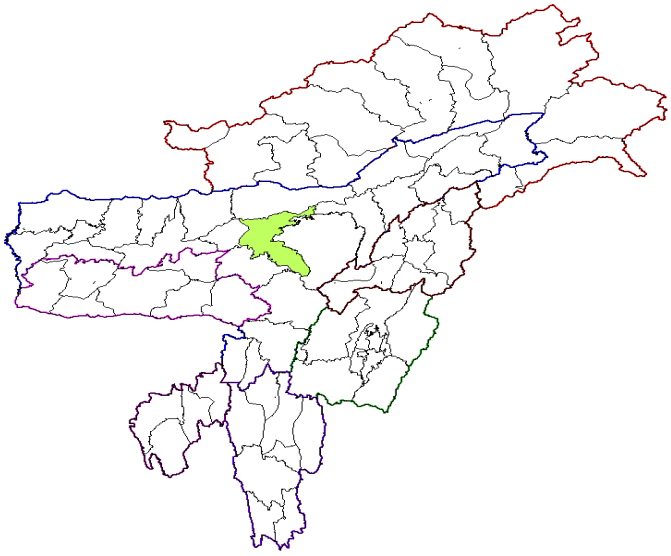
Technical Report Series: D

No:

Ground Water Information Booklet
Nagaon District, Assam



Central Ground Water Board

North Eastern Region

Ministry of Water Resources

Guwahati

November 2013

NAGAON DISTRICT, ASSAM

DISTRICT AT A GLANCE

SI No	Items	Statistics
1.	GENERAL INFORMATION i) Geographical Area (in sq.km AS PER 2011 CENSUS) ii) Population iii) Average Annual Rainfall (mm) iv) No of sub division	 411030 2826006 1541 03
2.	GEOMORPHOLOGY (i) Major Physiographic units (ii) Major drainage	 Piedment plain, flat alluvial plain (older and younger alluvial) and Inselberges (Granites & Gneisses) Brahmaputra and its tributaries mainly Kolong, Kopili, Sonai and Diyang.
3.	LAND USE (sq. km.) as on 2011 i) Forest Area ii) Net Area Sown iii) Total cropped area iv) Area sown more than once	 88024 235626 291339 55713
4.	Major soil types	Alluvial soil
5.	AREA UNDER PRINCIPAL CROPS (2008-09)	66865 ha (paddy)
6.	IRRIGATION BY DIFFERENT SOURCES (sq.km.)	1039.30
7.	NUMBERS OF GROUND WATER MONITORING STATIONS OF CGWB (as on March 2013)	25
8.	PREDOMINANT GEOLOGICAL FORMATIONS	Vast river borne sediment, Older and Younger alluvium.
9.	HYDROGROLOGY i) Major water bearing formation ii) Pre-monsoon water level iii) Post monsoon water level iv) Long term water level trend	 i) Sand and pebble aquifer zone down to 300 m depth and weathered and fracture zones up to 100 m depth in consolidated rocks ii) 2.23 – 4.48 mbgl iii) 1.861 - 4.07 mbgl iv) No significant change observed
10.	GROUND WATER EXPLORATION BY CGWB (31.03.2013) i) Nos. of well drilled ii) Depth range in m	 EW-30,PZ-5,S.H-3,O.B-17 60 to 270

	iii) Discharge in m^3/hr iv) Transmissivity (m^2 /day) v) Permeability (m/day)	33 to 70 2200 246
11.	GROUND WATER QUALITY i) Presence of Chemical Constituents beyond permissible limit (i.e. EC, F, Fe, As)	EC-Permissible limit F- Within desirable limit Fe- 0.35 -2.25 mg/l As-not detected.
12.	DYANMIC GROUND WATER RESOURCES (2009) in mcm. i) Net GW Availability ii) Net annual G.W draft iii) Project demand for domestic and industrial use up to 2025 iv) Stage of G. W. development	 1844.62 719.32 90.56 39 %
13.	AWARENESS AND TRAINING ACTIVITY i) Mass awareness programmes organized ii) Date iii) Place	 Not organized
14.	EFFORTS OF ARTIFICIAL RECHARGE AND RAINWATER HARVESTING i) Project completed by GCWB (Nos and amount spent) ii) Project under technical guidance of CGWB	 Nil
15.	GROUND WATER CONTROL AND REGULATION i) Number of OE block ii) Number of critical blocks iii) Number of block notified	 Nil
16.	MAJOR GROUND WATER PROBLEMS AND ISSUES	Higher conc. of iron in ground water and Arsenic & Fluoride in some pockets.

Ground Water Information Booklet, Nagaon District, Assam

1.0 Introduction

Nagaon district is situated in the central portion of Assam State and is represented by a vast plain with small hills on northern, southern and eastern part. Nagaon is the district headquarter of the district.

