

GEOMORPHOLOGY

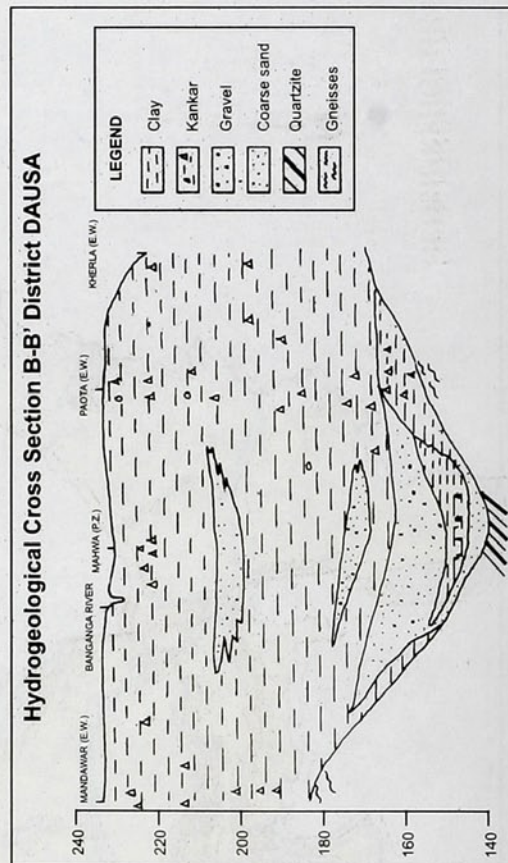
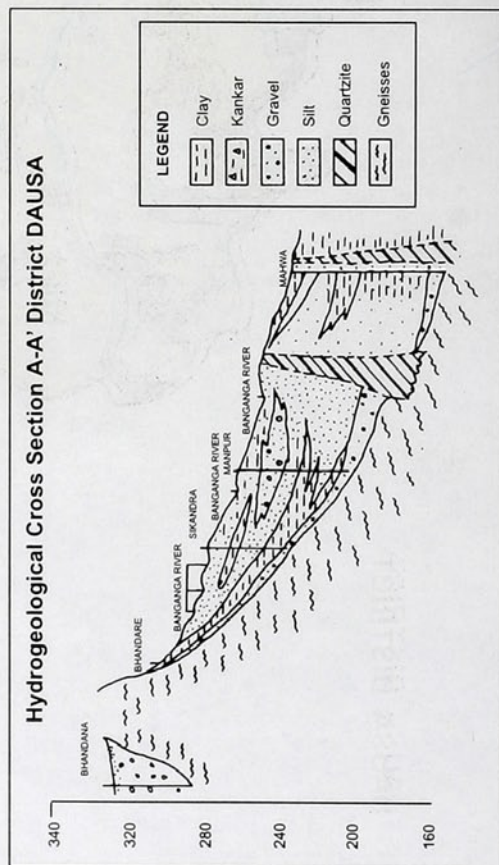
DISTRICT—DAUSA

