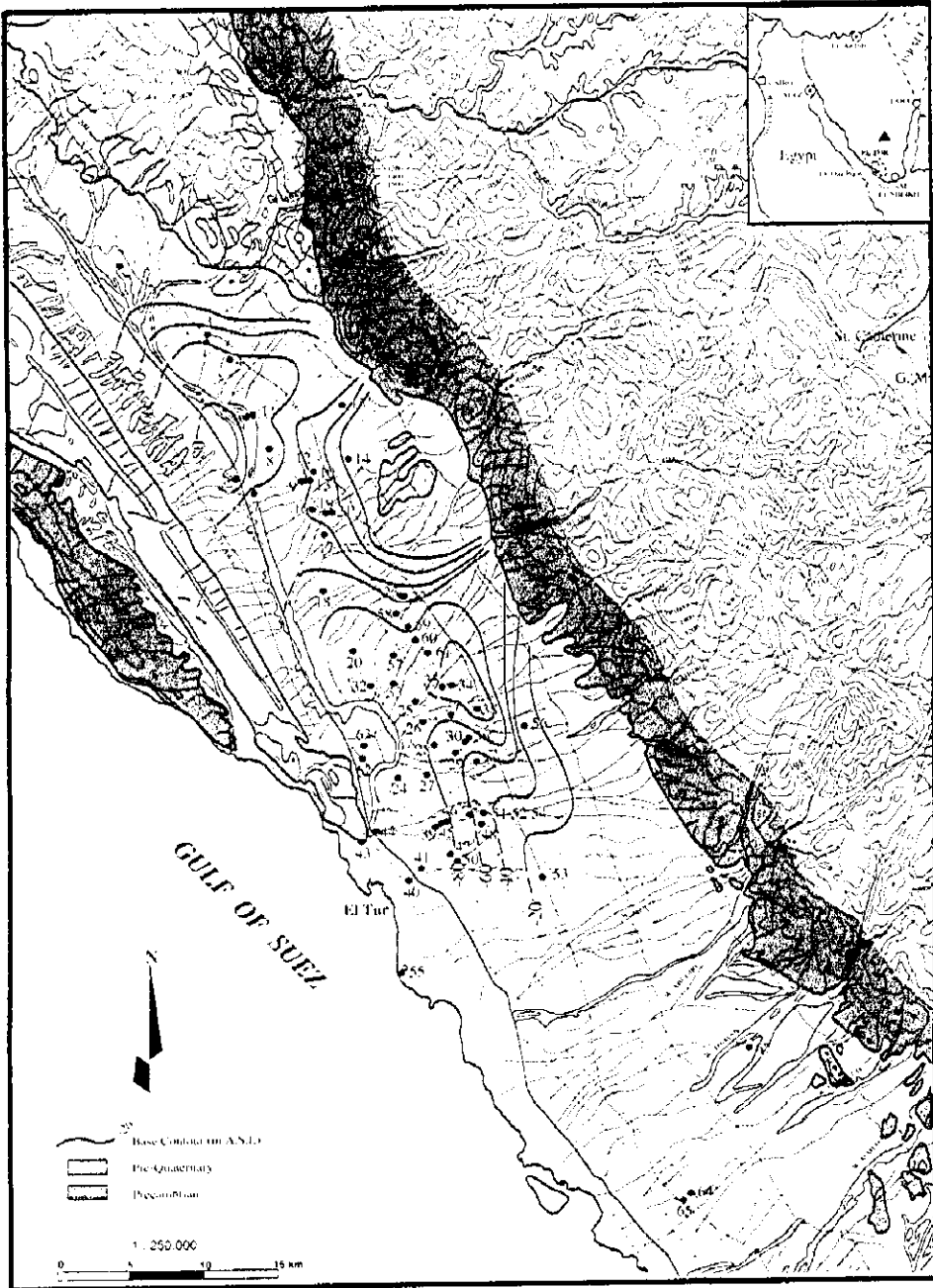


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 Groundwater Level and Water Quality of
 Upper Cretaceous
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 Date: March 1989 Sheet No. 14 of 19

