GOVERNMENT OF INDIA
MINISTRY OF WATER RESOURCES
CENTRAL GROUND WATER BOARD

GROUND WATER YEAR BOOK OF CHHATTISGARH 2013 - 14

NORTH CENTRAL CHHATTISGARH REGION
RAIPUR
May 2014

FOREWORD

Central Ground Water Board, North Central Chhattisgarh Region, Raipur monitors the water levels in the State four times a year through a network of 709 number of observation wells(both dug wells and piezometers). Water quality is also assessed once in a year. The generated data from these observation wells are compiled, analysed and presented in the form of reports from time to time and circulated to various Central and State Government Departments. The present report embodies data and information collected during monitoring in the year 2012-13.

The report has been compiled and prepared byShri J.R.Verma, Scientist 'B' under the supervision of Shri S.K.Verma, Scientist 'C' under the guidance of Shri K.C.Nail ,Regional Director. I appreciate the efforts put by the officer in bringing out this report. The water level data and sample collection was done by the officers of CGWB, NCCR Raipur. I am sure this report will be of immense use to all the stakeholders of groundwater in the State.

(K C Naik)
Regional Director,
CGWB, NCCR, Raipur

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I Details of National Hydrographs Stations

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1. INTRODUCTION

The State of Chhattisgarh lies between North Latitude 17°47' to 24°06' and East Longitude 80°14' to 84°24' **(Fig. 1.1)**. Central Ground Water Board, North Central Chhattisgarh Region, Raipur is carrying out ground water regime monitoring in the State. The State covers a geographical area of 1,37,360 sq. km. Nearly 65.90 % of the total area is covered by tribals and hence it is said as tribal dominated State. The ground water regime is monitored through a network of observation dug wells and piezometers. Dug wells represent the shallow phreatic aquifer system where as piezometers represent the shallow un-confined as well as deeper semi-confined aquifer system. The network of observation stations form a part of All India Network Hydrograph Stations, which is being monitored by various Regional offices of the department, located at different parts of the country.

As on March 2013, a network of 1007 observation wells (both dug wells and purpose built piezometers) are monitored four times a year. The monitoring includes measurement of ground water level and quality. The purpose is to observe the behavior of ground water and their levels in different hydrogeological environments in order to estimate the ground water resource from time to time and to know the water quality changes.

The monitoring database on water levels and chemical parameters helps to simulate models of forecasting, planning and management of ground water resources. The behavior of the ground water level and quality during the period from May 2013 to January 2014 is presented in this report with the idea that it will enable the user agencies to plan the development strategy for optimum utilization of ground water resources in the state.

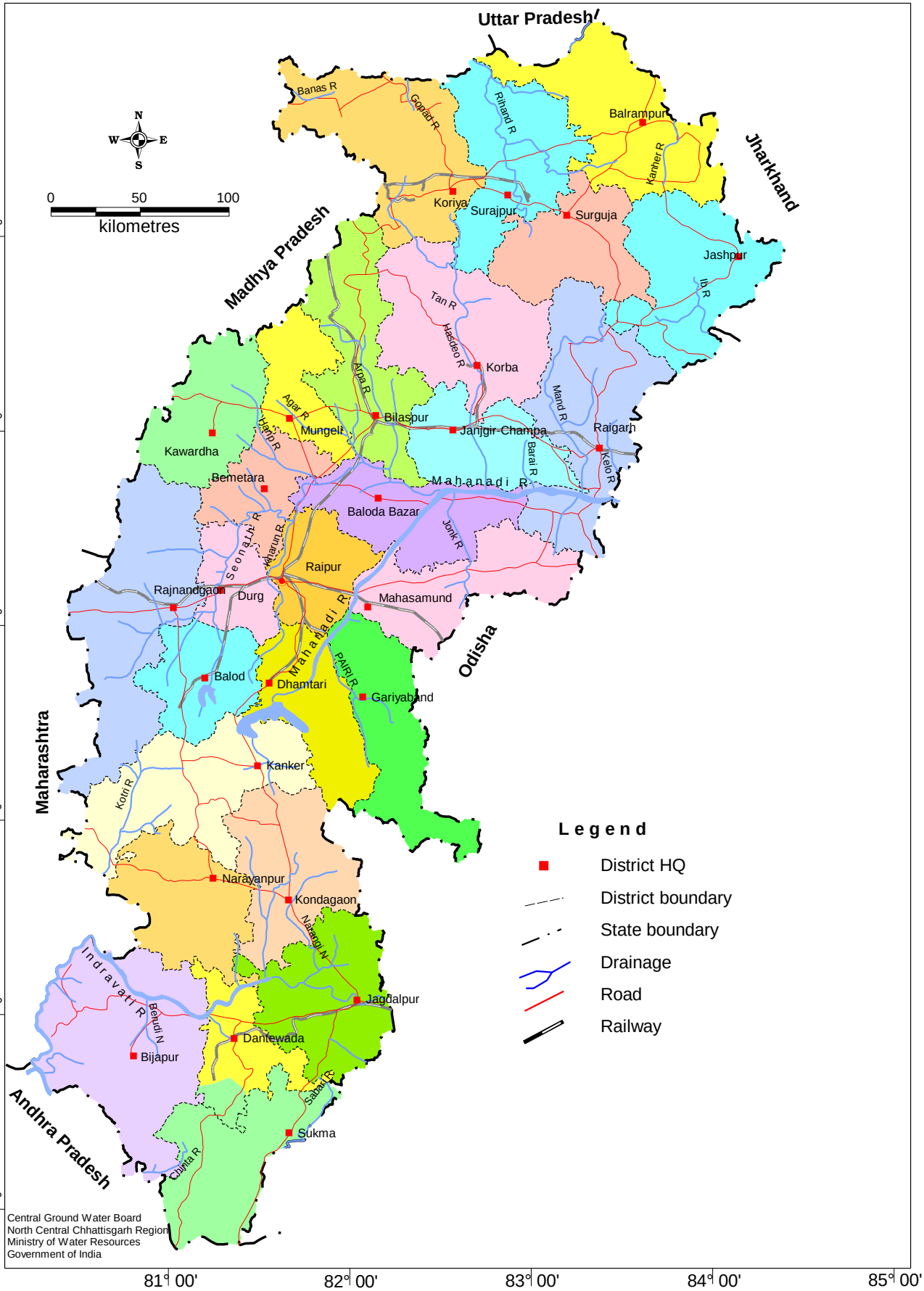


Fig 1.1 Administrative divisions of Chhattisgarh State

2. GEOMORPHOLOGY

2.1 Physiography

Physiographically, Chhattisgarh can be divided into three distinct units i.e.
i) Bastar plateau region on the southern part,
ii) Chhattisgarh Plain region on the central part and
iii) Northern hilly region on the northern parts of the State.

