GROUND WATER PROSPECTS MAP

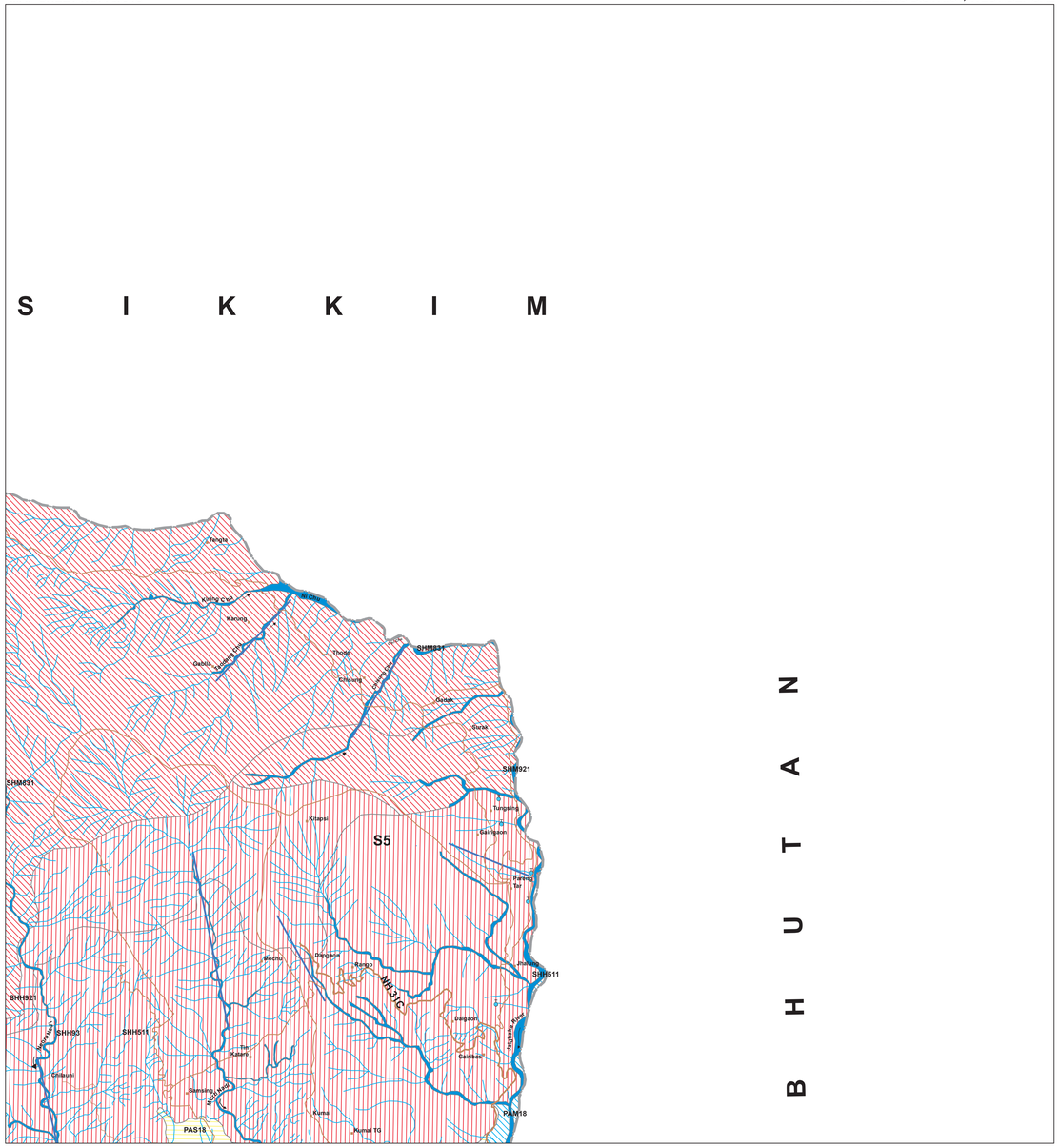
(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

