DISTRICT SURVEY REPORT
(CACHAR)

(ON MINING OF MINOR MINERALS UNDER 'Y' SCHEDULE OF AMMC RULE 2013)

UNDER CACHAR FOREST DIVISIONAL JURISDICTION

PREPARED:-

Under the provision of paragraph 7(iii) (a) of Appendix-VII of the Notification dtd.15th January 2016 of MoEF & Climate Change, bringing certain amendment in the EIA Notification 2006

By:

Divisional Forest Officer, Cachar Division: Silchar

(STONE)

DECLARATION

This is to certify that the District Survey Report (DSR) for Cachar District in respect to Mining Units (for Minor Minerals under "Y" Schedule) located within the jurisdiction of Cachar Civil District for collection of Stone (Minor Mineral) has been prepared under the provision of notification of MoEF and Climate Change dated 15th January 2016, where in certain amendment made in the original EIA Notification, 2006.

It is further certified that the information furnished in the DSR are on the basis of field data as well as office records and are correct to the best of my knowledge.

Sd/-
Divisional Forest Officer,
Cachar Division: Silchar

CONTENTS

INTRODUCTION

The Cachar District with its surrounding hills, foot hills & valleys presents a relatively immature topography that exposes rock masses ranging in age from middle of the Tertiary period (=34 million years ago) to the present day gravelly-sandy-clayey deposits.

The District is blessed with several hilly rivers and tributaries that drain in an around riverrine areas carrying huge quantity of gravel, sand and mud including bajari which are readily available at the surface. Presence of Barail, Surma, Tipam, Dupitila, Dihing group of rocks as well as Quaternary gravels (2 million years ago) enrich the district with minor mineral deposits in the form of river born boulder, bajari and sand. In addition, replenishment of the basins occurs naturally with the high speed water flowing into the river during rainy season.

Taking the advantage of availability of the minor minerals on the rivers bed including over bank deposits and natural phenomenon of replenishment, several mohals and quarries of Stone materials were selected on the stretches of river beds under Coupes and Mohals rule, 1977, long back and continued till 2012. In 2013, with the commencement of AMMC Rule, 2013 some of the quarries and mohals area were selected and constituted as Mining Lease/Permit/Contract unit of stone materials along-with few new areas under the guidelines of Hon'ble Supreme Court and as per provision of AMMC Rule, 2013.

The mining sites being open river courses free from any human habitation, vegetation, infrastructural construction including those which do not fall within any restricted areas as notified in the guideline, coupled with natural replenishment of mining materials through fluvial deposition during rainy season, offers negligible impact on the environment.

The boulder, bajari and sand extracted through surface mining of river beds are utilised for the development of infrastructures in the State. A significant growth in the socio-economic scenario of the nearby areas due to such mining activities is obvious as it generates employment opportunities. Further, sustainable mining activities in the river bed reduce the chance of flood in the district.

OVERVIEW OF MINING ACTIVITY IN THE DISTRICT

Development of an area depends upon the infrastructure project like Roads & Bridges, Railways, Buildings, Industries and many more. Boulder, Bajari and Sand are the most essential requirement for construction of such infrastructure projects. As in other part of our country, there is a huge demand of these materials (Boulders, Bajari and Sand), for the infrastructural development works in the Cachar District and adjoining areas.

Although, the District has numerous small hills and hillocks, and contains more of boulders and gravel in different layers, often invaded with clayey alluvium and also have alternate gradation of sand and sand mixed clay; yet they were avoided as a source of stone materials, since beginning due to availability of the materials in river basins of the District to fulfil the demand. Besides, most of the hillocks were covered with Tea plantation and tree/vegetation since long.

Rivers remain as the major producer of construction materials, like Sand gravel, boulder, aggregate etc., to meet up the requirement of this region from the very beginning and today also. The Cachar District, rather the entire Barak Valley is benefitted with discharges of several hilly rivers and tributaries in and around and in between it.