The Bastar Plateau Region

It covers Bastar, Kanker and Dantewada districts lying on the southern parts of the State. Except Indravati River plains, most of the area is covered by evergreen dense reserve forests and hilly tracts. The major landforms are high-level plateaus, structural hills and valleys and pediments and pediplains. The altitude varies from 400 to 600 m amsl. In the plains of Indravati River covering central parts, and along the Shabri River, covering southeastern parts the altitude varies from 250 to 300 m amsl.

The Chhattisgarh Plain

It is spread over the central part of the State and covers parts of Bilaspur, Janjgir-Champa, Mahasamund, Dhamtari, Raipur, Durg, Rajnandgaon and Kawardha districts. It forms the structural plains on Proterozoic rocks and mature pediplain with remnants of few isolated hills and ridges in between flood plains of numerous tributaries of Mahanadi River system. It is characterised by a gently undulating and flat terrain. The overall altitude varies from 750 m amsl on northwestern parts of the area to 284 m amsl on southeastern parts.

Northern Hilly Region

It covers from north to the north central part of the area and occupies parts of Sarguja, Koriya, Korba, Bilaspur, Jashpur and Raigarh districts. It is a part of Maikal and Hazaribagh hill ranges of central India. It represents structural plains of Gondwana rocks, pediment/pediplains, structural and denudational plateaus, structural and denudational hills and valleys. It supports north flowing tributaries of Son River and south flowing Hasdeo and other tributaries of Mahanadi River. The Narmada, an

important west-flowing River of central India, originates from Amarkantak in the central part of this physiographic unit.

The highest point in the State is 1197 m amsl at Tulisi Dongri range in Dantewada district and the lowest point is 50 m amsl at Konta in Dantewada district.

2.2 Drainage

The major Rivers flowing in Chhattisgarh State are given in **Table 2.1.** The Mahanadi River and its tributaries Seonath, Hasdeo, Mand and Arpa drain part of Raipur, Durg, Rajnandgaon, Bilaspur, Raigarh and Surguja districts. The Indravati River is a tributary to Godavari River and drains the districts of Kanker, Bastar and Dantewada. Most of the Rivers are perennial in nature. In general the drainage patterns are dendritic, parallel, angular and radial types. Son is the tributary of Ganga River and drains part of Sarguja and Koriya districts. **Fig. 2.1** shows the physiography and drainage pattern existing in the area.

Table 2.1: Major River Basins in Chhattisgarh State

S.No.	Major Rivers	Tributaries	Districts
1.	Ganga 18407 Sq.Km.	Son	Surguja, Koriya, Jashpur and Bilaspur
2.	Mahanadi 75858 Sq.Km.	Ib, Hasdeo, Seonath, Tel, Mand	Raipur, Mahasamund, Dhamtari and parts of Durg, Rajnandgaon, Kawardha, Korba, Kanker, Bastar, Surguja, Raigarh and Bilaspur.
3.	Godavari 38694 Sq.Km.	Indravati, Sabari Wain ganga	Parts of Durg,Bastar, Rajnandgaon, Kanker and Dantewada
4.	Narmada 744 sq.Km.	Narmada	Parts of Rajnandgaon, Bilaspur, and Kawardha
5.	Bramhani 1394 sq.Km.	Sankh	Part of Jashpur