The district is bounded by Brahmaputra & Sonitpur district on the north, towards south lies West Karbi Anglong and North Cachar Hills, towards its east lies the districts of East Karbi Anglong and Golaghat.

The area of the district spans 3993 Sq. Km making it one of the largest districts of Assam. The district extends between 25° 45' to 26° 45' North Latitudes. Its highlands include the Hatimura Parbat with an elevation of 186.5 m, the Barkandali with an altitude of 853 m and the Kamakhya Parbat with an altitude of 244 m. The average altitude of the district is 60.6 m. Its major rivers include the Brahmaputra, Kalong, Sonai, Nanoi, Jamuna, Kopili and the Barapani.

There are several beels, marshy lands and swamps; these are abandoned channels of the Kalong and the Kopili rivers. These are the Marikalong, Potakalong, Haribhanga, Jongalbalahu, Samoguri beel, Urigadang and the Nawbhanga. These beels are major unused resources of the district. There are about two hundred numerous marshy lands here.

Together with Morigaon district, it has the shape of a broken dish. The north and the south are uplands. The general slope of the district is towards the west. The eastern, north eastern and the south eastern parts are hilly terrains.

The major river is the Kalong which divides the town into two halves - Haibargaon and Nagaon. Haibargaon slopes down towards the west and then to the south west towards the Sonai. Nagaon slopes down first towards the south east and then southwards to the beels and then towards Kalong.

2.0 Rainfall and Climate

The area experiences hot sub tropical humid climate. A hot and humid pre-monsoon from March to mid May, a prolonged southwest monsoon or rainy season from mid May to September, a pleasant post-monsoon or retreating monsoon from October to November and a cold pleasant winter from December to February are the characteristics of the general climate.

Summer runs concurrently with the later part of the pre-monsoon season and continues throughout the monsoon season.

The four climatic seasons viz pre-monsoon, monsoon, post-monsoon and winter could be considered as comprising of the following months:

i. Pre-monsoon: March, April and May
ii. Monsoon: June, July, August and September
iii. Post-monsoon: October and November
iv. Winter: December, January and February

Sometimes, the monsoon commences in mid-May and ends in mid-September. Therefore, the boundaries between the seasons are not very rigid. The months October, November and December are considered to be representative study period**.**

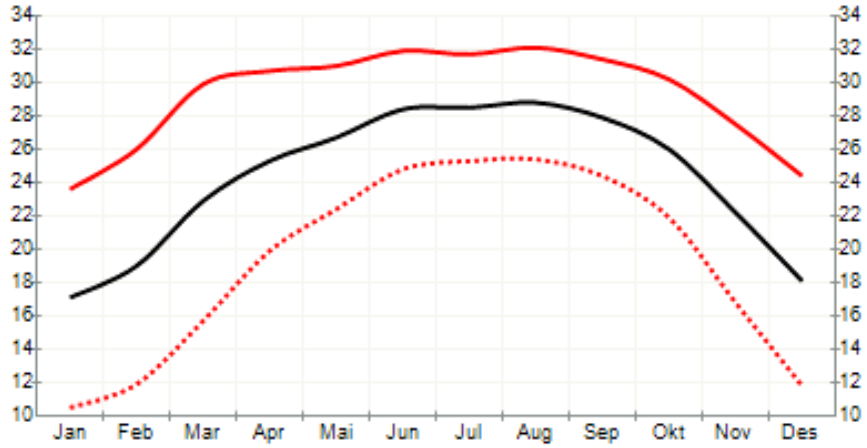


Fig.1. Average temperature per month

The mean daily maximum temperature during winter is about 25°C and minimum is 11°C. The mean daily maximum temperature during summer is 34°C and the minimum is 24° C. The relative humidity varies from month to month and increases from 76% to 84% during the South west monsoon and is about 77% in rest of the year. The humidity varies throughout the year but seldom drops down below 67%. The average annual rainfall is 1541 mm. Rainfall is confined mainly during the monsoon season.

