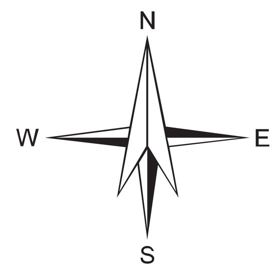
GROUND WATER PROSPECTS MAP

(PREPARED FROM SATELLITE IMAGE INTERPRETATION WITH LIMITED FIELD CHECKS)

Kilometers

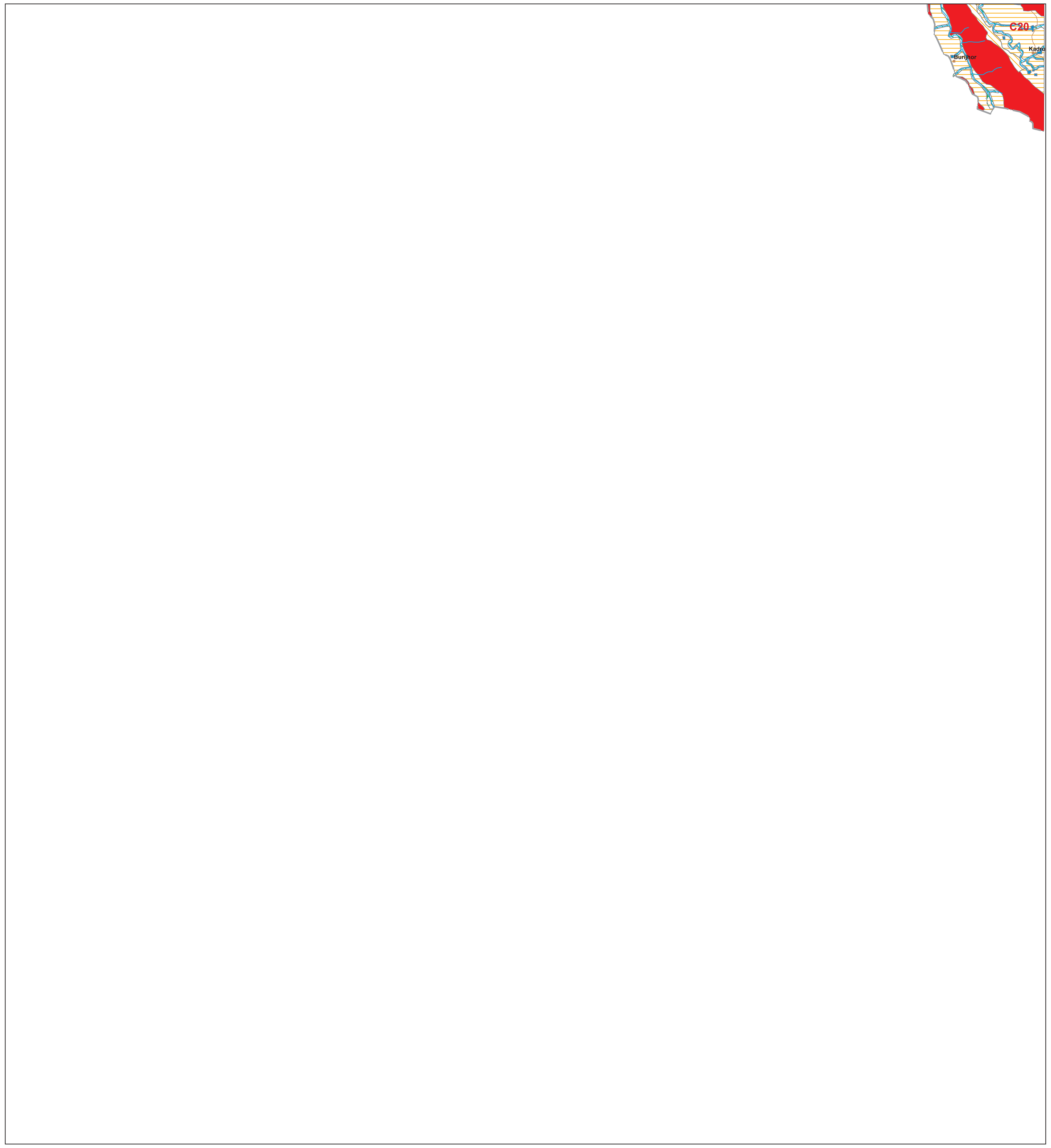
0 1 2 3 4 5

SCALE - 1 : 50,000



MAP SHEET NO. 73J/6

PURULIYA DISTRICT, 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 / DTW = DUG CUM-BORE WELL / DUG CUM-TUBE WELL)	DEPTH RANGE OF WELLS (SUGGESTED) MIN - MAX (IN METERS)	YIELD RANGE OF WELLS (EXPECTED) (in LPM or m³ / 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)	REMARKS (PROBLEMS / LIMITATIONS)
CB111	Hugli/Bhagirathi Formation/Present day Deposits (Present Day)	Alluvium (Sand Dominant) (111)	Channel Bar (CB)	5 - 6 / 2	Excellent	LS	TW	5-10 m	400-500 LPM	Very High	P	42%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
PB111			Point Bar (PB)	6 / 1	Very Good	LS	RW TW	5-10 m	300-400 LPM	Very High	P	7%	Not Required	Groundwater prospects very high with high recharge potential. Recharge structures not required.
APY113	Panskura/Arambagh Fm (Early to Late Holocene)	Alluvium (Sand Dominant) (113)	Alluvial Plain Younger (APY)	4.4 - 7.5 m / HP - 8	Very Good	LS	DW TW	10 - 12 m 20 - 30 m	100 -125m³/day 200 - 2500 LPM	Very High	P	Nil	Not Required	Aquifer is formed of sandy part of alluvium. Recharge structures are not required as good recharge condition prevails
NL13	Sijua/Rampurhat Formation (Lower Holocene)	Alluvium (Sand,Silt and Clay) (13)	Natural Leeve (NL)	8.2 - 14.5 / DG - 3 HP - 6	Good to Very Good	LS	DW TW	10 - 15 m 25 - 30 m	50 - 75m³/day 175 - 200 LPM	High	P	Nil	Not Required	Aquifer is formed of sandy part of alluvium. Recharge structures are not required as good recharge conditions prevail
APO13			Alluvial Plain Older (APO)	3.5 - 8.1 / DW - 43 HP - 40	Good	LS	DW TW	15 - 20 m 40 - 60 m	50 - 75 m³/day 150 - 200 LPM	High	P	Nil	Not Required	Aquifer is formed of sandy part of alluvium. Recharge structures are not required as good recharge condition prevails
VFS211	Lalgarh/Illambazar Formation (Middle to Upper Pleistocene)	Laterite (Ferricrete-hard crust, lateritic nodules and lithomarge clay) (211)	Valley Fill Shallow (VFS)	No wells observed	Moderate	LS underlain by WM + FR	TW / BW	40 - 50 m	50 - 100 LPM	Moderate	P	Nil	DT Moderate	Recharge structure will increase the sustainability of ground water prospects
