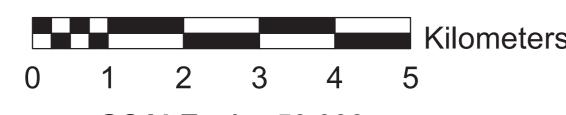
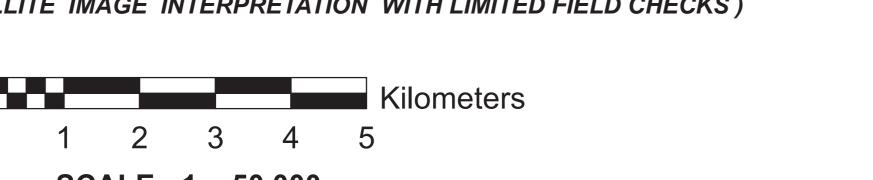
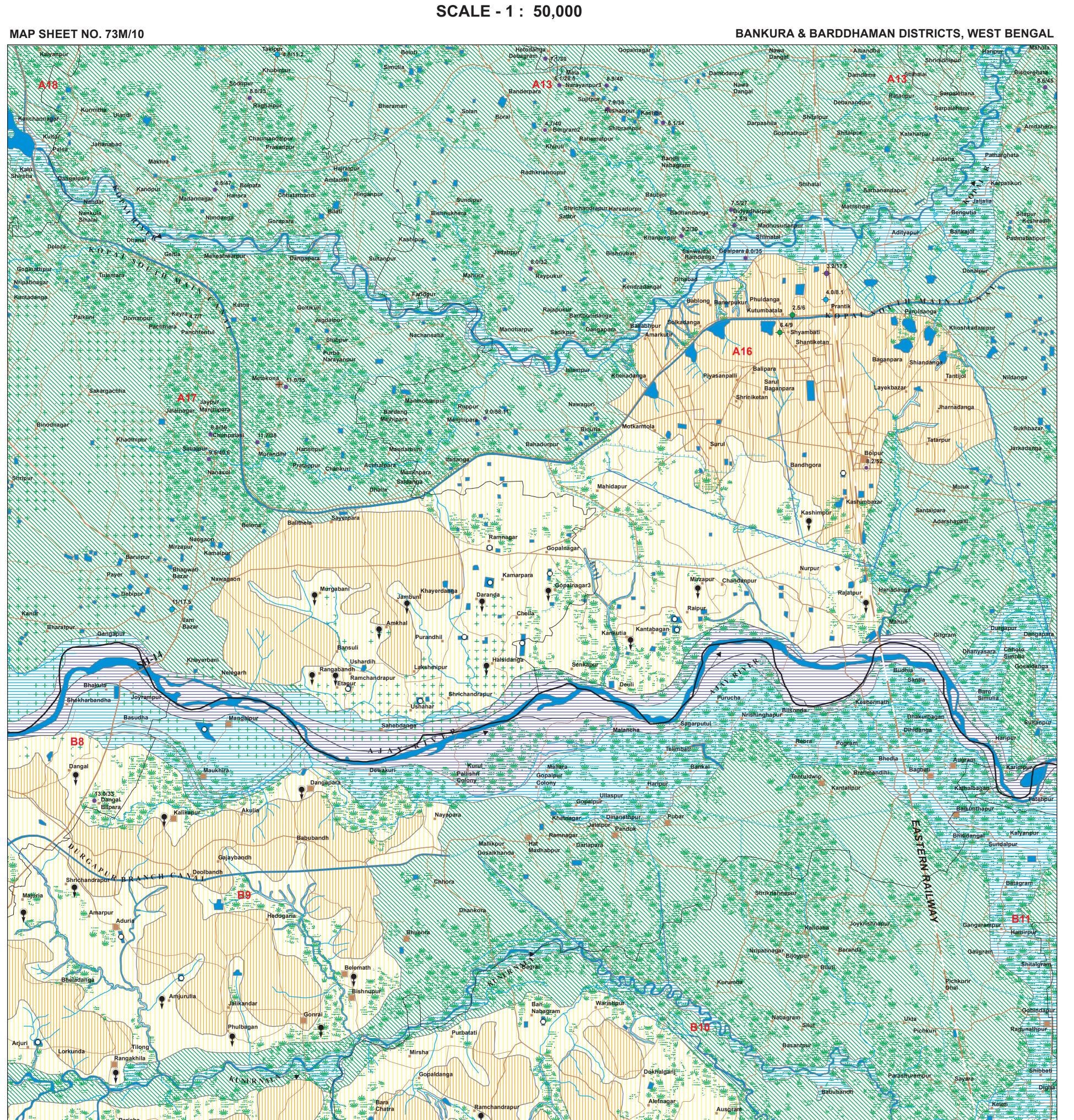
GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)







DATA USED: IRS - P6 LISS III FCC dated February 2006, GROUND TRUTH & WELL OBSERVATION during April-May, 2009 & Jan-Feb, 2010, Published Geological maps & Literatures.