Kilometers
0 1 2 3 4 5

SCALE - 1 : 50,000

MAP SHEET NO. 78A/16

DARJEELING DISTRICT, WEST BENGAL



L E G E N D

MAP UNIT (HYDROGEOMORPHIC UNIT) — REPRESENTED IN THE MAP WITH ALPHANUMERIC CODE (COLOUR INDICATES YIELD RANGE AND HATCHING INDICATE DEPTH RANGE)	GEOLOGICAL SEQUENCE / ROCK TYPE (REPRESENTED IN THE MAP WITH NUMERIC CODE)	GEOMORPHIC UNIT / LANDFORM (REPRESENTED IN THE MAP WITH ALPHABETIC CODE)	DEPTH TO WATER LEVEL — PRE / POST- MONSOON (AVERAGE IN METERS) — NO. OF WELLS OBSERVED	RECHARGE CONDITIONS BASED ON AVAILABILITY OF WATER (RAINFALL & OTHER SOURCES)	GROUND WATER PROSPECTS: AQUIFER MATERIAL	TYPE OF WELLS SUITABLE	DEPTH RANGE OF WELLS (SUGGESTED) MIN - MAX (IN METERS)	YIELD RANGE OF WELLS (EXPECTED) (in LPM or m^3 / day)	HOMOGENEITY IN THE UNIT & SUCCESS RATE OF WELLS (PROBABILITY) VERY HIGH HIGH MODERATE LOW	QUALITY OF WATER POTABLE (P) NON - POTABLE (NP) (INDICATE REASONS IF NON POTABLE)	GROUND WATER IRRIGATED AREA (APPROX. RANGE IN PERCENTAGE)	RECHARGE STRUCTURES SUITABLE & PRIORITY	REMARKS (PROBLEMS / LIMITATIONS)
PAS18	Chasa /Matiali /Thuljhora/ Alluvium (Lt.Pleistocene-Pr.Holocene) — Alluvium (Gravel Dominant) (18)	Piedmont Alluvium Shallow (PAS)	No Well Observed	Good	LS	TW	5 - 10m	50-100 LPM	Moderate	P	Nil	Not Required	Moderate ground water prospect at shallow depth along piedmont slope.
PAM18		Piedmont Alluvium Moderate (PAM)	No Well Observed	Good	LS	TW	40 -60m	300-400 LPM	Moderate	P	Nil	Not Required	Good ground water prospect at modarate depth along piedmont slope.
SHH511	Siwaliks (Pliocene-Eocene)	Structural Hill Highly Dissected (SHH)											
SHH93	Daling Group (Rangit Formation) (Proterozoic)	Phyllite (93)	Structural Hill Highly Dissected (SHH)										
SHH921	Daling Group (Gorubathan Formation) (Proterozoic)	Schist (921)	Structural Hill Highly Dissected (SHH)										
SHM921			Structural Hill Moderately Dissected (SHM)										
SHM831	Central Crystallins Gneiss (Proterozoic)	Granitoid Gneiss/ Gneissic Granitoid/ Granitoid Complex (831)	Structural Hill Moderately Dissected (SHM)										

Essentially run-off zone. Drinking water sources primarily from springs and river/stream water. Limited prospects along Intermontane Valleys.

F____F/____/ — — - *These are fault / fracture zones, which generally act as conduits for movement of ground water in hard rocks. Along these zones, the yields are significantly higher and wells are likely to be sustainable for longer duration. However, the inferred fractures need to be confirmed by detailed ground surveys.*

D____D /Q____Q / P____P
D— — D /Q— — Q / P____P — These are dykes, quartz reefs and pegmatite veins, which generally act as barriers for ground water movement.

N.B.-The depth range and yield range of wells may vary within the unit because of certain inhomogeneities. Fractures/Lineaments which are clearly observed / inferred from the satellite image are indicated on the map. There could be some obscured fractures which also influence the ground water prospects. Locations of the recharge structures shown in the map are tentative. This map is useful for narrowing down the target zones,and exact location on the ground for wells and recharge structures should be identified based on follow-up ground hydrogeological/geophysical surveys.

GROUND WATER PROSPECTS INFORMATION

YIELD RANGE OF WELLS	COLOUR CODE	DEPTH RANGE OF WELLS — SHALLOW < 30 METERS	MODERATE 30 - 60 METERS	DEEP > 60 METERS
> 800 LPM	VIOLET			
400 - 800 LPM	INDIGO			
200 - 400 LPM	BLUE			
100 - 200 LPM	GREEN			
50 - 100 LPM	YELLOW			
30 - 50 LPM	ORANGE			
20 - 30 LPM	BROWN			
10 - 20 LPM	PINK			
Prospects restricted to valley portions only (Hills, Plateaus etc.)	RED			
Run-off zone/ Barrier for G.W. movement	RED	(Inselberg / Ridge / Dyke etc.)		

