GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

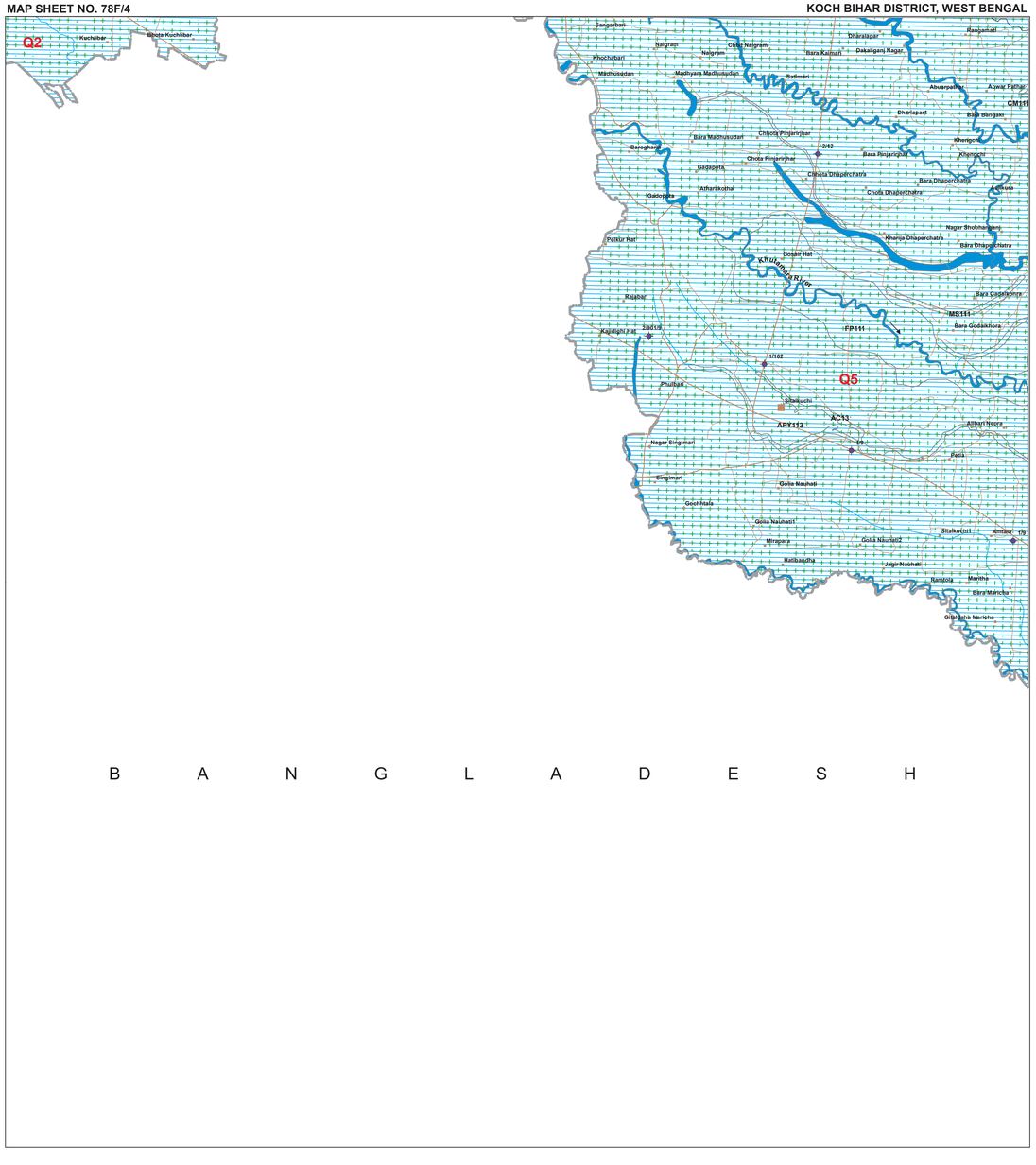
Kilometers

0 1 2 3 4 5

SCALE - 1 : 50,000

MAP SHEET NO. 78F/4

KOCH BIHAR DISTRICT, WEST BENGAL



B A N G L A D E S H

© 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 Geological maps & Literatures. *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 (LS = LOOSE SEDIMENTS; CR = CONSOLIDATED ROCK; FR = FISSURED ROCK; FR = FRACTURED ROCK; WR = WEATHERED ROCK / WW = WEATHERED MATERIAL; IR = IMPERVIOUS ROCK)	TYPE OF WELLS SUITABLE (DW = DUG WELL; RW = RING WELL; BW = BORE WELL; TW = TUBE WELL; DBW = DUG CUM BORE WELL / DTW = DUG CUM-TUBE WELL)	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 PT = PERCOLATION TANK; CT = CHECK DAM; NB = NALA BUND; RW = RECHARGE WELL; DT = DESILTING OF TANK; RP = RECHARGE PIT; SD = SUBSURFACE DYKE; RS = RECHARGE SHAFT; ST = STORAGE TANK; SCM = SOIL CONSERVATION MEASURES	REMARKS (PROBLEMS / LIMITATIONS)
CM111	Shaugaon Formation/Present Day Deposits: Alluvium (Sand Dominant) (111)	Cut-off Meander (CM)	No Well Observed	Very Good	LS	RW TW	10-20 m	300-400 LPM	Very High	P	100	Not Required	Highly productive shallow aquifers with good recharge.
MS111		Meander Scar (MS)	No Well Observed	Very Good	LS	RW TW	10-15 m	200-250 LPM	High	P	100	Not Required	Highly productive shallow aquifers with good recharge.
FP111		Flood Plain (FP)	No Well Observed	Very Good	LS	TW	<30 m	250-350 LPM	Very High	P	100	Not Required	Receives good recharge and forms shallow aquifer.Overall quality of the water is potable.
