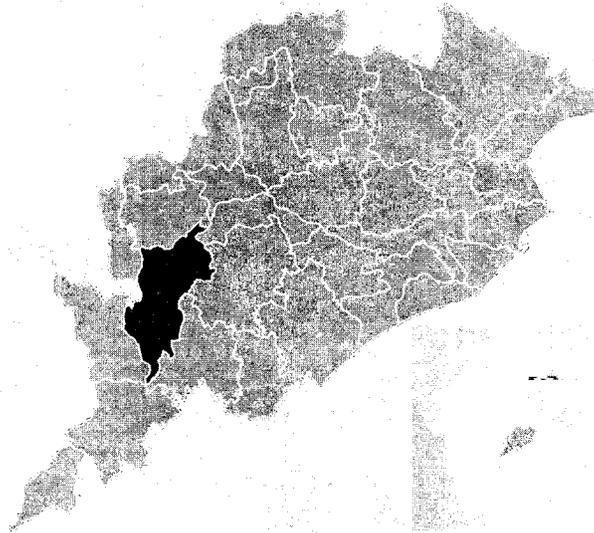


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**DISTRICT SURVEY REPORT (DSR) OF
KALAHANDI DISTRICT, ODISHA
ON SAND MINING/RIVER BED MINING**

As per Notification No. S.O. 141(E), 15th January, 2016 & S.O. 3611(E),
25th July, 2018, New Delhi, MINISTRY OF ENVIRONMENT, FOREST &
CLIMATE CHANGE (MoEF & CC)



**COLLECTORATE OF KALAHANDI, ODISHA
JUNE-2021**

Collector, Kalahandi

CONTENTS

Point No.	DESCRIPTION	Page No.
00	Preface	01
01	Introduction	01-02
02	Overview of Mining activity in the District.	02
03	List of Mining leases in the district with location, area & period of validity	03
04	Details of Royalty or Revenue received in last three years.	04
05	Detail of Production of Sand.	05
06	Process of Deposition of Sediments in the rivers of the District.	06
07	General Profile of the District.	06-08
08	Land Utilization Pattern in the district: Forest, Agriculture, Horticulture, Mining etc.	08-11
09	Physiography of the District.	11
10	Rainfall: month-wise.	12
11	Geology and Mineral Wealth.	12-25

In addition to the above points, the report contains the following:

(a) District wise details of river or stream and other sand source; **Annexure-I** (b) District wise availability of sand or gravel or aggregate resources; **Annexure-II** (c) District wise details of existing mining leases of sand and aggregates, **Annexure-III**

LIST OF PLATES

SI No.	DESCRIPTION	Plate No.
01	Index Map of the District	PLATE-I
02	Map showing Tehsils of the District	PLATE-II
03	Geological/Mineral Map of District	PLATE-III
05	Hydro-Geological Map of District	Plate-IV
06	Mining leases marked on the Map of the District	Plate-V

Dehru

A survey has been carried out by the **District Level Environment Impact Assessment Authority (DEIAA), Kalahandi** with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Mining Department etc. in the district as per the *MoEF, New Delhi, notification S.O. 141(E) dated 15th January 2016* to prepare the District survey Report (DSR) of Kalahandi District (Forest and) in the year 2019.

Forwarded by:

- i. Sub-Collector cum SDM, Bhawanipatna.**
- ii. Sub-Collector cum SDM, Dharmagarh.**
- iii. CDMO, Kalahandi.**
- iv. Deputy Director Geology, ZS Balangir**
- v. Deputy Director Agriculture, Kalahandi.**
- vi. Deputy Director Horticulture, Kalahandi.**
- vii. SDO Irrigation Division, Kalahandi, Bhawanipatna**
- viii. ACF North & South Division, Kalahandi.**
- ix. Asst. Engineer (R & B), Kalahandi, Bhawanipatna.**
- x. RO State Pollution Control Board, Rayagada.**
- xi. Mining Officer, Kalahandi.**
- xii. Tahasildar of concern Tahasil.**



0.PREFACE

The main objective of the preparation of District Survey Report (DSR) as per the notification issued by the *Ministry of Environment and Forest and Climate Change Notification No.S.O.361 (E) New Delhi dated 25/07/2018* and the Sustainable Sand Mining Guidelines is for identification of areas of aggradation or deposition & areas of erosion to ensure the rate of replenishment after mining in an area etc. District Survey Report of Sand mining has been prepared in accordance with *Clause-I of Appendix X* of the said notification.

01. INTRODUCTION.

The first gazetteer (15 August 1980) of Kalahandi District says that the district comprised of the ex-State Kalahandi minus Kashipur Police Station (the Zamizari of Khariar as Nuapada Sub-division, now Nuapada District). With the merger of princely States with province of Odisha 1948, the ex-State of Kalahandi together with ex-State Patna and Sonepur formed the District of Kalahandi with headquarters at Balangir. On 1st November 1949 Patna and Sonepur areas were separated to form District Balangir; Patna (later Bolangir) Sonepur (later Subarnapur district). And ex-State of Kalahandi, together with Nuapada sub-division which formed a part of Sambalpur district since 1st April 1936, was reconstituted a separate District Kalahandi with Headquarters at Bhawanipatna. As the area comprising Kashipur Police station posed administrative difficulties due to lack of direct communications with the district headquarters, it was separated from Kalahandi on 1st August 1962. Further Nuapada Subdivision was separated on 27 March 1993 from Kalahandi to form new District as Nuapada.

On the basis of Administration Kalahandi District has been divided into 2 Sub-Divisions named as Bhawanipatna & Dharmagarh. As Per the Blocks & Tahasils are concerned the District is divided into 13 Blocks & Tahasils namely Kalahandi, Kesinga, Karlamunda, M.Rampur, Narla, Th.Rampur, Lanjigarh belongs to Bhawanipatna Sub-Division and Jaipatna, Junagarh, Koksara, Golamunda, Kalampur and Dharmagarh

District Survey Report (Sand) Kalahandi, Odisha

belongs to Dharmagarh Sub-Division. There are 310 Gram Panchayat in the District.

Kalahandi situated at a distance about 400Km from the state capital & international airport Bhubaneswar and at a distance about 500 Km from the shore line of Bay of Bengal.

Highways like NH-26, SH-16, SH-06, SH-06A, SH44 etc. passes within the district.

02. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT.

A great variety of major mineral potential like Bauxite, Graphite, Galena, Ruby & Iolite and Specified Minor Minerals like Quartz, Feldspar & Decorative Stone (Granite) are available in the district.

Bauxite occurs in Karlapat-Pollingpadar, Kutrumali-Tangridongar, Lanjigarh -Niyamgiri, Keluamali, Krishanmali.

Graphite occurs in Sargipada, Gaidar, Singjharan, Lamer&Badibahal.

Galena occurs in Sisakhal.

Precious Stone (Ruby) occurs in Jhillingdhar, Hinjlibahal, Kerumurda, Sirja, Tandla, Banjipadar, Sargiguda.

Semi-Precious Stone (Iolite) occurs in Dedar, Labanyasar, Bondoguda, Kutingpadar, Ghatpada, Rengali, Dharmagarh, Golamunda and Th.RampurTahasil.

Quartz and Quartzite occurs in Kalahandi, Kesinga, Jaipatna, Junagarh, Dharmagarh, M.Rampur, Narla, Koksara, Golamunda, KalampurTahasil.

Feldspar occurs in Bhikajharan of Kalahandi Tahasil.

Decorative Stone (Granite) occurs in Lanjigarh & Kalahandi Tahasil.

(a) Major Mineral:-

In Kalahandi district, presently there are eight nos. of mining leases of semiprecious stone out of which only two nos. of mining leases are working i.e. Labanyasar Iolite Mines over an area of 2.505 hectares of Sri Debraj Meher & Bondoguda Iolite Mines over an area of 2.023 hectares of M/s Manikeswari Gems Pvt. Ltd.

(b)Specified Minor Mineral:-

(i) There is one non-working mining lease of decorative stone in village Nuapada, Tahasil-Kalahandi in favour of Sri Harendra Kumar Patnaik. The lease area is 8.575 hectares.

Besides this there are three nos. of prospecting licenses; one is located at Karlasoda village under Kalahandi Tahasil over an area of 13.464 hectares granted in favour of Smt. P. Ramadevi. Another two are located at village Chandanpur under Lanjigarh Tahasil over an area of 3.602 hectares and 9.696 hectares granted in favour of Jay Minerals Prop. Ajay Agrawal.

(ii) There are three nos. of non-working Quartz mines in the district. Out of the three two mining leases are granted in favour of Sri M.N. Patjoshi at village Patharla under Kesinga Tahasil and Santemri under Jaipatna Tahasil over an area of 3.864 & 3.148 hectares respectively. Another mining lease over an area of 18.818 hectares has been granted in favour of Sri Samarendra Pratap Singh Deo at village Sidingpadar under M-Rampur Tahasil.

