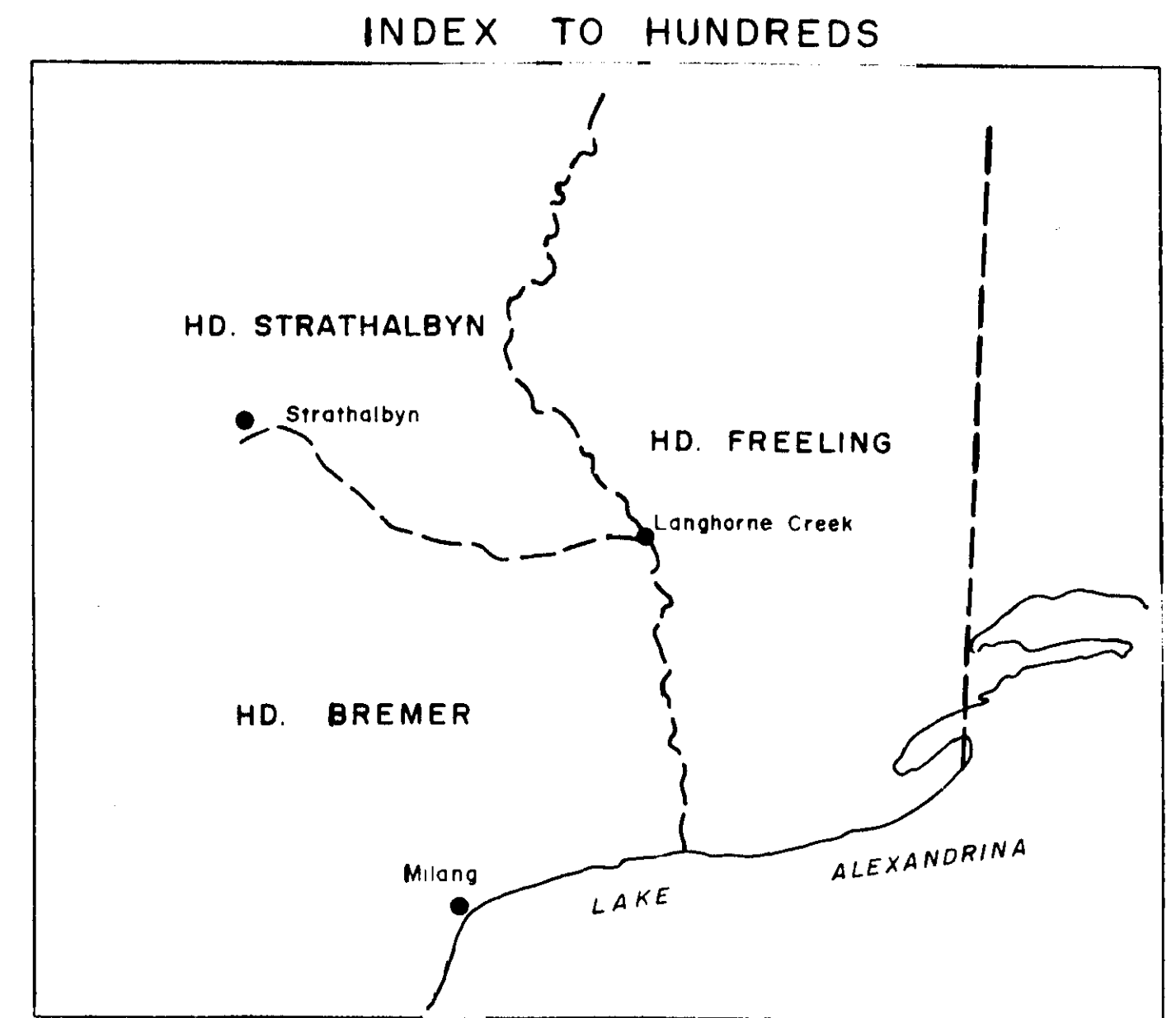


**ZONE OF LARGE HEAD DIFFERENCES  
BETWEEN AQUIFERS  
(ASSUMED NEGLIGIBLE LEAKAGE)**



Modern 3m. contour of potentiometric surface (at southern edge of steep gradient zone) - taken as southern limit of area with little or no change in storage.

Assumed pre-pumping potentiometric contours.

Arbitrary pre-pumping sea level contour of potentiometric surface.

Zone of change in head  
 1.5 ← Estimated change in head (m)  
 6.75 ← Area to which change applies (km<sup>2</sup>)

$\Delta St$  (Change in Storage) =  $\sum \Delta h AS$ , where  
 $\Delta h$  = change in head  
 $A$  = area to which change applies  
 $S$  = storage coefficient  
 $\Delta St = 9.6 \times 10^6 \text{ m}^3$  over 20 years  
 = 500 Ml/year