APY113	Malda/Jalpaiguri Formation (Early-Late Holocene): Alluvium (Sand and Silt) (113)	Alluvial Plain Younger (APY)	1 / 1 — 6	Good	LS	TW	25-30 m	200-250 LPM	High	P	100	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	100	Not Required	Highly productive shallow aquifers with good recharge from base flow.

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 - 50 METERS	DEEP > 50 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		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	15/72	> 400 m^3 / day	8/15
400 - 800 LPM	15/72	200 - 400 m^3 / day	8/15
200 - 400 LPM	15/72	100 - 200 m^3 / day	8/15
100 - 200 LPM	15/72	50 - 100 m^3 / day	8/15
50 - 100 LPM	15/72	25 - 50 m^3 / day	8/15
30 - 50 LPM	15/72	15 - 25 m^3 / day	8/15
20 - 30 LPM	15/72	10 - 15 m^3 / day	8/15
10 - 20 LPM	15/72	5 - 10 m^3 / day	8/15
< 10 LPM	15/72	< 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 - 2	NATIONAL HIGHWAY
SH - 9	STATE HIGHWAY
	METALLED ROAD
	OTHER ROAD
	RAILWAY
	CITY / VILLAGE
	HABITATIONS : NON - COVERED (NC) PARTIALLY COVERED (PC)

BOUNDARY :

INTERNATIONAL; STATE; DISTRICT; BLOCK

OTHER INFORMATION

Rainfall : 3102 mm
Nearest Rain gauge Station : Koch Bihar (Source IMD)

LOCATION INFORMATION

STATE INDEX

DISTRICT INDEX

S-DARJEELING R-KALIMPONG D-KOCH BIHAR P-UTTAR DINAJPUR G-DAKSHIN DINAJPUR N-MALDA M-MURSHIDABAD

BLOCK INDEX

G2 - MEKHLIGANJ
G6 - SITAKUCHI

MAPSHEET INDEX

78B15	78F3	78F7
78B16	78F4	78F8
78C13	78G1	78G5

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