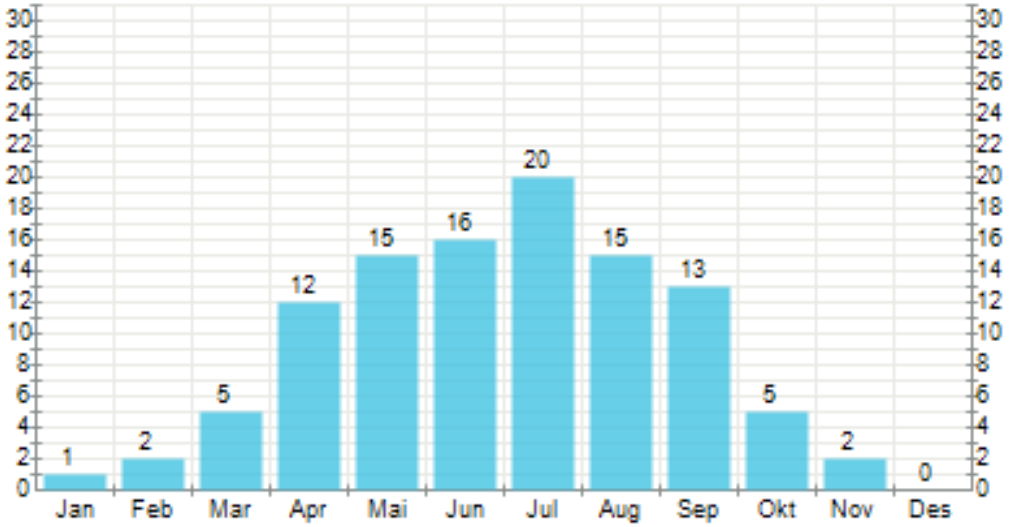


Fig.2.Average days with rainfall per month

3.1 Geomorphic Features and Landforms

The major geomorphic units in the district are - i. Denudational hills, ii. Piedmont zone, iii. Flood plain deposits with Charland and Swampy areas.

i. **Denudational Hills:** It occupies eastern and southern part of the district comprising parts of Karbi angling hills and N.C.hills. They are NE-SW trending rugged topographic highs standing out due to differentiated erosion. The hilly terrain is covered by thick mantle of lateritic deposit and is densely forested.

ii. **Piedmont Zones:** These zones occur at the contact of the denudational hills and plains. They are high land forms deposited adjacent to hill slopes by fluvial action. They consist of assorted admixture of cobbles, pebbles, sand and a matrix of clay.

iii. **Flood Pain deposits:** Flood Plain deposit occupy a major part of the district with huge thickness of unconsolidated alluvial sediment deposited by the mighty Brahmaputra and its tributaries. The Kopili River on the south and the Kalong River on the north-east have deposited the sediment during floods.

iv. **Charland:** Charland is relatively low lying area along the river Brahmaputra within the recent flood plain. The area is characterized by fertile land with sandy and silty

loam. The Charland is formed due to oscillation of the river water which is either washed away by subsequent floods or strengthened by further deposition.

v. **Swampy areas:** Swampy areas are low lying areas or the natural depressions created due to change of river courses as abandoned channels or meander lakes. They are locally known as beels and are found abundantly in the district.

3.2 Drainage and Morphometric Features

The main river is the Brahmaputra flowing on the northern part of the district from east to west with its tributaries Kopili, Kalong and Sonai rivers. Among these, Kopili is the major river originating in the hills of Karbi Anglong to the south and flows on north-westerly direction and meet with Diyang River near Dhing. It follows north-westerly direction from Dhing to the same north-westerly trend up to Kampur and deflects towards west. Kalong, the tributary of Kopili joins the later near Jagiroad.

Together with Morigaon district, it has the shape of a broken dish. The north and the south are uplands. The general slope of the district is towards the west. The eastern, north eastern and the south eastern parts are hilly terrains.

The major river is the Kalong which divides the town into two halves - Haibargaon and Nagaon. Haibargaon slopes down towards the west and then to the south west towards the Sonai. Nagaon slopes down first towards the south east and then southwards to the beels and then towards Kalong.

3.3 Soil

The alluvial soil is mostly loamy and consists of a mixture of clay and sand in varying proportions, ranging from pure sand on the banks of the Brahmaputra to sticky clay which is considered unfit for cultivation. Marshy soil is chiefly found in the low lying areas. These are black in colour. The red soil generally occupies the hill slopes and foot hills. Occasionally lateritic soil is also found near about Lumding.

The plain areas bordering Brahmaputra River are occupied by alluvial sediments belonging to Quaternary ages. Based on such criteria such as sedimentation, soil characteristics and geomorphic features, the Quaternary sediments can be grouped into two subdivisions, viz.

(i) Older Alluvium, and
(ii) Younger alluvium.

The Older alluvium by virtue of its relative maturity is composed of somewhat oxidized sediments comprising yellow and the reddish brown colour sand, silt and clay in contrast to the light colour, less compact Younger alluvium sediment. The Older alluvium always occupies

the higher grounds than the adjacent Younger alluvium but takes the proper stratigraphy position underlying the Younger alluvium sediments in the plain areas.

4.0 Geology

Geologically the district is underlain by rocks of Precambrian age consisting of granites and gneisses, rocks belonging to Barail and Surma series of Tertiary age and Quaternary alluvium. Since the Archaean and Precambrian granites and gneisses form the basement or are found as inselbergs projecting out the plains alluvial stretch. They are not of much significance from ground water point of view. The younger Tertiary formations are found confined to Lumding, Lanka and Hojai areas and in the east and north east. The rocks comprise massive and compact sandstones and shales.