The rivers emerge from Barail hill range (being Barail series of geological formation) bears gravel/stone alternating with clay. River Jatinga, Madhura & Chiri with its tributaries originating from hilly terrain of Barail Range, passes through the District and becomes the major producer of stone material.

On the basis of availability and suitability of extraction, some river bed stretches of the district within Cachar Forest Divisional jurisdiction were selected as a source of minor mineral like Stone, Sand gravel, boulder, aggregate etc. and accordingly quarries and mohals were constituted for collection of such

material since long under the provision of Coupes and Mohal Rule 1977 and with the introduction of AMMC Rule 2013, some of those areas were demarcated along with some new areas and termed as mining lease/ mining contract unit/ mining permit areas and were given for mining activities in the district after EIA clearance under the guideline of Hon'ble Supreme Court and as per the provision of AMMC Rule, 2013.

As a result of industrialisation and progressive development, the demand of stone materials has increased immensely. The existing sources will not be sufficient to fulfil such increasing demand of minor minerals and hence new sites are required to be explored in different areas. Thus, some probable sites having **good mining potential** under the jurisdiction of Cachar Forest Division is identified with location and listed below :-

List of probable sites enriched with stone materials

Sl. No.	Location	Land status
1.	Land under Sonatan Somobay Krishi Samiti, Sonacherra	Patta land
2.	Madhupur Part-II Madhura	-do-
3.	Nagadum, Budhorbond, Madhura	-do-
4.	Thapa area, Madhura	-do-
5.	Khorail T.E.	T.E. grant land
6.	Thaligram, Nagadum, Thaligram	Annual Patta land
7.	Aynacherra	Cherra/Rivulet under Govt. land.
8.	Other areas	Depending on the EIA application by the intending applicants.

The list of the **existing stone mining units** under the jurisdiction of Cachar Forest Division is furnished in the ongoing chapter.

LIST OF STONE MINING LEASES IN THE DISTRICT WITH LOCATION, AREA & PERIOD OF VALIDITY

Most of the stone mining areas of Cachar Forest Division of the District are located on the river courses. After intensive survey and considering the availability and suitability of operation, the mining operation were restricted only to limited stretches of the river course confining the mining operation within the river beds only.

The Cachar Forest Division has notified **5 nos**. of stone mining units and **8 Nos.** of stone mining units under Kalain Range of Karimganj Division and other EIA cleared stone mining permit areas under Cachar District under the provision of relevant Rules and Guidelines.

However, for new application/areas for mining vide Govt. Notification No.S.O.141(E) Dtd.15th January, 2016 the powers for granting EIA for B2 category projects (below 5 Hect.) has been delegated to the District EIA after the scrutiny of the EIA application by the DEAC.

The list of existing stone mining units and stone permit area with location and Geo-Coordinates, area, validity etc. along with its present status is furnished as follows:-