FIG. DEPARTMENT OF MINES - SOUTH AUSTRALIA

ANGAS - BREMER IRRIGATION AREA  
 STORAGE CHANGES IN UNCONFINED AQUIFER  
 SINCE COMMENCEMENT OF IRRIGATION

ENGINEERING DIVISION	COMPILED J.D.W	DRN R.H	SCALE 1:50 000	PLAN NUMBER
DIRECTOR OF MINES		CKD	DATE Nov. 1977	78-123

10 CENTIMETRES

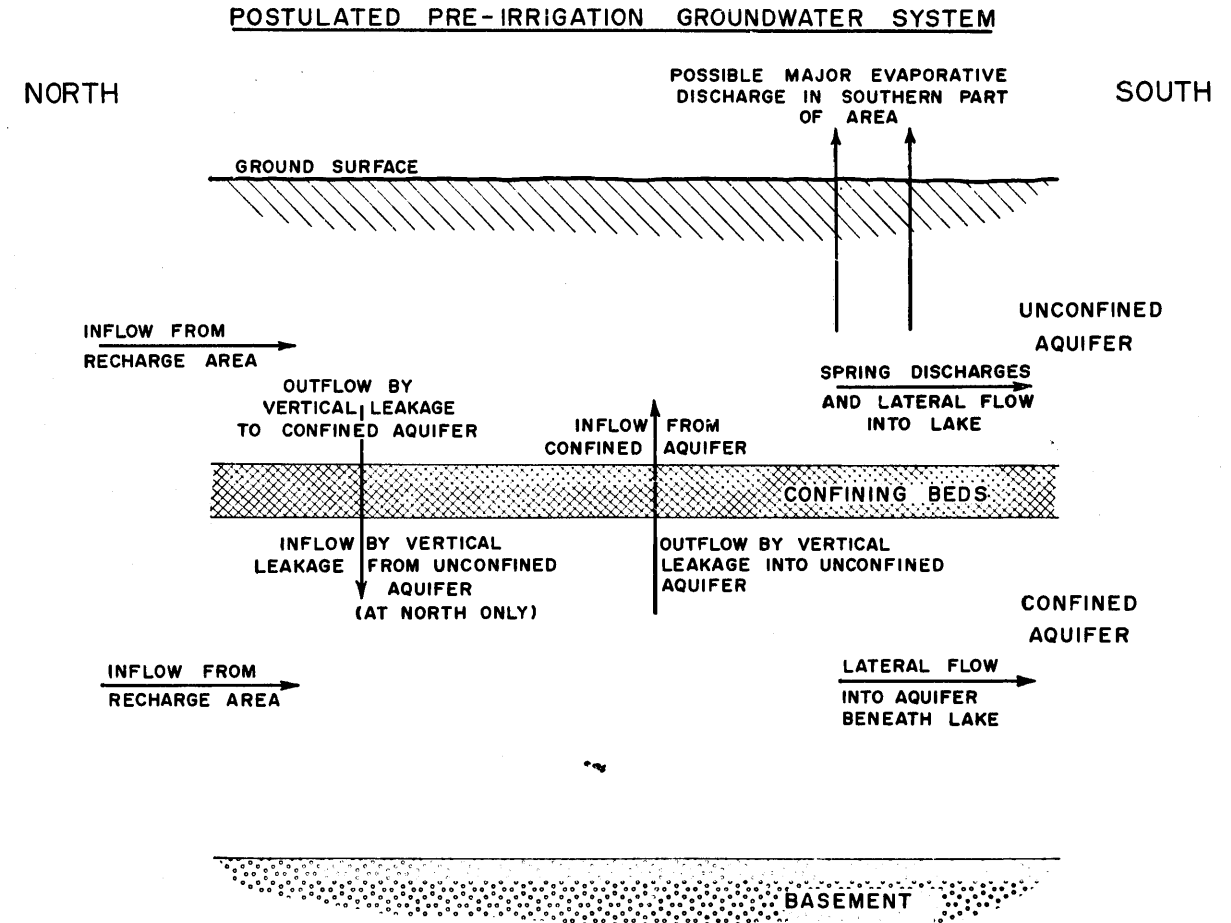
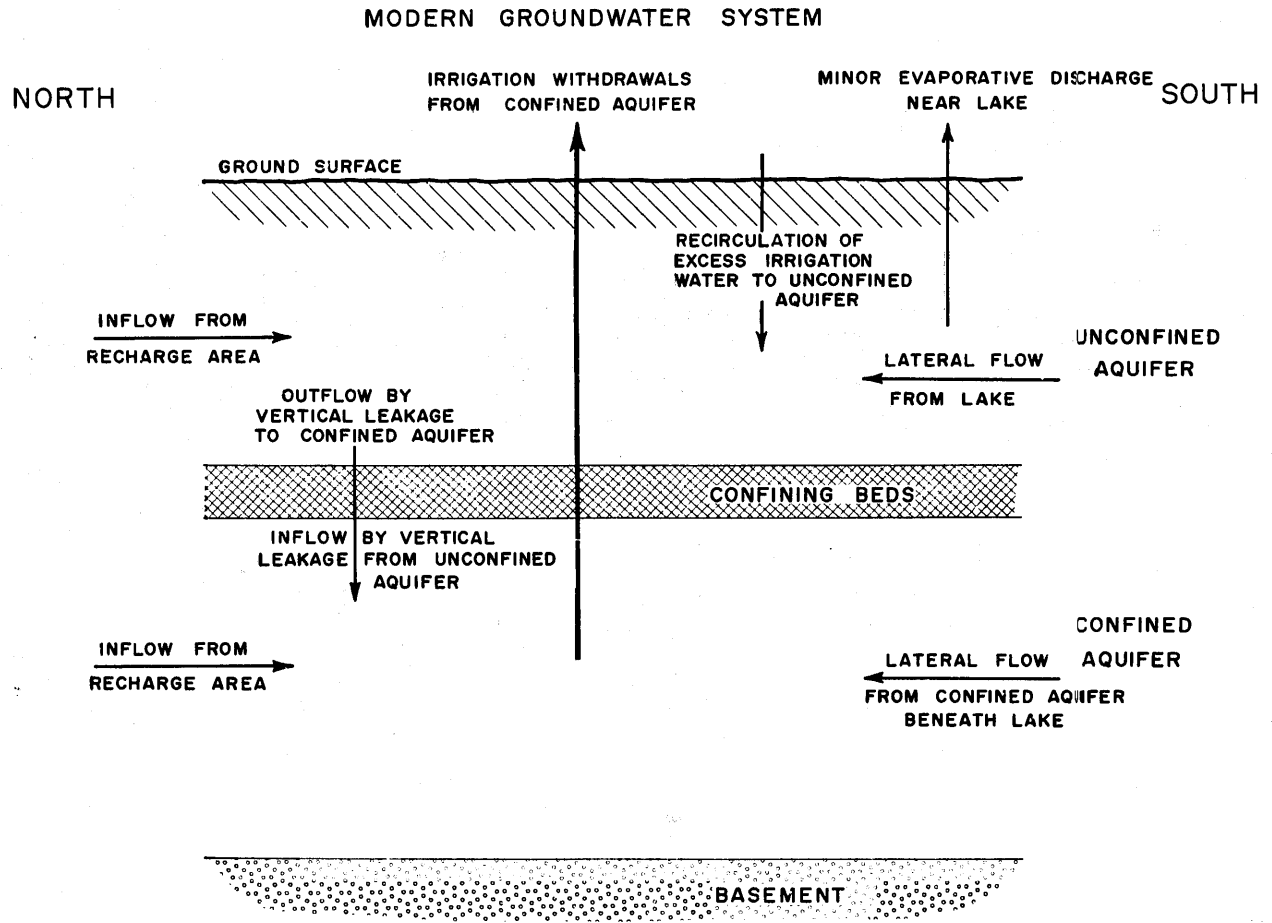
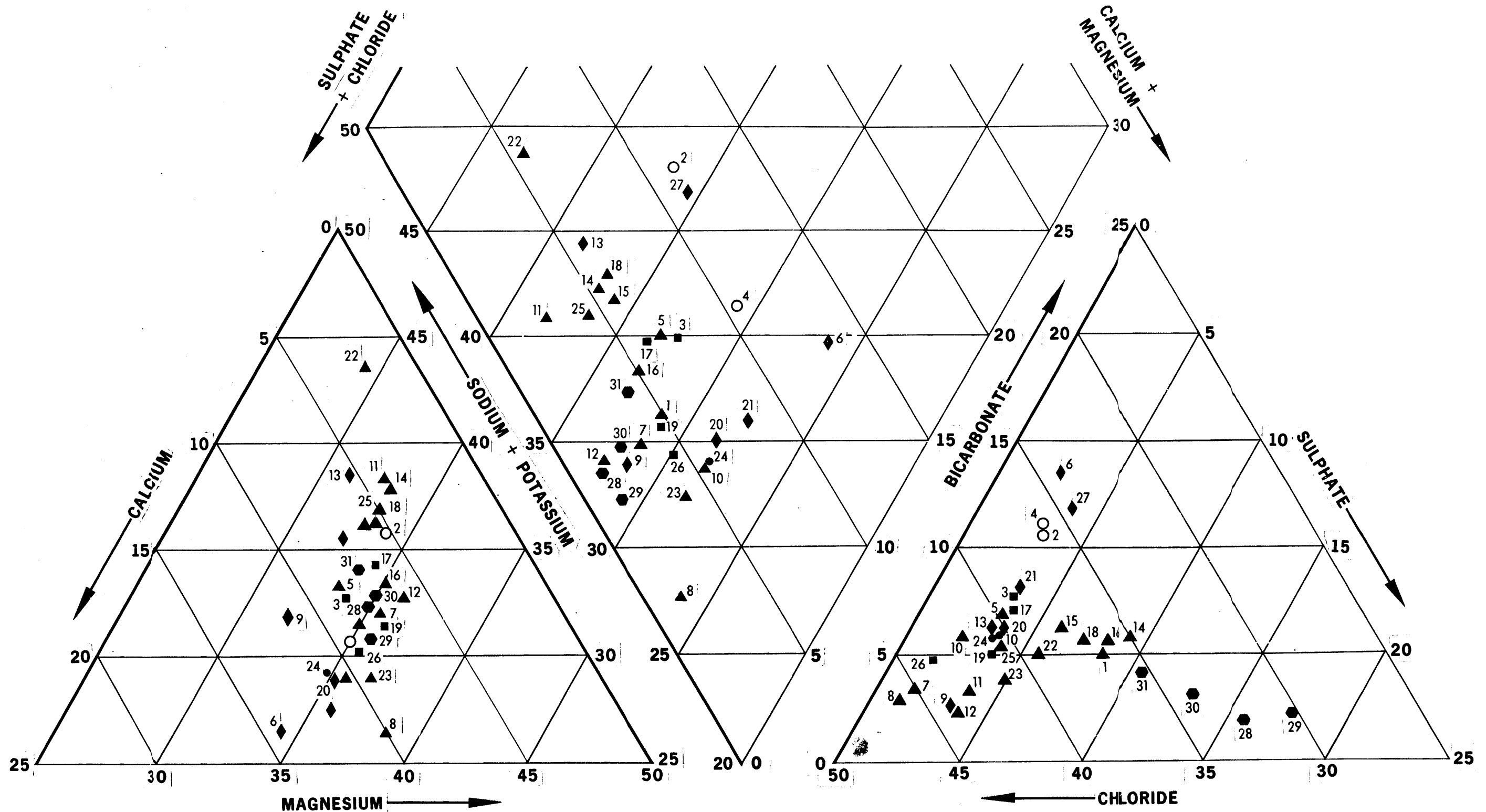