The district is occupied by Consolidated Formations belonging to Pre-Cambrian Groups of rocks, Semi-consolidated Formations of Tertiary age and overlain by Unconsolidated Alluvial sediments of Quaternary age. The Pre-Cambrian rocks occupy about 3 % and the semi-consolidated Tertiary Group is an about 5 % of the TGA of the district. The Unconsolidated Alluvial sediments occupy about 90% of the total area and dominant in the district.

5.0 Structure

Structurally, the district is flat alluvial terrain with hills on the southern part. The southern alluvial strip from Kathiatoli to Lumding is surrounded by hills, is Mikir Massif on northern and southern part and the Tertiary rocks on extreme south. The whole southern part is suspected to have been deposited in a graben with deep seated basement faults.

6.0 Ground Water Scenario

Hydrogeological survey aided by exploratory drilling carried out by CGWB revealed the existence of potential aquifer zones down to the depth of 200m. The thickness of the granular zones which mainly constitute sands of various grades, clay and occasional gravel occurs in the Recent to Sub-recent alluvial formations which spread out the whole district from southern part of the river Brahmaputra to the areas around Lanka on south. The granular zones of this unconsolidated formation have higher thickness on northern part and gradually decrease towards south with interfringering of the clay lenses. Based on the exploration data, the aquifers can broadly divided into two groups –

i. 0.0 to 50 mbgl : Shallow aquifer zone

ii. 50 to 280 mbgl : Deep aquifer zone

6.1 Hydrogeology

A large area near Lumding is occupied by the transgressive Surma Series which dip at very low but variable angles. The Surmas are predominantly argillaceous and as such clay and shale dominate over sandstone and siltstone. The northern and central parts of the district are mostly covered by alluvium of the Brahmaputra river system.

The Quaternary Group of sediments represented by unconsolidated alluvium covers large part of the district. These deposits comprise sands of various grades with minor silt and clay. The older alluvium comprising sand, silt and clay occurs in the present day channel of rivers Kalang and Kopili. The Newer alluvium is confined broadly to the area north of Kalang River and comprises medium to very coarse sand with gravel.

A critical appraisal of aquifer zones encountered in the boreholes reveal that in the flood plain area is in the Kalang sub-basin the aquifers are not only extensive but thick and prolific. Clay predominance increases in the south and fine to medium grained sands occur in relatively very thin lenses indicating that the formations possibly belong to arenaceous facies of Tipam Group or Dupitila Group of Tertiary age.

Hydrogeologically the district is proved to be potential. Ground water in Nagaon district occurs in secondary porosity like fractures, fissures of Precambrian rocks and in the semi consolidated and unconsolidated formations of Tertiary and Quaternary age respectively. While the greater part of the district falls in Kalang sub-basin. In the Kalang sub-basin the alluvial formations show two characteristic features. In the northern part of the district particularly north of Sonai river, the alluvium comprising medium to coarse sand with gravel and pebbles from a single aquifer system of massive thickness. But in the south central and southern parts, which is broadly underlain by older alluvium, the clay proportion increases markedly. The clay beds act as confining layers. Thus ground water occurs both under confined, semi-confined and unconfined conditions.

In the Jammu Command area (Kopili sub-basin) three to four good aquifer horizons are encountered within the depth of 300 m with a cumulative thickness of aquifers actually occur within 200 m depth. The dispositions of aquifers are such that both shallow and deep tube wells can be constructed to develop ground water resource.

Water table generally rests within 4 to 6m of land surface in the greater part of the district. The depth to piezometric surface more or less coincides with the water table in the Kalang sub-basin and is thus generally within 6m from ground surface. However, in the Kopili

sub-basin that is, in the southern part of the district it is variable from 0.5 to 14.0 m below ground surface. and in certain localized areas around Hojai- Doboka and Nilbagan artesian conditions prevail indicating thereby that the piezometric surface lies above land surface.

Ground water movement is to the north towards the Brahmaputra River. The hydraulic gradients vary considerably from place to place. In the northern and northeastern parts, the gradient is very gentle from 0.16 to 0.18 m per kilometer. In the south central part it varies from 0.21 to 23 m per km. In the foot hill areas the gradient is much steeper varying from 0.5 to 1.25 m per kilometer.

Large numbers of shallow and deep tube wells have been constructed in the district which provides us with valuable information regarding aquifer characteristics. Bored wells 20 to 40 m deep and fitted with hand pump normally yield 3 to 6 m^3/hr which is considered sufficient for domestic supplies. Low-duty irrigation tube wells of 10 to 15 cm diameters and 30 to 40 m deep generally tapping 10 to 20 m of saturated sand may yield 15 to 35 m^3/hr.