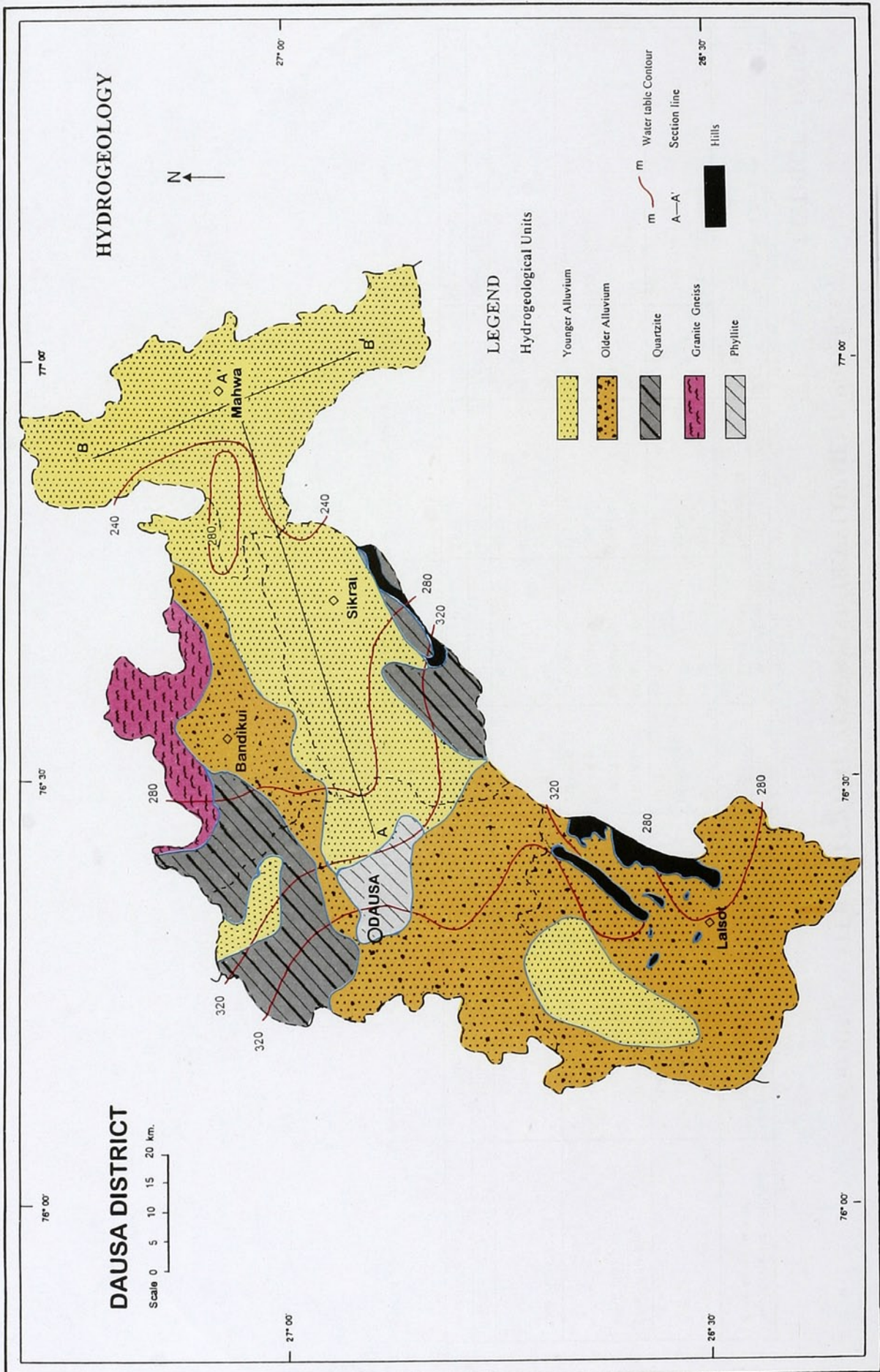
Landform Units	Symbol	Lithology / Material / Description	Occurrence in district	Land use/Land cover
Fluvial Origin Alluvial Plain	AP	Mainly undulating land scape formed due to fluvial activity, consisting of gravels, sand, silt and clay. Terrain mainly undulating, produced by extensive deposition of alluvium.	Covers all most entire district.	Double crop, single crop (Rabi / Kharif) marginally fallow open scrub.
Valley Fill	VF	Formed by fluvial activity, usually at lower topographic locations, comprising of boulders, cobbles, pebbles gravels, sand, silt and clay. The unit has consolidated sediment deposits.	In north around Baswa town and north east of Lalsot town.	Single crop (Rabi.)
Ravine	RV	Small, narrow, deep, depression, smaller than gorges larger than gulley usually carved by running water.	Along Morel river, north of Kalakho dam.	Marginal Kharif, open scrub.
Denudational Origin Pediment	P	Broad gently sloping rock flooring, erosional surface of low relief between hill and plain, comprised of varied lithology, criss crossed by fractures & faults.	North east and south west of Dausa town.	Single crop (Kharif), fallow, open scrub.
Hills Structural Hill	SH	Linear to arcuate hills showing definite trend-lines with varying lithology associated with folding, faulting etc.	On eastern margin of district and small patches in north and north east.	Forest, open scrub.

HYDROGEOLOGY

DISTRICT—DAUSA

Hydrogeological units	Description of the unit/Geological section	Occurrence	Ground Water flow
Alluvium (Quaternary)	The litho unit comprises younger and older alluvium and consists of sand, silt, clay, gravel and pebbles in varying proportions. Thickness of the sediments increases from north west to south east direction. In eastern peripheral region it attains thickness of about 92 m; but in major part it varies between 25 to 75 m.	Younger alluvium occupies Sikrai and part of Bandikui and Lalsot blocks. Older alluvium covers southern half of the district. Younger and older alluvium together cover nearly 85% potential area.	In general direction of ground water flow has been inferred west to east. Hydraulic gradient is more in the western part (6.6 m/km) and gradually decreases in the eastern part (1.0 m/km).
Quartzite (Delhi Super Group)	It includes Alwar group and Ajabgarh group of rocks. The Alwar group of formations are predominantly arenaceous in composition and comprises orthoquartzites, micaceous quartzites and ferruginous quartzites with some conglomerates and mica schists. Quartzites are at places interbedded with phyllite. The Ajabgarh group comprises argillaceous meta sediments, carbonaceous phyllite, slates, calcareous shales and limestone.	The litho unit occupies north western area in parts of Dausa and Bandikui blocks. Quartzite encompasses nearly 11% potential area.	
Phyllite (Delhi Super Group)	These include meta sediments and represented by carbonaceous phyllite, grey to dark grey slates and calcareous slates.	This litho unit occurs in small area in Dausa block. It encompasses nearly 2% potential area.	
Granite Gneisses (Bhilwara Super Group)	These comprises granite gneiss, mica schists and quartzite.	The litho unit covers peripheral area north of the Bandikui block. Granite and gneiss occupy nearly 2% potential area.	