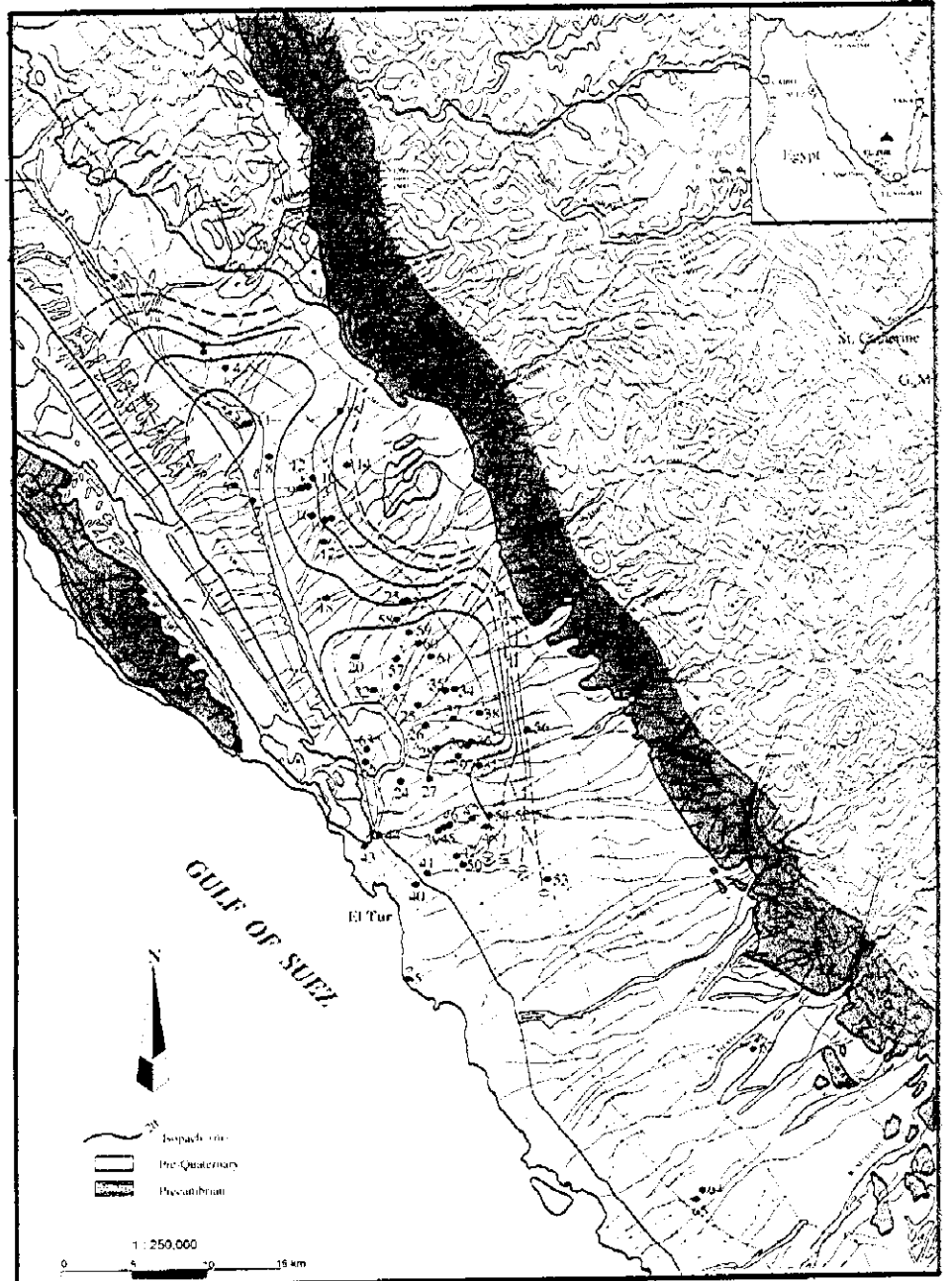


Location of Geological Cross Section

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 