In kalang sub-basin deep tube wells, 120 to 230 m deep tapping about 60 m of saturated zone, yield 175 to 200 m^3/hr for drawdown of 5.5 9.7 m. But in Kopili sub-basin i.e. (Jammu Command area) yields of deep tube wells is within one cusec (100 m^3/hr) for a drawdown of up to 12 m.

Details of the exploratory wells are given below-

Table.2 Details of wells constructed during 2011-12 in Nagaon district, Assam

Sl. No	Location	Well Type	Drilled Depth (in metre)	Zones Tapped (in m,bgl)	Remarks (Discharge recorded by A/C development)
1	Gashibasti, Chhapanala	01 EW_1	71.45	(47 - 65)	Q_{1ew} = 404 lpm
		01 OW_1	61.50	(52-58)	$Q_{1\ ow}$ = 256 lpm
2	Rangamati Grant	01 EW_2	150.00	(136 - 145)	Q_{2ew} = 256 lpm
		01 OW_2	125.00	(116 -122)	$Q_{2\ ow}$ = 147 lpm
3	Gendhali Kachharigaon	EW_3	156.75	(36-39), (42-45), (49-52), (62-68), (100-112), (128-134)	Q_{3ew} = 594 lpm
N.B. EW: Exploratory Well; OW : Observation Well (AAP 2001-12) Target : EW=3 & OW=2)					

Central Ground Water Board has been carrying out exploratory drilling activities in various hydrogeological set ups by deploying appropriate drilling rigs in Nagaon district, Assam. The Board has constructed nineteen (30) exploratory tube wells in the district since its inception. In addition to this fifteen (17) observation wells, five (5) piezometers and three(3) slim holes have already been constructed in the district during the different groundwater exploration programmes of CGWB, NER, Guwahati. List of the exploratory wells are given below-

Table.3 List of exploratory wells constructed in Nagaon district, Assam

Sl.No	Location	Well_Type	Sl.No	Location	Well_Type
1	Kathiatali	EW +OW	14	Chal Chali	Pz
2	Nagayapam	EW+OW	15	Hojai	Pz
3	Nilbagan	EW+ OW	16	Doboka	Pz
4	Pepulpukhuri	EW+OW	17	Ramnagar	EW+OW
5	Rupahitoli	EW	18	Jugijan	EW
6	Bandermela	SH	19	Islamnagar	EW+OW
7	Itapara	EW+OW	20	Debasthan	EW
8	Majputani	EW	21	Kaki No- 1	EW+OW
9	Paschim Singimari	EW+OW	22	Lankajan	EW+OW
10	Rangagora	EW+OW	23	Sensawa	EW+OW
11	Gajiapam	SH	24	Phakoli	EW+OW
12	Konwarital	Pz	25	Balijuri	EW+OW
13	Bordowa	Pz	26	Dakhimpat	EW+OW
N.B. EW: Exploratory Well; OW : Observation Well ; Pz : Piezometer; SH : Slim hole					

6.2 Ground Water regime and depth to Water Analysis

Nagaon district has 25 numbers of Ground Water Monitoring Stations (GWMS). Monitoring of water levels is being carried out periodically four times in a year to observe any change in water level, in both space and time i.e. four times a year. First set of measurement is taken during pre-monsoon period (March 1st to 10 th), second set is being taken during peak

monsoon (August 20th to 30th), third measurement is taken during post-monsoon (November 1st to 10th) and last set is being taken during January 1st to 10th.

6.3 Ground Water Resources

Methodology adopted for ground water resource estimation of Nagaon District of Assam is as per GEC 1997 Report, i.e. Ground Water Level Fluctuation and Rainfall infiltration factor Method.

Assessment unit can be categorized into 4 categories as SAFE, SEMI-CRITICAL, CRITICAL, and OVER-EXPLOITED. In Nagaon district stage of ground water development is 39 %, which shows under the SAFE category. As long-term water level trend does not show any major change so the whole district may be considered as SAFE.

GROUND WATER RESOURCE ESTIMATION (as on March 2009)

Total Ground Water resources of the District	= 204957.45 ham
Net Ground Water Availability	= 184461.71 ham
Gross Ground Water Draft for All Uses	= 71932.20 ham
Stage of Ground Water Development	= 39%
Future provision for Domestic & Industrial Use	= 9056.17 ham
Future Provision for Irrigation Use	= 109634.12 ham

6.4 Ground Water Quality

Chemical quality of ground water in the district is being monitored every year for temporal and spatial changes. Water samples are being collected in the month of April (pre-monsoon) every year.

In general, the quality of ground water in the district is suitable for both the drinking and irrigation purposes except the high concentration of fluoride (F) in certain areas. Almost all the constituents are within the permissible limits of drinking water standards, except Iron (Fe), which exceeds the permissible limit at a few places.