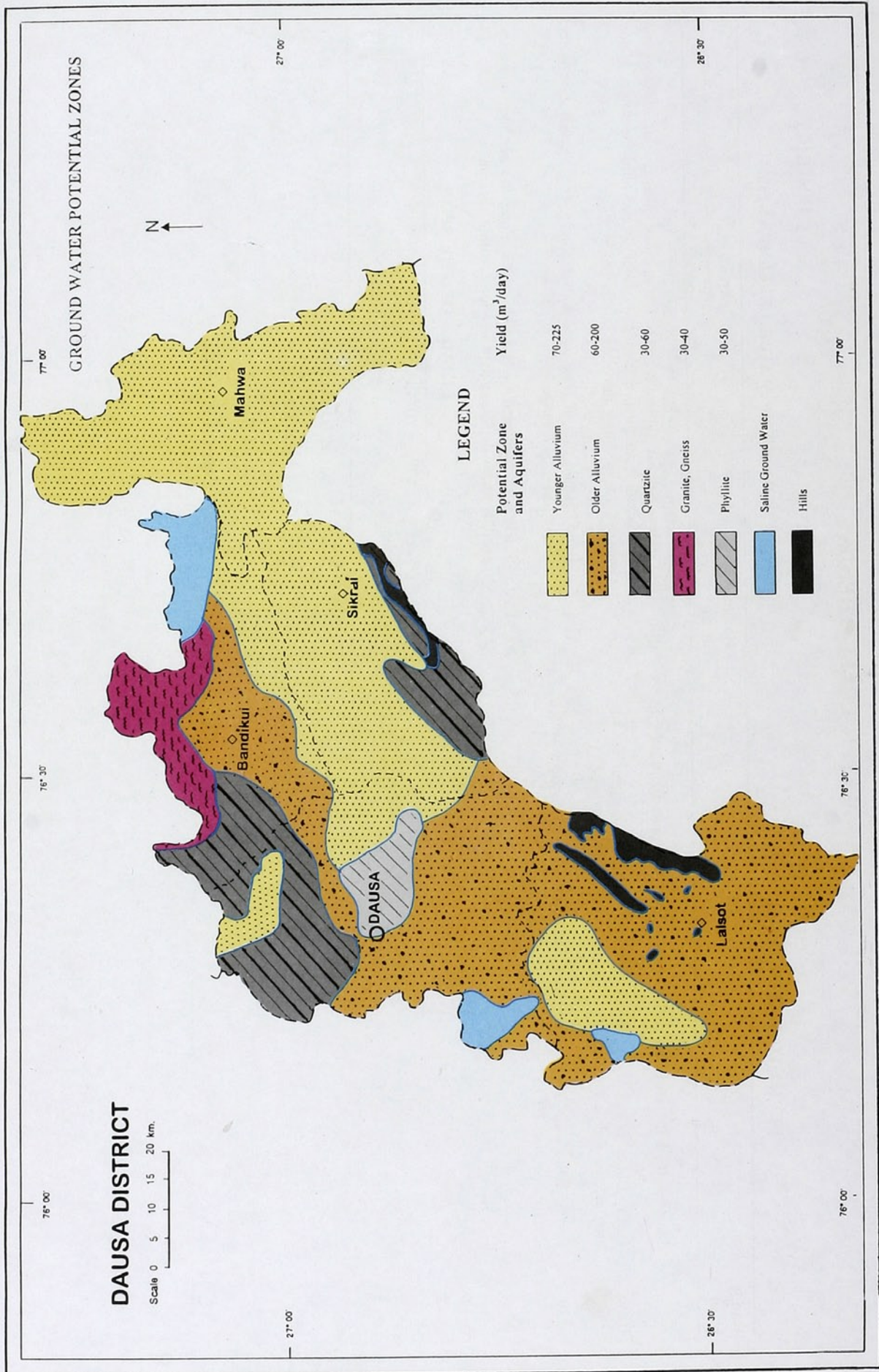


GROUND WATER POTENTIAL ZONES AND DEVELOPMENT PROSPECTS

DISTRICT - DAUSA

Aquifer in the Potential Zone (Area in Km ²)	Occurrence * Block (Area in Km ²)	Water Level (1997) in m.	Well Parameters			E.C. X10 ⁻⁴ stem/cm	Development Prospects
			Type	Proposed depth in m	Discharge in m ³ /day		
Younger Alluvium (709.19)	* Bandikui (198.93)	<20	DCB	45-70	50-60	<2	Safe
	* Lalsot (134.85)	<15	DCB	45-70	50-60	<2	Over exploited
	* Sikrai (375.41)	<10	DCB	45-70	50-60	<2,2-4	Safe
Older Alluvium (1902.86)	* Bandikui (168.25)	<20	TW/DCB	80-100/45-70	150-200	<2	Over exploited
	* Dausa (647.10)	<15	TW/DCB	80-100/45-70	150-200	<2,2-8	Safe
	* Lalsot (645.51)	<10	TW/DCB	80-100/45-70	150-200	<2	Over exploited
	* Mahwa (442.80)	<15	TW/DCB	80-100/45-70	150-200	<2,2-4	Over exploited
Quartzite (327.39)	* Bandikui (88.07)	<35	DCB	50-90	40-50	<2	Over exploited
