GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

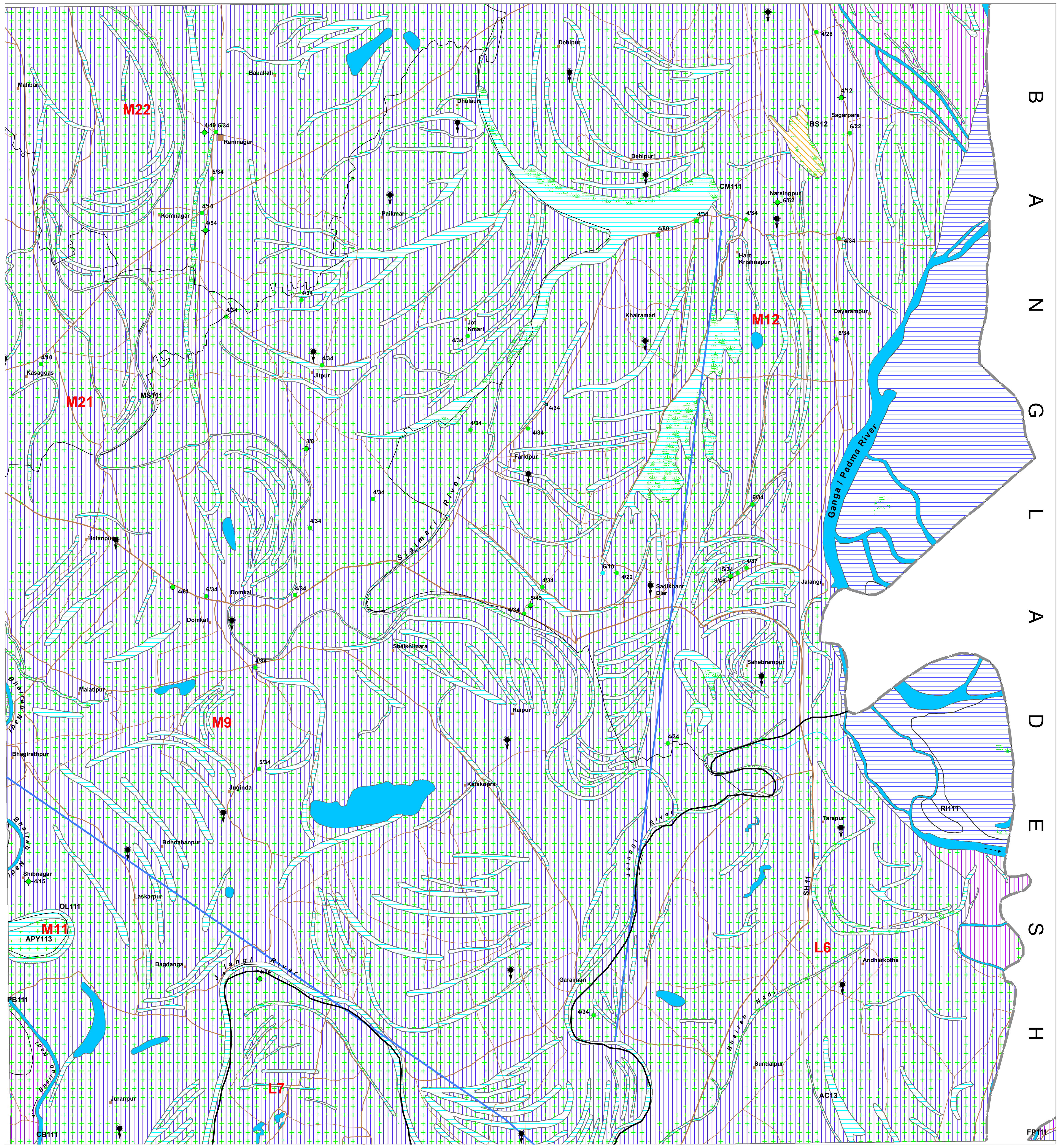
0 1 2 3 4 5 Kilometers

SCALE - 1 : 50,000

N
W E
S

MAP SHEET NO. 78D/12

MURSHIDABAD & NADIA DISTRICTS, 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 LS = LOOSE SEDIMENTS PR = PERMEABLE ROCK FIR = FISSURED ROCK FR = FRACTURED ROCK WR /= WEATHERED ROCK / WM 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 CD = 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	R E M A R K S (PROBLEMS / LIMITATIONS)
CB111	Hugli/Bhagirathi Formation/Present day Deposits (Present Day)	Alluvium (Sand Dominant) (111)	Channel Bar (CB)	No well observed	Excellant	LS	TW	5-10 m	400-500 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
PB111			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.
RI111			River Island (RI)	No well observed	Excellant	LS	TW	5-10 m	400-500 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
OL111			Ox-bow Lake (OL)	No well observed	Very Good	LS	TW	10-15 m	200-300 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
CM111			Cut-off Meander (CM)	5 /3 1	Very Good	LS	RW TW	10-15 m	200-300 LPM	Very High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
MS111			Meander Scar (MS)	6 / 4 2	Good	LS	RW TW	10-15 m	200-250 LPM	High	P	Nil	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
FP111			Flood Plain (FP)	No well observed	Very Good	LS	TW	>150 m	>800 LPM	Very High	NP (As&Fe) [At shallow depth]	58	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
BS12	Panskura/Arambagh/Chinsura/Katwa Formation (Early to Late Holocene)	Alluvium (Clay Dominant) (12)	Backswamp (BS)	No well observed	Poor	LS	TW	60-70 m	40-50 LPM	Low	P	Nil	Not Required	Areas of low groundwater potential. Better potential at greater depths.