HYDROLOGICAL INFORMATION

DESCRIPTION	SYMBOL
CANAL / TANK IRRIGATED AREA	
GROUND WATER IRRIGATED AREA	
RIVER / STREAM (with sand)	
WATER BODY / SPRING	
CANAL	
RAIN GUAGE STATION (With average annual rainfall in mm)	800
RECHARGE STRUCTURES SUGGESTED	
PERCOLATION TANK	CHECK DAM
NALA BUND	RECHARGE WELL
DESILTING OF TANK	RECHARGE PIT
SUBSURFACE DYKE	RECHARGE SHAFT
SOIL CONSERVATION MEASURES	STORAGE TANK

WELLS OBSERVED DURING FIELD VISIT

YIELD RANGE IN LPM	BORE / TUBE WELL	YIELD RANGE IN m^3/day	DUG WELL / RING WELL
> 800 LPM	15/70	> 400 m^3 / day	8/15
400 - 800 LPM	15/70	200 - 400 m^3 / day	8/15
200 - 400 LPM	15/70	100 - 200 m^3 / day	8/15
100 - 200 LPM	15/70	50 - 100 m^3 / day	8/15
50 - 100 LPM	15/70	25 - 50 m^3 / day	8/15
30 - 50 LPM	15/70	15 - 25 m^3 / day	8/15
20 - 30 LPM	15/70	10 - 15 m^3 / day	8/15
10 - 20 LPM	15/70	5 - 10 m^3 / day	8/15
< 10 LPM	15/70	< 5 m^3 / day	8/15

Colour inside well symbol indicates yield range. The figures on the top right hand side of well indicate the depth to water level and depth of well in meters

DUG - CUM- BORE WELL — HAND PUMP WELL
ARTESIAN WELL — OBSERVATION WELL OF G.W DEPT. / C.G.W.B.

STRUCTURAL INFORMATION

DIPS	BEDDING	SCHISTOSITY/ FOLIATION
GENTLE (< 15)		
MODERATE (15 - 45)		
STEEP (45 - 80)		
SUB - VERTICAL TO VERTICAL (> 80)		

ANTICLINE / ANTIFORM
SYNCLINE / SYNFORM
TREND LINE
ESCARPMENT
LITHOLOGY / GEOMORPHIC UNIT BOUNDARY

	MINOR	MAJOR
FAULT	F F	F F
THRUST	T T	T T
FRACTURE / LINEAMENT		
FRACTURE / LINEAMENT (Inferred)		
SHEAR ZONE (Confirmed / Inferred)	S S	S S
DYKE (Confirmed / Inferred)	D D	D D
QUARTZ REEF (Confirmed / Inferred)	Q Q	Q Q
PEGMATITE VEIN (Confirmed / Inferred)	P P	P P

Lithologic contacts are inferred at places & Geomorphic boundaries are gradational

BASE MAP INFORMATION

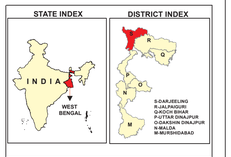
SYMBOL	DESCRIPTION
NH - 34	NATIONAL HIGHWAY
SH - 12	STATE HIGHWAY
	METALLED ROAD
	OTHER ROAD
	RAILWAY
	CITY / VILLAGE
	HABITATIONS : NON - COVERED (NC) PARTIALLY COVERED (PC)
BOUNDARY :	
	INTERNATIONAL
	STATE
	DISTRICT
	BLOCK

OTHER INFORMATION

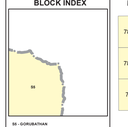
Rainfall : 2628 mm
Nearest Rain gauge Station : Darjeeling (Source IMD)

LOCATION INFORMATION

STATE INDEX — DISTRICT INDEX



BLOCK INDEX — MAPSHEET INDEX



78A11	78A15	78E3
78A12	78A16	78E4
78B9	78B13	78F1

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DATA USED : IRS - P6 LISS III FCC dated February 2009,March 2009 & Nov 2011, GROUND TRUTH & WELL OBSERVATION during February-March 2011, Published GSI & SOI maps.

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