	* Dausa (195.11)	<15	DCB	50-90	40-50	<2,2-8	Semi Critical
	* Sikrai (64.21)	<10	DCB	50-90	40-50	<2,2-4	Over exploited
Phyllite (52.53)	* Dausa (52.53)	<10	DCB	70-80	40-50	<2,2-8	Semi Critical
	* Bandikui (73.65)	<25	DCB	50-60	35-45	<2	Over exploited

TW - Tube wells DCB - Dug cum borewells Safe - <65% stage of development Semi Critical - 65-85% development Critical - 85-100% development Over exploited - >100% development



WATER LEVEL TRENDS

DISTRICT : DAUSA

DEPTH TO WATER LEVEL

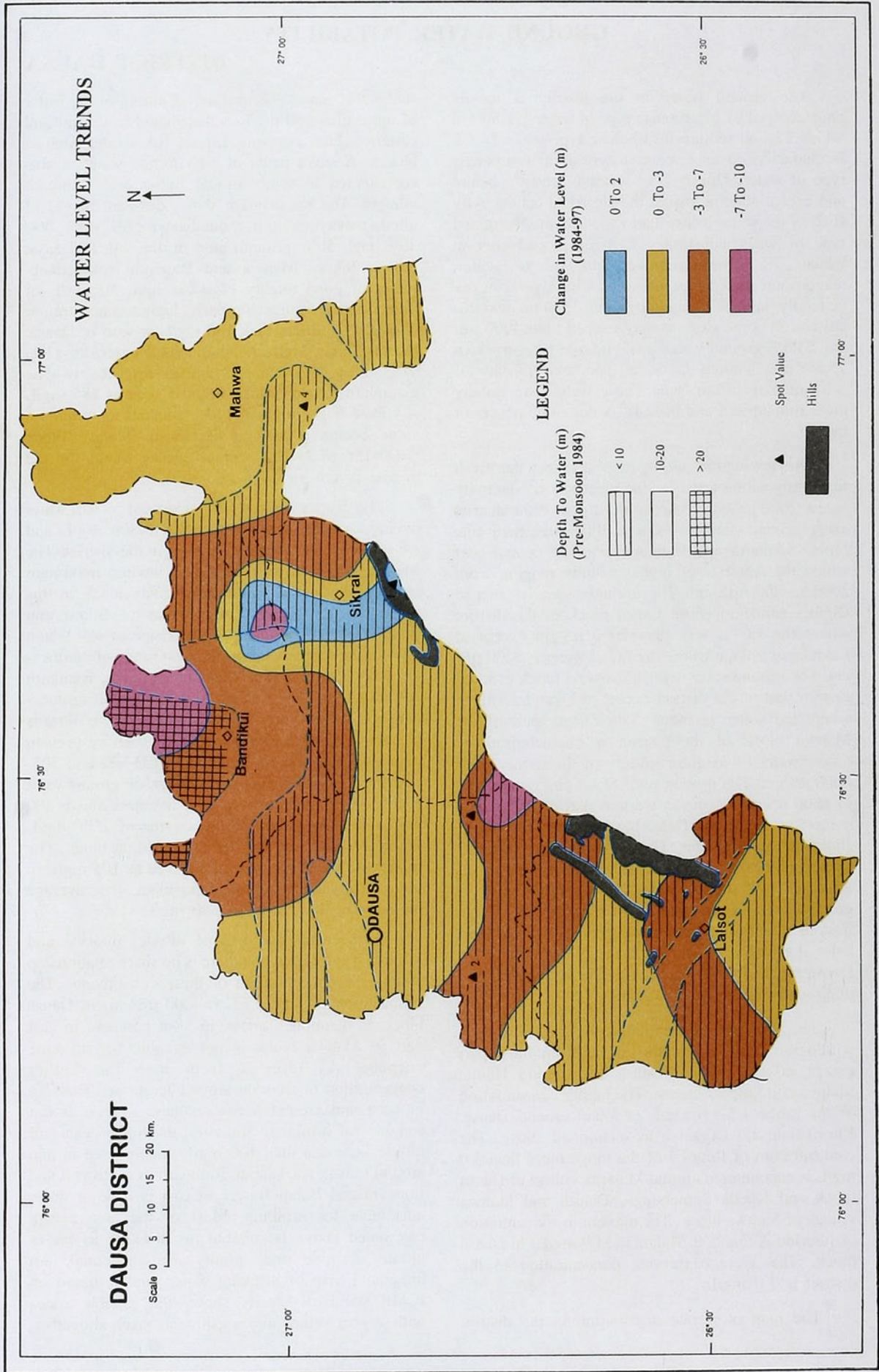
Range in m	Area
< 10	Major part of the area has shallow water level less than 10 m.
10 to 20	Part of Bandikui and Mahwa blocks situated north of Banganga river and area around Lalsot have depth to water level within the range.
> 20	Part of Bandikui along northern boundary of the district has deep water level more than 20 m.