Geological Cross Section in El Qua Plain
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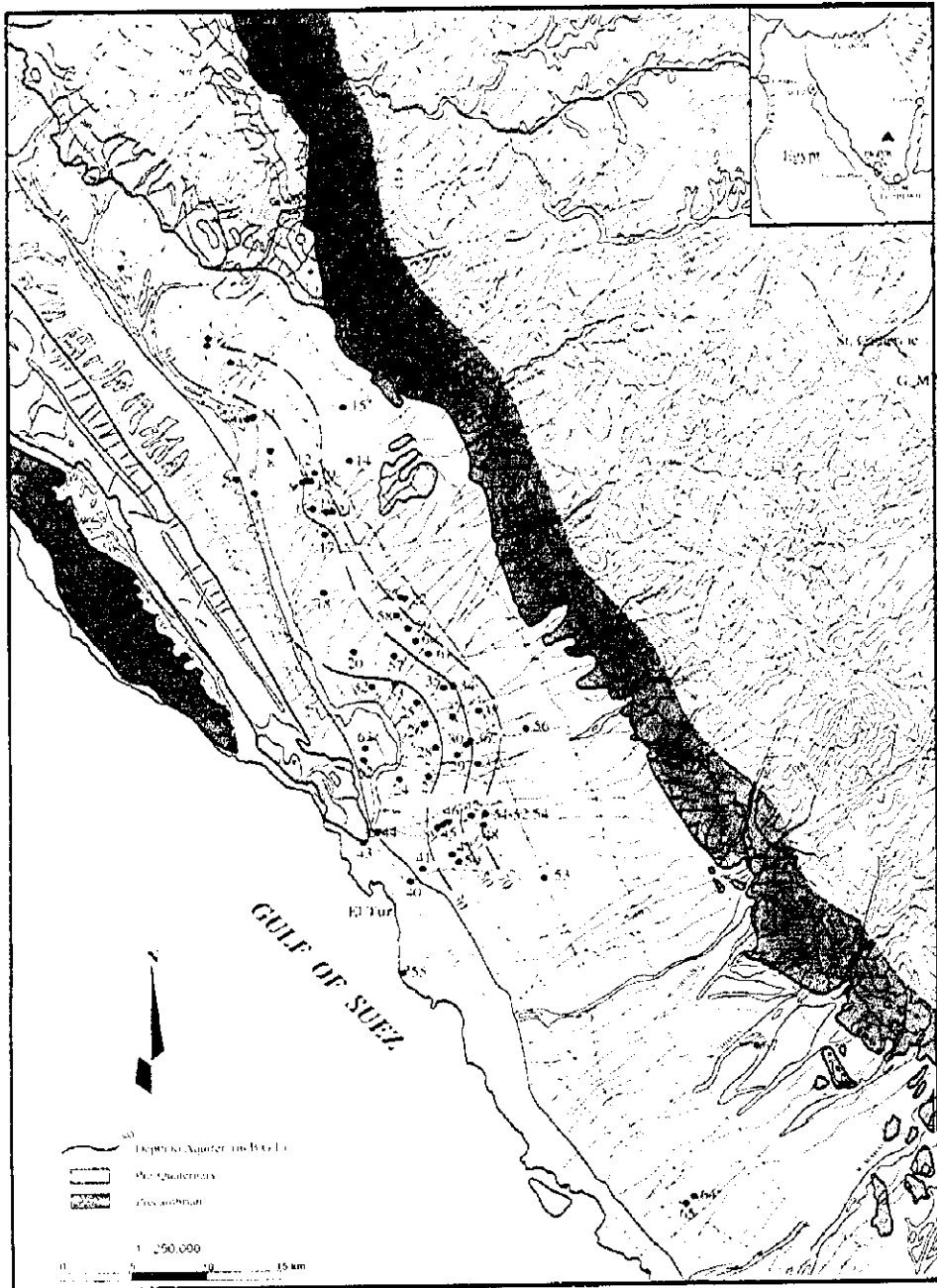