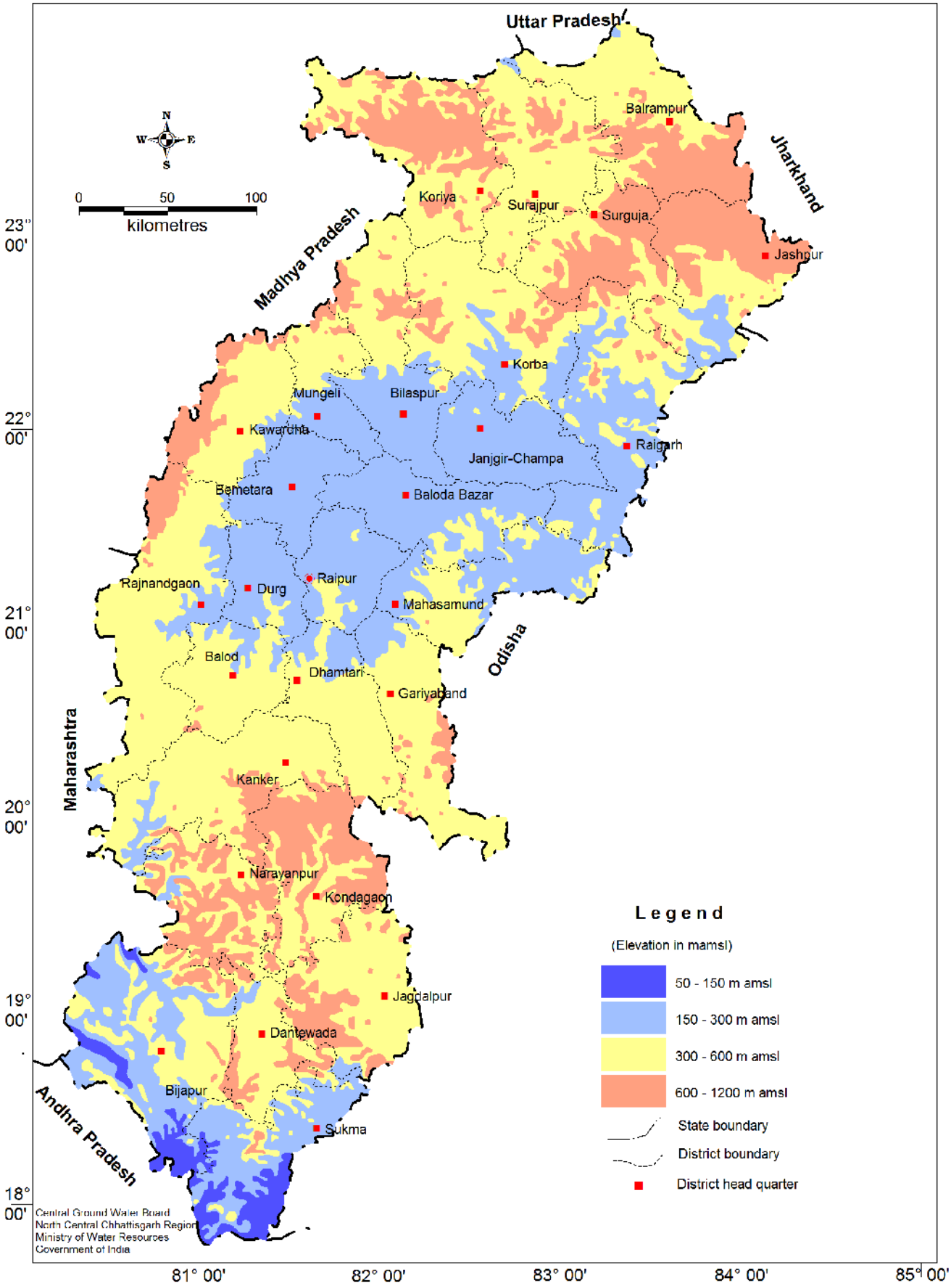


Fig 2.1 Physiography of Chhattisgarh State

3. CLIMATE AND RAINFALL

3.1 Rainfall

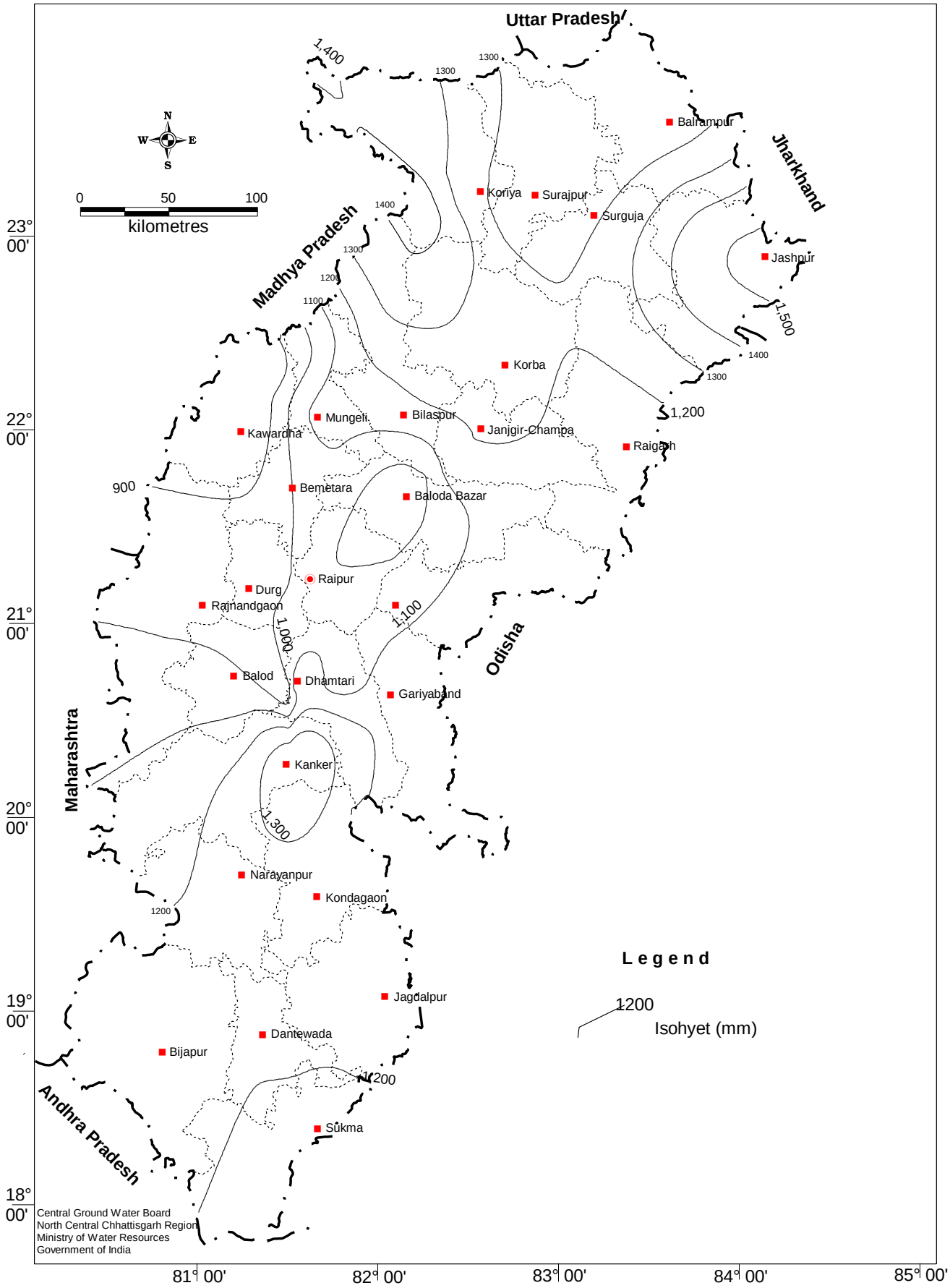
The region is endowed with sub-tropical monsoon climate with three distinct seasons i.e. summer, monsoon, and winter. The southwest monsoon starts from June and continues till middle of September. Winter season spreads from October to February. Summer season extends from March to early part of June. Rainfall is the major source of ground water recharge in the area and receives maximum (85%) rainfall during the southwest monsoon season. The winter rainfall is meager (10 - 15%).The Indian Meteorological Department (IMD), various State Government departments, Agricultural Universities etc. are maintaining number of rain gauge stations which comes to more than 200 in the State.

The average annual rainfall in the state during the year 2012 was 1146.43 mm. Table 3.1 shows the annual rainfall in mm district wise for Chhattisgagh for the last eight years.

Table 3.1 DISTRICT WISE AVERAGE ANNUAL RAINFALL (mm) OF CHHATTISGARH

Sl. No.	District	Year								Average
		2005	2006	2007	2008	2009	2010	2011	2012	
1	Bastar	1519.1	1708.8	1259.2	1398.3	1038.3	1623.2	1160.5	1320	1378.425
2	Bilaspur	1475.7	1091.7	1269.4	1047	854.8	973.9	1290.1	1189	1148.95
3	Dantewara	1177.7	1151.5	1685.6	1206	709.1	1631.2	1219.7	1254	1254.35
4	Dhamtari	1100.3	1320.4	1007.2	901	1113	1211.1	1102.4	1130	1110.675
5	Durg	1103.9	886.4	1068.5	904.8	794.9	1149.7	1282.3	1197	1048.438
6	Janjgir-Champa	1217.4	1203.1	1396	1404.6	873.7	1212.6	1319.6	1256	1235.375
7	Jashpur	1395	836.3	1233.5	1412	1064	1133.9	1858.7	1298	1278.925
8	Kanker	1245.7	1571.7	1235.7	652.2	868.6	1480.8	1211.5	1205	1183.9
9	Korba	1482.3	750.7	857.4	1233.6	822.6	1093.1	1490.4	1187	1114.638
10	Koriya	1153.3	1021.3	1318.7	998.4	816.9	702.2	1808.7	1254	1134.188
11	Kawardha	966.2	773.1	654.5	694.7	612.4	1225	1028.2	943	862.1375
12	Mahasamund	1379	1383.9	1174.6	944.9	1190.1	1130	1298.6	1234	1216.888
13	Raigarh	1246.4	1089.1	1291.8	1513.9	978.2	988.3	1288.5	1200	1199.525
14	Raipur	1348	1206.7	1434.2	1114.5	948.3	1109.1	1322.9	1232	1214.463
15	Rajnandgaon	1568.8	1127.6	769.8	812.7	734.9	1221.9	1169.8	1075	1060.063
16	Surguja	1110.1	1186.3	1153.4	1019.6	616.8	596.7	1383.6	1009	1009.438
Chhattisgarh		**1280.6**	**1144.3**	**1175.6**	**1078.6**	**877.3**	1155.2	**1327.2**	**1146.43**	1149.225