CHANGE IN WATER LEVEL (1984-1997)

Range in m	Area
0 to -3	Mahwa and Sikrai blocks, part of Dausa block situated south of Banganga river exhibit marginal depletion in water level within the range. Major part of Lalsot block also lies in this range.
-3 to -7	Bandikui and part of Dausa and Lalsot blocks show depletion in water level within the range.
-7 to -10	Small pocket situated in Bandikui block along the northern boundary exhibits steep depletion in water level within the range.

DETAILS OF THE SPOT

Spot code	Village (Block)	Change in water level in m (1984-97)
1.	Danda Baseri (Sikrai)	(-) 14.15
2.	Galmoli (Mahwa)	(-) 8.85
3.	Lawan (Dausa)	(-) 7.40
4.	Paparada (Dausa)	(-) 9.95



GROUND WATER POTABILITY

DISTRICT DAUSA

The ground water in the district is mostly characterised by bicarbonate type of water (51.5%) in which 27% is sodium bicarbonate type while 24.5% is characterised as calcium magnesium bicarbonate type of water. This type of water is fresh in nature and except at some places the electrical conductivity (EC) of the water is less than 1500 $\mu\text{S}/\text{cm}$. The mixed type of water constitutes 27% of groundwater in which 17% is sodium mixed and 10% is calcium magnesium mixed type of water. This type of water generally have EC ranging between 1500 to 3000 $\mu\text{S}/\text{cm}$ and in some cases it may exceed upto 4000 $\mu\text{S}/\text{cm}$. 21.5% ground water is of chloride type in which 15.5% are sodium chloride type and 6% are of calcium magnesium type. These waters are usually more mineralised and have EC value 3000 $\mu\text{S}/\text{cm}$ or more.

On viewing the salinity map, it is seen that fresh to slightly saline water having electrical conductivity below 2000 $\mu\text{S}/\text{cm}$ occurs in most part of the district except around villages — Dausa, Bhandarej, Baniyana, Japra, Sikandra and Bamanwas in the central part where the water is of higher salinity ranging from 2000 to 8000 $\mu\text{S}/\text{cm}$. The ground water is fresh to slightly saline in entire Lalsot block of the district where the EC is less than 2000 $\mu\text{S}/\text{cm}$ except at Lakhanpur village where the EC of water is 3200 $\mu\text{S}/\text{cm}$. The groundwater is fresh in Sikrai block in south eastern part of the district except at Sikandra village where the water is saline. The eastern part of the Mahwa block of the district is characterised by groundwater of medium salinity of the range 2000-4000 $\mu\text{S}/\text{cm}$. The groundwater of salinity range 4000 to 6000 $\mu\text{S}/\text{cm}$ occurs in western part of the district comprising villages of Dausa block namely- Bhandarej, Jhonpara and Kalakho. The groundwater of the EC range 6000-8000 $\mu\text{S}/\text{cm}$ is seen only in Alloda in west part of the district. The minimum EC of groundwater is 470 $\mu\text{S}/\text{cm}$ and seen at village Baryalkalan in Bandikui block whereas its maximum value has been encountered in village Alloda of Dausa block (EC-7700 $\mu\text{S}/\text{cm}$). The average salinity of groundwater is 1677 $\mu\text{S}/\text{cm}$.