(iii) There is only one non-working Quartz and Feldspar mining lease over an area of 5.147 hectares is granted in favour of Sri M.N. Patjoshi.

(b)Other than specified minor mineral:-

Other than specified minor minerals such as riverbed sand and ordinary stone (road metal) are also available in the district.

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

*All required Lease details are given in the prescribed format,
Please refer (Table No. 11.C.01).*

04.DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS.(for Sand)

SI No.	Name of Tahasil	Name of Source	Revenue collected in last three years in INR		
			2016-2017	2017-2018	2018-2019
01	Lanjigarh	-	-	-	-
02	M. Rampur	TurchiNadighat	-	95,804	96,696
03	Narla	Bhanpur sand Bed	-	-	1,59,000
04	Karlamunda	-	-	-	-
05	Koksara	Mudra River Sand Bed	-	62,806	66,348
06	Kalahandi	Gobra Sand Bed	1,40,000	1,40,000	1,40,000
		Turkel Sand Bed	-	92,426	3,46,680
		Seinpur Sand Bed	3,80,457	4,91,818	3,55,674
		Ajrai Sand Bed	-	-	1,40,000
07	Dharmagarh	Taranjia Sand Bed	51,660	52,920	55,650
		B.Chhendia Sand Bed	54,750	58,950	63,390
		Chhilipa Sand Bed	41,370	47,610	52,470
		Kankeri Sand Bed	44,670	47,580	51,060
08	Kalampur	-	-	-	
09	Jaipatna	-	-	-	
10	Th.Rampur	-	-	-	
11	Junagarh	-	-	-	
12	Kesinga	Kesinga Sand Bed	4,18,000	2,42,000	8,50,000
		Chhenagaon Sand Bed	-	46,000	2,45,000
		Belkhandi Sand Bed	1,74,000	99,000	1,50,000
		Kantesir Sand Bed	-	31,000	89,000
		Digsira Sand Bed	1,55,000	-	-
13	Golamunda	Udeshrung Sand Bed	-	1,08,955	1,14,725
		ChilgaonSand Bed	-	1,98,685	-
		Pandkul Sand Bed	-	2,92,394	2,92,508
		Kumbhari Sand Bed	-	2,36,806	2,68,606
		SinapaliSand Bed	-	1,34,955	1,40,635
TOTAL			14,59,907	24,79,709	36,77,442

05. DETAIL OF PRODUCTION OF SAND.

Sl. No.	Name of Tahasil	Name of Source	Production Of Minor Mineral In Last Three Years(Cum)		
			FY 2016-2017	FY 2017-2018	FY 2018-2019
01	Lanjigarh	-	-	-	-
02	M. Rampur	TurchiNadighat	-	1050	1075
03	Narla	Bhanpur Sand Bed	-	-	3000
04	Karlamunda	-	-	-	-
05	Koksara	Mudra River Sand Bed		1206	1307.2
06	Kalahandi	Gobra Sand Bed	2000	2000	2000
		Turkel Sand Bed	-	4000	4000
		Seinpur Sand Bed	6400	6800	7200
		Ajrai Sand Bed	-	-	5000
07	Dharmagarh	Taranjia Sand Bed	1722	1764	1855
		B.Chhendia Sand Bed	1825	1965	2113
		Chhilipa Sand Bed	1379	1587	1749
		Kankeri Sand Bed	1489	1586	1702
08	Kalampur	-	-	-	
09	Jaipatna	-	-	-	
10	Th.Rampur	-	-	-	
11	Junagarh	-	-	-	
12	Kesinga	Kesinga Sand Bed	4600	5290	6100
		Chhenagaon Sand Bed	-	1707	1802
		Belkhandi Sand Bed	4390	5098	6787
		Kantesir Sand Bed	-	6160	6440
		Digsira Sand Bed	4020	-	-
13	Golamunda	Udeshrung Sand Bed	-	2212	2403
		ChilgaonSand Bed	-	2402	2613
		Pandkul Sand Bed	-	2412	2611
		Kubhari Sand Bed	-	3408	3604
		SinapaliSand Bed	-	1650	1750
Total			27,825	52,297	65,111.2

06. PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT.

Fluvial Process of deposition is a geological process on the face of earth, normally controlled by various factors like gradient of the river, velocity of the flowing water, amount of discharge, change in the river channel pattern & chemical precipitation etc. Sediment in rivers gets deposited as the river slows down. Larger, heavier particles like pebbles and sand are deposited first, whilst the lighter silt and clay only settle if the water is almost still. The flow of water is strongest on the outside of river bends, eroding the bank, but is slowest on the inside of the bends, allowing deposition of sand and gravel. When a river "bursts its banks" after heavy rain, flood water spreads out across the floodplain and, because this water hardly moves, finer silt and clay are deposited – often making good farmland.

Kalahandi district is a physically hilly terrain having majorly dendritic drainage pattern, there is only one main river named *Tel River* flows in the district in the northern part of district, in addition to that several immature rivers namely *HatiNadi*, *UdantiNadi*, *SagadaNadi*, *KamalNadi*, *Ret Nadi*, *UtteiNadi* etc. originate & flows in the district also few of them act as the tributary to Tel River. The distance of the sources from the river origin is geologically very short, hence this can be concluded that the rate of deposition of sand in Tel River is moderate, while in rest rivers within the district the rate of deposit is slow.

***Additional river source details are given in the following tables
Please refer (Table No. 11.A.01) & (Table No. 11.B.01)***

07. GENERAL PROFILE OF THE DISTRICT.

Present Kalahandi District covering a geographical area of 7920 sq km lies in between 19.175489⁰ to 20.454517⁰ North Latitude and 82.617767⁰ to 83.794874⁰ East Longitude having a population of total population of 1,576,869 as per the Census 2011. Out of which 787,101 are males while 789,768 are females. In 2011 there were total 401,251 families

District Survey Report (Sand) Kalahandi, Odisha

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residing in Kalahandi district. The District occupies the South Western portion of Odisha, bordered to the North by the Balangir District and Nuapada District, to the South by the Nabarangpur District, Koraput District and Rayagada District, and to the East by the Rayagada, Kandhamal District and Boudh District.

The climate of the Kalahandi District is of extreme type. It is dry except during monsoon. The maximum temperature of the District is 45+ degree Celsius, whereas the minimum temperature recorded is 4°Celsius. The District experiences the average annual rainfall as 1378.20 mm. The monsoon starts late in June and generally lasts up to September.

Kalahandi District is largely an agriculture based Economy. The District is rich with agriculture. Dharamgarh sub division was historical known for rice production in Odisha. Since 2000s the Indravati Water Project, second biggest in the state has changed the landscape of southern Kalahandi, leading to two crops in a year. Because of this, blocks like Kalampur, Junagarh, Jaipatna, Dharmagarh are the leading producer of paddy in district. Cotton is widely cultivated in areas of Kesinga, Bhawanipatna, Golamunda blocks.

Forest based products like Mahua, Kendu-Leaf, Wood, Timber and Bamboos also contribute to local economy largely. Kalahandi District supply substantial raw materials to paper mills in neighbouring Rayagada District.

Kalahandi District celebrates many festivals round the year. ChhatraJatra in Bhawanipatna, Deepawali, Rathajatra, Shivaratri, Holi, Janmastami, Ramanabami are the famous festivals celebrated by local people with fun and fair. There are also some other local festivals like Khandabasa, Nuakhai, Amnuan, Kandulnuan, Seminuan, Dumernuan, Kalahandi Utsav, GhantaJatra that are celebrated in the District.

Many eminent personalities have taken birth on the soil of Kalahandi

District Survey Report (Sand) Kalahandi, Odisha

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District. RindoMajhi (freedom fighter in Odisha), PratabKesariDeo (former MP and ex- Maharaja of Kalahandi), Chakra Bisoi (freedom fighter), Ram Chandra Patra (bureaucrat, social worker, administrator), NatyarashmiPrafullaRatha, DayanidhiNayak (former minister), Jayanta Kumar Behera (social activist and artist) and mountaineer JogabyasaBhoi (first from district to climb Mount Everest) are a few among them.