Designed & Developed by Hydrogeology Division, NRSC, ISRO

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

LEGEND

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							RECHARGE STRUCTURES	REMARKS
					AQUIFER MATERIAL LS = LOOSE SEDIMENTS PR = PERMEABLE ROCK FIR = FISSURED ROCK FR = FRACTURED ROCK WR /= WEATHERED ROCK / WM WEATHERED MATERIAL IR = IMPERIVIOUS ROCK IM = IMPERIVIOUS MATERIAL	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)	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	(PROBLEMS / LIMITATIONS)
CB111	Hugli/Bhagirathi Formation Present Day (total)	Channel Bar (CB)	<u>5 - 6</u> 2	Excellent	LS	TW	5-10 m	400-500 LPM	Very High	Р	42%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
PB111		Point Bar (PB)	<u>6</u> 1	Very Good	LS	RW TW	5-10 m	300-400 LPM	Very High	Р	7%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
FP111		Flood Plain (FP)	<u>5 - 22</u> 104	Very Good	LS	RW TW	<30 m	250-350 LPM	Very High	Р	93%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
APY113	Panskura Formation (Early to Late Holocene minimula) (Early to Late Holocene minimula) (Early to Late Holocene minimula)	Alluvial Plain Younger (APY)	8.0 HP - 1	Very Good	LS	DW TW	5 - 7 m 20 - 30 m	100 -125 m ³ day 200 - 250 LPM	Very High	Р	20%	Not Required	Aquifer is formed of sandy part of alluvium Recharge structures are not required a good recharge condition prevails
AC13	Sijua/Rampurhat formation (Lower Holocene) (Lower Holocene) (Sand,Silta and Clay) (13)	Abandoned Channel (AC)	No wells observed	Excellent	LS	DW TW	5 - 7 m 10 - 20 m	150 - 200 m ³ /day 300 - 400 LPM	Very High	Р	5%	Not Required	Aquifer is formed of sandy part of alluvium Recharge structures are not required as good recharge condition prevails
APO13		Alluvial Plain Older (APO)	3.2 - 11.7 DW - 3 HP - 9 PW - 2	Good	LS	DW TW	10 - 15 m 40 - 60 m	50 - 75 m ³ /day 150 - 200 LPM	High	Р	10%	Not Required	Aquifer is formed of sandy part of alluvium Recharge structures are not required as good recharge condition prevails
VFS211	(Middle to Upper Pleistocene) (Middle to Upper Pleistocene) (Middle to Upper Pleistocene) (Eatternation (S11) (Taterite (Serricete-hard crust lateritic nodules and lithomarge clay) (S11)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS Underlain by WM + FR	TW / BW	40 - 50 m	50 - 100 LPM	Moderate	Р	Nil	DT Moderate	Recharge structure will increase the sustainability of ground water prospects
		Lateritic Plain (LP) (Lithomarge Clay)	13.0 HP - 1	Limited	WM + FR	DW TW / BW	15 - 20 m 50 - 60 m	15 - 25 m ³ day 50 - 100 LPM	Moderate	Р	10%	RW / DT High	Recharge wells have high priority as the lithomarge clay layer needs to be penetrate to recharge underlying aquifer formed or weathered material and fractured rooms.
DLU211		Dissected Lateritic Upland (DLU) (Hard crust and lateritic nodules)	2.6 - 8.2 PW - 1 DW - 4	Poor to limited	WM + IR (Impervious Material)	TW / BW	80 -100 m	30 - 50 LPM	Low	Р	Nil	Not Required	Essentially run-off zone where hard crust is present. Areas of lateritic nodules are recharge zones with deep water table conditions. Primarily forest areas with sparse settlements. Not suitable for large scale development of ground water.

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.