FIG. 38

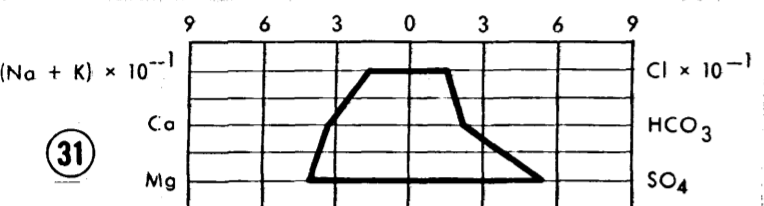
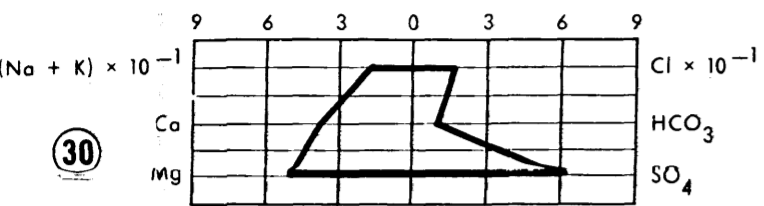
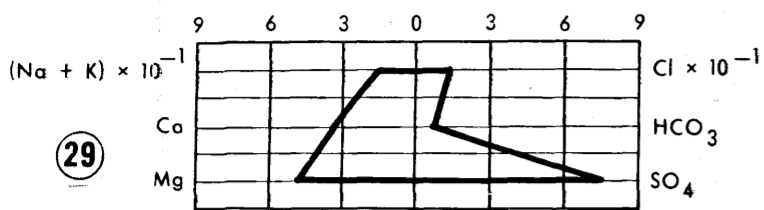
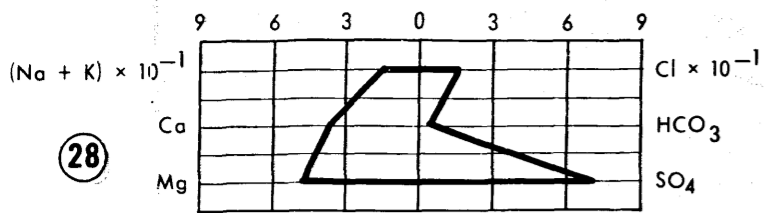
ENGINEERING DIVISION	DEPARTMENT OF MINES - SOUTH AUSTRALIA	SCALE DIAGRAMMATIC
COMPILED J.D.W.	ANGAS - BREMER IRRIGATION AREA	DATE NOV. 1977
DRAWN R.H. (S)	DIAGRAMMATIC GROUNDWATER SYSTEMS BEFORE AND AFTER THE COMMENCEMENT OF IRRIGATION	PLAN NUMBER 77-1068



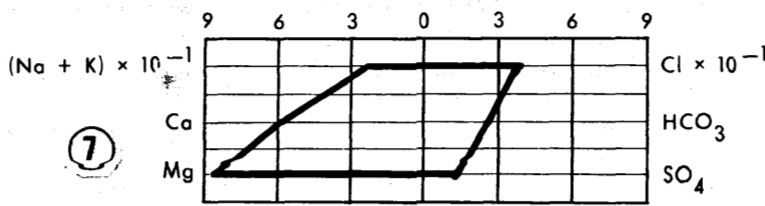
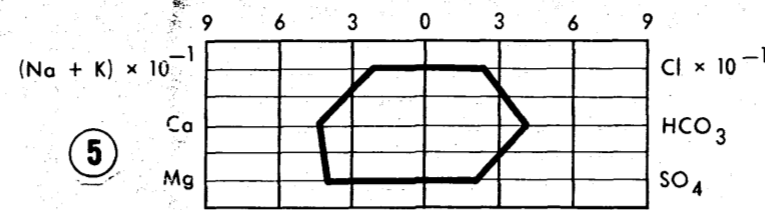
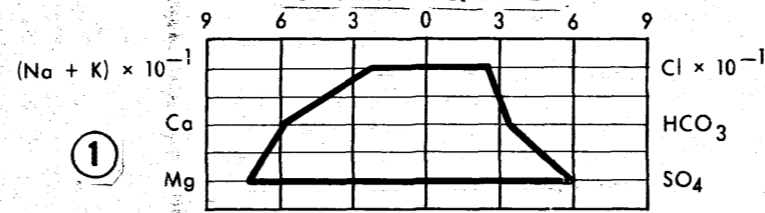
### LEGEND

- |                                         |      |                                      |      |
|-----------------------------------------|------|--------------------------------------|------|
| Surface sample — Bremer River           | 23 ● | Groundwater sample — Miocene aquifer | 20 ◆ |
| Groundwater sample — Quaternary aquifer | 17 ▲ | " " — Eocene aquifer                 | 24 ● |
| " " — Pliocene aquifer                  | 31 ■ | " " — Cambrian aquifer               | 2 ○  |