LP211			Lateritic Plain (LP) (Lithomarge Clay)	2.2 - 7.5 / DW - 32 HP - 16	Limited	WM + FR	DW TW / BW	15 - 20 m 50 - 60 m	15 - 25 m³/day 50 - 100 LPM	Moderate	P	Nil	RW High	Recharge wells have high priority as the lithomarge clay layer needs to be penetrated to recharge underlying aquifer formed of weathered material and fractured rock
DLU211			Dissected Lateritic Upland (DLU) (Hard and Lateritic nodules)	4.7 / HP -1	Poor to limited	WM + IR (Impervious Material)	TW / BW	80 -100 m	30 - 50 LPM	Low	P	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

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	RED	(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 m³/day	DUG WELL / RING WELL
> 800 LPM	15/70	> 400 m³ / day	8/15
400 - 800 LPM	15/70	200 - 400 m³ / day	8/15
200 - 400 LPM	15/70	100 - 200 m³ / day	8/15
100 - 200 LPM	15/70	50 - 100 m³ / day	8/15
50 - 100 LPM	15/70	25 - 50 m³ / day	8/15
30 - 50 LPM	15/70	15 - 25 m³ / day	8/15
20 - 30 LPM	15/70	10 - 15 m³ / day	8/15
10 - 20 LPM	15/70	5 - 10 m³ / day	8/15
< 10 LPM	15/70	< 5 m³ / 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 : STATE, DISTRICT, BLOCK

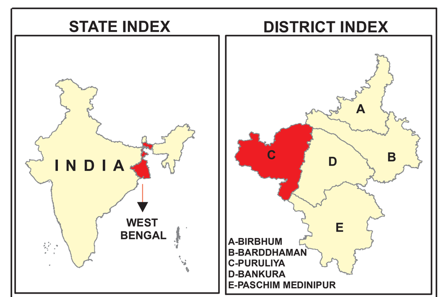
OTHER INFORMATION

Rainfall : 1348mm

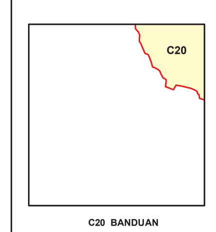
(Source IMD)

LOCATION INFORMATION

STATE INDEX / DISTRICT INDEX



BLOCK INDEX



73M/6	73M/10	73M/14
73M/7	73M/11	73M/15
73M/8	73M/12	73M/16

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GEOINFORMATICS & REMOTE SENSING CELL
W.B. STATE COUNCIL OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF WEST BENGAL
4TH FLOOR, BIKASH BHAVAN
SALT LAKE, KOLKATA 700 091

TECHNICAL GUIDANCE & QUALITY CHECK
NATIONAL REMOTE SENSING CENTRE
INDIAN SPACE RESEARCH ORGANISATION (ISRO)
DEPT. OF SPACE, GOVT. OF INDIA
BALANAGAR, HYDERABAD - 500 625

PARTICIPATING ORGANIZATIONS
SURVEY OF INDIA
GEOLOGICAL SURVEY OF INDIA
PHED, GOVT. OF WEST BENGAL
STATE WATER INVESTIGATION DIRECTORATE, GOWB
P.S.MAPS (LAND RECORD), GOVT OF WEST BENGAL

METHODOLOGY & PROJECT EXECUTION
NATIONAL REMOTE SENSING CENTRE
INDIAN SPACE RESEARCH ORGANISATION (ISRO)
DEPT. OF SPACE, GOVT. OF INDIA
BALANAGAR, HYDERABAD - 500 625

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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.

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