Isobath Map of the Aquifer

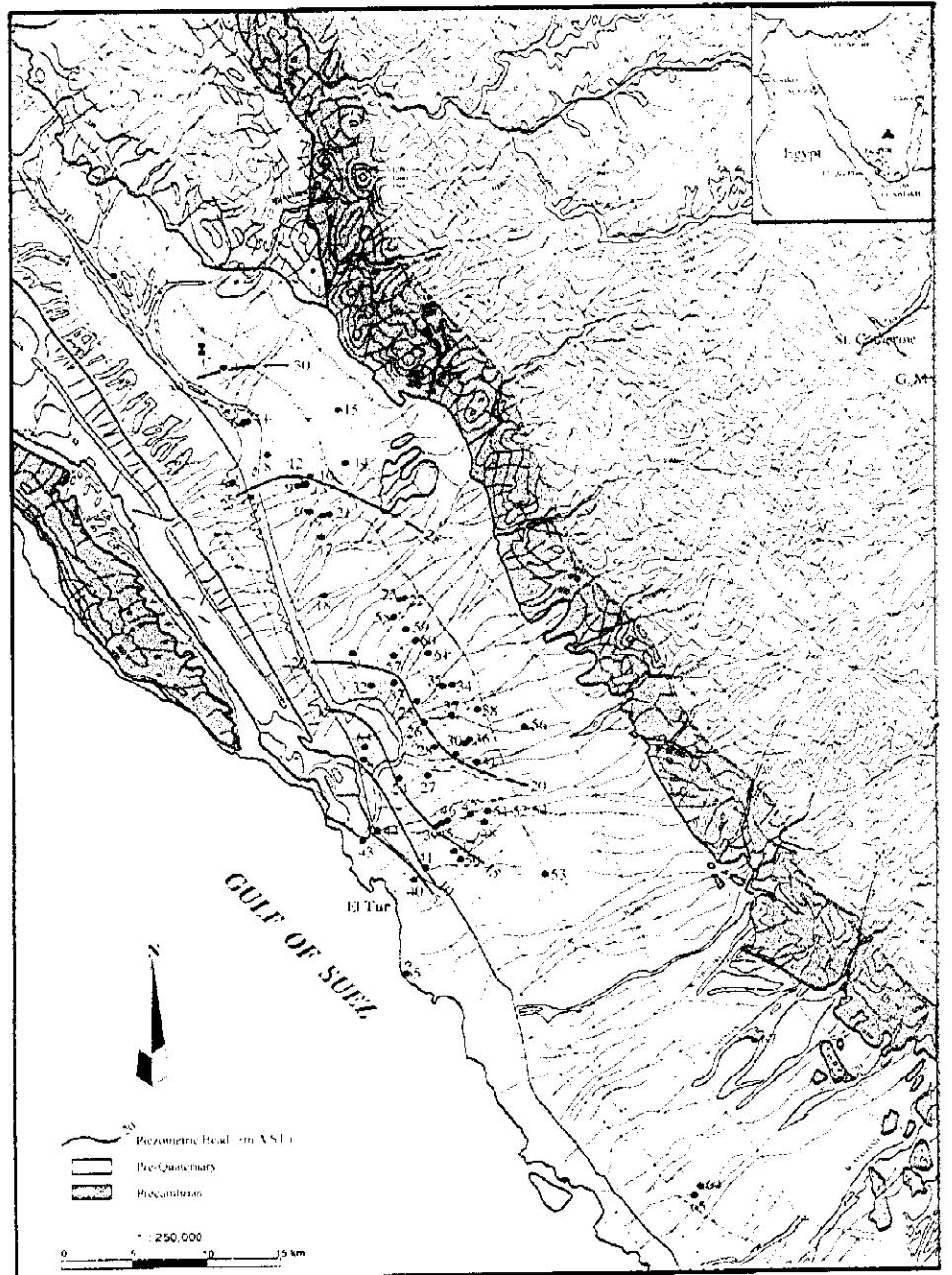


Isopach Map of the Aquifer

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 Isobath and Isopach Map
 of Aquifer in El Qaa Plain
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 Date: March 1999 Sheet No. 16 of 19