08. LAND UTILIZATION PATTERN IN THE DISTRICT: FOREST, AGRICULTURE, HORTICULTURE, MINING ETC.

General land information of Kalahandi district is as follows;

Forest:

Forest land use as per the concern authority is as follows;

Abstract of area statement of Kalahandi North Division

SL. NO	Legal status of the forest Blocks	Name of the Range										Total	
		Bhawanipatna		M.Rampur		Narla		Kesinga		Kegaon		No. of Blo cks	Area in Ha.
		No. of Blo cks	Area in Ha.	No. of Blo cks	Area in Ha.	No.o f Bloc ks	Area in Ha.	No.o f Bloc ks	Area in Ha.	No. of Blo cks	Area in Ha.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Reserve Forest	12	15653.00	11	21475.00	7	15141.00	3	9824.00	10	20521.00	43	82614.00
2	P.F.	-	-	-	-	-	-	-	-	-	-	-	-
3	PRF notified u/s-4	1	6720.20	11	15174.98	6	4469.44	-	-	-	-	18	26364.62
4	PRF not notified u/s-4	2	9255.70	9	2551.08	5	4787.93	6	727.14	16	1285.75	38	18607.60
5	Village Forest	14	89.524	3	12.638	-	-	12	77.76	1	20.00	30	199.65
6	Non Forest land mutated in favour of FD	1	436.00	-	-	-	-	-	-	-	-	1	436.00
Total =		30	32154.42	34	39213.43	18	24398.37	21	10628.90	27	21826.75	130	128221.87

Abstract of area statement of Kalahandi South Division

SL · NO	Legal status of the forest Blocks	Name of the Range														Total	
		Biswanathpu r		Dharmagar h		Jaipatna		Junagarh		Th.Rampur North		Th.Rampur South		Karlapat		No. of Bloc cks	Area in Ha.
		No. of Blo cks	Area in Ha.	No. of Blo cks	Area in Ha.	No. of Blo cks	Are a in Ha.	No. of Blo cks	Are a in Ha.	No. of Blo cks	Area in Ha.	No. of Blo cks	Area in Ha.	No. of Blo cks	Area in Ha.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1	Reserve Forest	16	17139 .00	5	13083 .00	8	2992 .00	7	5239 .00	9	717.0 0	4	6086. 00	-	-	49	45256 .00
2	P.F.	1	17.48 3	-	-	-	-	-	-	-	-	-	-	-	-	1	17.48 3
3	PRF notified u/s- 4	9	11349 .02	-	-	-	-	2	327. 10	7	9288. 59	3	756.1 9	1	462.0 0	22	22182 .90
4	PRF not notified u/s- 4	10	1480. 32	-	-	-	-	6	3453 .02	1	346.0 0	-	-	1	760.1 7	18	6039. 51
5	Village Forest	-	-	1	20.00	-	-	-	-	3	20.00	6	60.00	-	-	10	100.0 0
6	Non Forest land mutated in favou r of FD	2	43.26 1	-	-	1	25.4 0	-	-	1	22.41 6	5	322.9 53	-	-	9	414.0 3
Total =		38	30029 .08	6	13103 .00	9	3017 .40	15	9019 .21	21	10394 .01	18	7225. 14	2	1222. 17	109	74009 .92

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Agriculture:

Sl. No				High	Med.	Low	
1	Geographical area		Ha.				792000
2	Cultivable area		Ha.	237856	85279	67865	391000
3	Forest area		Ha.				314000
4	Misc. Tree & Grooves		Ha.				8000
5	Permanent Pasture		Ha.				23000
6	Culturable Waste		Ha.				21000
7	Land put to non agriculture. Use		Ha.				35000
8	Net shown area	Kharif-2018	Ha.				383721
9	Gross crop area	2018-19	Ha.				600030
10	Cropping intensity	2018-19	Ha.				156%
11	Irrigated area	Kharif-2018	Ha.				143688
12		Rabi 2018-19	Ha.				84721
13	Cultivated area	For 2019	Ha.	217139	90962	75620	383721
14	Paddy area	For 2019	Ha.	46976	79261	75620	201857
15	Non paddy area	For 2019	Ha.	170163	11701	0	181865
16	DAO Circle		Nos.				4
17	AAO Circle		Nos.				26
18	AC/VAW Circle		Nos.				310

Horticulture:

Details of the land use given by concern authority is as follows;

Sl. No	Crop	Area (in Hects)
1	Fruits	17944.00
2	Plantation Crops	2100.00
3	Spices	5389.00
4	Vegetables	23300.00
5	Flowers	269.00
Total =		49002.00

District Survey Report (Sand) Kalahandi, Odisha

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Mining:

The total area considered for mining activity for all minerals shall be the mining area within the district.

09. PHYSIOGRAPHY OF THE DISTRICT.

The district Kalahandi is situated at the south western part of Odisha constituting part of Western Ghat Mobile Belt normally a rugged hilly terrain. The district covers a number of new series Topo Sheets i.e. F44W16, E44E9, E44E10, E44E11, E44E13, E44E14, E44E15, E44E16, F44X3, F44X4, F44X7, F44X8, F44X11, F44X12, F44X16, E44F1, E44F2, E44F3, E44F5 & E44F6.

Kalahandi district is physiologically a complex terrain having numerous numbers of hills, mounds, plane lands, river beds, agricultural lands, forest growth areas etc. In the southern most part of the district there is Indravati Reservoir catchment area which is also shared by Nawarangpur district. Adjacent to reservoir catchment area hilly terrain present which have an elevation range from mean sea level about 700m to 1000m. Hills and mounds are more common in the south to Bhawanipatna whereas in the north part there are less hills compared to southern part possesses an elevation range between 250m to 800m from MSL. As the district is a part of Eastern Ghat Mobile Belt so the rock types are mostly homogeneous in nature, so the drainage pattern developed in the region is dendritic pattern. The main drainage trend flows from the south-west to north-east direction within the district. There are several seasonal nala / dry nala & a few perennial natural drainage exists within the district. Main river that touches the district is *Tel River*, in addition to that a few other small rivers present within the district namely *Hati Nadi, Udanti Nadi, Sagada Nadi, Kamal Nadi, Ret Nadi, Uttei Nadi* etc.

The main township that is developed in the district is Bhawanipatna also is the district head quarter, which is present in the central part of the district and connect to all parts of the district through road ways.

There are a number of reserve forests present within the district a few major RF are namely *Benakhamar RF, Udaygiri RF, Singari RF, Gopalpur RF, Indravati RF, Phatadhara RF, Machul RF, Hatisal RF, Kiding RF, Bazargarh RF, Benagurha RF, Urladani RF, Taprang RF, Telan RF, Satami RF, Sulia Block A RF* etc. In addition to the reserve forests there is a wild life sanctuary present in the district namely *Karlapat Wild life sanctuary*.

District Survey Report (Sand) Kalahandi, Odisha

10. RAINFALL: MONTH-WISE.

The climate of the Kalahandi District is of extreme type. It is dry except during monsoon. The maximum temperature of the District is 45+ degree Celsius, whereas the minimum temperature recorded as 4°Celsius. The District experiences the average annual rainfall as 1664.633 mm. The monsoon starts late in June and generally lasts up to September.

MONTH WISE RAINFALL DATA OF KALAHANDI DISTRICT

Year	2017	2018	2019
MONTH	AVERAGE RAINFALL in mm	AVERAGE RAINFALL in mm	AVERAGE RAINFALL in mm
January	0	0	1.82
February	0	0	6.2
March	15.52	0	8.63
April	2.46	14.52	10.54
May	16.5	40.12	23.48
June	209.64	106.44	156.98
July	511.85	652.15	454.07
August	342.65	815.76	657.01
September	208.94	231.42	253.3
October	116.66	59.88	--
November	1.16	0	--
December	0	76.18	--
Total	1425.38	1996.47	1572.05

11. GEOLOGY AND MINERAL WEALTH.

Geology:

Kalahandi District is part of Eastern Ghat Super Group, the Eastern Ghats are a discontinuous range of mountains along India's eastern coast. The Eastern Ghats run from the northern Odisha through Andhra Pradesh to Tamil Nadu in the south passing some parts of Karnataka and in the Wayanad district of Kerala. They are eroded and cut through by four major rivers of peninsular India, viz. Godavari, Mahanadi, Krishna, and Kaveri.

The mountain ranges run parallel to the Bay of Bengal. The Deccan Plateau lies to the west of the range, between the Eastern Ghats and Western Ghats. The coastal plains, including the Coromandel Coast

District Survey Report (Sand) Kalahandi, Odisha

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region, lie between the Eastern Ghats and the Bay of Bengal. The Eastern Ghats are not as high as the Western Ghats. The Eastern Ghats are older than the Western Ghats, and have a complex geologic history related to the assembly and breakup of the ancient supercontinent of Rodinia and the assembly of the Gondwana supercontinent.

The Eastern Ghats on the east coast of India is a largely granulite terrain but also exposes granites, migmatites, anorthosites and alkaline rocks. This granulite belt has had a prolonged history of mountain building from late Archaean to late Proterozoic. During this long period the Eastern Ghats mobile belt witnessed repeated folding and possibly polycyclic metamorphism. Some recent findings suggest breaks between orogenic cycles and a proterozoic reworking of Archaean granulites. Extreme-temperature crustal metamorphism under fluid-absent conditions and crustal anatexis in huge thickness of pelitic to psammitic protoliths producing leptynites are some of the important results of recent investigations of the Eastern Ghats mobile belt. Different generation of charnockites are present in the Eastern Ghats belt, but charnockitisation of granitic gneisses is yet to be documented. Some apparently nascent growths, the patchy charnockites in the Chilka area are shown to be relict of older charnockitic rocks that suffered granulite-facies metamorphism and attendant migmatitisation.