LIST OF STONE MINING CONTRACT UNITS AND MINING PERMITS UNDER CACHAR FOREST DIVISION OF DISTRICT OF CACHAR

A. UNDER CONTRACT UNIT

Sl. No.	Name of Mining/lease/contract unit/Permit	Location, boundary description with Geo-coordinates	Area of the mining lease/contract unit/permit	Stipulated Quantity (In m3)	Validity of mining lease/ extraction/ permit	Remarks
1	Madhura River Minor Mineral Unit- 1 (Stone)	The boundary of the Madhura river minor mineral unit No.1(Stone) starts from the northern side of the river nearby the Thapa Basti at Geo Co-ordinate N- $24^0$59'32.2" E -$92^0$59'30.1" and then runs along the downstream of the Madhura river in the southern direction upto Rakhaldhar at Geo-co-ordinate N- $24^0$57'33.2" E- $92^0$53'44.9"	18 Hect.	60,000	Yearly basis	The units were put on sale but due to Hon'ble High Court issued order on 25/02/2015 in PIL 37/2013 Review Petition 115/2010, 46/2011 Court Case 402/2011, PIL 39/2014 and 3/2012 that Mining of Stone materials from the contract units can be carried out for developmental works by Govt. permits only.
2	Madhura River Minor Mineral Unit- 2 (Stone)	The Boundary of the Madhura River Minor Mineral Unit No.2 (Stone) starts from Northern side of the river at Engine Tukra at Geo-co-ordinate N- $24^0$57'36.3" E - $92^0$54'14.0" near Sukcherra Basti opposite of Nagadum T.E. at Madhura river and then meets along the downstream upto Nutan basti Deshabandhu Nagar at the end point of Geo-co-ordinate N -$24^0$56'12.7" E- $92^0$55'14.7"	22 Hect.			
3	Tikol Minor Mineral unit- 1 (Stone)	The boundary of the Tikol Minor Mineral Unit No.1(Stone) starts from the Northern side of upstream of the Tikol Nala at Geo-co-ordinate N- $24^0$57'32.2" E - $92^0$58'12.4" and then runs along the downstream in the soth east direction till its meets Madhura river at Tikolmukh at Geo-co-ordinate N -$24^0$55'55.2" E- $92^0$57'31.1"	6 Hect.	28,000	7 years	Under process of EIA
4	Jatinga River Minor Mineral Unit- (Stone)	The boundary of the Jatinga Minor Mineral Unit (Stone) starts from the Northern side of the Jatinga river at Kachukhal at Geo-co-ordinates N- $25^0$01'55.9" E - $92^0$46'28.2" and then runs along the downstream of the said river in the southern direction upto confluence of Maruacherra at Geo-co-ordinate N -$24^0$58'08.3" E- $92^0$45'38.6" It covers a workable length of 11 Km and 15 m width.	16.5 Hect.	1,40,000	7 years	In operation on EIA clearance vide No.SEIAA.112/2013/26-A Dtd.03-01-2014.
5	Chiri River Minor Mineral Unit - 1 (Stone)	The boundary of the Chiri River Minor Mineral Unit 1 (Stone) starts from confluence of Digun Nala with Chiri River near Digun Tea Garden at Geo Co-ordinate N-$24^0$59'32.6", E- $93^0$04'01.4" and runs along the downstream of the river towards southern direction leaving aside Chiripar Khasia Punjee, Shantipur, Kanakpur Pt.III on the eastern bank while Ainacherra Tea Garden, Beramnagar on the Western bank and ends near Sibasthan Temple at Geo Co-ordinate N-$24^0$55'08.2", E- $93^0$03'36.5" covering a distance of approx. 12 km with an average extractable width of 15mtrs.	13.5 Hect.	84000	7 years	In operation on EIA clearance vide No. SEIAA.252/2014/45-A Dtd.28-07-2014

B. UNDER MINING PERMIT

Sl. No.	Name of Mining/lease/contract unit/Permit	Location, boundary description with Geo-coordinates	Area of the mining lease/contract unit/permit	Stipulated Quantity of Stone materials (In m3)	Validity of mining lease/ extraction/ permit	Remarks
1.	M/S. Nidhi Creative Infrastructure Pvt. Ltd.	The location of the site falls in the river bed of Madhura river under Geo-co-ordinates No. N-25^{0}00.40.4" E-92^{0}55'15.3"N -25^0 00.01.2" E-92^{0}54'41.9"	4.5 Hect.	40,023m3	1 year	Under operation on EIA clearance vide No. SEIAA.No.542/2015/EC /15 dtd.30-09-2015
2.	M/S. ABCI Infrastructure Pvt. Ltd.	The location of the site falls in the Madhura Stone Quarry of Madhura River in Madhura USF area under Geo-co-ordinates No. N-25"00'47.2" E-92^{0}55.26.6" N -25^0 00.01.2" E-92^{0}54'41.9"	4.5 Hect.	40,000.0m3	2 years	Under operation on EIA clearance vide No. SEIAA.210/2014/18-A Dtd.12-05-2014.
3.	-do-	The location of the site falls in the Madhura Stone Quarry of Madhura River in Madhura USF area under Geo-co-ordinates No. N-25"00'47.2" E-92^{0}55.26.6" N -25^0 00.01.2" E-92^{0}54'41.9"	3.75 Hect.	32,800.0m3	2 years	Under operation on EIA clearance vide No. SEIAA. 231/2014/56-A Dtd.16-07-2014.
4.	M/S. Himangshu Paul & Associates Pvt. Ltd.	The location of the site falls in the Madhura River bed under Udharbond Forest Range area under Geo-co-ordinates No. N-24"59'55.40" E-92^{0}54.51.40" N -24^0 59'39.33" E-92^{0}54'26.88"	2.40 Hect.	19,632.0m3	2 years	Under operation on EIA clearance vide No.595/2015/EC/17/327 dtd.10th December, 2015
5.	Sri Rajib Das Patta land holder	The location of the site at Nagadum under Udharbond revenue circle bearing Geo-co-ordinates No. N-24"57'32.5" E-92^{0}53.45.5" N -24^0 57'28.5" E-92^{0}53'43.1" N-24"57'24.1" E-92^{0}53.48.4" N -24^0 57'28.9" E-92^{0}53'50.1"	5.0 Hect.	35000.0m3	2 years	Under operation on EIA clearance vide No.587/2015/EC/30/311 dtd.12-11-2015