Source: India Meteorological Department (IMD)


Uttar Pradesh
Jharkhand
Madhya Pradesh
Maharashtra
Odisha
Andhra Pradesh
Balrampur
Koriya
Surajpur
Surguja
Jashpur
Korba
Mungeli
Bilaspur
Janjgir-Champa
Raigarh
Kawardha
Bemetara
Baloda Bazar
Raipur
Durg
Rajnandgaon
Balod
Dhamtari
Gariyaband
Kanker
Narayanpur
Kondagaon
Jagdalpur
Dantewada
Bijapur
Sukma
1,400
1300
1400
1200
1100
1,500
1,200
900
1,100
1,000
1,300
1200
0
50
100
kilometres
N
W
E
S
23° 00'
22° 00'
21° 00'
20° 00'
19° 00'
18° 00'
81° 00'
82° 00'
83° 00'
84° 00'
85° 00'
Legend
1200
Isohyet (mm)
Central Ground Water Board
North Central Chhattisgarh Region
Ministry of Water Resources
Government of India

3.1 Temperature

The State experiences sub-tropical climate characterized by extreme summer and moderate winter. The summer extends from March to mid June and May is the hottest month. The mean daily maximum temperature during the month of May goes upto 45^0C. The winter season lasts till end of February. January is the coldest month with the mean daily maximum temperature at 30°C and the mean daily minimum temperature at 10.2°C. In Raipur area, the average temperature varies from 13°C during winter to 46°C in summer. However, in the plateau areas on the northern part, the variation was from 10°C in winters to 39°C in summers.

4. SOIL AND LANDUSE

4.1 Soil

The soils in the upper reaches of the drainage are shallow, young and are eroding in nature. Changes in soil properties indicate the drainage conditions, transport of eroded material and redeposition of soil constituents. Down the slope, the soil depth, water holding capacity, ion exchange capacity, and preponderance of calcium and magnesium increases. The colour changes from red to dark brown. The texture also changes from sandy loam to clayey, and sticky to very sticky. The various soil types existing in the State and their suitability for various crops is enumerated in **Table 4.1** and fig 4.1.

Table 4.1: Distributions of Soils and suitability of crops in Chhattisgarh State

Type of soil	Parent Rock	Distribution (Districts/tehsils)	Suitable Crops
Red-yellow soil (Matasi)	Gondwana, Chhattisgarh Supergroup	Surguja, Koriya, Jashpur, Raigarh, Korba, Bilaspur Kawardha, Durg, Raipur, Dhamtari and and Mahasamund districts	Paddy
Red-sandy soil	Archaean Granite	Bastar, Dantewada, Kanker, Durg, Rajnandgaon and Dhamtari districts	Kodo-Kutki, Jawar, Maize, Potato Coarse grains etc
Red-domat soil	Archaean Granite	Dantewara and Konta tehsils	Paddy
Laterite soil	Mixed	Bagicha, Samri, Sitapur, Ambikapur, Kawardha, Chhui-Khaddan, Saja, Bemetera and Jagdalpur tehsils	Potato, Jawar, Kuddo-Kutti, Oilseeds, Pulses etc.
Black soil	Mixed	Mungeli, Ariya, Raipur, Rajim, Mahasamund, Kurud and Kawardha tehsils	Paddy, Wheat, Cotton, Gram, Sugarcane And Rabi crops