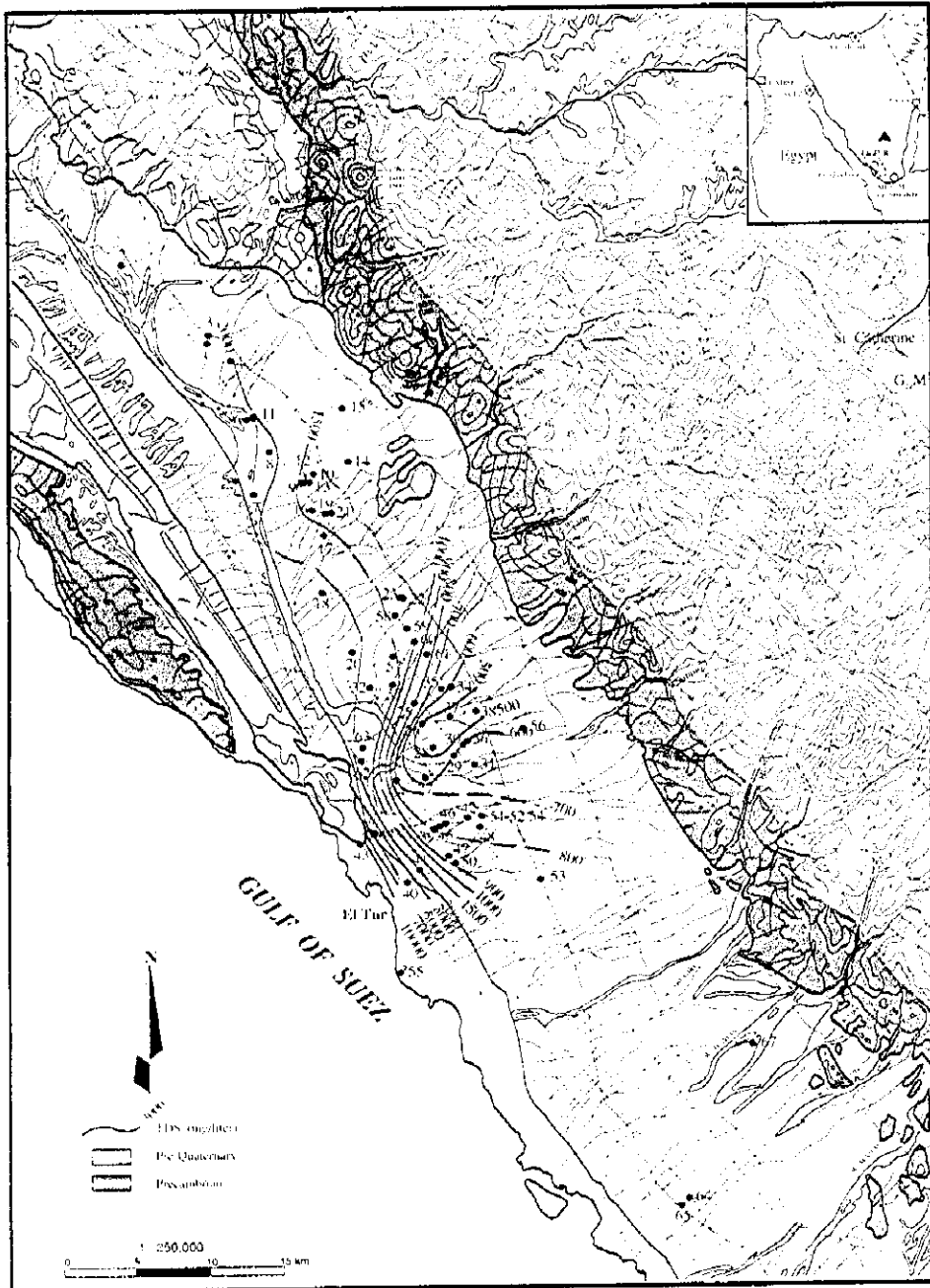


Depth to Aquifer

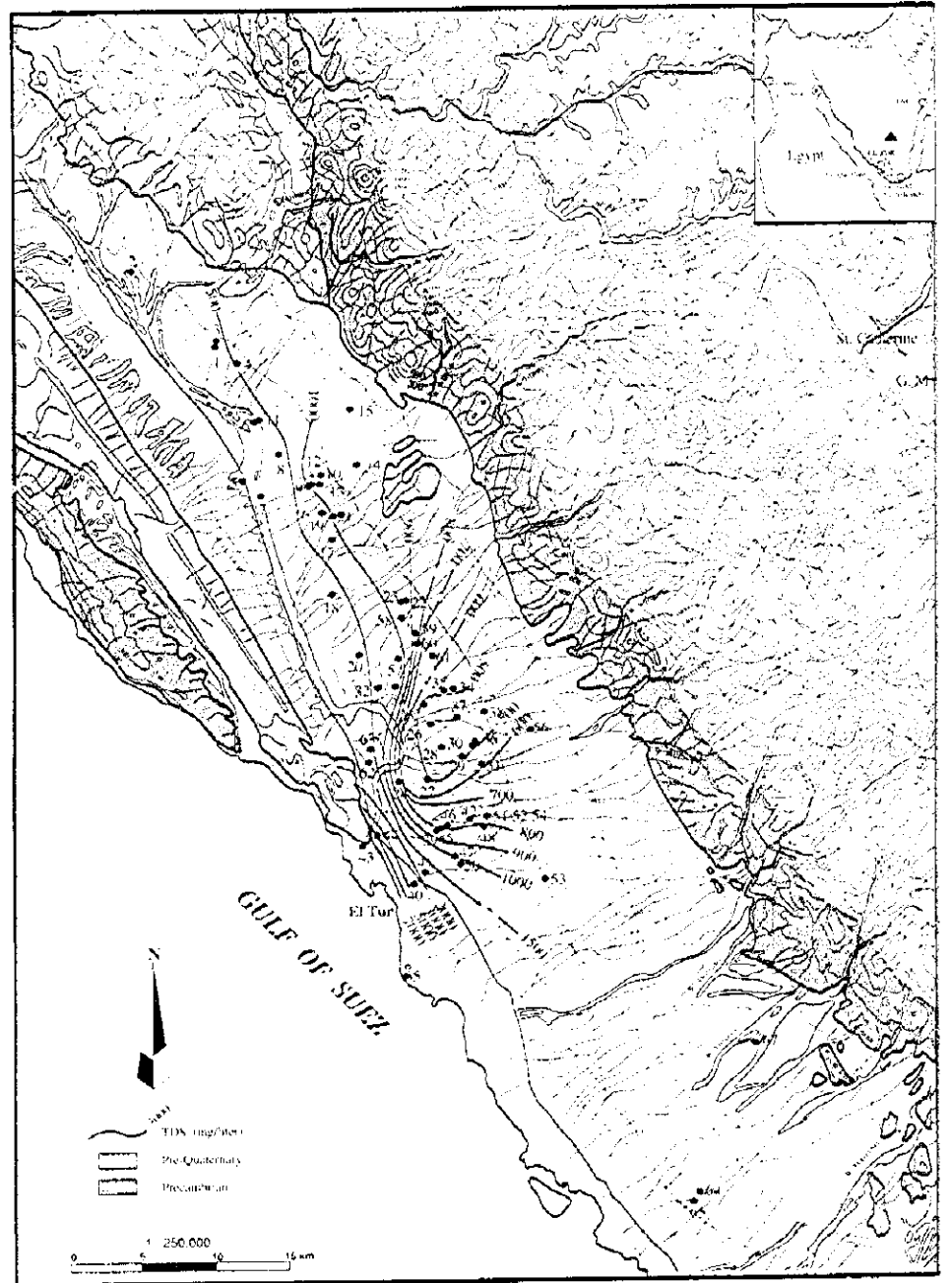


Piezometric Head of the Aquifer

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 SOUTHERN GROUNDWATER RESOURCES STUDY
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 Depth (m B.G.L.) to Aquifer and Piezometric
 Head (m A.S.L.) of Aquifer in El Qaa Plain
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 Date: March 1999 Sheet No. 17 of 19