LIST OF STONE MINING UNITS UNDER CACHAR CIVIL DISTRICT OF KARIMGANJ FOREST DIVISION

Sl. No.	Name of Mining Lease/ Contract Unit/ Permit	Location, boundary description with Geo Coordinates	Area of the mining lease/ contract unit/ permit	Stipulated Quantity (in m^3)	Validity of mining lease/ contract unit/ permit	Remarks
1	Gumrah Stone Minor Mineral Unit No. 1	The boundary of the contract area starts from Makidhar at GPS Co ordinates N 25º 01' 44.3' E 92º 31' 10.1' in Gumrah River and runs towards downstream in southern direction upto the Julon Bridge over Gumrah River at GPS Co-ordinates N 25º 00' 69.1' E 92º 30' 56.7' leaving 250 Mtr. upstream and 500 Mtr. downstream and runs along the downstream up to ending point at GPS Coordinates N 25º 00' 08.6' E 92º 30' 72.3' in Gumrah River.	20 Ha.	35000	7(seven) years	Under operation
2	Arang Stone Minor Mineral Unit No. 1	The boundary of the contract area starts from Chailtadhar at GPS Co-ordinates N 24º 59'56.0' E 92º 39' 89.9' and runs towards downstream in southern direction at GPS Co-ordinates N 24º 58' 84.4' E 92º 39' 52.0' being the ending point, 500 Mtr. upstream from Kalimandir at Noonchuri Bazar area of the Arang River.	12.10 Ha.	21000	7(seven) years	Under operation
3	Arang Stone Minor Mineral Unit No. 2	The boundary of the contract area starts from extraction path at GPS Co-ordinates N 24º 58' 77.7' E 92º 39' 73.5' leaving a span of 1000 Mtr. from the end point of Arang Minor Mineral unit No 1 (Stone) at Noonchuri Bazar and runs towards downstream in southern direction upto 250 Mtr. upstream of Jhulonpul over the Arang River being the ending point at GPS Co-ordinates N 24º 58' 08.6 ' E 92º 39' 91.2'.	10.13 Ha.	17500	7(seven) years	Under operation
4	Gumrah Stone Minor Mineral Unit No. 2	The boundary of the contract area starts nearby Digorkhal Check post at GPS Co-ordinates N 24º 59' 96.1' E 92º 31' 06.1' & runs along the downstream in southern & south-western direction upto Bhitor Gumrah village ending at GPS Co-ordinates N 24º 59' 08.0' E 92º 31' 63.0'.	13.4 Ha.	28000	7(seven) years	Under Appeal against LoI issued

