GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

Kilometers

0 1 2 3 4 5

SCALE - 1 : 50,000

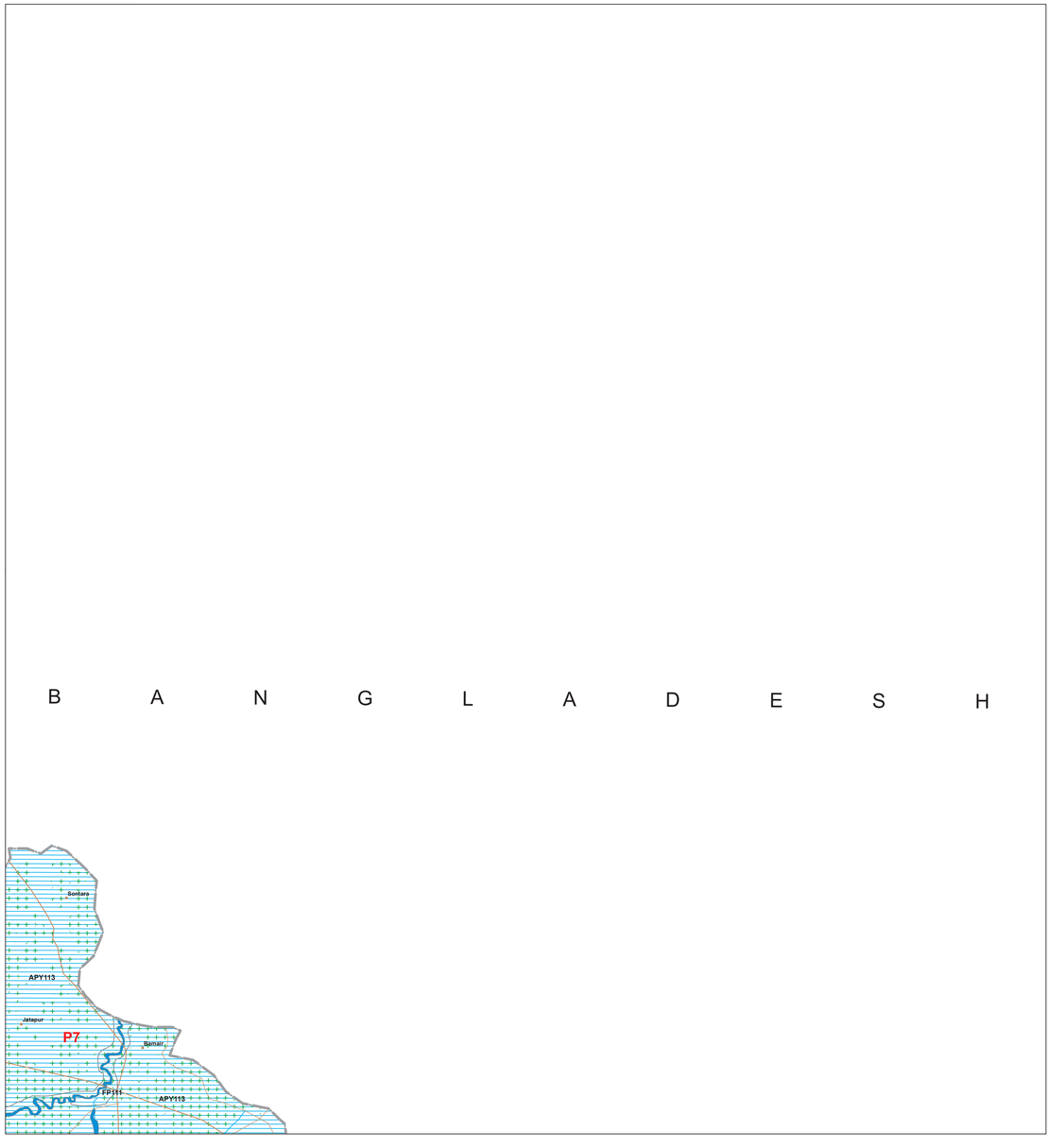
N

W E

S

MAP SHEET NO. 78C/5

UTTAR DINAJPUR DISTRICT, WEST BENGAL



© NRSC (ISRO), DEPT. OF SPACE, GOVT. OF INDIA 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.