Event Stratigraphy of the Eastern Ghat Mobile Belt is as follows;

Age(Ma)	Event
----------------	--------------

550-650	Exhumation & Stabilisation(Pan-African)
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800-850	Emplacement of Anorthosite Massifs, Some Alkaline Rocks(?) Younger Granitoids are charnokites
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950-1100	Main Eastern Ghat Orogeny(=Grenville)
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	Garnet-Sillimanite- Graphite Gneiss (Khondalite) with Khondalite minor cordierite-Saphrine-Spinel Gneiss(Mg-Al)
--	--

District Survey Report (Sand) Kufahandi, Odisha

Group Calc- Silicate rocks & rare Marbles

Quartzite (Garnet ±Sillimanite)

~1500 Emplacement of Alkaline rocks along with the rift Margin

Evolution of platform(Purana) basins like Cuddahpah, Chhatishgarh, Indravati etc.

1800-1600 Evolution of Nellore-Khemmam schist belt in DharwarCraton

2600-2800 Charnokite& Gneisses of the basement(WCZ).

Mineral welth:

A great variety of majormineral potential like Bauxite, Graphite, Galena, Ruby & Iolite and Specified Minor Minerals like Quartz, Feldspar & Decorative Stone (Granite) are available in the district.

Bauxite occurs in Karlapat-Pollingpadar, Kutrumali-Tangridongar, Lanjigarh -Niyamgiri, Keluamali, Krishanmali.

Graphite occurs in Sargipada, Gaidar, Singjharan, Lamer&Badibahal.

Galena occurs in Sisakhal.

Precious Stone (Ruby) occurs in Jhillingdhar, Hinjlibahal, Kerumurda, Sirja, Tandla, Banjipadar, Sargiguda.

Semi-Precious Stone (Iolite) occurs in Dedar, Labanyasar, Bondoguda, Kutingpadar, Ghatpada, Rengali, Dharmagarh, Golamunda and Th.RampurTahasil.

Quartz and Quartzite occurs in Kalahandi, Kesinga, Jaipatna, Junagarh, Dharmagarh, M.Rampur, Narla, Koksara, Golamunda, KalampurTahasil.

Feldspar occurs in Bhikajharan of KalahandiTahasil.

Decorative Stone (Granite) occurs in Lanjigarh& Kalahandi Tahasil.

Reserve & Resource potential Evaluation;

As per UNFC (*United Nations Framework Classification*) of potentials of minerals, A '**Mineral Reserve**' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, *District Survey Report (Sandi Kalahandi), 2010, 10*

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economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is justified.

The mineability (Economic Viability) is demonstrated in consecutive Feasibility Assessment stages which may be, in order of increasing detail, Prefeasibility Study and Feasibility Study/Mining Report. A Probable Mineral Reserve may derive from a Prefeasibility study and a Proved Mineral Reserve from a Feasibility Study or mining activity documentation. Hence for the Reserve Potential estimation of the Kalahandi district, the approved Mining Plans of each existing Quarry has been referred as it provides details of the Mineable & Geological Reserve potentials of the Quarry lease.

As per the approved Mining Plans of the quarry leases till *September-2019* in Kalahandi District the Total mineral potential are as follows;

Potential Reserve as per Approved Mining plan of Existing Sources of Sand

SI No.	Name of Tahasil	Name of Source	Geological reserve as per approved Mining Plan of existing quarries (in m ³)	Mineable reserve as per approved Mining Plan of existing quarries (in m ³)
01	M-Rampur	Turuchi Sand Bed	9013	6806
02	Narla	Bhanpur Sand Bed	50586	33633
03	Karlamunda	Barpadar Sand Bed	78913	51205
04	Karlamunda	Deogaon Sand Bed	16725.5	13585.5
05	Karlamunda	Kundeipali Sand Bed	90265.5	73347
06	Karlamunda	Teresinga Sand Bed	84630	64954.5

District Survey Report (Sand) Kalahandi Odisha

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07	Karlamunda	Pourkela Sand Bed	78913.5	64353
08	Karlamunda	Putigaon sand Bed	50340	19830
09	Karlamunda	Legda Sand bed	114891	68935
10	Kalahandi	Turkel Sand Bed of applicant SabitriJaiswal	100038	21476
11	Kalahandi	Turkel Sand Bed	99956	86784
12	Kalahandi	Ajarai Sand Bed	22578	16479
13	Kalahandi	Bargaon Sand Bed	85296	18689
14	Kalahandi	Gobra Sand Bed	16666	10000
15	Kalahandi	Seinpur Sand Bed	55666	33400
16	Kalahandi	JojanaNuaada sand Bed	12500	7500
17	Kesinga	Kesinga Sand Bed	60500	54000
18	Kesinga	Chhenagaon Sand Bed	74967	55399
19	Kesinga	Belkhandi Sand Bed	75877	51993
20	Kesinga	Kantesir Sand Bed	56400	49500
21	Kesinga	Digsira Sand Bed	53000	45000
22	Kesinga	Jolko sand Bed	74967	23529
23	Kesinga	Patharla Sand Bed	50586	33147
24	Kesinga	Gokuleswar Sand Bed	40468	13460

District Survey Report (Sand) Kalahandi, Odisha

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25	Kesinga	Kanabira Sand Bed	7972	5200
26	Dharmagarh	Brahmana Chhendia sand Bed	49978	37646
27	Dharmagarh	Kankeri Sand Bed	50181	40880
28	Dharmagarh	Taranja Sand Bed	50586	39853
29	Dharmagarh	Chhilipa Sand Bed	62743	37646
30	Koksara	Mudra River Sand Bed	31565.4	18569.4
31	Kalampur	Khangarguda River Sand Bed	37286	22918
32	Kalampur	Deypur River Sand Bed	31656.4	21812.4
33	Kalampur	Patrabasa River Sand Bed	31565.4	18907.7
34	Golamunda	Udeshrung Sand Bed	75028	59323
35	Golamunda	Chiligaon Sand Bed	75028	61237
36	Golamunda	Pandkul Sand Bed	75028	63079
37	Golamunda	Kumbhari Sand Bed	75028	64470
38	Golamunda	Sinapali sand Bed	750315	30069
Total			2857703	1438616

Similarly, as per UNFC (*United Nations Framework Classification*) of potentials of minerals A '**Mineral Resource**' is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's *District Survey Report (Sand) Kalahandi, Odisha*

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crust in such form, quality and quantity that these are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

The resource figures are quoted as being of intrinsic economic interest, depending on the results of a Prefeasibility Study and feasibility Study. Generally, only in-situ resource figures are reported at this stage of geological assessment. Mineral Resources are subdivided, in order of increasing geological confidence, into inferred, indicated and measured categories. Portions of a deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource.

For assessment of potential resources of *New sairat sources of Sand*, a joint field survey has been done and sources has been identified. At this stage of survey, a detail study of each source is not feasible, hence the sand area of proposed quarry lease has been multiplied with the average sand bed thickness of the respective source to obtain the Geological resources whereas for Mineable resources has been considered about 60% of geological Resources.

✓ Potential Resource of LOI issued Existing Sairat Sources (Mining Plan not Obtained) & New Sairat Sources for Sand

SI No.	Name of Tahasil	Name of Proposed source with Land Schedule.	Area covered with sand within the lease, normally varies from 60% to 90% as per field observation in m ²	Average sand Bed thickness of proposed source in meter	Tentative geological Resource of Proposed Source in m ³	Tentative Mineable Resource of Proposed Source i.e. 60% of geological Resources in m ³
01	M Rampur	Ghodapokhari Sand Bed, Khata No-278, Plot No- 1899, 12.00Ac	30000	0.7	21000	12600