5	Boleswar Stone Minor Mineral Unit No. 1	The boundary of the contract area starts from the tri-points of Kalanadi, Balicherra & Boleswar at Silkidhar at GPS Co ordinate N 25º 04' 13.8' E 92º 28' 54.5' and runs towards downstream in west & south-west direction up to Malidhar Bridge at GPS Co ordinate N 25º 02' 09.4' E 92º 27' 66.1' leaving a span 250 Mtr. upstream and 500 Mtr. downstream at GPS Co-ordinate N 25º 01' 51.3' E 92º 27' 47.3' and then runs downstream at GPS Co ordinate end N 25º 01' 18.0' E 92º 27' 47.3' as an ending point of the mining area leaving a span of 50 from the meeting point of extraction path with Boleswar River at GPS Co ordinate N 25º 01' 18.7' E 92º 27' 79.7'.	39 Ha.	70000	7(seven) years	Re-Sale initiated but under High Court Case
6	Boleswar Stone Minor Mineral Unit No. 2	The extraction path starts from NH 44 in Boleswar area at GPS Co-ordinate N 25º 01' 28.5' E 92º 27' 52.3' and passes through Jalalpuur Tea Garden and meet with Boleswar River at GPS Co ordinate N 25º01'18.7' E 92º 27' 79.7'. From that point at distance of 950m along the downstream of Boleshwar River at GPS Co-ordinate N 25º 00' 88.2' E 92º 27' 99.2' is the starting point of the boundary of the contract area and it runs along the downstream of Boleswar River and passes through Mukamdhar at GPS Co-ordinates N 25º 00' 44.2' E 92º 27' 78.6' and runs towards downstream in the south-western direction up to the ending point 250 Mtr. upstream of the PWD Bridge over Boleswar River at Jalalpur at GPS Co-ordinates N 24º 59' 48.3' E 92º 27' 69.1'.	30 Ha.	35000	7(seven) years	LoI cancelled and now under Re-Sale but High Court Case preferred
7.	Kalain Stone Minor Mineral Unit No. 1	The boundary of the contract area starts from 15 No. Sindura Tea Division at GPS Co-ordinates N 25º 00' 70.2' E 92º 37' 45.6' and run along the downstream in south-western direction upto Ailarthal at GPS Co-ordinates N 24º 59' 92.0' E 92º 36' 23.9' in the Kalain River.	39 Ha.	56000	7(seven) years	Under High Court Appeal
8.	Kalain Stone Minor Mineral Unit No. 2	The boundary of the contract area starts from the point at Ailarthol area at GPS Co-ordinates N 24º 59' 85.2' E 92º 35' 88.0' and runs towards downstream in west, south-western & north-western direction upto Gorurdwal at GPS Co ordinates N 24º 59' 49.4' E 92º 34' 71.0' of the Kalain River.	30 Ha.	70000	7(seven) years	Under High Court Appeal