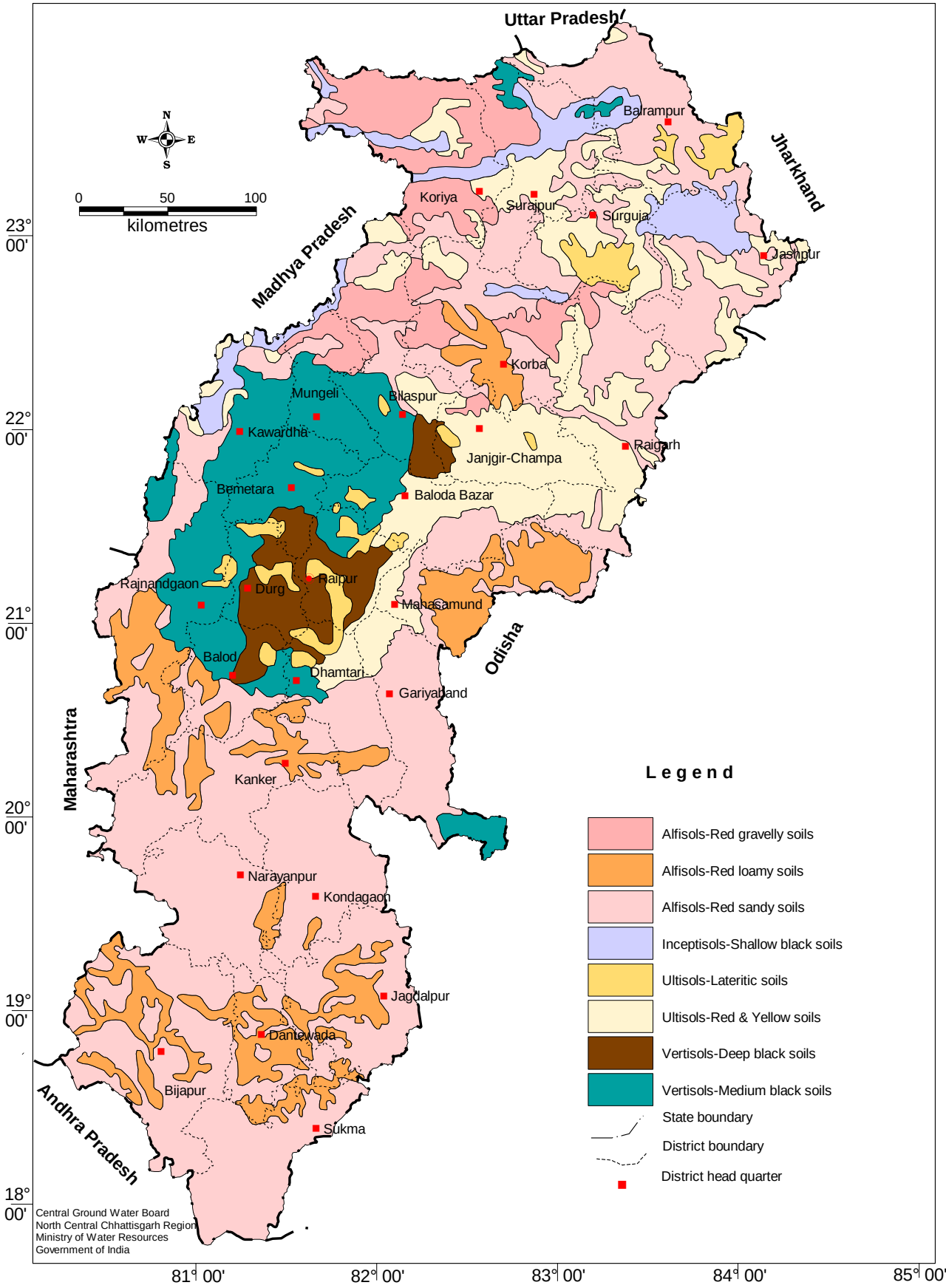


Fig 4.1 Distribution of soil in the State

4.2 Land use

The land use pattern is an important index of the human, social, cultural, and economic developments. As per the available statistics for the year 2013 (Department of Statistics, Govt. of Chahttisgarh), 6698724 Ha. (47.38 %) of the total area in the State is covered by forests. The forests include protected forests, reserved forests, revenue forests and others .Nearly 92.2 % of Narayanpur district (637470 Ha) is covered by forests but area wise Raipur district has the maximum forest cover (874833 Ha). Durg district has the lowest forest cover in terms of percentage of the toal area (11.44 %,99603 Ha) but area wise Janjgir-Champa has the lowest forest cover (89204Ha).The net sown area for Chhattisgarh is just 33.31% (4710447Ha).The double cropped area is 972729 Ha. Nearly 28 % of the net sown area has irrigation facilities. Land use map is presented in fig 4.2

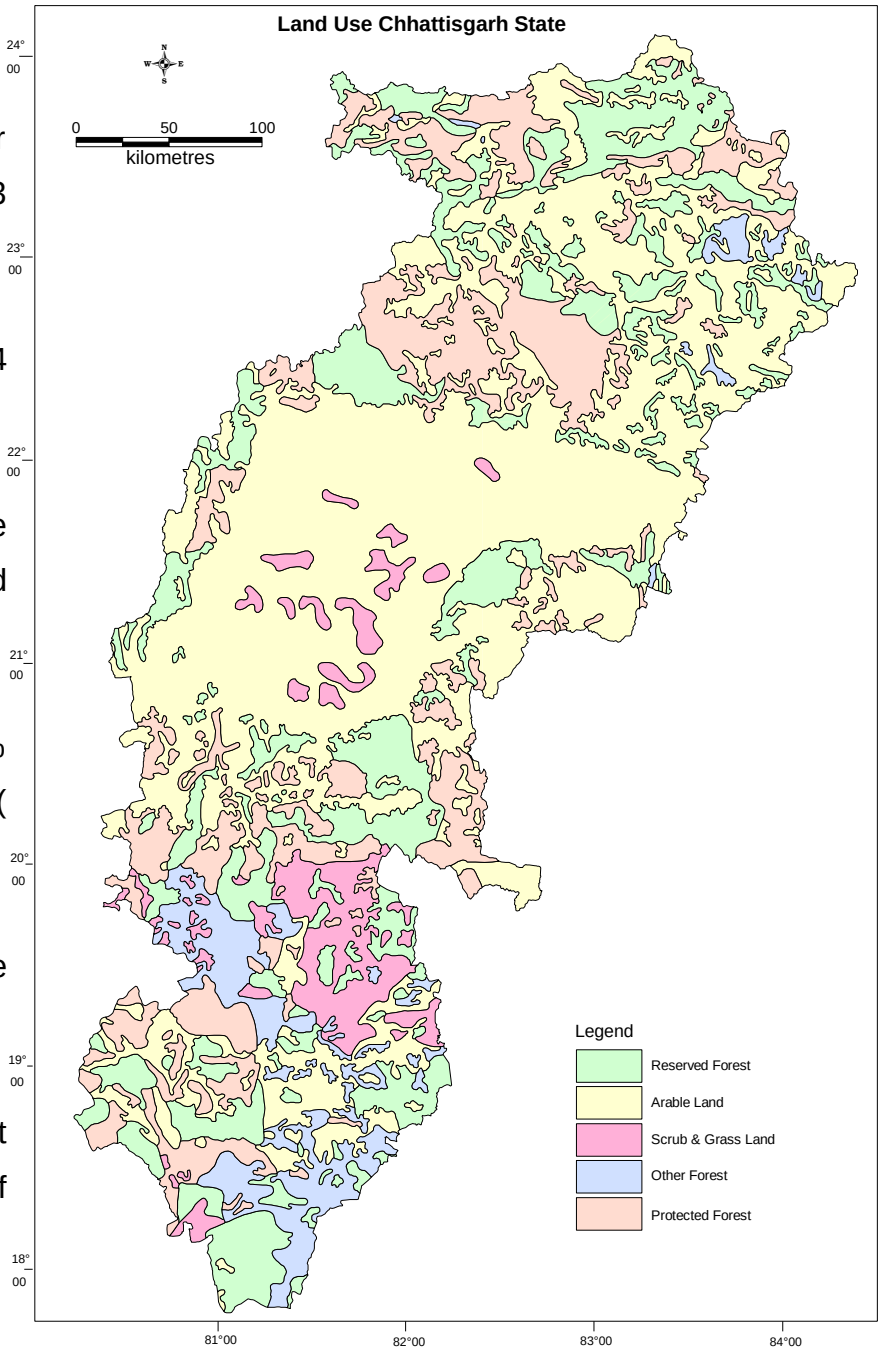


Fig 4.2 Landuse map of the State

5. HYDROGEOLOGICAL CONDITIONS

The occurrence and movement of ground water is related to the existing geology of the area. The State is underlain by various rock types belonging to different geological ages, from Azoic to Quaternary. The major lithounits are shown in **Fig. 5.1** and the general geological succession is given in **Table 5.1**.

Nearly 58 % of the State is covered by Crystalline and Metamorphic rocks, around 27 % of the area is covered by Chhattisgarh Group of rocks. The semi-consolidated Gondwana Supergroup of rocks covers 13 % of the area and the remaining 2 % by Daccan trap, Lameta, Laterite and River Alluvium.