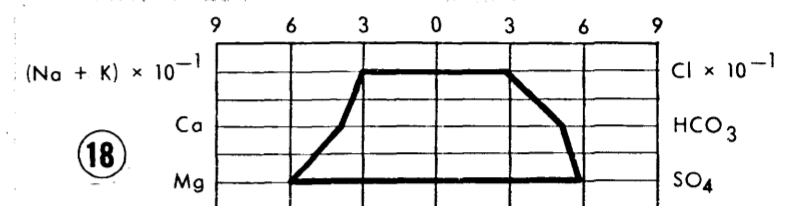
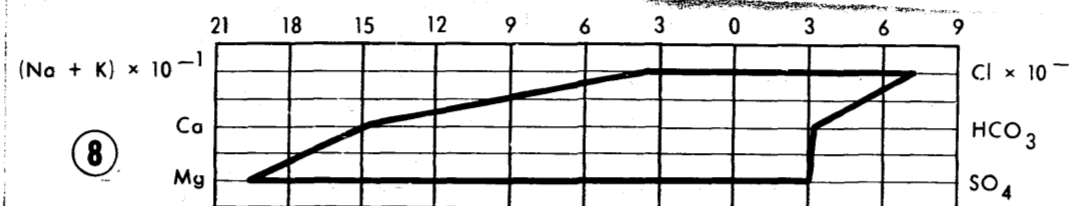
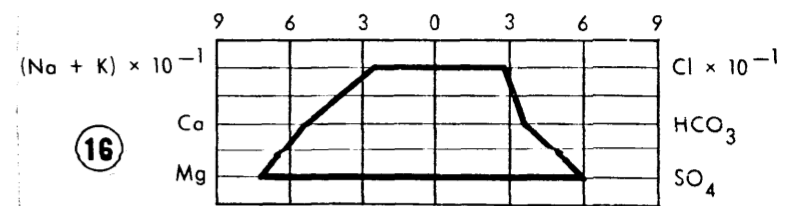
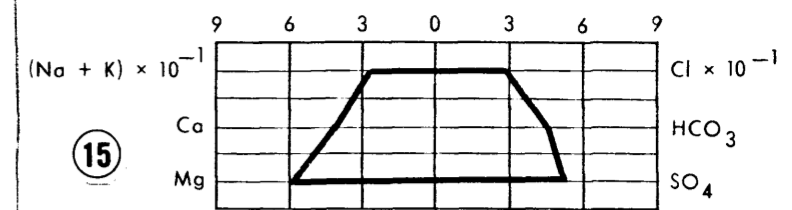
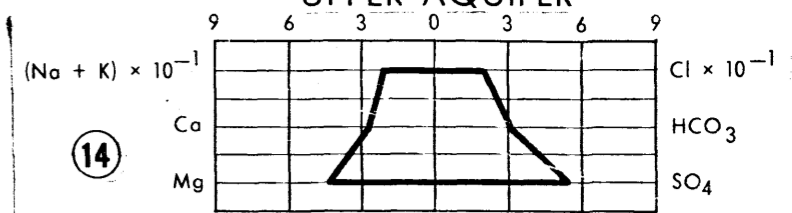
**SURFACE WATER-BREMER RIVER**



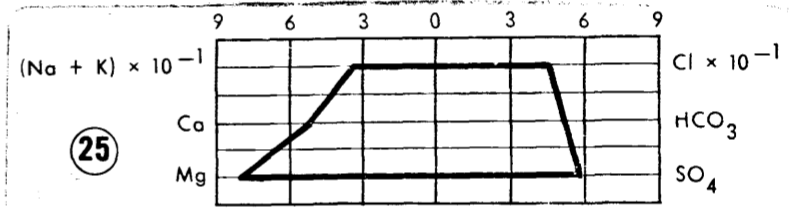
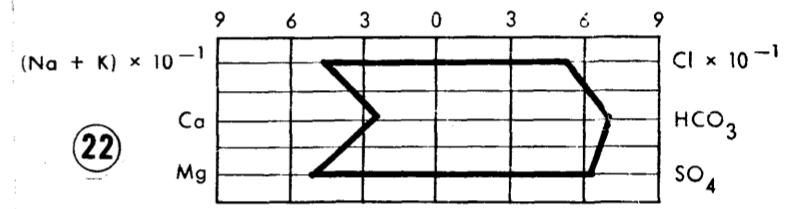
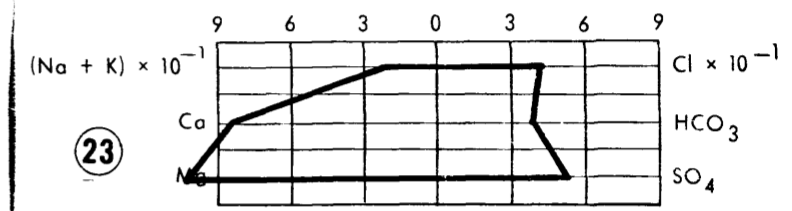
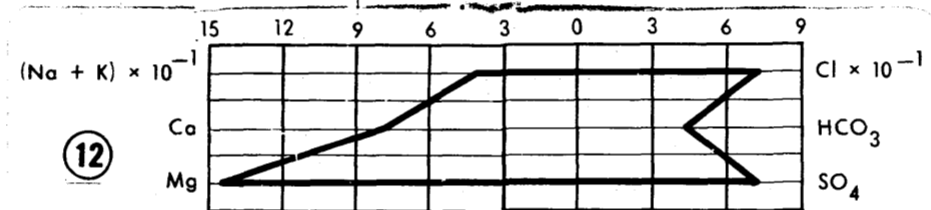
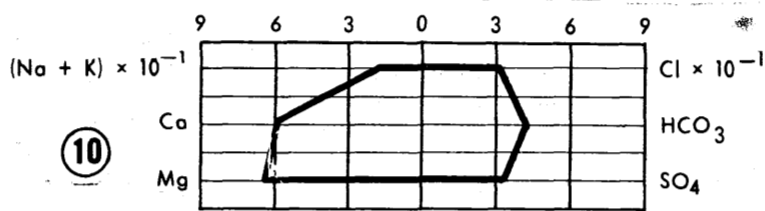
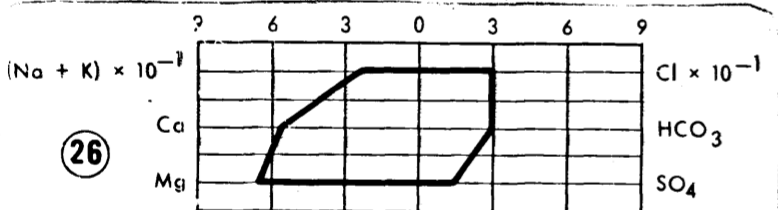
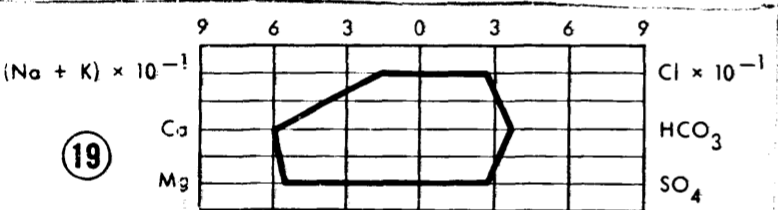
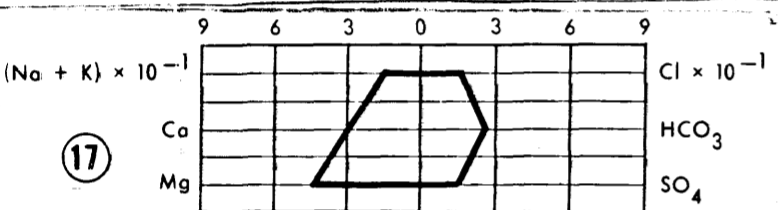
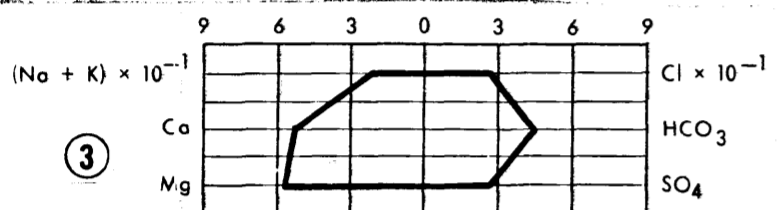
**QUATERNARY AQUIFER  
UPPER AQUIFER**