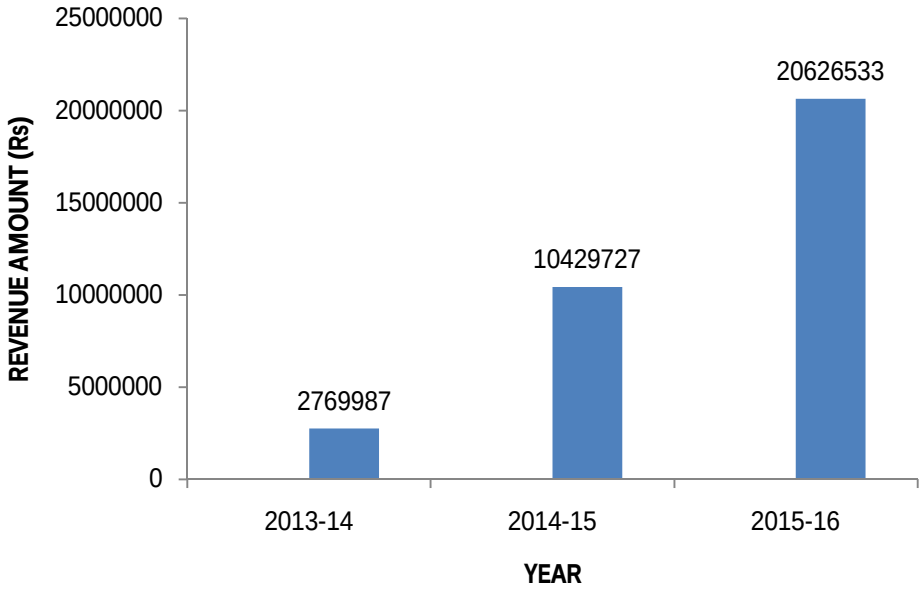
DETAIL OF ROYALTY/REVENUE OF STONE MATERIALS RECEIVED IN LAST 3 (THREE) YEARS

With the progressing infrastructure development works in the region, the demand for the essential minor minerals like stone, boulder, sand gravel, aggregate etc. increased. As a result, the Govt. is also fetching a handsome amount of Revenue out of it.

The Revenue realised from stone under Cachar Forest division during last 3 (three) years are:-

Year	Revenue Amount
2013-2014	Rs. 27,69,987/-
2014-2015	Rs. 1,04,29,727/-
2015-2016	Rs. 2,06,26,533/-

Graphical representation



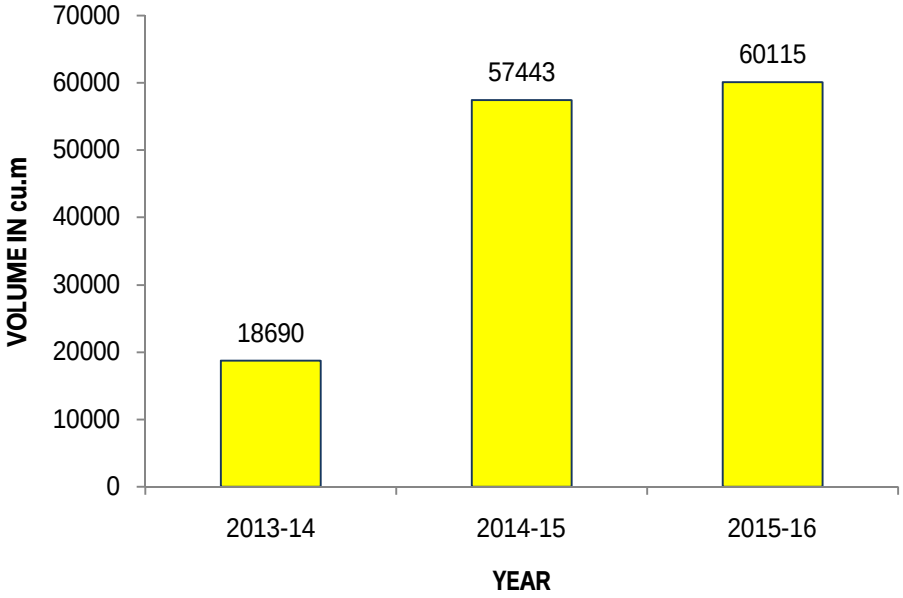
DETAILS OF PRODUCTION OF STONE MATERIALS IN THE LAST 3 (THREE) YEARS

River remains as the main source of minor minerals in the District. The Cachar Forest Divisional jurisdiction of the District is facilitated with discharges of several hilly rivers and their tributaries producing plenty of minor minerals like stone, boulders, sand gravel, aggregates etc.

The production of **stone materials** during last 3 (three) years in the Cachar Forest Division is as given below–

Year	Stone materials
2013-2014	18,690 cu.m
2014-2015	57,443 cu.m
2015-2016	60,115 cu.m

Graphical representation



PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT

The mining areas of Boulder/Sand/Bajari are presently confined to river courses. Since all the rivers are originating from hills and passing through hilly terrain running downstream to approach the plains, the accumulation of Boulder, Sand and Bajari etc. on the river beds occur by natural phenomenon. During rainy season, high runoff along the rivers and its tributaries causes transportation and deposition of huge quantity of sediments all along the river course.

Owing to the geological set up of the Cachar District including areas under the jurisdiction of Cachar Forest Division, huge accumulation of river sediments (boulder, sand, bajari and clay) offers good opportunity of environmental friendly mining activities of minor minerals in the District.