The Archaean crystallines comprising of granites and gneisses form the major litho unit in the area. The ground water occurs under unconfined to semi-confined conditions. All the districts except Janjgir- Champa are covered by crystallines. The weathered formation and the fractures form the main repository for ground water in these rocks. The second important litho unit in the area is the Proterozoic arenaceous–argillacaous- calcareous rocks of Chhattisgarh, Indravati, Khariyar and Sukma Groups. The weathered formation, caverns, fractures and formation contacts form the potential ground water zones. The karstified argillo –calcareous rocks are much more productive than compact –sillicified arenaceous sediments. The gypsum karsts are more intense than calcareous karsts in the Chhattisgarh basin. The overall karstification in Indravati basin is much higher than in the Chhattisgarh basin. Karsts, though few and far in between are the best repository for ground water. These rocks cover the districts of Bastar, Dantewada, Kanker, Raipur, Dhamtari, Mahasamund, Durg, Rajnandgaon, Kawardha, Bilaspur, Janjgir- Champa, Korba and Raigarh.

The rocks belonging to Gondwana Supergroup are the third major litho unit in the area. The sandstones posses primary and occasional secondary porosity. They form thick and extensive unconfined to confined aquifers extending to a depth of 300 mbgl. At some places free flow conditions are existing and at places the temperature goes up to 50^0C. The Gondwana formations are covering the districts of Raigarh, Korba, Koriya and Surguja and are exhibiting confined conditions.

Table 5.1: Geological Succession for Chhattisgarh State

Age	Formation	Lithology
Quaternary	Recent to sub recent	Alluvium – clay, silt, sand pebble, gravel, laterite ferruginous concretions
Cenozoic	Deccan traps	Traps with or without intertrappean sediments
Cenozoic, Mesozoic, upper Palaeozoic	Gondwana Super group	Sandstone, shale, conglomerate, quartzite, silt – stone, clay stone.
Proterozoic	Chhattisgarh Super group Chilipi, Kotri, Dongargarh, Iron Ore Super group	Limestone and shale Arkose, conglomerate, sand stone, silt stone, shale Schist, phyllite, slate, gneiss, marble, BHQ.
Azoic	Basement crystallines Basement crystallines	Charnockite, khondalite, granulite, gneisses and meta sediments Granites, gneisses and associated basic and ultra basic intrusive

The unconsolidated formation of Quaternary age comprising alluvium, clay, silt and laterite form as a thin and extensive unconfined aquifer in several isolated patches along major River courses. The thickness extending up to a depth of 30 mbgl along Mahanadi, Arpa, Hasdeo, Seonath, Kharun, Mand, Kelo Rivers.

From the hydrogeological point of view, all rock types existing in the State can broadly be divided into three groups as i) the consolidated formations, ii) the semi consolidated formations and iii) the unconsolidated formations. The hydrogeological map of the state is presented in **Fig. 5.2.**

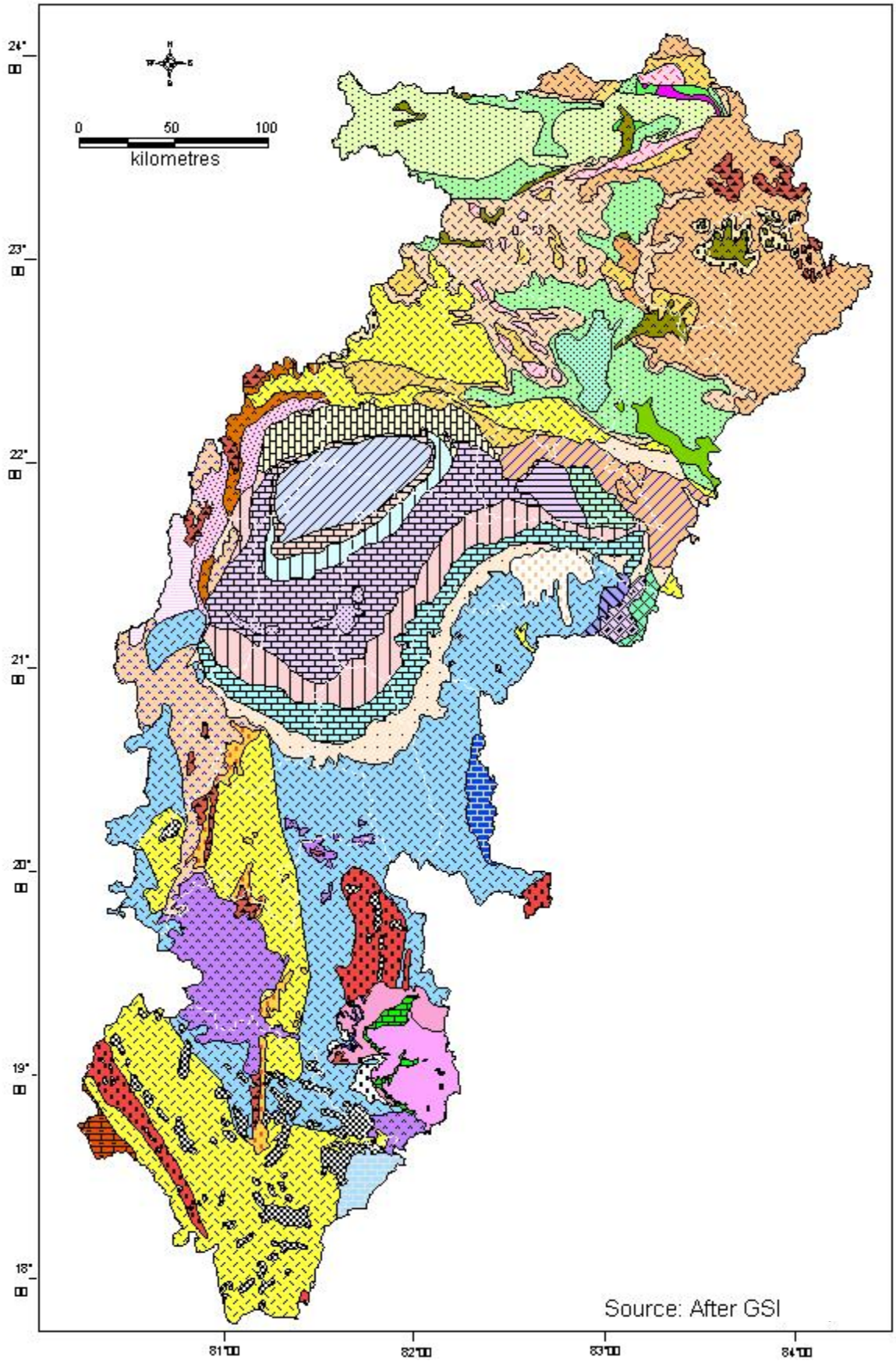
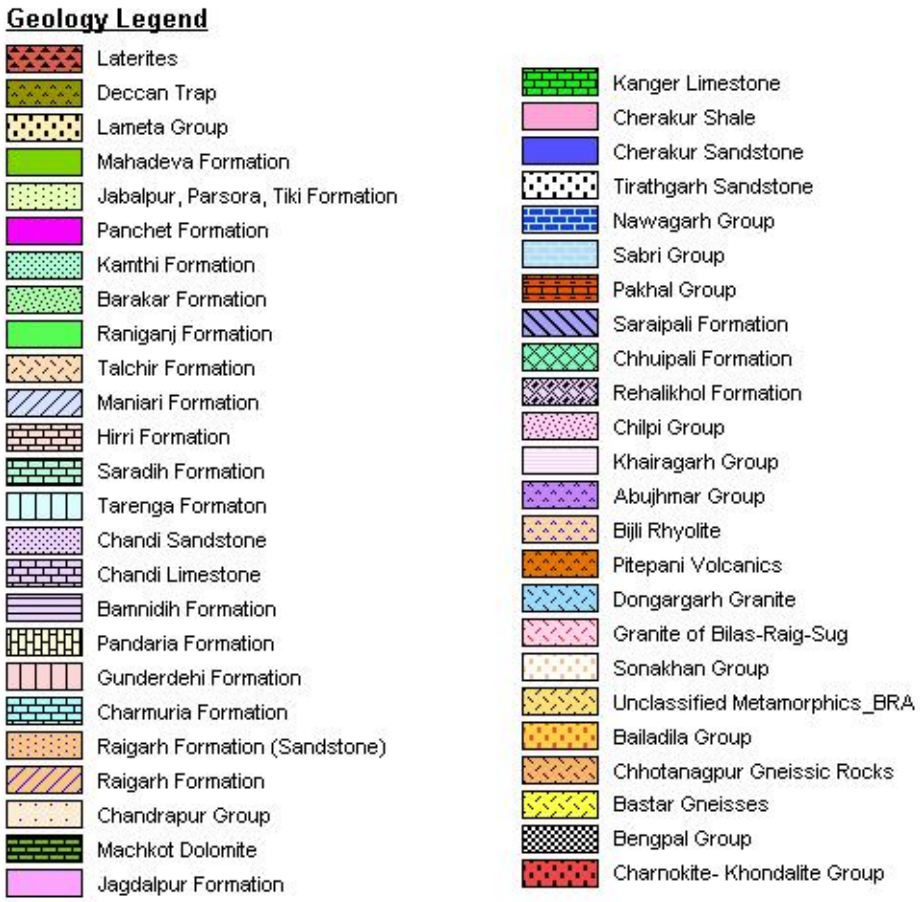