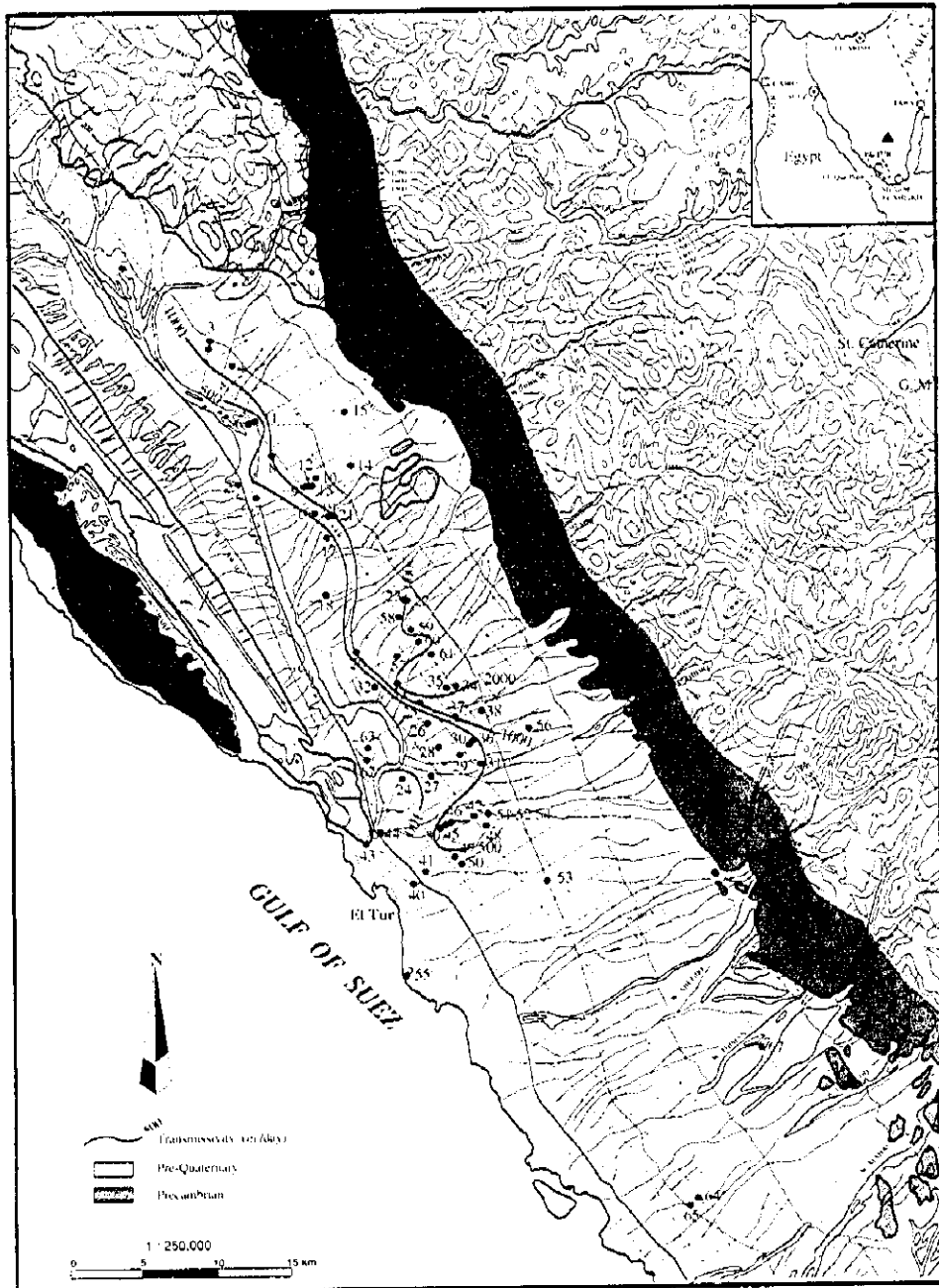


Water Quality in Summer (Aug. 1997)