The fluoride concentration in the district is within the limits i.e. upto 1.5 mg/L in most part except in west around Dausa and around Hudla, Mahwa and Lalpuri in east. The higher concentration of the range 1.5-3.0 mg/L is found around Dausa, Khorikalan and Diganiya as mentioned above. The concentration of fluoride of the range more than 3.0 mg/L is encountered around Malarna village of Dausa block and Kheda Sumersingh, Dhardi and Mahwa village of Mahwa block. The maximum concentration of fluoride is found at Malarna (5.09 mg/L) in Dausa block. The average fluoride concentration in the district is 1.0 mg/L.

The map of nitrate distribution in the district

shows that high concentration of nitrate of the order of more than 100 mg/L is distributed in central and eastern region covering Dausa, Sikrai and Mahwa blocks. A small patch of high nitrate water is also encountered in south around Lalsot and Ramgarh villages. The bar diagram shows different ranges of nitrate concentration in groundwater. 56%, 40%, 0%, 30% and 50% groundwater in the block Dausa, Lalsot, Sikrai, Mahwa and Bandikui respectively represent good quality of water upto 50 mg/L of nitrate concentration. Similarly, higher concentration of nitrate i.e. more than 100 mg/L is seen in Dausa, Lalsot, Sikrai, Mahwa and Bandikui blocks in 31%, 27%, 60%, 40% and 8% samples respectively. The maximum nitrate concentration is seen as 780 mg/L at village Bagri in Lalsot block whereas its minimum value occurs at village Khedla in Mahwa block (NO₃-12mg/L). The average nitrate value for the district is 116 mg/L.

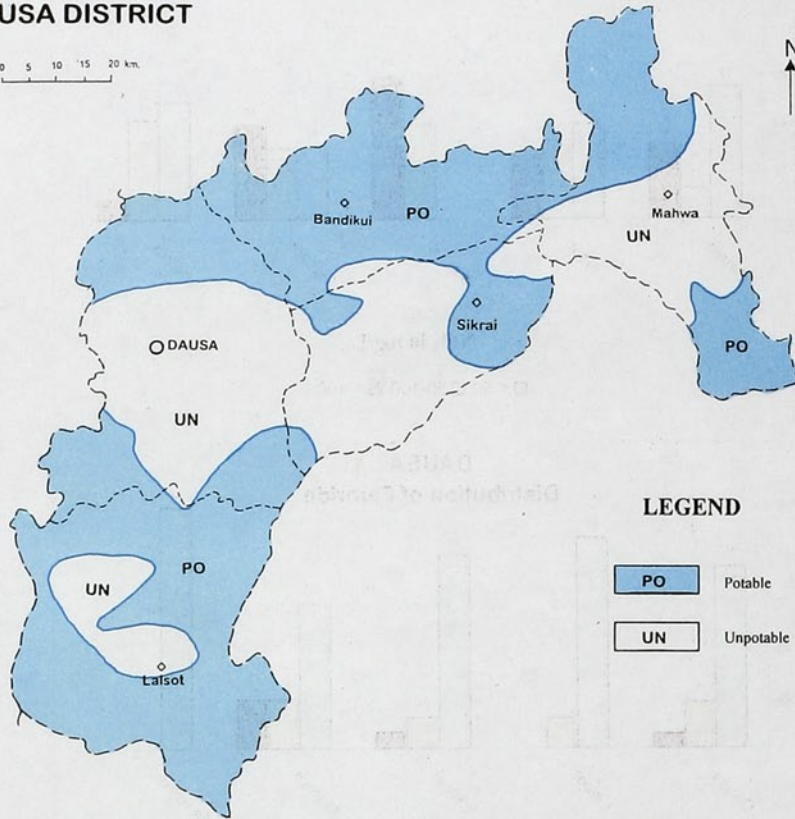
The district is mostly characterised by soft water having hardness ranging between 0-300 mg/L and constitute 61.5% of water samples in the district. The Mahwa and Lalsot blocks are having maximum number of samples in the district which fall in this range. A few number of samples of Sikrai and Bandikui blocks also fall in this range of soft water. 32% of the samples fall in the next range of hardness i.e. 301-600 mg/L. The water of Didwana, Ramgarh and Bagri in Lalsot block is having total hardness between 301-600 mg/L. The groundwater in Sikrai is characterised and divided equally with respect to number of samples in the range of 0-300 and 301-600 mg/L. Only a meagre number of groundwater (6.5%) in the district have total hardness above 600 mg/L. The maximum hardness value of 1220 mg/L is found in the well at Sikandra in Sikrai block. The minimum hardness value is observed as 105 mg/L in village Baryalkalan in Bandikui block. The average hardness in the district is 340 mg/L.