Fig. 5.1: Geological map of Chhattisgarh State



5.1 Consolidated Formations

The consolidated formations include the crystallines and the metamorphosed sedimentary formations belonging to Proterozoic age. They are mainly granites, granite gneisses, schistose rocks, charnockites, quartzites, calcsilicate rocks, shales, phyllites and limestones. These rocks are devoid of primary porosity. The ground water occurs in the secondary porosity resulting from fracturing, jointing and weathering. These hard rock aquifers exhibit considerable variations laterally as well as depth wise. The weathered formation is composed of loose regolith with secondary intergrannular porosity, which facilitates free circulation of ground water. Also the fractures at depth form potential repository of ground water. In general the average thickness of weathered formation varies from 15 to 20 m. The ground water occurs under water table conditions. The water bearing fracture zones are generally occurring within a depth of 100m, but deeper potential fractures are also encountered in some of the boreholes.

Deccan Trap basalts are typical hard rock formations. The lava flows are generally 10 to 20 m thick. The top of each flow comprises of 25 to 40 % vesicular/fragmentary basalt. The vesicles are generally filled with secondary minerals like calcite and zeolite. The characteristic red bole beds form the marker horizons and occur as inter- trappean beds between successive flows. Deccan Traps with primary vesicular structure and secondary fractures and joints are moderately productive from ground water point of view. The ground water occurs under both unconfined to semi confined conditions. The Deccan Trap basalts are occurring at few places.

5.2 Semi-consolidated formations

The semi-consolidated formations include Gondwana Supergroup of sedimentary rocks and ranging in age from Upper Carboniferrous to Cretacceous. This group includes sandstone, shale, siltstone and conglomerate beds. These formations are generally highly compact and possess less intergrannular porosity. The coarse to medium grained, weathered, fractured and friable sandstone forms good aquifer. The ground water occurs under water table conditions in the near surface aquifers and under confined conditions in the deeper aquifers. The depth of weathering in Gondwana Group of rocks generally extends to a depth of 15 m.

5.3 Unconsolidated formations

The unconsolidated formations include alluvium and laterite. Alluvium occurs as discontinues patches along the River courses where the thickness is limited. The sand and gravel layers act as a good repository for ground water. The ground water occurs under unconfined conditions. The laterites occur as cap rocks on basalts or granites. The laterites are vesicular, essentially ferruginous and form good repository of ground water.