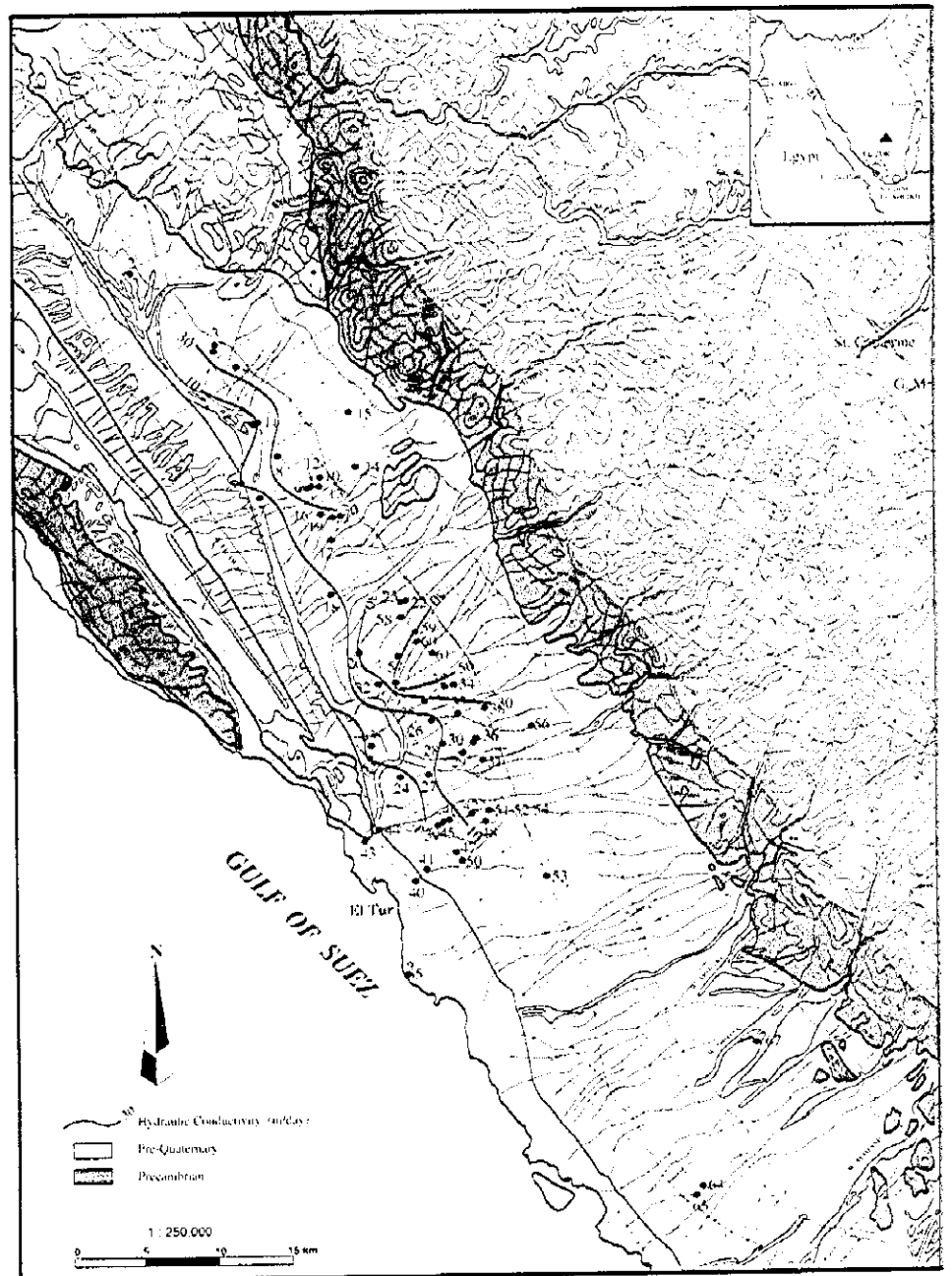


Water Quality in Winter (Feb. 1997)

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 Water Quality of Aquifer
 in El Qaa Plain
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 Date: March 1999 Sheet No. 15 of 19



Transmissivity Distribution



Hydraulic Conductivity Distribution

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 IN
 THE ARAB REPUBLIC OF EGYPT

Transmissivity and Hydraulic Conductivity
 Distribution in El Qaa Plain

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