GENERAL PROFILE OF THE DISTRICT: CACHAR

Located in the Southern most part of Assam, the Cachar District covers an area of approximately 3775 Sq. Km bounded between the latitude 24^0 22' to $25^0$07' North and longitude 92^0 38' to 93^0 16' East. The Cachar district is surrounded by hill ranges on three sides, i.e., North, South, and East while the Western boundary falls in plains as shown below:-

The Geographical boundaries of Cachar District are:- -

North - Barail Hill Range & District of Dima Hasao

South - Lusai Hills & State of Mizoram

East - Manipur Hills & State of Manipur & Part of Lusai Hills

West - Districts of Karimganj & Hailakandi

The Barak is the most prominent and largest river passing through the district. It originates from the Angami Hills of Barail Range stretching South of Kohima in Nagaland. It surfaces into the plains of Cachar district, a few kilometres near South of Jiribam on the Cachar-Manipur border and receives discharges from several hilly rivers and tributaries within the District territories and ultimately split into the Kusiyara and the Surma rivers near the Assam-Bangladesh Border in Karimganj District.

The main rivers discharging into river Barak in the civil jurisdiction of Cachar District are Jiri, Chiri, Sonai, Madhura, Jatinga, Katakhal apart from innumerable rivulets/nalas/cherras etc. The overall physiography of the district may be characterized by a series of **N-S** hills with intervening narrow as well as wide and flat valleys.

The combination of all these surrounding hills and foot hills and valleys receiving medium to heavy rainfall are a host to the thick forest cover, tea gardens, fertile cultivable land, river networks, diverse flora and fauna life and makes the region very picturesque and endows it with a good deal of natural beauty.

The district of Cachar exhibits a wide diversity of ethnic groups and their admixture. There have been influxes of people from both the valley and across the hills. They have brought in a large measure of ethnic monoglot groups, forming a wide mixture of North Eastern population. Of late, during the last 3-4 decades there has also been influx of people from neighbouring country like Bangladesh.

Although the District has huge potential with its plenty of natural resources, but no major industries were set up in the District/region perhaps due to its bottleneck in communication system. The Paper Mill, HPC in Panchgram is at the border of Cachar District and some Tea gardens and factories are the prominent industries which exist here.

Geology

The Cachar area forms a part of north – south trending compressed thrust fold belt of Assam - Arakan basin having an area of 7000 sq.km. The structural style of sedimentary cover in this area is depicted by a series of NNE – SSW trending, sub- parallel, arcuate, elongated narrow, tightly folded, doubly plunging and highly faulted anticlines. These anticlines are en-echelon to each other. The anticlines are asymmetrical & are separated by the synclines. Characteristically, the folding intensity shows a gradual increase from west to east. The area has a huge sedimentary cover of approximately 10-11 km. The sediment thickness increases from west to east. This consists of alternating sandstone, siltstone, shale and claystone beds ranging in age from Eocene to Recent.

Regional Stratigraphy

The Tertiary deposits constitute bulk of the sediments of Assam-Arakan Basin. Ther is a contrast in the nature of sedimentary facies among the Palaeogene sequences and hence devided into Shelf facies (Shallow marine) and Geosynclinal facies (Deep marine).

The shelf facies is exposed in Garo, Khasi, Jaintia and parts of North Cachar and Mikir Hills and is also known to occur in subsurface of West Bengal, Upper Assam & Bangladesh.

The Geosynclinal facies is developed in Naga Hills, part of North Cachar Hills, Manipur and expected to occur in subsurface of Surma Valley (south of Cachar area), Bangladesh, Tripura, Mizo Hills, Chittaganj Hills and Arakan coast of Burma.