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02	M Rampur	Dam Karlakhunta Sand Bed, Khata No-91, Plot No- 181, 3.00 Ac	6070	0.5	3035	1821
03	M Rampur	Duta Sand Bed, Khata No-139, Plot No-353, 10.00Ac.	28328	0.7	19830	11898
04	M Rampur	Ainlapali Sand Bed, Khata No-173, Plot No-607, 2.47 Ac.	6070	0.7	4249	2549
05	M.Rampur	Kurupadar Sand Bed, Khata No.60, Plot No.34, 10.00Ac	26273	0.3	7881.90	4585.50
06	M.Rampur	Duked Sand Bed, Khata No.29, Plot No.1, 4.60 Ac	9338	0.2	1867.60	1087.20
07	M.Rampur	Salepali - Ambagaon Sand Bed, (Salepali Khata No.117, Plot No.462, 4.00Ac & Ambagaon Khata No. 190, Plot No. 1 & 17, 4.30 Ac	16742	1.50	25113	18501
08	M.Rampur	Jarka Sand Bed, Khata No.26, Plot No.114, 9.95Ac	7406	0.30	2221.80	1346.70
09	M.Rampur	Lahadi Sand Bed, Khata No.20, Plot No.348, 12.00Ac	17974	0.30	5392.20	4023.90
10	Narla	Sargiguda Sand Bed, Khata No-229, Plot No-132, 1.00Ac	3237	0.5	1618	971
11	Narla	Bilat Sand Bed, Khata No-120, Plot No-137, 1.10Ac	3237	0.4	1294	776
12	Narla	Lakhguda Sand Bed, Khata no-104, Plot No-391, 2.80Ac	8093	0.5	4046	2428
13	Narla	Dahal Sand Bed, Khata No.76, Plot No.1, 1 acre	3237	0.4	1295	777
14	Narla	Pujipadar Sand Bed, Khata No.134, Plot No.631, 1 acre	3237	0.3	971	582
15	Narla	Burdipada Sand Bed, Khata No.250, Plot No.1006, 2.80 Ac.	8093	0.5	4046	2428

Distric Survey Report (Sand) Kolahali, Galsiya

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16	Narla	Brahmani Sand Bed, Khata No.107, Plot No.1, 1 acre	3237	0.3	971	582
17	Narla	Jodabandha Sand Bed, Khata No.132, Plot No.1,1 acre	3237	0.5	1618	971
18	Narla	Ratul Sand Bed, Khata No.117, Plot No.89, 5.77 acres	12140	0.4	4856	2913
19	Narla	Badachiching sand Bed, Khata No.88, Plot No.221, 4 acres	12140	0.6	7284	4370
20	Narla	Sanachiching Sand Bed, Khata No.87, Plot No.431& 9, 3.95 acres	12140	0.4	4856	2913
21	Narla	Dhoben sand Bed, Khata No.176, Plot No.1, 2 acres	4046	0.5	2023	1214
22	Narla	Ghuguti Sand Bed, Khata No.130, plot no.1120 & 1122, 1.00 acre	3237	0.3	971	582
23	Narla	Ulikupa Sand Bed, Khata No. 270, Plot No.301,3 acres	8093	0.4	3237	1942
24	Narla	Kanagaon Sand Bed, Khata No.78, plot no.291, 2 acres	6070	0.3	1821	1092
25	Kalahandi	Borda-1 Sand Bed, Khata No-527, Plot No-2636, 7.88 Ac	20234	1.0	2023	1214
26	Kalahandi	Karlapada Sand Bed, Khata No-197, Plot No-09, 6.10 ac	20234	0.5	10117	60702
27	Kalahandi	Pastipada Sand Bed, khata No- 155, plot No-01, 3.00 Ac.	5000	0.1	500	300
28	Kalahandi	Chahagaon Sand Bed, Khata No-164, Plot no-01, 3.00 Ac	6070	0.7	4249	2549
29	Kalahandi	Sagada Sand Bed, Khata No-132, Plot No-1084, 4.80 Ac	7000	1.0	700	420
30	Kalahandi	Kusumdar Sand Bed, Khata No-96, Plot No-958, 4.88 Ac	7000	0.7	4900	2940

31	Kalahandi	Gandbasa Sand Bed, Khata No-109, Plot No-81, 5.00 Ac	7000	0.7	4900	2940
32	Kalahandi	Borda- 2 Sand Bed, Khata No-527, Plot No-2238, 3.50 Ac	10117	0.7	7082	4249
33	Kalahandi	Sapsilet Sand Bed, Khata No-311, Plot No-895, 3.50 Ac	10117	1.8	18210	10926
34	Kalahandi	Paikpada Sand Bed, Khata No-155, Plot No-1/580, 6.00 Ac	16187	1.8	29136	17481
35	Kalahandi	Pastipada- 2 Sand Bed, Khata No-155, Plot No-955, 2.00Ac	3000	0.1	300	180
36	Kalahandi	Borda-3 Sand Bed, Khata No-527, Plot No-2438, 12.60 Ac	30000	1.8	54000	32400
37	Kalahandi	Artal Sand Bed, Khata No-349, Plot No-42, 12.50 Ac	30000	1.8	54000	32400
38	Kalahandi	Bileikuni Sand Bed, Khata No-168, Plot No-983, 12.00 Ac	30000	0.5	15000	9000
39	Kalahandi	Themra Sand Bed, Khata No-236, Plot No-01, 10.00 Ac	28300	1.8	50940	30564
40	Kalahandi	Jojana Nuaada- 1 Sand Bed, Khata No- 4,146,158, Plot No- 9,43,311, 12.35 Ac	30000	0.7	21000	12600
41	Dharamgarh	Chilchila Sand Bed, Khata No.411 Plot No. 01, 12.35 Ac.	24840	1.8	44712	26827
42	Dharamgarh	Chhilipa Sand Bed, Khata No.528 Plot No. 1043/2679 , 12.35 Ac.	21000	2.5	52500	31500
43	Dharamgarh	Tambachhada Sand Bed, Khata No.275 Plot No. 01/1170 , 12.35 Ac.	25920	1.5	38880	23328
44	Dharamgarh	Telipalash Sand Bed, Khata No. 297 Plot No. 195, 12.35 Ac.	27600	1.2	33120	19872
45	Dharamgarh	Sandhikulihari Sand Bed, Khata No. 518 Plot No. 2678, 12.35 Ac.	46080	1.5	69120	41472

District Survey Report (Sand) Kalahandi, Odisha

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46	Dharamgarh	Kanagaon Sand Bed, Khata No. 369 Plot No. 1711,858 / 1716, 12.35 Ac.	16320	1.5	24480	14688
47	Dharamgarh	Luhagaon Sand Bed, Khata No. 467 Plot No. 1819, 12.35 Ac.	15075	1.3	19597	11758
48	Koksara	Kaudala-2 Sand Bed, Khata no. 888 (Hal)Plot No. 1894, 8.50 Ac.	34398	0.1	3439	2063
49	Koksara	Chilguda Sand Bed, Khata no. 342,Plot No. 354, 3.50 Ac.	16164	0.8	12931	7758
50	Koksara	Dahagaon sand Bed, Khata No-11, Plot No- 1897(A) , 2.00 Ac.	8093	0.5	4046	2427
51	Koksara	Dahagaon sand Bed, Khata No-11, Plot No- 1897(B) , 1.65 Ac.	6677	0.5	3338	2003
52	Junagarh	Habaspur Sand Bed, Khata No-559, Plot No-1566, 3.2 Ac	12950	1.7	22015	13209
53	Junagarh	Karchala Sand Bed, Khata No-439, Plot No-1681, 14.00Ac	32375	1.7	55038	33023
54	Junagarh	Dasigaon-1 Sand Bed, Khata No-10, Plot No- 778, 11.00 Ac	6515	1.3	8470	5082
55	Junagarh	Dasigaon-2 Sand Bed, Khata No. 10. Plot No. 1, 1.61 Ac	6515	1.3	8470	5082
56	Junagarh	Atigaon Sand Bed, Khata No-361, Plot No-768, 12.50Ac	28328	1.8	50991	30594
57	Junagarh	Kandulguda Sand Bed, Khata No-244, Plot No-795, 1.00Ac	2023	1.8	3642	2185
58	Junagarh	Budhipadar Sand Bed, khata No-5&285, Plot No-29&1, 11.00Ac	24281	1.3	31566	18939
59	Junagarh	Chingudisar Sand Bed, khata No-138, Plot No-01, 3.40Ac	8093	1.7	13759	8255
60	Junagarh	Panigaon Sand Bed, Khata No-188, Plot No-01, 5.00Ac	12140	1.3	15783	9469

61	Junagarh	Barabesal Sand Bed, Khata No. 140, Plot No.1, 1.00Ac	4047	1.5	6071	3643
62	Junagarh	Banijara Sand Bed, Khata No. 341, Plot No. 699, 0.40 Ac	1619	1.6	2590	1554
63	Junagarh	Chilguda Sand Bed, Khata No. 136, Plot No. 103, 0.40 Ac	1619	1.3	2105	1263
64	Junagarh	Chilakpur Sand Bed, Khata No. 291, Plot No. 657, 1.45 Ac	5868	1.00	5868	3521
65	Junagarh	Bargaon Sand Bed, Khata No.414, Plot No. 1683, 4.75 Ac	19223	0.80	15378	9227
66	Junagarh	Budel Sand Bed, Khata No.320 Plot No. 1672, 28.43 Ac	48562	0.50	24281	14569
67	Junagarh	Badadungri Sand Bed, Khata No. 171, Plot No. 262, 0.20 Ac	809	1.00	809	485
68	Golamunda	Panjia Sand Bed, Khata No.356 , Plot No.1243, 4.94 Ac	19991	1.3	25988	15593
69	Golamunda	Beheraguda Sand Bed, Khata No.166, Plot No.663, 4.94 Ac	19991	1.4	27987	16792
70	Golamunda	Khamarhaldi Sand Bed, Khata No.286, Plot No.1250, 5.93 Ac	59300	1.5	88950	53370
71	Golamunda	Funda Sand Bed, Khata No.307, Plot No.1412, 3.36 Ac	13597	1.4	19036	11422
72	Golamunda	Bandhagaon Sand Bed, Khata No.470, Plot No.849, 2.56Ac	10360	1.4	14504	8702
73	Golamunda	Gundri Sand Bed, Khata No.191, Plot No.498, 0.99 Ac	4006	1.00	4006	2404
74	Golamunda	Uchhla Sand Bed, Khata No.318 , Plot No.2113, 12.00 Ac.	48562	1.4	20387	12232
75	Golamunda	Karli Sand Bed, Khata No.243, Plot No.1117. 2.27 Ac	9186	1.3	11942	7165