Designed & Developed by Hydrogeology Division, NRSC, ISRO

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	GROUND WATER PROSPECTS: TYPE OF WELLS SUITABLE	GROUND WATER PROSPECTS: DEPTH RANGE OF WELLS (SUGGESTED) MIN - MAX (IN METERS)	GROUND WATER PROSPECTS: YIELD RANGE OF WELLS (EXPECTED) (in LPM or m^3 / day)	GROUND WATER PROSPECTS: HOMOGENEITY IN THE UNIT & SUCCESS RATE OF WELLS (PROBABILITY) VERY HIGH HIGH MODERATE LOW	GROUND WATER PROSPECTS: QUALITY OF WATER POTABLE (P) NON - POTABLE (NP) (INDICATE REASONS IF NON POTABLE)	GROUND WATER PROSPECTS: GROUND WATER IRRIGATED AREA (APPROX . RANGE IN PERCENTAGE)	RECHARGE STRUCTURES SUITABLE & PRIORITY	REMARKS (PROBLEMS / LIMITATIONS)
FP111	Alluvium (Sand Dominant) (111)	Flood Plain (FP)	No Well Observed	Very Good	LS	TW	<30 m	250-350 LPM	Very High	P	25	Not Required	Receives good recharge and forms shallow aquifer.Overall quality of the water is potable.
APY113	Alluvium (Sand and Silt) (113)	Alluvial Plain Younger (APY)	No Well Observed	Good	LS	TW	25-30 m	200-250 LPM	High	P	70	Not Required	Highly productive aquifer at shallow depth with good recharge.

Maldas / Jalpaiguri Formation (Early-late Holocene) — Shaugaon Formation (Present Day)

LS = LOOSE SEDIMENTS
PR = PERMEABLE ROCK
IPR = IMPERMEABLE ROCK
FR = FRACTURED ROCK
WR = WEATHERED ROCK / WM = WEATHERED MATERIAL
IR = IMPERVIOUS ROCK

DW = DUG WELL
RW = RING WELL
BW = BORE WELL
TW = TUBE WELL
DBW = DUG CUM-BORE WELL / DTW = DUG CUM-TUBE WELL

PT = PERCOLATION TANK
CD = CHECK DAM
RW = RECHARGE WELL
RW = RECHARGE WELL
DT = DESILTING OF TANK
RP = RECHARGE PIT
SC = SUBSURFACE DYKE
RS = RECHARGE SHAFT
ST = STORAGE TANK
SCM = SOIL CONSERVATION MEASURES

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 limited to valley portions only (Hills, Plateaus etc.)	RED			
Run-off zone/ Barrier for G.W. movement				(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, NALA BUND, DESILTING OF TANK, SUBSURFACE DYKE, SOIL CONSERVATION MEASURES, CHECK DAM, RECHARGE WELL, RECHARGE PIT, RECHARGE SHAFT, 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 S
DYKE (Confirmed / Inferred)	D D	D / D D
QUARTZ REEF (Confirmed / Inferred)	Q Q	Q / Q Q
PEGMATITIE VEIN (Confirmed / Inferred)	P 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 : 1423 mm
Nearest Rain gauge Station : Malda (Source IMD)

LOCATION INFORMATION

STATE INDEX

DISTRICT INDEX

S-DARJEELING
R-JALPAIGURI
Q-KOCH BIHAR
O-UTTAR DINAJPUR
D-DAKSHIN DINAJPUR
N-MALDA
M-MURSHIDABAD

BLOCK INDEX

PT - HEMTABAD

MAPSHEET INDEX

78B4	78B8	78B12
78C1	78C5	78C9
78C2	78C6	78C10

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