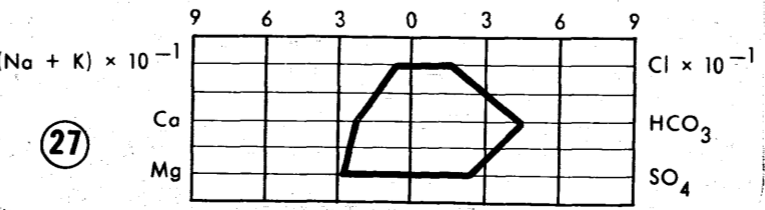
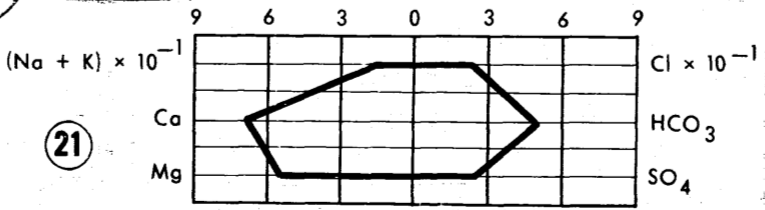
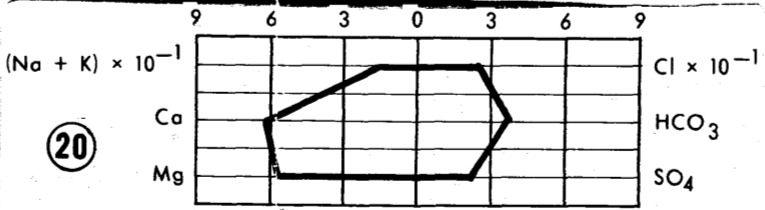
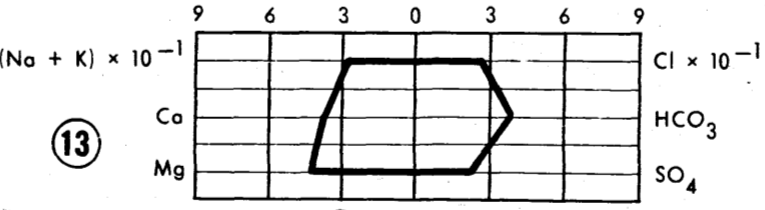
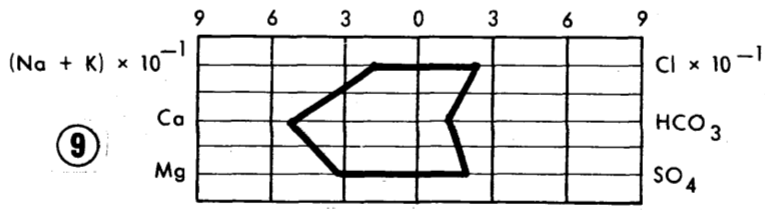
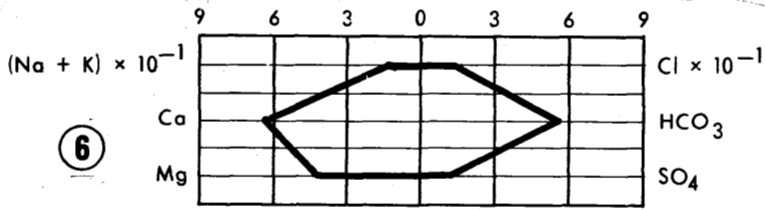
**QUATERNARY AQUIFER  
UPPER AQUIFER**



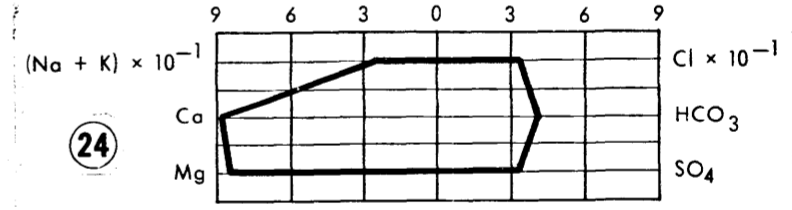
**PLIOCENE AQUIFER**



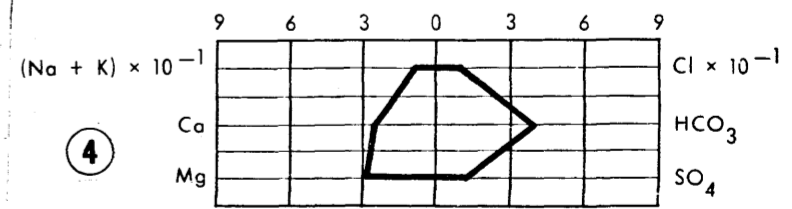
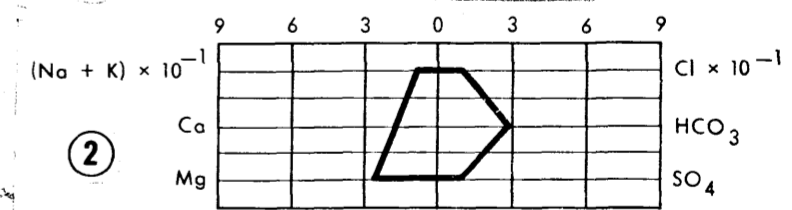
**MIOCENE AQUIFER  
LOWER AQUIFER**



**EOCENE AQUIFER  
BUCCLEUCH BEDS**



**CAMBRIAN AQUIFER**



NOTE: Ion Proportion in Milliequivalents/litre

② Bore number (See Table 3)