On viewing the map of nitrate, fluoride and salinity, it is inferred that there is no sharp relationship among the concentration of these constituents. The saline water of higher EC (>4000 $\mu\text{S}/\text{cm}$) in Dausa block as mentioned above in west part and in east part in Mahwa block is not suitable for drinking purpose. As inferred from map the higher concentration of fluoride around Jerota and Badarka in west and around Mahwa Dhardi in east is not suitable for drinking. Similarly, the higher value of nitrate i.e. more than 100 mg/L encountered in and around Lalsot, Kushanpur, Ramgarh in southwest and Lotwara and Balaji Basera in east is making water unsuitable for drinking. Most of the area except mentioned above is suitable for drinking as far as nitrate, fluoride and salinity are concerned. An integrated map of drinking water quality based on ICMR standards clearly shows the suitable zones with respect to the three constituents taken altogether.

GROUND WATER POTABILITY

DAUSA DISTRICT

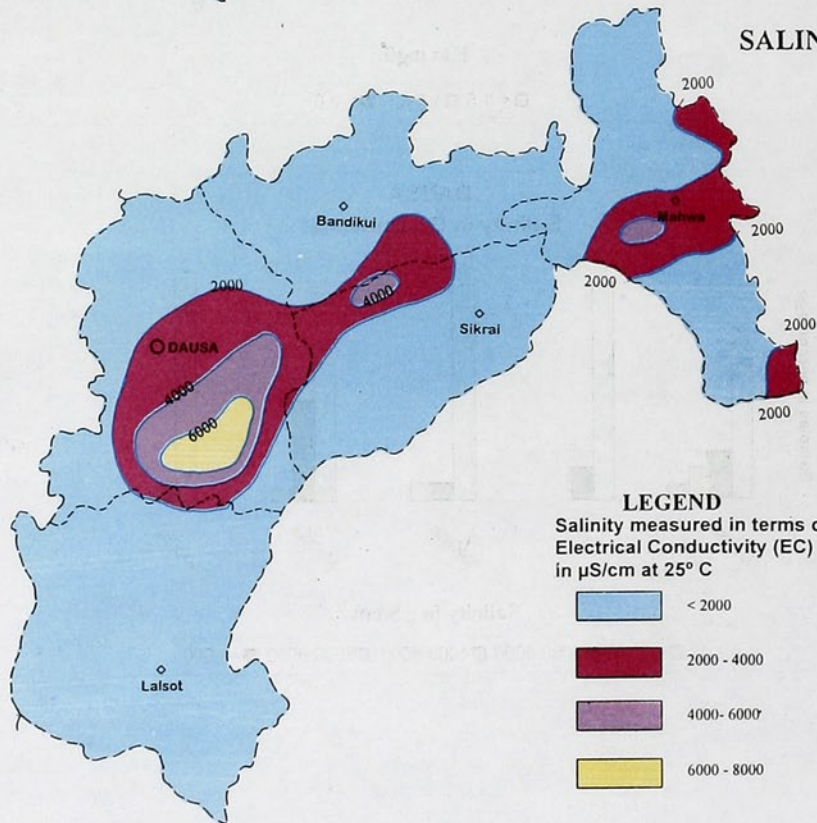
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LEGEND

