GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

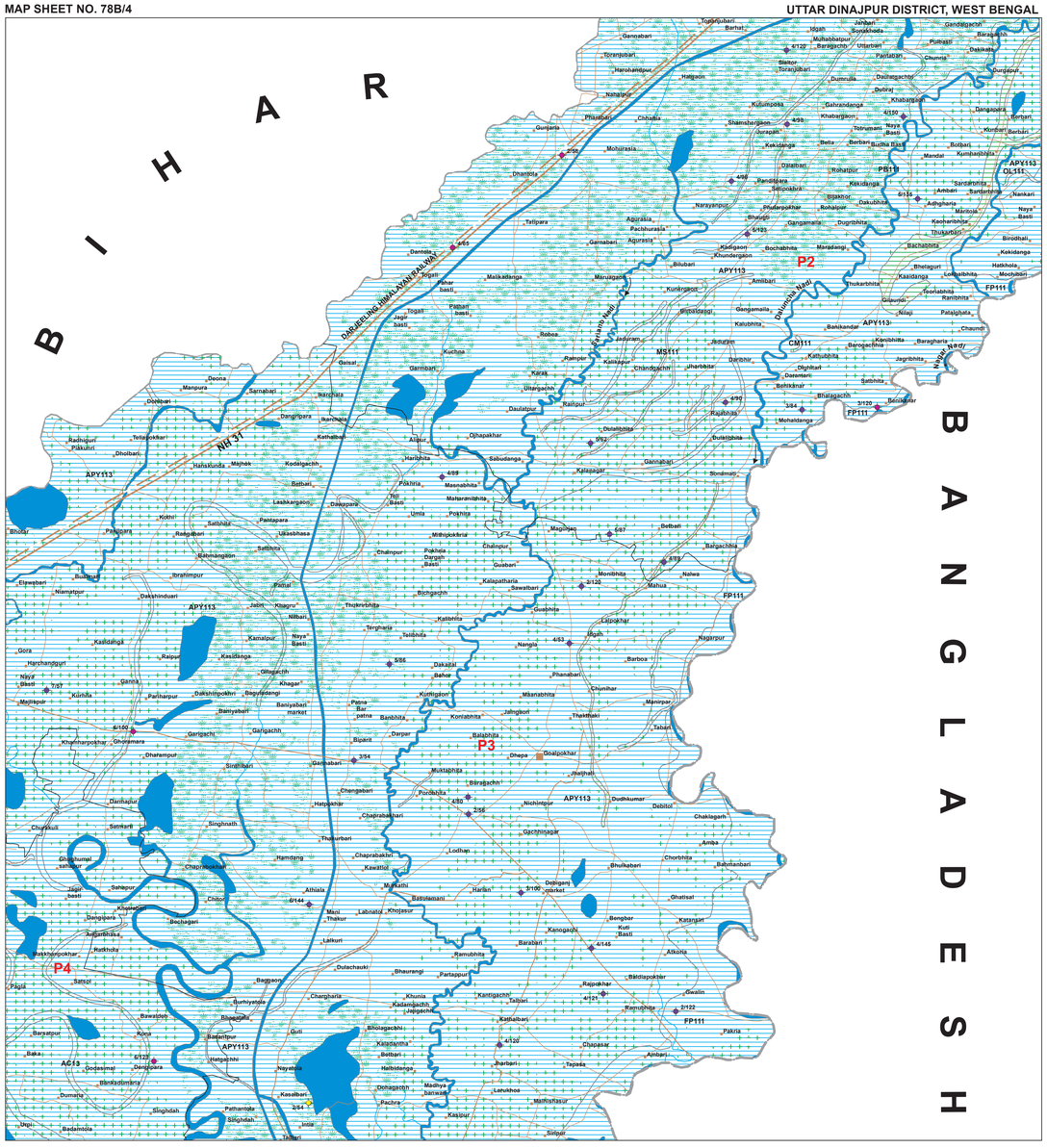
Kilometers

0 1 2 3 4 5

SCALE - 1 : 50,000

MAP SHEET NO. 78B/4

UTTAR DINAJPUR DISTRICT, WEST BENGAL



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)	GEOLOGICAL SEQUENCE / ROCK TYPE	GEOMORPHIC UNIT / LANDFORM	DEPTH TO WATER LEVEL (PRE / POST-MONSOON (AVERAGE IN METERS)) / NO. OF WELLS OBSERVED	RECHARGE CONDITIONS	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)	GROUND WATER PROSPECTS: QUALITY OF WATER POTABLE (P) NON - POTABLE (NP)	GROUND WATER PROSPECTS: GROUND WATER IRRIGATED AREA (APPROX. RANGE IN PERCENTAGE)	RECHARGE STRUCTURES SUITABLE & PRIORITY	REMARKS (PROBLEMS / LIMITATIONS)
PB111	Sahagaon Formation (Present Day) - Deposit: Alluvium (Sand Dominant) (111)	Point Bar (PB)	No Well Observed	Very Good	LS	RW TW	5-10 m	300-400 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
OL111		Oxbow Lake (OL)	No Well Observed	Good	LS	TW	20-30 m	200-300 LPM	Moderate	P	Nil	Not Required	Though occur as water bodies, but highly productive aquifer occurs at depth.
CM111		Cut-off Meander (CM)	No Well Observed	Good	LS	RW TW	10-20 m	300-400 LPM	High	P	Nil	Not Required	Highly productive shallow aquifers with good recharge from the river base flow.
MS111		Meander Scar (MS)	No Well Observed	Very Good	LS	RW TW	10-15 m	200- 250 LPM	High	P	Nil	Not Required	Highly productive shallow aquifers with good recharge.
FP111		Flood Plain (FP)	3 / 3 — 2	Very Good	LS	TW	<30 m	250-350 LPM	Very High	P	Nil	Not Required	Receives good recharge and forms shallow aquifer. Overall quality of the water is potable