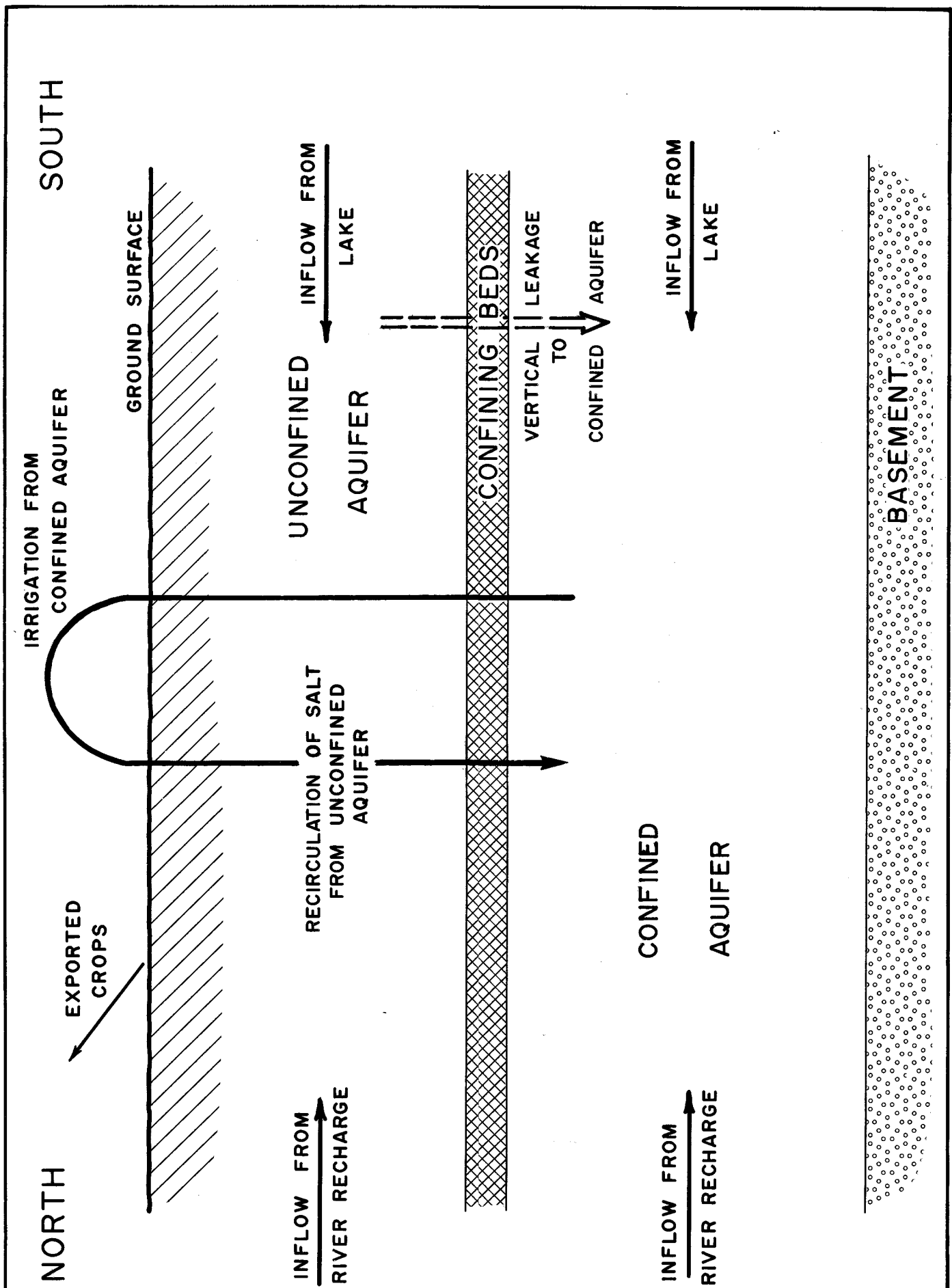


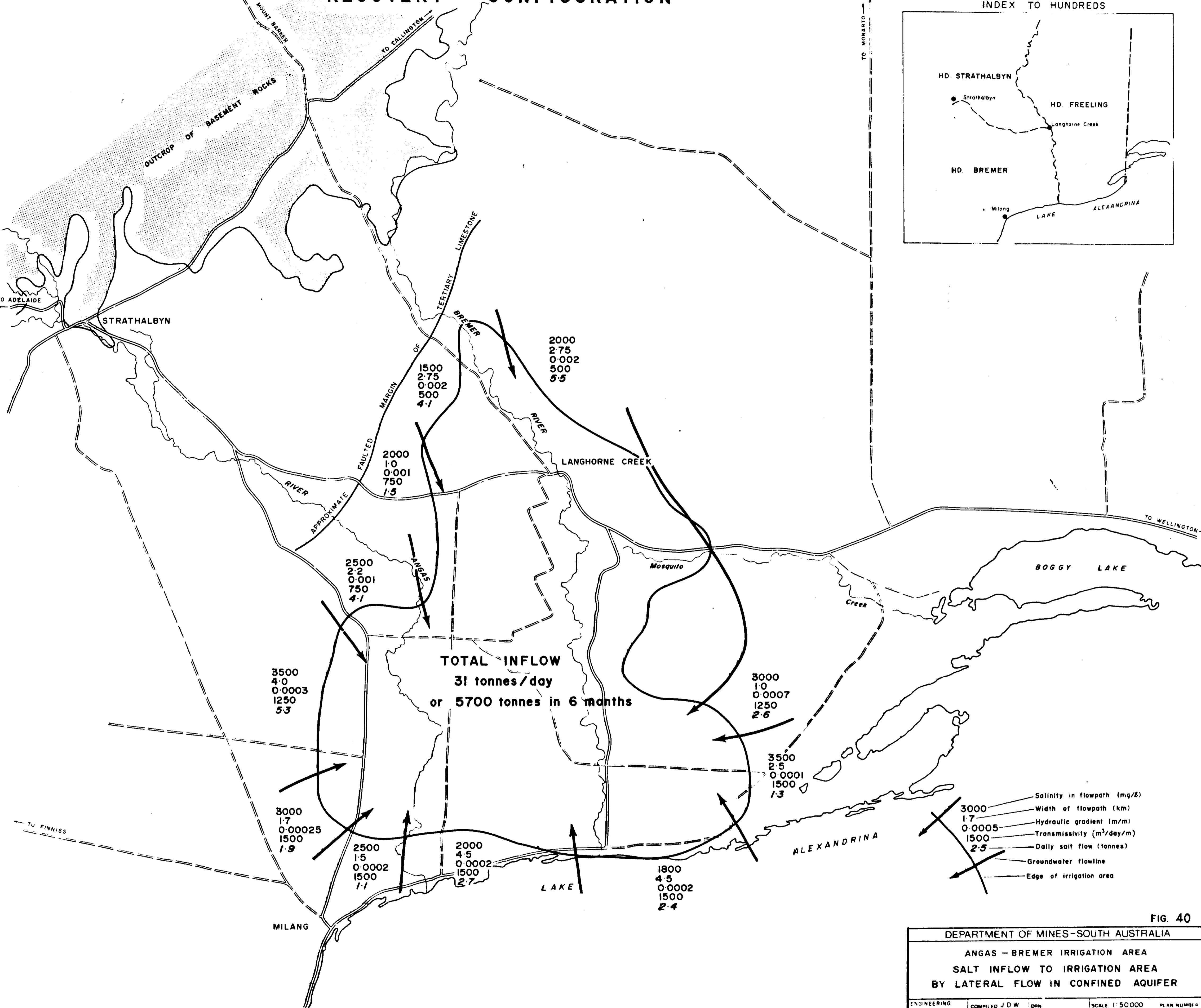
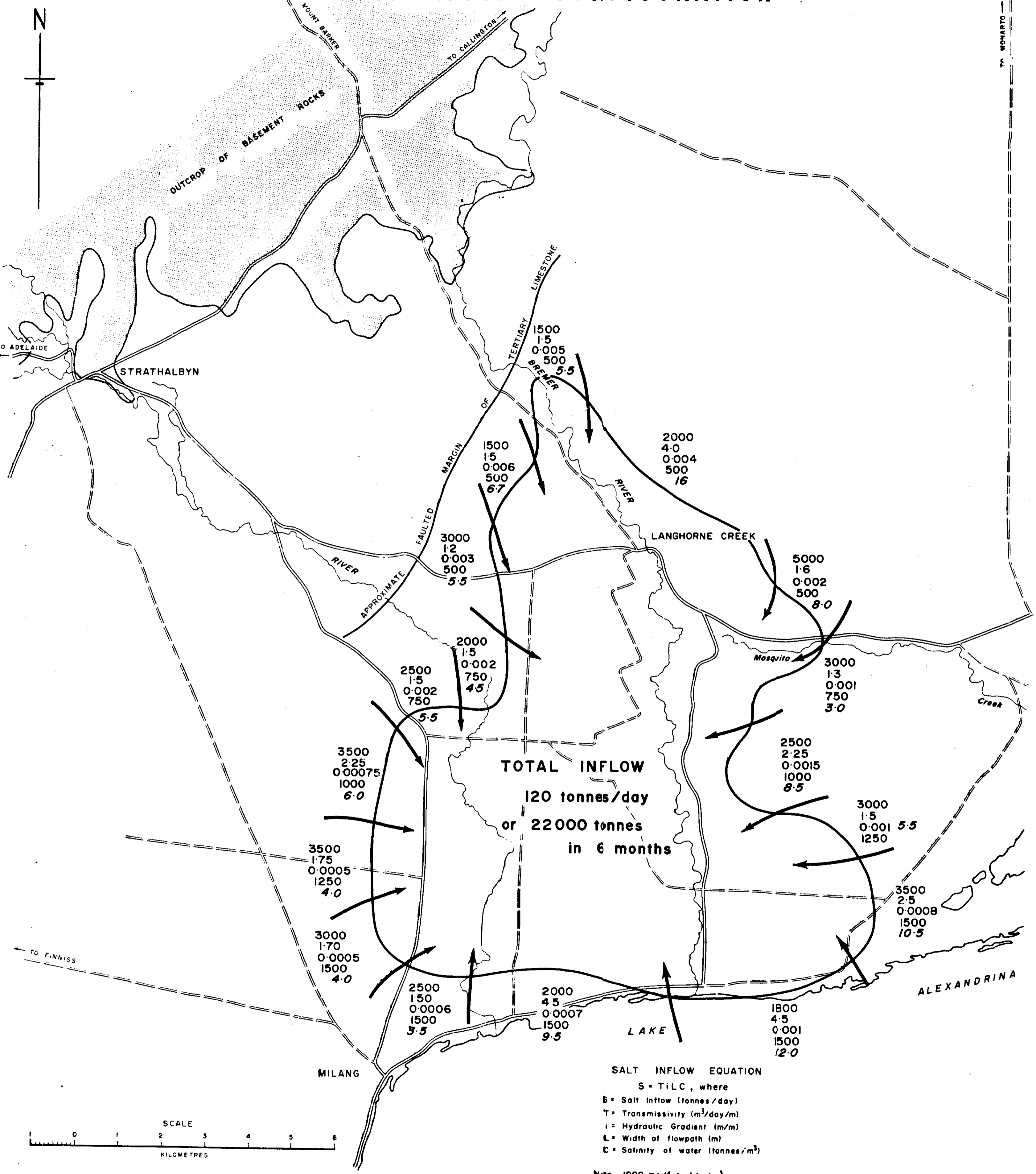
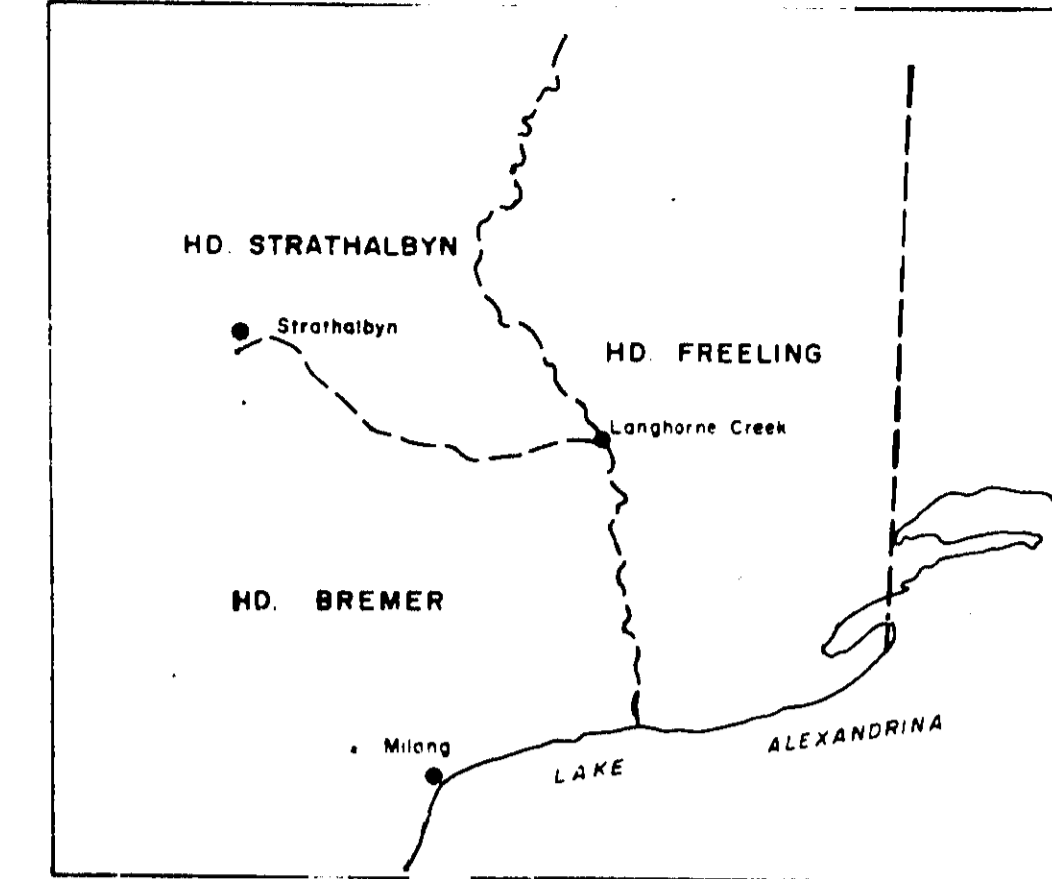
FIG. 41