6.4.1 Water Quality of Shallow Aquifer

The pH value in the ground water range from 6.96 to 7.10 while the EC value and TDS concentration are varying from 112-to 412-µ mhos/cm at 25^{o} C and 73 to 268 mg/l respectively. The concentration of Cl is from 11 to 85 mg/l and that of SO_4 is 2.0 to 9.0 mg/l showing concentrations within the permissible limits. Ca and Mg concentration ranges from 12 to 20 mg/l and 1.2 to 3.6 mg/l respectively with a total hardness of 35-to 65-mg/l concentration in the district. The chemical quality of ground water in Nagaon district showed high concentration of some chemical elements such as iron (Fe) with a concentration varying from 0.14 to 1.29 mg/l. and fluoride in some part of the distrtict with concentration varying between 0.5 to 8 ppm

6.4.2 Water Quality for Deeper Aquifers

Fluoride content in the ground water of some of the deeper aquifer in the district is observed high which is greater than permissible limit of BIS and WHO. Ground water samples collected from the exploratory wells of CGWB

7.0 Ground Water Management Strategy

7.1 Ground Water Development

In view of ground water development the district shows occurrence of enough ground water resources for the domestic and irrigation purposes. Older alluvium of fine sand and sandy clay to a maximum depth of about 20 mbgl and semi-confined to confined conditions in the deeper aquifer are potential for tapping by medium/heavy duty deep tube wells. In Younger alluvium ground water can be extracted by means of open wells and small diameter tube wells for both domestic and irrigation purposes.

The estimated gross annual dynamic groundwater resource is 204957.45 ham while a net ground water resource is 184461.71 ham. The stages of development are 39%.

Thus, there is much scope for the development of ground water by way of constructing ground water abstraction structures in a planned way for profitable ground water development.

7.2 Water Conservation and Artificial recharge

Method of making ground water abstraction structure, type, design, depth of wells, number and spacing between two wells depends on size of aquifer material, depth range &

hydraulic parameters of aquifer zones, which differ from place to place. As per earlier reports and present study, following design criteria is recommended.

7.2.1 Shallow Domestic Wells

Open wells and filter point wells are feasible in all area of the district. In unconsolidated sediments ring well may be constructed by excavating down to the saturated horizon. Cement or earthen rings from 0.80 to 1.20 placed one above another with weep holes in the bottom rings are likely to hold sufficient quantity of water. Depth may be range from 9 to 22 m depending upon the topographic elevation. Expected discharge will be 4-to 6 cubic meters per day.

In the iron contaminated areas of the district it is important to install Filter Point Wells with a total depth of 10 to 25 mbgl by providing galvanized iron or mild steel pipe and at bottom slotted pipe against aquifer zone either made from bamboo or MS pipe or P.V.C pipe are suitable. Bamboo as pipe and screen are very much within the reach of small and marginal farmers, as bamboo is locally available in the district. This type of well will be low cost and long lasting. Expected discharge will be 10 to 20 cubic meters per day.

7.2.2 Deep Tube Well for Irrigation Purpose

Nagaon is feasible for the deep tube wells for irrigation purposes by tapping the granular zones occurring beyond 35-50 mbgl. Diameter of casing pipe, when used as housing pipe, need to be decided based on the anticipated discharge. Housing pipe should be large enough to accommodate the pump. Based on the static water level, maximum draw down and seasonal fluctuation length of housing pipe should be range from 30 to 40 mbgl. Along foothill region of inselbergs and towards southeastern part bordering to Mikir Hills, it should be range from 20 to 30 mbgl. For avoiding corrosion and clogging of well screen, the entrance velocity should be less than 2 cm/sec.

8.0 Ground Water Related issues and problems

Nagaon District experiences floods of moderate to severe intensity during the monsoon. The patterns of floods cannot truly be forecasted in spite of the well – organized warning system. It is, therefore, imperative that in order to ensure speedily and efficient rescue, relief and rehabilitation, a well-prepared master plan is formulated.

9.0 Awareness and Training activity

9.1 Mass Awareness Programme and Water Management Programme by CGWB.

No such programme and activity is carried out in the district till date.

9.2 Participation in Exhibition, Mela, Fair etc.

Till date no such Exhibition, Mela, Fair etc were organized and participation by CGWB does not arise.

9.3 Presentation and Lecture delivered in Public forum/radio/T.V/Institution of Repute/ Grassroots associations / NGO / Academic institutions etc.

The district showed good participation during the School Level Painting Competitions organized by Central Ground Water Board under Information Education & Communication activities of Ministry of Water Resources, Govt of India for the last painting competitions i.e. 1st SLPC November 2010, 2nd SLPC, November 2011 and 3rd SLPC, November 2012.