APY113		Alluvium (Sand and Silt) (113)	Alluvial Plain Younger (APY)	5 / 3 40	Good	LS	TW	100-120 m	400-500 LPM	High	NP (As&Fe) [At shallow depth]	69	RW Low	Areas with high Arsenic and Iron concentration.Potable water available at depth range above 80m.
AC13		Alluvium (Sand,Silt & Clay) (13)	Abandoned Channel (AC)	No well observed	Very Good	LS	RW TW	10-15 m	250-300 LPM	Very High	P	Nil	Not Required	Areas of very high groundwater potential at shallow depth.Most suitable for extraction of groundwater.

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 - 80 METERS	DEEP > 80 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	IIIIIIII	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
PEGMATITIE 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

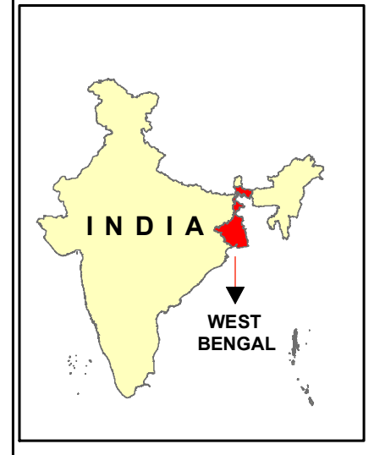
OTHER INFORMATION

Rainfall :1377 mm

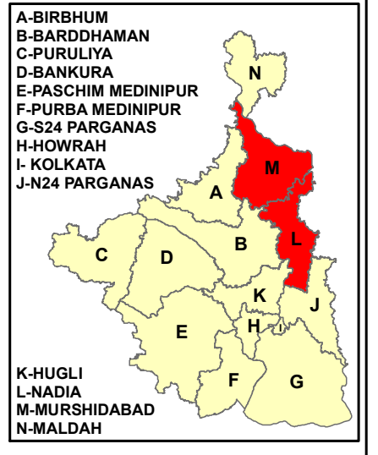
(Source IMD)

LOCATION INFORMATION

STATE INDEX

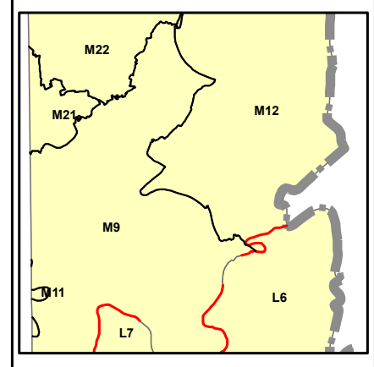


DISTRICT INDEX



A-BIRBHUM
B-BARDDHAMAN
C-PURULIYA
D-BANKURA
E-PASCHIM MEDINIPUR
F-PURBA MEDINIPUR
G-S24 PARGANAS
H-HOWRAH
I- KOLKATA
J-N24 PARGANAS
K-HUGLI
L-NADIA
M-MURSHIDABAD
N-MALDAH

BLOCK INDEX



M9-DOMKAL
M11-HARIHARPARA
M12-JALANGI
M21-RANINAGAR I
M22-RANINAGAR II
L6-KARIMPUR I
L7-KARIMPUR II

MAPSHEET INDEX

78D07	78D11	78D15
78D08	78D12	78D16
79A05	79A09	79A13

PREPARED BY

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GOVERNMENT OF INDIA
NEW DELHI

DATA USED : IRS - P6 LISS III FCC dated September 2005-February 2006,GROUND TRUTH & WELL OBSERVATION during March-June, 2012 & Oct 2012-Jan 2013,Published Geological maps & Literatures. *Designed & Developed by Hydrogeology Division, NRSC, ISRO*