- PO Potable
- UN Unpotable

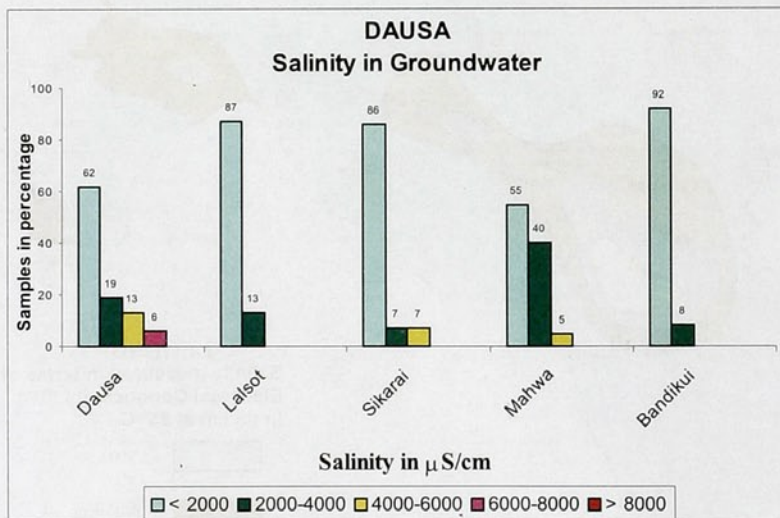
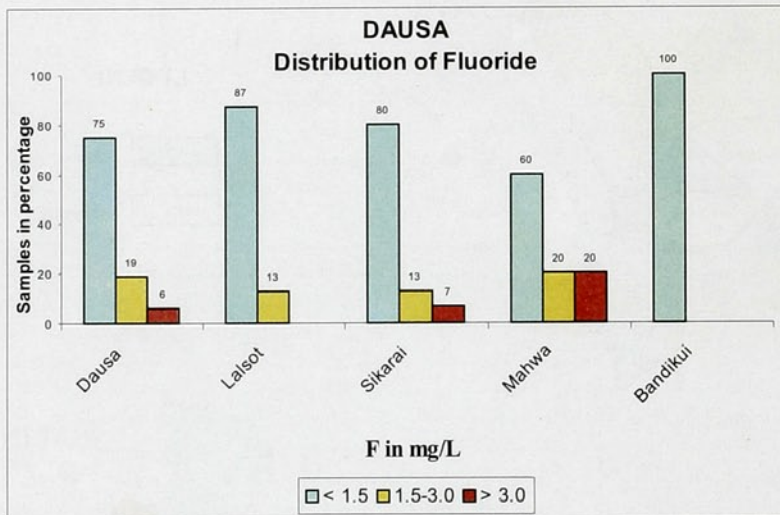
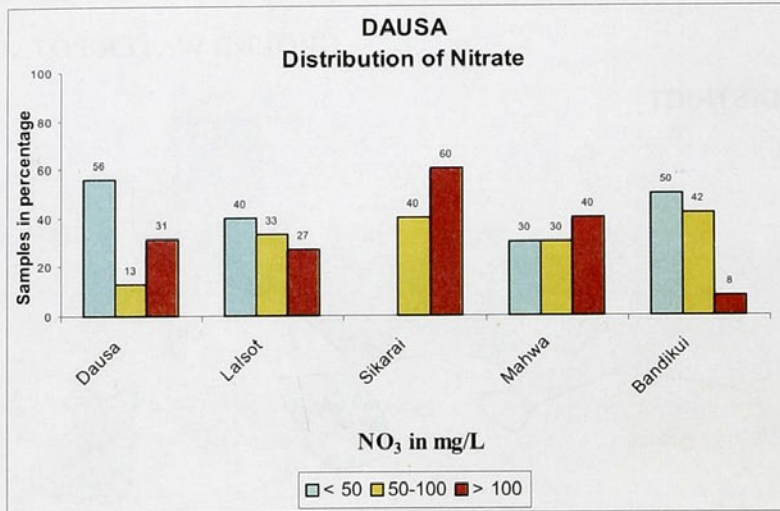
SALINITY



LEGEND

Salinity measured in terms of Electrical Conductivity (EC) in $\mu\text{S/cm}$ at 25°C

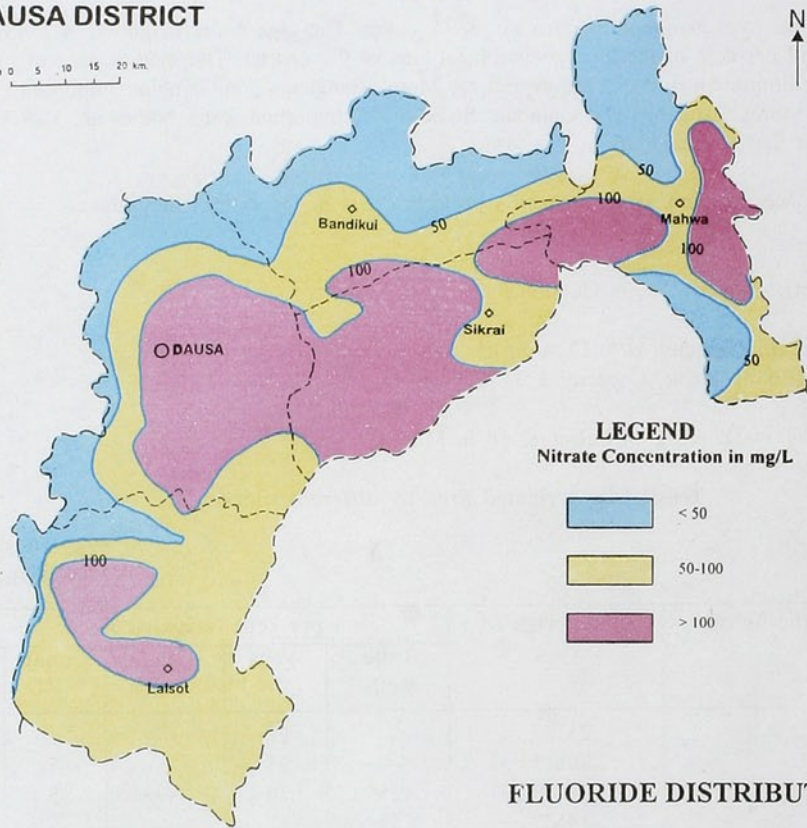
- < 2000
- 2000 - 4000
- 4000 - 6000
- 6000 - 8000



NITRATE DISTRIBUTION

DAUSA DISTRICT

Scale 0 5 10 15 20 km.



FLUORIDE DISTRIBUTION