76	Golamunda	Chapri Sand Bed, Khata No.448, Plot No.3, 7.41 Ac	29987	1.4	41982	25189
77	Golamunda	Manjhari Sand Bed, Khata No.6, Plot No.1, 7.00 Ac	16861	1.2	20234	12140
78	Golamunda	Mahaling Sand Bed, Khata No.581, Plot No.3050, 5.00 Ac	18116	2.3	41667	25000
79	Golamunda	Kantamal Sand Bed, Khata No.271, Plot No.1660, 10.00 Ac	18750	2.4	45000	27000
80	Kesinga	Matia & Bisodi Sand Bed, Khata No.281, Plot No.466 & Khata No. 180, Plot No.1, 11.16 Ac	45163	1.3	58712	35227
81	Kesinga	Boria Sand Bed, Khata No.255, Plot No.412,412/1272, 7.00 Ac	28328	1.3	36826	22096
82	Kesinga	Turlakhaman Sand Bed, Khata No.361, Plot No.231,12.00 Ac	40000	2.5	100000	60000
83	Kesinga	Amath Sand Bed, Khata No.135, Plot No.27, 11.50 Ac	21569	1.7	36667	22000
84	Kesinga	Goudtola Sand Bed, Khata No.164, Plot No.1, 12.00 Ac	21429	2.1	45000	27000
85	Karlamunda	Ekatara Sand Bed, Khata No.153, plot No.796/1190, 12.35 Ac.	48562	1.4	20387	12232
86	Karlamunda	Joradobra Sand Bed, Khata No.345, Plot no. 1318, 12.35 Ac	48562	1.4	20387	12232
87	Karlamunda	Kernapala Sand Bed, Khata No.71, Plot No.1, 12.90 Ac.	12121	1.1	13333	8000
88	Kalampur	Panigaon Sand Bed, Khata No.315, Plot No.1485, 3.65 Ac	14771	1.00	14771	8863
89	Kalampur	Badkutru Sand Bed, Khata No.326, Plot No.1458, 2.84Ac	11493	0.50	5746	3448
90	Kalampur	Karmel-1 Sand Bed, Khata No.200, Plot No. 360, 3.00 Ac	12141	0.80	9713	5828

District Survey Report (Sand) Kalabandri, Odisha

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91	Kalampur	Mandal Sand Bed, Khata No.373, Plot No.1305, 10.00Ac	40469	0.50	20235	12141
92	Kalampur	Khandidangriguda Sand Bed, Khata No.176, Plot No.883, 8.00Ac	32375	0.60	19425	11655
93	Kalampur	Balichhada Sand Bed, Khata No.194, Plot No.90, 11.00Ac	44515	1.00	44515	26709
Total					1711082.50	1085330.30

The total Tentative Geological & Mineable sand potential of the district shall be the sum of existing reserve and the proposed resource calculated in the above tables, the potentials are as follows;

Category	Tentative Geological potential in m ³	Tentative Mineable Potential in m ³
Existing sources	2857703	1438616
Proposed sources	1711082.50	1085330.30
Total potential	4568785.50	2523946.30

As in nature the replenishment of sand is a natural process within the river bed, hence the estimated potential may vary in each successive year.

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(a) District wise details of river or stream and other sand source;

Annexure-I

In Kalahandi District River beds and streams are the only source of Sand, hence the details of the main river and streams are given in the following table:

Drainage system with description of main river (Table No. 11.A.01)

SI No.	Name of river	Area (sq. km drained)	% area drained in the District
01	Tel River	2850	60%
02	Hati River	735	100%
03	Udanti River	1800	100%
04	Sagada River	360	100%
05	Kamal River	350	100%
06	Ret River	810	100%
07	Uttei River	420	100%

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(b) District wise availability of sand or gravel or aggregate resources;

Annexure-II

In this case only **Sand** has been considered

Salient Features of Important Rivers and Streams: (Table No. 11.B.01)

Sl. No	Name of the River or Stream	Total Length in the District (in Km)	Place of origin	Altitude at Origin	Portion of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral concession (in Km)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in Sq. meter)	Mineable mineral potential (in m ³) (60% of total mineral potential)
01	Tel River	123.60	Krushu in Nawarangpur district	551m	Details provided in the Table No. 11.C.01 for each existing leases and for proposed leases details provided in the Resource table.				2053783
02	Hati River	86.80	Merakani in Nawarangpur District	530m					
03	Udanti River	32.00	Chhatishgarh	396m					
04	Sagada River	45.00	Poiguda in Kalahandi district	492m					
05	Kamal River	35.00	Pipalguda in Kalahandi district	334m					
06	Ret River	79.00	Patangpadar in Kalahandi district	570m					
07	Uttei River	45.00	Belghar in Kandhamal District	726m					

Dr. R. K. Das

(c) District wise details of existing mining leases of sand and aggregates;

Annexure-III

In this case only Sand has been considered.(Table No. 11.C.01)

Name of Tahasil	Sl. No	Name of the Mineral	Name of the Lessee	Address of Lessee	Mining lease Grant Order No. & date	Area of Mining lease (ha)	Period of Mining lease (Initial)		Date of commencement of Mining Operation	Status (Working/NonWorking/Temp. Working for dispatch etc.	Obtained Environmental Clearance (Yes/No)	Location of the Mining lease (Latitude & Longitude)
							7 From	8 To				
M. Rampur	01	Turchi Sand Bed	Sachidananda Sahu	Turchi	--	5.261	2015-16	2019-20	16.06.2017	Working	Yes	20°15'05.99"N 83°27'08.30"E
Narla	02	Bhanpur Sand Bed	Arjun Pradhan	Mursingh	--	5.050	2016-17	2020-21	05.05.2018	Working	Yes	20°07'22.05"N 83°22'50.04"E
Karlamunda	03	Borpadar Sand Bed	Mukesh Agrawal	Kesinga	176/Tauzi 29.01.16	3.925	2016-17	2020-21	--	Non- Working	No	20°17'26.38"N 83°27'46.47"E
Karlamunda	04	Deogaon Sand Bed	Aditya Prasad Sahu	Takarumal	199/Tauzi 02.02.16	6.628	2016-17	2020-21	--	Non- Working	No	20°19'23.58"N 83°26'41.06"E
Karlamunda	05	Kundeipali Sand Bed	Mukesh Agrawal	Kesinga	103/Tauzi 22.01.16	6.001	2016-17	2020-21	--	Non- Working	No	20°25'30.00"N 83°27'10.00"E
Karlamunda	06	Teresinga Sand Bed	Mukesh Agrawal	Kesinga	105/Tauzi 22.01.16	4.605	2016-17	2020-21	--	Non-Working	No	Khata No. 821, Plot No.546
Karlamunda	07	Pourkela Sand Bed	Mukesh Agrawal	Kesinga	109/Tauzi 22.01.16	5.260	2016-17	2020-21	-	Non-Working	No	20°26'19.63"N 83°28'13.12"E
Karlamunda	08	Putigaon sand Bed	Mukesh Agrawal	Kesinga	101/Tauzi 22.01.16	4.046	2016-17	2020-21	-	Non-Working	No	20°21'39.14"N 83°24'08.74"E
Karlamunda	09	Legada Sand Bed	Mukesh Agrawal	Kesinga	174/Tauzi 29.01.16	4.046	2016-17	2020-21	-	Non-Working	No	Khata No. 399, Plot No. 2538
Kalahandi	10	Turkel Sand Bed	Sabitridevi Jaiswal	Bhawani patna	15.12.16	5.000	2016-17	2020-21	05.05.2017	Working	Yes	20°08'33.10"N 83°05'20.30"E
Kalahandi	11	Turkel Sand Bed	Tahasildar Kalahandi	Bhwani patna	-	5.000	-	-	-	Working	Yes	Khata No. 221, Plot No.270
Kalahandi	12	Ajarai Sand Bed	Sanjeev Bhoi	Artal	27.03.2015	8.134	2018-19	2023-24	17.01.2019	Working	Yes	20° 08'45.21"N 83°01' 48.32"E