10.0 Areas Notified by CGWA/SGWA

Nil.

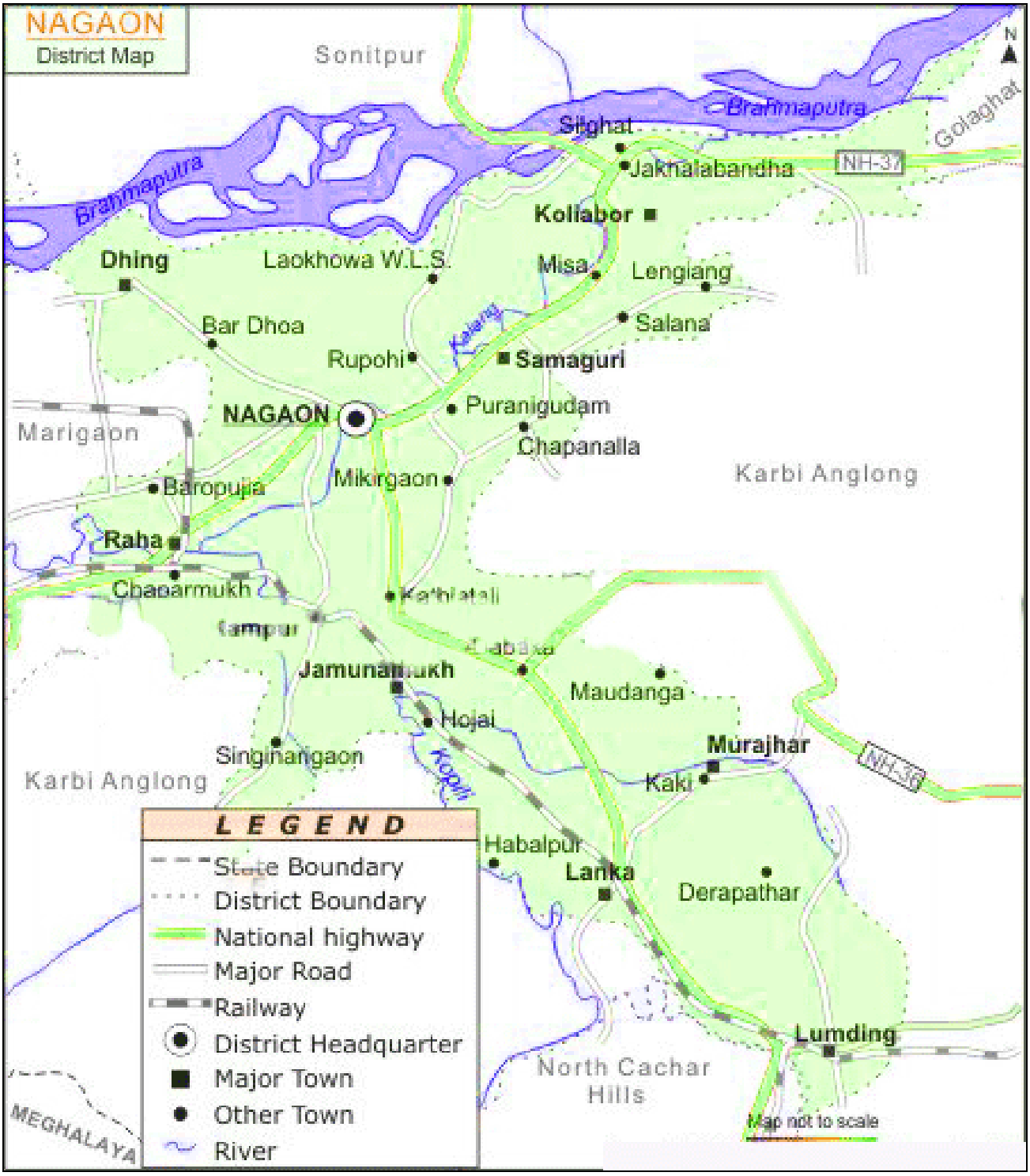
11.0 Recommendations

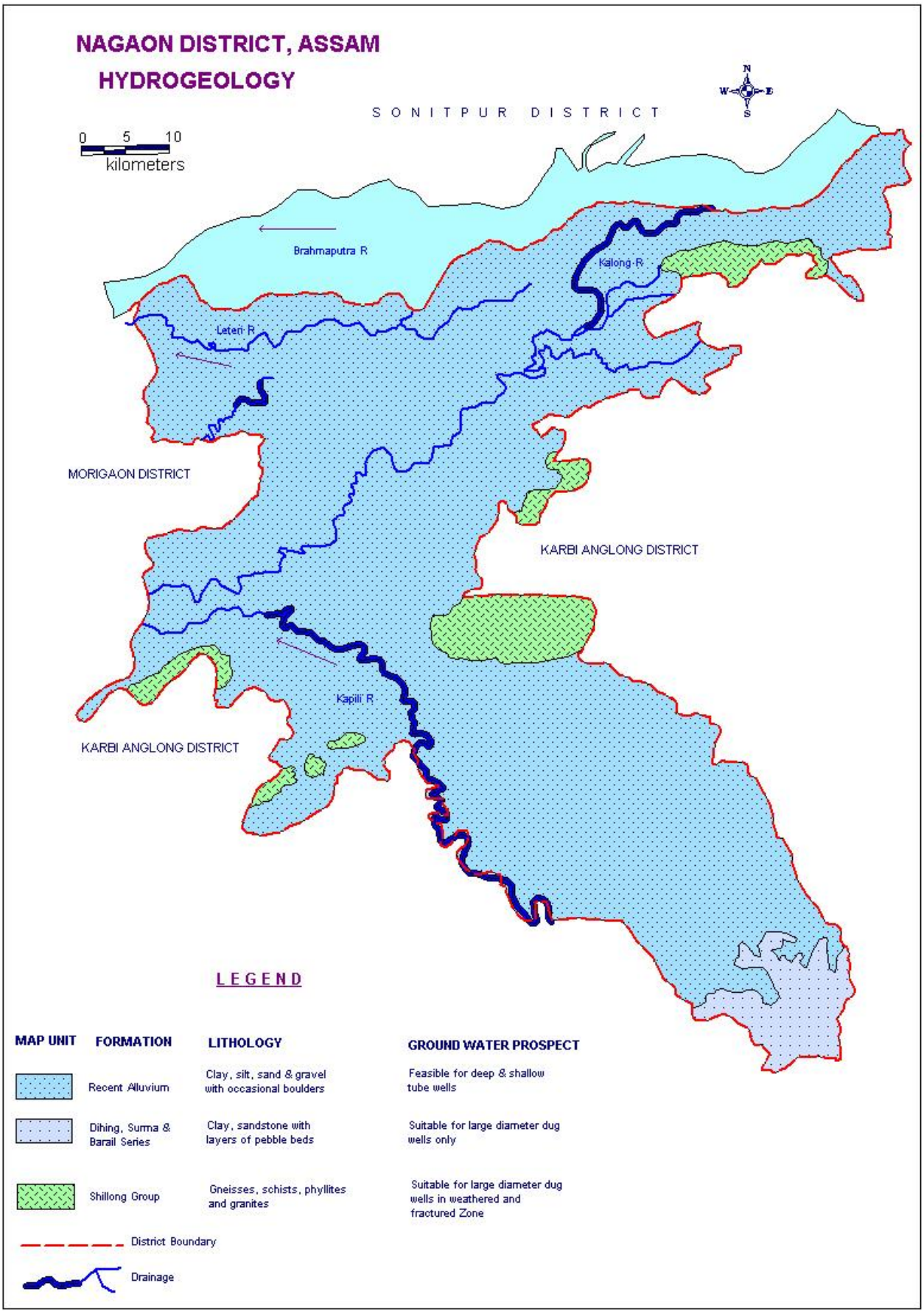
The prevailing hydro geological condition and ground water resourcesavailable in the district indicates the scope for the development of ground water by way of constructing ground water abstraction structures in a planned way for profitable development stage.

In view of ground water quality, there is no major change in the chemical quality of water for the last ten years except the recent report of high content of iron and fluoride in ground water of the district. Keeping in view, it is advisable to test the potability of ground water before using it for drinking and domestic purpose. A long term environmental planning is also essential to blunt the danger from such pollution problems. The status of chemical quality of ground water regime and its utilized formulation for future ground water development programme and drinking water management strategy must assume a greater significance.

Iron treatment plants need to be installed with PHED water supply station under the regular monitoring of the ground water of the existing water supply stations. Proper rehabilitation of sick wells in the district is to be carried out so as to mitigate water scarcity as reported from different village.

NAGAON DISTRICT, ASSAM
ADMINISTRATIVE
DIVISIONS




NAGAON DISTRICT, ASSAM
HYDROGEOLOGY
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Kalong R
Leteri R
MORIGAON DISTRICT
KARBI ANGLONG DISTRICT
Kapili R
KARBI ANGLONG DISTRICT
LEGEND
MAP UNIT
FORMATION
LITHOLOGY
GROUND WATER PROSPECT
Recent Alluvium
Clay, silt, sand & gravel with occasional boulders
Feasible for deep & shallow tube wells
Dihing, Surma & Barail Series
Clay, sandstone with layers of pebble beds
Suitable for large diameter dug wells only
Shillong Group
Gneisses, schists, phyllites and granites
Suitable for large diameter dug wells in weathered and fractured Zone
District Boundary
Drainage