APY113	Malda/Jalpaiguri/Ganga-Kosi Formation (Early - Late Holocene)	Alluvium (Sand and Silt) (113)	Alluvial Plain Younger (APY)	5 / 3 — 29	Good	LS	TW	25-30 m	200- 250 LPM	High	P	50	Not Required	Highly productive aquifer at shallow depth with good recharge.
AC13		Alluvium (Sand,Silt & Clay) (13)	Abandoned Channel (AC)	No Well Observed	Excellent to Very Good	LS	RW TW	10-15 m	250 - 300 LPM	Very High	P	Nil	Not Required	Highly productive shallow aquifers with good recharge from base flow.
PC13			Palaeo-channel (PC)	No Well Observed	Very Good	LS	RW TW	15-20 m	150 - 200 LPM	Very High	P	Nil	Not Required	Highly productive shallow aquifers with good recharge.

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/ Recharge to 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)	600

RECHARGE STRUCTURES SUGGESTED

PERCOLATION TANK	CHECK DAM
NALA BUND	RECHARGE WELL
DEBILTING OF TANK	RECHARGE PIT
SUBSURFACE DYKE	RECHARGE SHAFT
SOIL CONSERVATION MEASURES	STORAGE TANK

YIELDS OBSERVED DURING FIELD VISIT

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

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 - 90)		
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 - 31	NATIONAL HIGHWAY
SH	STATE HIGHWAY
	METALLED ROAD
	OTHER ROAD
	RAILWAY
	CITY / VILLAGE
	HABITATIONS : NON - COVERED (NC) PARTIALLY COVERED (PC)

BOUNDARY :

INTERNATIONAL
STATE
DISTRICT
BLOCK

OTHER INFORMATION

Rainfall : 1857 mm
Nearest Rain gauge Station : Raiganj (Source IMD)

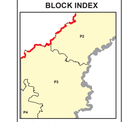
LOCATION INFORMATION

STATE INDEX

DISTRICT INDEX

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

BLOCK INDEX



P2 - ISLAMPUR
P3 - GOALPOKHAR I
P4 - GOALPOKHAR II

MAPSHEET INDEX

72N15	78B3	78B7
72N16	78B4	78B8
72O13	78C1	78C5

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