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	HYDROLOGICAL INFORMATION	s	TRUCTURAL INFORM	ATION	BASE MAP	INFORMATION	LOCATION	INFORMATION	
YIELD COLOUR DEPTH RANGE OF WELLS	DESCRIPTION SYME	OL DIPS	BEDDING	SCHISTOSITY/ FOLIATION	SYMBOL	DESCRIPTION	STATE INDEX	DISTRICT INDEX	
RANGE CODE SHALLOW MODERATE DEEP	CANAL / TANK IRRIGATED AREA		5)	FOLIATION	NH - 2	NATIONAL HIGHWAY		South South	
OF WELLS <30 METERS 30 - 80 METERS >80 METERS	GROUND WATER IRRIGATED AREA	MODERATE (15 - 45)	Á				3	
> 800 LPM VIOLET	RIVER / STREAM (with sand)	STEEP (45-8	۵۵)		SH - 9	STATE HIGHWAY		South A	
	WATER BODY / SPRING	SUB - VERTICAL TO VERTICAL		X		METALLED ROAD		CT.	
400 - 800 LPM INDIGO	CANAL	ANTICLINE / A	NTIFORM	←(-		OTHER BOAR	INDIA	C D B	
	RAIN GUAGE STATION (With average annual rainfall in mm)	0				OTHER ROAD			
200 - 400 LPM BLUE	RECHARGE STRUCTURES SUGGESTED PERCOLATION TANK CHECK DAM	SYNCLINE / S	/NFORM	←		RAILWAY	WEST	E E	
	NALA BUND RECHARGE WELL	TREND LINE	<u> </u>				BENGAL	A-BIRBHUM B-BARDDHAMAN	
100 - 200 LPM GREEN	DESILTING OF TANK O RECHARGE PIT SUBSURFACE DYKE	*				CITY / VILLAGE		C-PURULIYA D-BANKURA E-PASCHIM MEDINIPUR	
	SOIL CONSERVATION MEASURES RECHARGE SHAFT STORAGE TANK	● ESCARPMEI	1T ^	Antick A	HAR	ITATIONS : NON - COVERED (NC)		J [=	
50 - 100 LPM YELLOW		DUG WELL/ DOLINGABY	EOMORPHIC UNIT		# /	PARTIALLY COVERED (PC)			
	IN LPM TUBE WELL IN m ³ / day > 800 LPM • 15/70 > 400 m ³ / day	RING WELL BOUNDARY	MINOR	MAJOR		POLINIPARY	BLOCK INDEX	MAPSHEET INDEX	
30 - 50 LPM ORANGE	400 - 800 LPM - 15/70 200 - 400 m ³ / day	● 8/15 FAULT	F	F		BOUNDARY: STATE			
	200 - 400 LPM	8/15 8/15 THRUST	T	Т——Т		DISTRICT	Ags ATS Ads	73M/5 73M/9 73M/	
20 - 30 LPM BROWN	100 - 200 LPM	98/15				DISTRICT BLOCK	A17 C A16		
	30 - 50 LPM 15/70 15 - 25 m ³ / day	FRACTURE / LINEA (Inferred)	MENT					73M/6 73M/10 73M/	
10 - 20 LPM PINK	20 - 30 LPM	8/15 SHEAR ZONE	(Confirmed / Inferred)	s s/s s	OTHER	INFORMATION	BOB BO9		
Prospects	10 - 20 LPM	●8/15 DYKE	(Confirmed / Inferred)	DD			B10 B1	73M/7 73M/11 73M/	
limited to valley portions only	< 10 LPM + 15/70 < 5 m ³ / day	8/15 QUARTZ REEF	(Confirmed / Inferred)	Q——Q/Q———Q	Rainfal	l: 1431mm	A18 DUBRAJPUR B08 KANSKA A17 ILLAMBAZAR B09 AUSGRAM - II A13 SAINTHIA B11 MANGALKOAT	73M/7 73M/11 73M/	
(Hills, Plateaus etc.)	Colour inside well symbol indicates yield range. The figures on the hand side of well indicate the depth to water level and depth of well indicate the depth to water level and depth of well indicates the depth to water level.	Il in meters		P P P			A13 SAINTHIA B11 MANGALKOAT A16 BOLPUR B10 AUSGRAM - I		
Run-off zone/ Barrier for (Inselberg / Ridge / Dyke ei	DUG - CUM- BORE WELL HAND PUMP		(*************************************		(Sou	rce IMD)			
G.W. movement	ARTESIAN WELL OBSERVATION G.W DEPT. / C.0	i.W.B. Lithologic conta are gradational	acts are inferred at places &	Geomorphic boundaries					
PREPARED BY	TECHNICAL GUIDANCE & QUALITY CHE	CK PART	ICIPATING ORGANIZA	ATIONS	METHODOLOGY	& PROJECT EXECUTION	SPONSO	DRED BY	
GEOINFORMATICS & REMOTE SENSING CEI					इसरो ंडाव		RAJIV GANDHI NATIONAL I		
B. STATE COUNCIL OF SCIENCE AND TECHNO DEPARTMENT OF SCIENCE AND TECHNOLO	NIATIONIAL BENACTE CENTOLIA CENT	RE GF	SURVEY OF INDIA GEOLOGICAL SURVEY OF INDIA			TE SENSING CENTRE	(PHASE III B) DEPARTMENT OF DRINKING WATER SUPPLY (DDWS MINISTRY OF RURAL DEVELOPMENT GOVERNMENT OF INDIA NEW DELHI		
GOVERNMENT OF WEST BENGAL	INDIAN SPACE RESEARCH ORGANISATIO	N (ISRO) PHE	PHED, GOVT. OF WEST BENGAL			ARCH ORGANISATION (ISRO)			
4TH FLOOR, BIKASH BHAVAN	DEPT. OF SPACE, GOVT. OF INDIA	l l	STATE WATER INVESTIGATION DIRECTORATE, GOWB P.S.MAPS (LAND RECORD), GOVT OF WEST BENGAL			ACE, GOVT. OF INDIA			
SALT LAKE, KOLKATA 700 091	BALANAGAR, HYDERABAD - 500 62	5 P.S.WAPS (LAI	ID KECUKU), GUVI	OL MESI BENGAL	BALANAGAR, I	HYDERABAD - 500 625	INEAN	DEFUI	