D. Sahu

Kalahandi	13	Bargaon Sand Bed	Rajesh Sahu	Gobra	16.03.2015	7.498	2016-17	2021-22	13.02.2017	Working	Yes	20° 08'54.16"N 83°02' 02.93"E
Kalahandi	14	Gobra Sand Bed	Rajesh Sahu	Gobra	16.03.2015	6.576	2016-17	2021-22	13.02.2017	Working	Yes	Khata No. 194, Plot No.141&142
Kalahandi	15	Seinpur Sand Bed	Rajesh Thakur	Bhawani patna	16.03.2015	9.817	2015-16	2020-21	31.12.2015	Working	Yes	20° 08'27.20"N 83°05' 16.90"E
Kalahandi	16	Jojana Nuapada sand Bed	Purna Ch. Sahu	Bhawani patna	23.03.2015	1.732	-	-	-	Non-Working	No	Khata No. 04, Plot No.09
Kesinga	17	Chhenagaon Sand Bed	Smt. Saranjeet Kour	Bhawani Patna	-	5.261	2018-19	2022-23	30.01.18	Working	Yes	20°08'42.22"N 83°07' 17.81"E
Kesinga	18	Belkhandi Sand Bed	Mukesh Agrawal	Kesinga	-	5.058	2017-18	2021-22	04.12.17	Working	Yes	20°21'18.69"N 83°24' 12.37"E
Kesinga	19	Jolko sand Bed	Tejuram Agrawal	Kesinga	2112-26.08.16	4.990	2016-17	2020-21	-	Non-Working	No	20°09'59.14"N 83°11' 13.18"E
Kesinga	20	Patharla Sand Bed	Mukesh Agrawal	Kesinga	530-02.03.19	5.050	2018-19	2022-23	-	Non-Working	No	20°10'10.17"N 83°10' 17.03"E
Kesinga	21	Gokuleswar Sand Bed	Bishnu Majhi	Gokuleswar	529-02.03.19	4.040	2018-19	2022-23	-	Non-Working	No	20°02'34.40"N 83°12' 40.13"E
Kesinga	22	Kanabira Sand Bed	Bishnu Majhi	Gokuleswar	529-02.03.19	0.800	2018-19	2022-23	-	Non-Working	No	20°04'06.14"N 83°13' 14.26"E
Dharmagarh	23	BrahmanaChendia sand Bed	Jyotirmaya Singh	Dharma garh	-	5.000	2015-16	2019-20	-	Working	Yes	19°54'50.00"N 82°47' 55.00"E
Dharmagarh	24	Kankeri Sand Bed	Jyotirmaya Singh	Dharma garh	-	5.010	2015-16	2019-20	-	Working	Yes	19°54'01.00"N 82°44' 48.00"E
Dharmagarh	25	Taranja Sand Bed-	Gajindra Pradhan	Dharma garh	-	5.058	2015-16	2019-20	-	Working	Yes	19° 54'33.80"N 82°49' 17.14"E
Dharmagarh	26	Chhilipa Sand Bed				5.058	2015-16	2019-20	-	Working	Yes	19° 53'15.10"N 82°43' 44.30"E
Koksara	27	Mudra River Sand Bed	Kishor Chandra Naik	Sarasma l		5.260	2015-16	2019-20	-	Working	Yes	19°42'22.50"N 82°44' 15.30"E

(Handwritten signature)

Kalampur	28	Khangarguda River Sand Bed	Santosh Kumar Naik	Gautam nagar, Koraput	8188-23.11.15	5.050	2015-16	2019-20	-	Non-Working	No	19°35'45.60" N 82°52' 20.20" E
Kalampur	29	Deypur River Sand Bed	Santosh Kumar Naik	Gautam nagar, Koraput	2184-23.11.15	5.260	2015-16	2019-20	-	Non-Working	No	19°39'53.40" N 82°53' 08.10" E
Kalampur	30	Patrabasa River Sand Bed	Santosh Kumar Naik	Gautam nagar, Koraput	8186-23.11.15	5.260	2015-16	2019-20	-	Non-Working	No	19°35'07.49" N 82°51' 46.50" E
Golamunda	31	Udeshrung Sand Bed	Bruhaspati Sahu	At/Po-Mahaling Kalahandi	-	5.000	2016-17	2020-21	-	Working	Yes	20°06'25.44" N 82°49' 40.50" E
Golamunda	32	Chilgaon Sand Bed	Basanta Bhoi	Funda, kalahandi, Odisha	-	5.000	2016-17	2020-21	-	Working	Yes	19°55'45.40" N 82°55' 21.20" E
Golamunda	33	Pandkul Sand Bed	Susanta Kumar Bhoi	FundaKalahandi	-	5.000	2016-17	2020-21	-	Working	Yes	19°55'28.20" N 82°51' 16.60" E
Golamunda	34	Kumbhari Sand Bed	Susanta kumar Bhoi	Funda Kalahandi	-	5.000	2016-17	2020-21	-	Working	Yes	19°55'46.06" N 82°52' 33.70" E
Golamunda	35	Sinapali Sand Bed	Pabitra Mohan Sahu	Sinapali Kalahandi	-	5.000	2016-17	2020-21	-	Working	Yes	20°07' 24.64" N 82°54' 00.61" E

NB: in the above table omitted Columns are,
Column 9&10 Period of Mining lease (1st/2nd...renewal)-**NA**
Column 13 Captive/ Non Captive- **All Non Captive**
Column 16 Method of Mining (Opencast/Underground)- **All Open cast**

Annexure-IV

Mineral Potential (Table No. 11.A.02)

Boulder (MT)	Bajari (MT)	Sand (m ³)	Total Mineable Mineral Potential (m ³)
NA	NA	3791946	2053783
Annual Deposition			
	NA	3791946	2053783

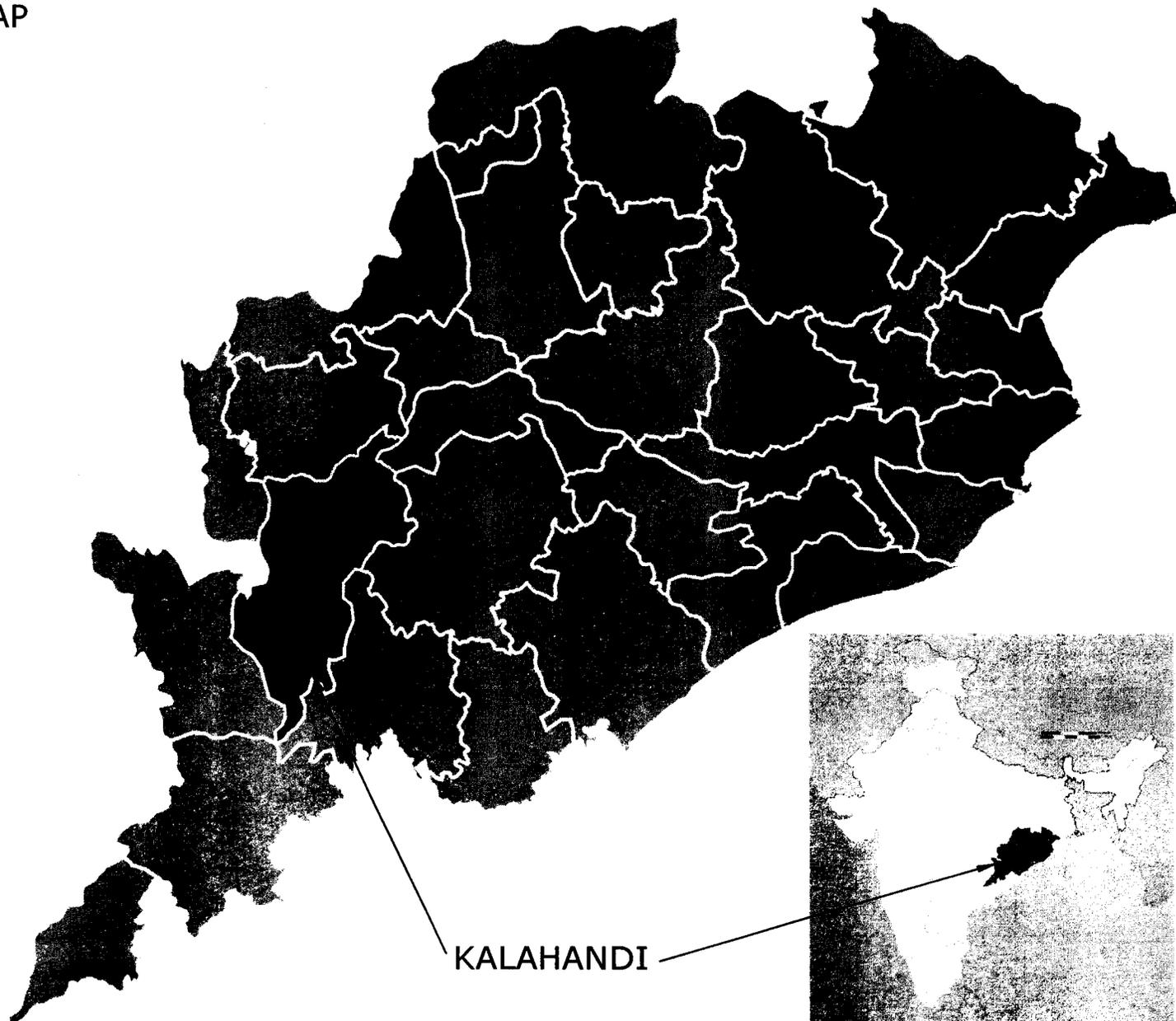
(Table No. 11.A.03)