		DEPARTMENT OF MINES - SOUTH AUSTRALIA	SCALE DIAGRAMMATIC
COMPILED J.D.W.		ANGAS - BREMER IRRIGATION AREA SALT FLOW IN THE MODERN GROUNDWATER SYSTEM	DATE NOV. 1977
DRN	R. H. CKD		PLAN NUMBER S13145

**PUMPING CONFIGURATION**

**RECOVERY CONFIGURATION**

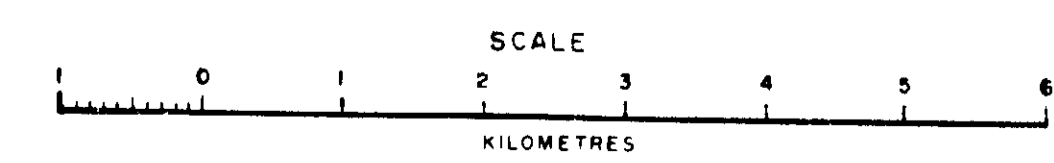
INDEX TO HUNDREDS



**SALT INFLOW EQUATION**  
 $S = T \cdot L \cdot C$ , where  
 S = Salt inflow (tonnes/day)  
 T = Transmissivity (m<sup>2</sup>/day/m)  
 L = Hydraulic Gradient (m/m)  
 C = Salinity of water (tonnes/m<sup>3</sup>)

Note: 1000 mg/L = 1 kg/m<sup>3</sup>

- 3000 Salinity in flowpath (mg/L)
- 1.7 Width of flowpath (km)
- 0.0005 Hydraulic gradient (m/m)
- 1500 Transmissivity (m<sup>2</sup>/day/m)
- 2.5 Daily salt flow (tonnes)
- Groundwater flowline
- Edge of irrigation area