The shelf facies is well established due to faunal control and availability of sufficient data in contrast to geosynclinal facies. The Cachar region exposes mainly sediments of Neogene age. A generalized lithostratigraphic sequence with unit thickness based on surface and sub-surface data (excluding Shelf region) after ONGC is given in Table below:

Chronostratigraphy		**Lithostratigraphy**		**Lithology**	**Thickness (Meters)**	**Depositional Environment**
Period	***Epoch***	***Group***	***Formation***			
Quaternary	Recent - Pleistocene		Dihing	Pebble beds, conglomerates and Sandstones with thin bands of clay	400	Fluvial
	U N C O N F O R M I T Y					
Neogene	Pliocene	Dupitila		Coarse, Pebbly sandstone & mottled clay	1000	Fluvial
	U N C O N F O R M I T Y					
	Mio-Pliocene	Tipam	Girujan Clay	Variegated soft & sticky clays, often silty	1500 - 1700	Fluvial
			Tipam Sandstone	Sandstone with sandy clays & claystone		
			Bokabil	Claystone & silt with thin beds of fine grained sandstone	700 - 1500	Brackish / Marginal Marine
			Upper Bhuban	Sandstone & sandy claystone laminations	650 - 1200	Brackish / Marginal Marine
			Middle Bhuban	Shale and occasional fine grained sandstone	650 - 1200	Outer Shelf / Open Marine

	Miocene	Surma	Lower Bhuban	Alternations of sandstone & shale	700- 1000	Brackish / Marginal marine
	U N C O N F O R M I T Y					
Palaeogene	Oligocene – Upper Eocene	Barail	Renji	Dominantly sandstone with thin shale beds	700-1000	Brackish / Marginal marine
			Jenum	Shale & occasional fine grained sandstone	900-1500	Brackish / Marginal marine
			Laisong	Alternation of thin bedded sandstone & shale	1500-2400	Brackish / Marginal marine
	Eocene	Disang		Dark grey shale with thin beds of sandstone	1750	Reducing Marine
	B A S E N O T E X P O S E D					

Topography

Topographical configuration of Cachar District can be broadly divided into two parts. The Central Narrow Valley of plains comprising mainly the alluvial deposition of river Barak and its tributaries, and bounded on 3 sides by the outer undulating regions of foot hills of different hill Ranges.

The District topography is highly undulating with numerous hills/hillocks. Most of the hillocks are under Tea cultivation and a good number of hillocks are covered by tress and many are un-surveyed revenue land. The overall morphology of the district consists of a series of **N-S** hills with intervening narrow as well as wide and flat valley.

Climate

The District has a subtropical climate with high humidity and medium to heavy rain fall spread over a long period and high temperature without much variation during summer and has a distinct winter period when the temperature falls. Climatically the seasons are well defined with a comparatively cooler winter from November to February; hot and humid summer from March to May and a rainy season from May to October. Sometimes pre-monsoon rain starts immediately after winter and the rainfall is distributed throughout the summer. The district generally experiences flood during the rainy

season. Humidity is high throughout the year and never falls below an average of 40% even in the driest month of December.

Annual Average rainfall is 3015 mm.

Annual Average humidity is 79%.

Average maximum daily temperature is 37.3^0 centigrade.

Average minimum daily temperature is 8.6^0 centigrade.

LAND UTILIZATION PATTERN UNDER CACHAR DISTRICT

The Cachar District with its total geographical area of 3775 Sq Km possess a combination of undulating configuration by the surrounding hills and foot hills with intervening narrow as well as wide and flat valley of fertile land comprising 1/3rd the of total land as Agriculture land. The undulating configuration being suitable for Tea plantation occupies approximately 1/7th of the total land of the district. Almost all the hills are covered with dense vegetation and 1/4th part of the total land is under forest cover. Land utilised under mining of stone materials is very negligible and equivalent to 0.001% and is very negligible to be distinctly represented graphically.

However, the baseline information on the existing land use pattern of the district is as follows:

Particulars	Description
1) Agriculture land	1250.00 Sq. K.M.
2) Forest land	935.00 Sq. K.M.
3) Tea grant land	543.69 Sq. K.M.
4) Township, Govt. Institute, homestead land, revenue land, un-surveyed land, beels and hawars, roads and paths, railway tracks etc.	1044.46 Sq. K.M.
5) Land under mining of stone materials (Minor Minerals)	0.96 Sq. K.M.

Pie chart representation