Sl. No.	River or Stream	Portion of the river or stream recommended for mineral concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in m ³) (60% of total mineral potential)
1	Tel River	Details provided in the Table No. 11.C.01 for each existing leases and for proposed leases details provided in the Resource table.				2053783
2	Hati River					
3	Udanti River					
4	Sagada River					
5	Kamal River					
6	Ret River					
7	Uttei River					
Total for the District						2053783

Debraj

INDEX MAP

PLATE-I

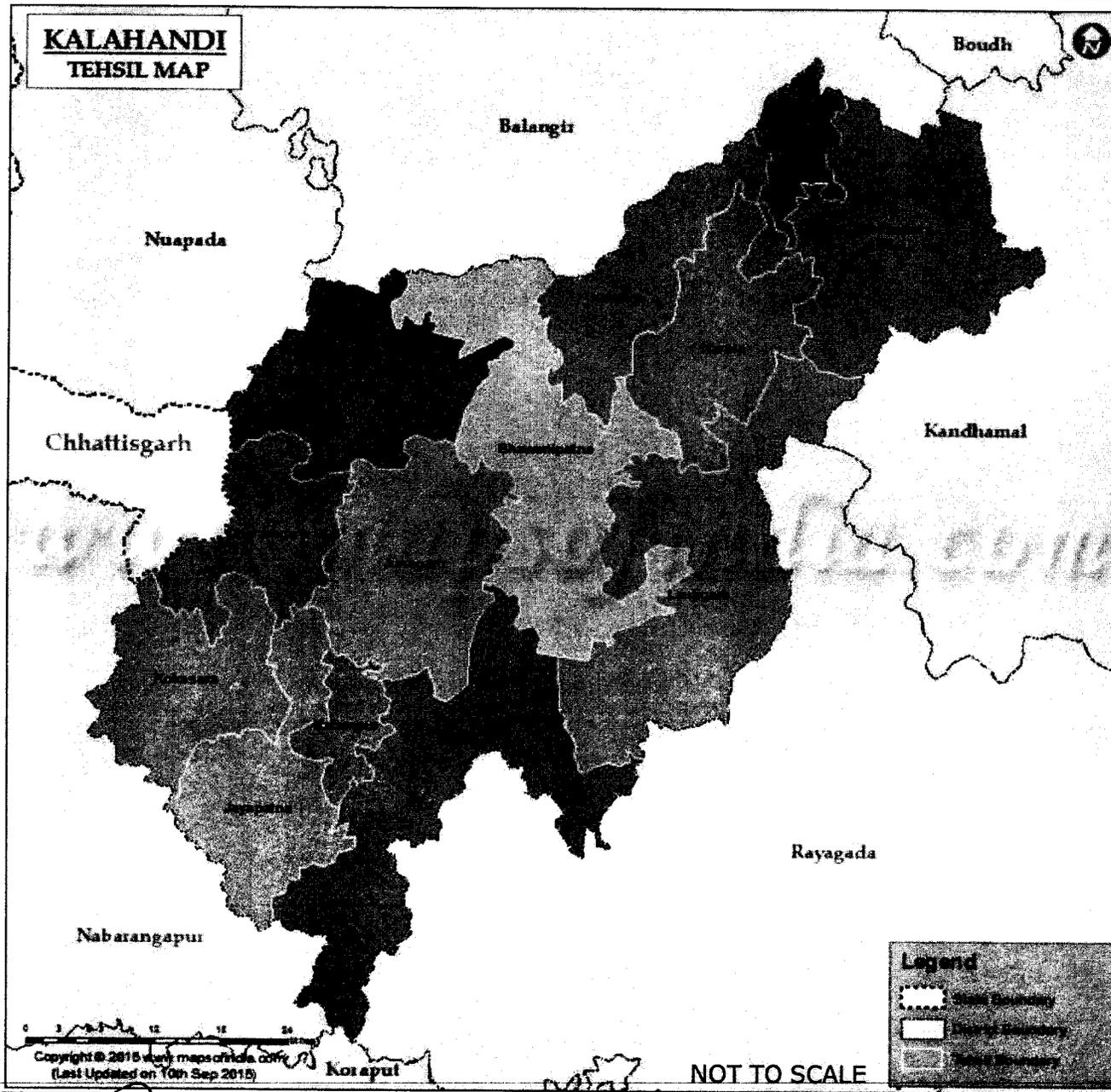


KALAHANDI



NOT TO SCALE

Odisha



Dehri

HYDROGEOLOGICAL MAP OF KALAHANDI DISTRICT, ORISSA

Plate :- 5



20°
15'

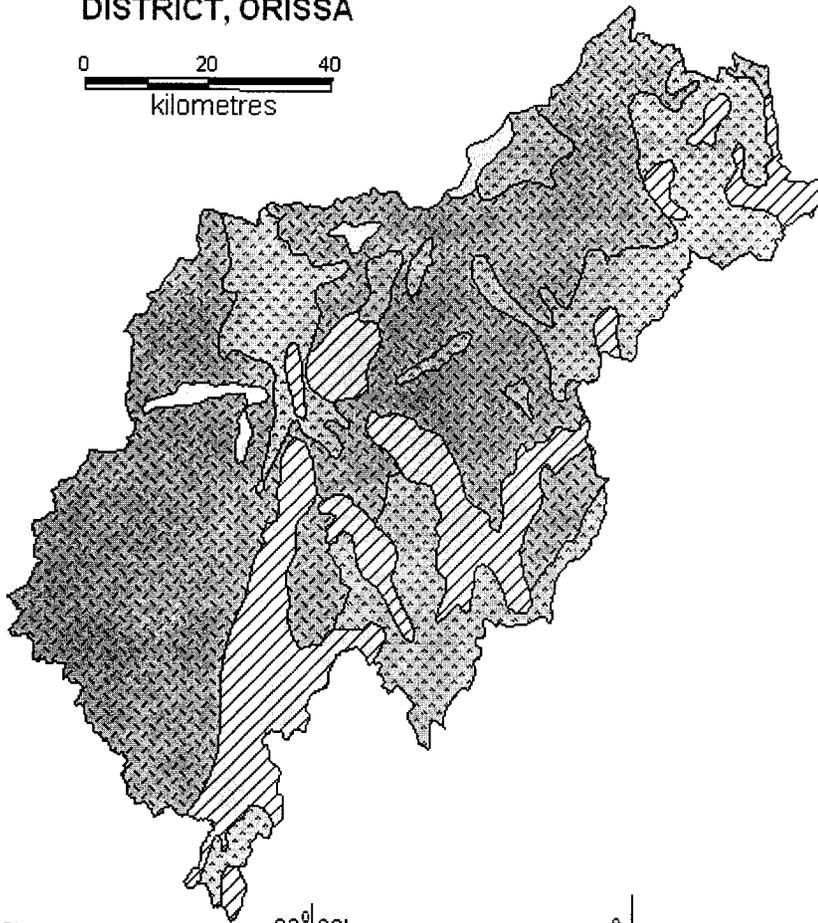
19°
45'

19°
15'

82° 30'

83° 00'

83° 30'



LEGEND

UNCONSOLIDATED FORMATIONS
CONSOLIDATED FORMATIONS

AGE GROUP

LITHOLOGY

HYDROGEOLOGICAL CONDITIONS
POROUS FORMATIONS

GROUND WATER POTENTIAL

QUATERNARY

RECENT ALLUVIUM,
LATERITES & LATERITIC
GRAVELS



THIN DISCONTINUOUS PATCHES
FORMING SHALLOW AQUIFERS

LIMITED TO MODERATE YIELD
PROSPECTS BELOW 20m³/Hr.

GRANITE & ITS VARIANTS



FISSURED FORMATION

GROUND WATER RESTRICTED TO
RESIDUUM AND FRACTURE
ZONE HAVING SECONDARY
POROSITY

LIMITED TO MODERATE YIELD
PROSPECTS BELOW 30 m³/ Hr.

ARCHEAN

CHARNOCKITES



KHONDALITES



Behn

[Signature]

Collector, Kalahandi