**FIG. 40**

DEPARTMENT OF MINES—SOUTH AUSTRALIA

ANGAS—BREMER IRRIGATION AREA  
SALT INFLOW TO IRRIGATION AREA  
BY LATERAL FLOW IN CONFINED AQUIFER

ENGINEERING DIVISION	COMPILED J.D.W.	DATE Nov 1977	SCALE 1:50000	PLAN NUMBER 78-120
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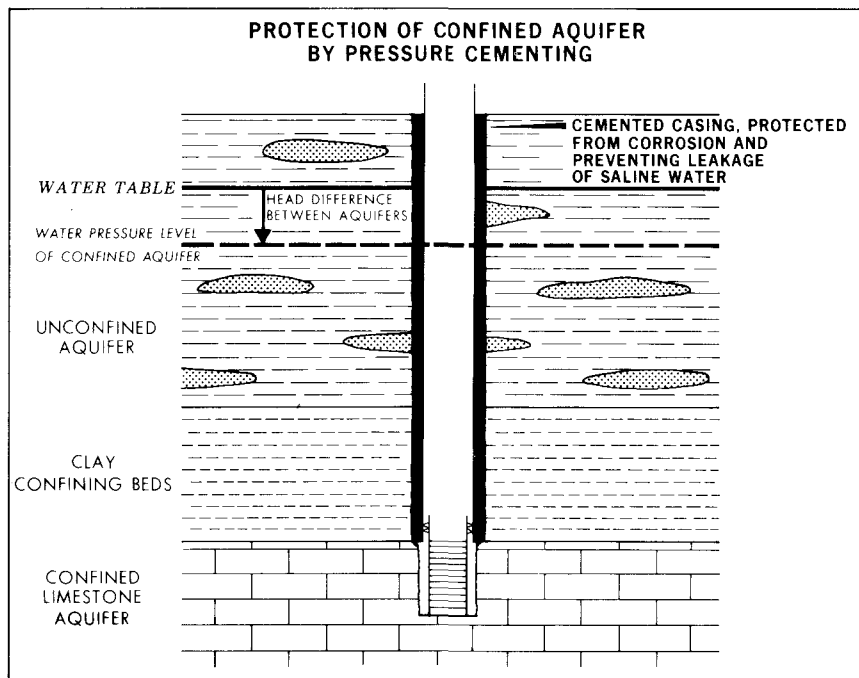
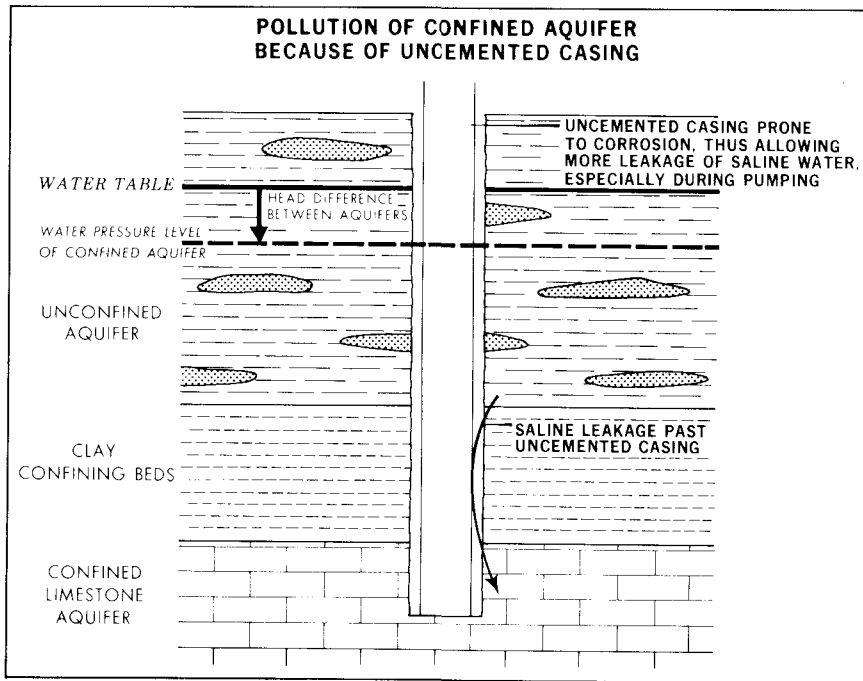
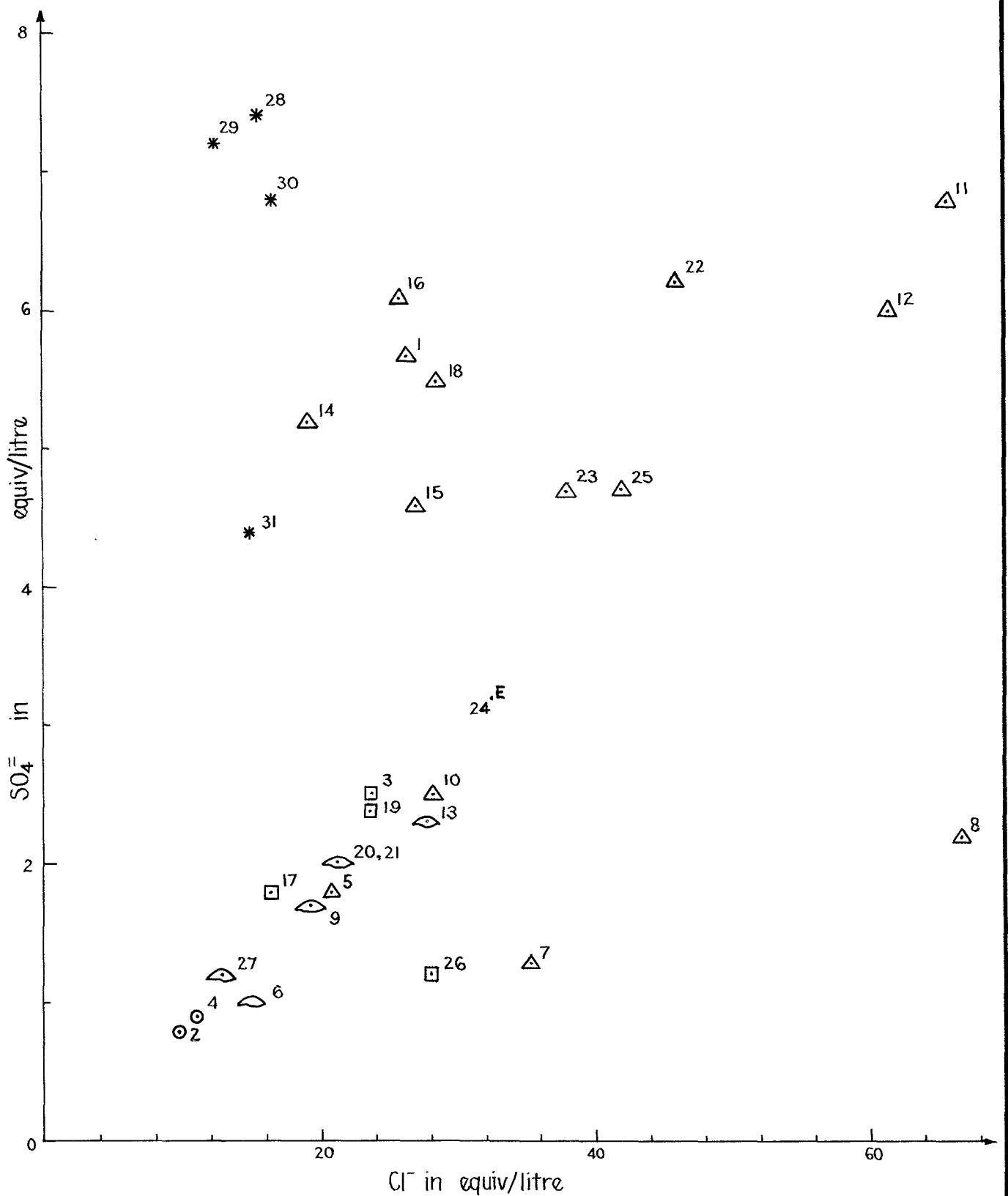


FIG. 39

ENGINEERING DIVISION	DEPARTMENT OF MINES - SOUTH AUSTRALIA	SCALE DIAGRAMMATIC
DESIGNED BY J.D.W.	ANGAS - BREMER IRRIGATION AREA	DATE NOV. 1977
DRAWN BY R.H.	<b>WELL CONSTRUCTION REQUIREMENTS AND PROBLEMS</b>	PLAN NUMBER S13146



\* Surface Water sample      \*E Eocene Aquifer sample  
 △ Quaternary Aquifer sample      ◡ Miocene Aquifer sample  
 □ Pliocene Aquifer sample      ⊙ Cambrian Aquifer sample

FIG. 44

		<b>DEPARTMENT OF MINES — SOUTH AUSTRALIA</b>	Scale : Graphical
Compiled : A.F.W.		ANGAS-BREMER IRRIGATION AREA SULPHATE VS. CHLORIDE PROPORTIONS	Date : 15 May 1975
Drn. T.E.	Ckd <i>AW</i>		Drg. No.
			<b>S11489</b>