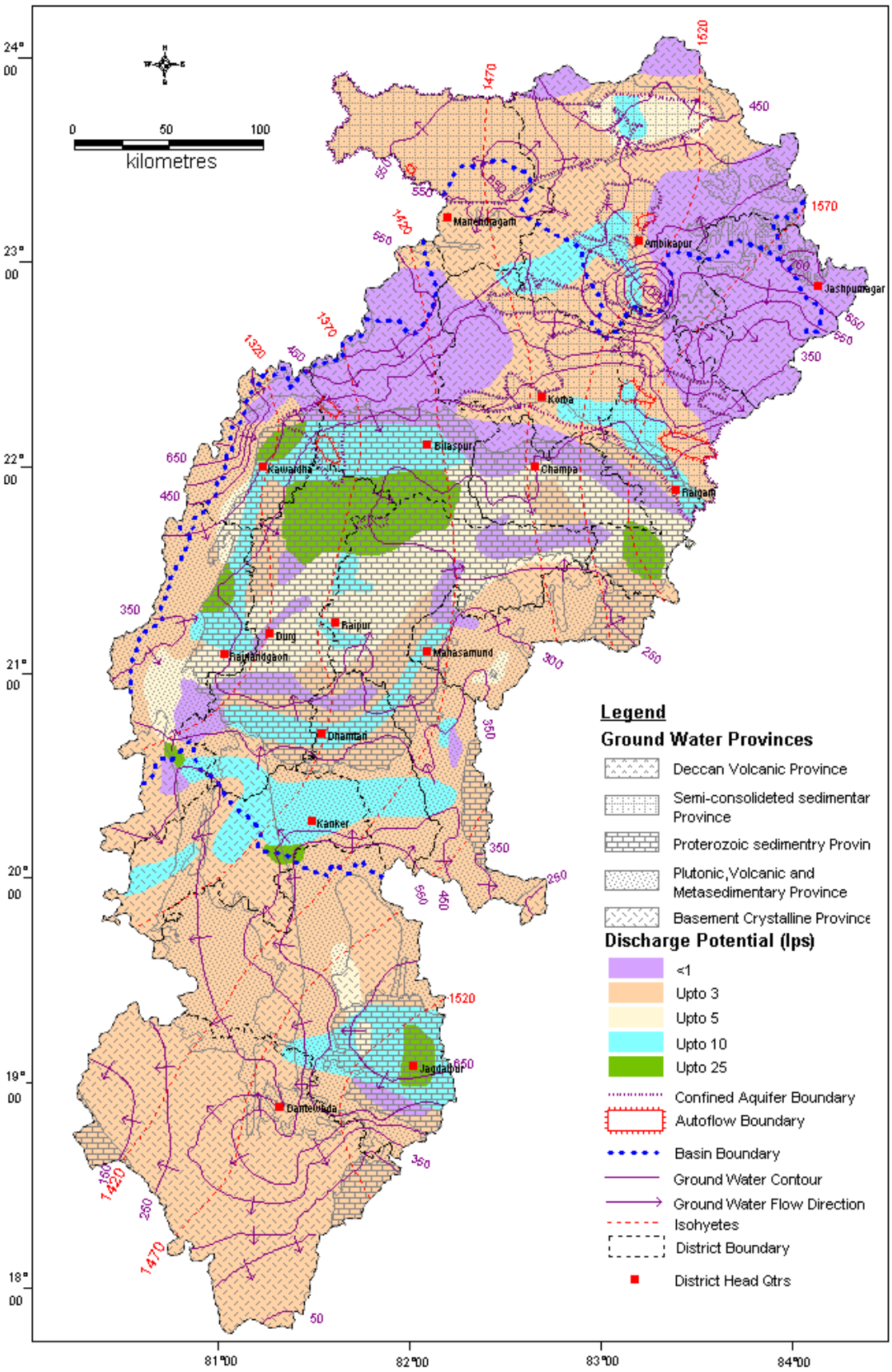


Fig. 5.2: Hydrogeological map of Chhattisgarh State

6. GROUND WATER REGIME MONITORING

Ground water level is not static. It is always under the influence of time-dependant recharge and discharge factors. As a result the water level in the aquifer system fluctuates and the range depends on the period of influence. The recharge is due to many factors such as rainfall, seepage from reservoirs, lakes, ponds, rivers and irrigation, etc. The discharge includes ground water withdrawal through manual and pumping systems, natural seepage to rivers and sea, evaporation from shallow water table and transpiration through vegetation.

The Central Ground Water Board is monitoring the ground water regime through the length and breadth of the country since the year 1969 through a network of Hydrograph Stations (NHS). The density of observation wells is increased from year to year. As on 31st March 2013, a total of 1007 number of observation wells, which included both dug wells (759) and piezometers (248) were established in Chhattisgarh for monitoring purposes. Location of the NHS wells is shown in **Fig. 6.1**. The details of NHS are given in Annexure-I.

The hydrograph network stations (NHS) are established permanently and are monitored during every set of measurements. The existing network provides information on ground water regime with fair degree of accuracy. The NHS wells are monitored four times in a year during the following months. They are;

May - 21st to 30th of the month - represents water level of Pre-monsoon period.
August - 21st to 30th of the month - represents peak monsoon water level
November - 1st to 10th of the month- represents water level of Post-monsoon period.
January - 1st to 10th of the month- represents the recession stage of water level

Water samples were collected from each network station during the month of May 2013 (Pre-monsoon) to assess the chemical quality of ground water.

6.1 Distribution of Hydrograph Network Stations (NHS)

a) District-wise

The total number of hydrograph network stations (NHS) in the State are 1007.Out of these 759 are dug wells tapping the shallow aquifer and 248 are piezometers tapping both shallow and deeper aquifers. District-wise distribution of the hydrograph network stations is given in **Table 6.1** and is also shown in Fig**. 6.1**.

Table 6.1: District wise distribution of Hydrograph Network Stations in Chhattisgarh

Sl No	Name of the District	Total No. of Ground Water Monitoring Wells (As on 31, Mar, 2013)			Total No. of Ground Water Monitoring Wells Established upto March, 2014)			Total No. of Ground Water Monitoring Wells Abandoned upto March, 2014)			Total No. of Ground Water Monitoring Wells (As on March, 2014)		
		DW	PZ	Total	DW	PZ	Total	DW	PZ	Total	DW	PZ	Total
1	Balod	15	10	25	7	0	7				22	10	32
2	Baloda Bazar	23	7	30	0	0	0				23	7	30
3	Balrampur	20	8	28	0	0	0				20	8	28
4	Bastar	13	6	19	5	0	5				18	6	24
5	Bemetara	17	10	27	0	0	0				17	10	27
6	Bijapur	7	0	7	0	0	0				7	0	7
7	Bilaspur	47	13	60	0	0	0				47	13	60
8	Dantewada	9	4	13	0	0	0				9	4	13
9	Dhamtari	22	12	34	1	0	1				23	12	35
10	Durg	24	5	29	8	0	8				32	5	37
11	Gariyaband	18	3	21	6	0	6				24	3	27
12	Janjgir-Champa	40	15	55	0	0	0				40	15	55
13	Jashpur	51	11	62	2	0	2				53	11	64
14	Kanker	20	3	23	2	0	2				22	3	25
15	Kawardha	13	12	25	0	0	0				13	12	25
16	Kondagaon	17	2	19	2	0	2				19	2	21
17	Korba	58	29	87	0	0	0				58	29	87
18	Koriya	29	7	36	0	0	0				29	7	36
19	Mahasamund	23	20	43	3	0	3				26	20	46
20	Mungeli	22	6	28	0	0	0				22	6	28
21	Narayanpur	3	0	3	0	0	0				3	0	3
22	Raigarh	64	23	87	22	0	22				86	23	109
23	Raipur	33	17	50	4	0	4				37	17	54
24	Rajnandgaon	44	9	53	10	0	10				54	9	63
25	Sukma	4	4	8	0	0	0				4	4	8
26	Surajpur	22	4	26	0	0	0				22	4	26
27	Surguja	26	8	34	3	0	3				29	8	37
Total		684	248	932	75	0	75				759	248	1007

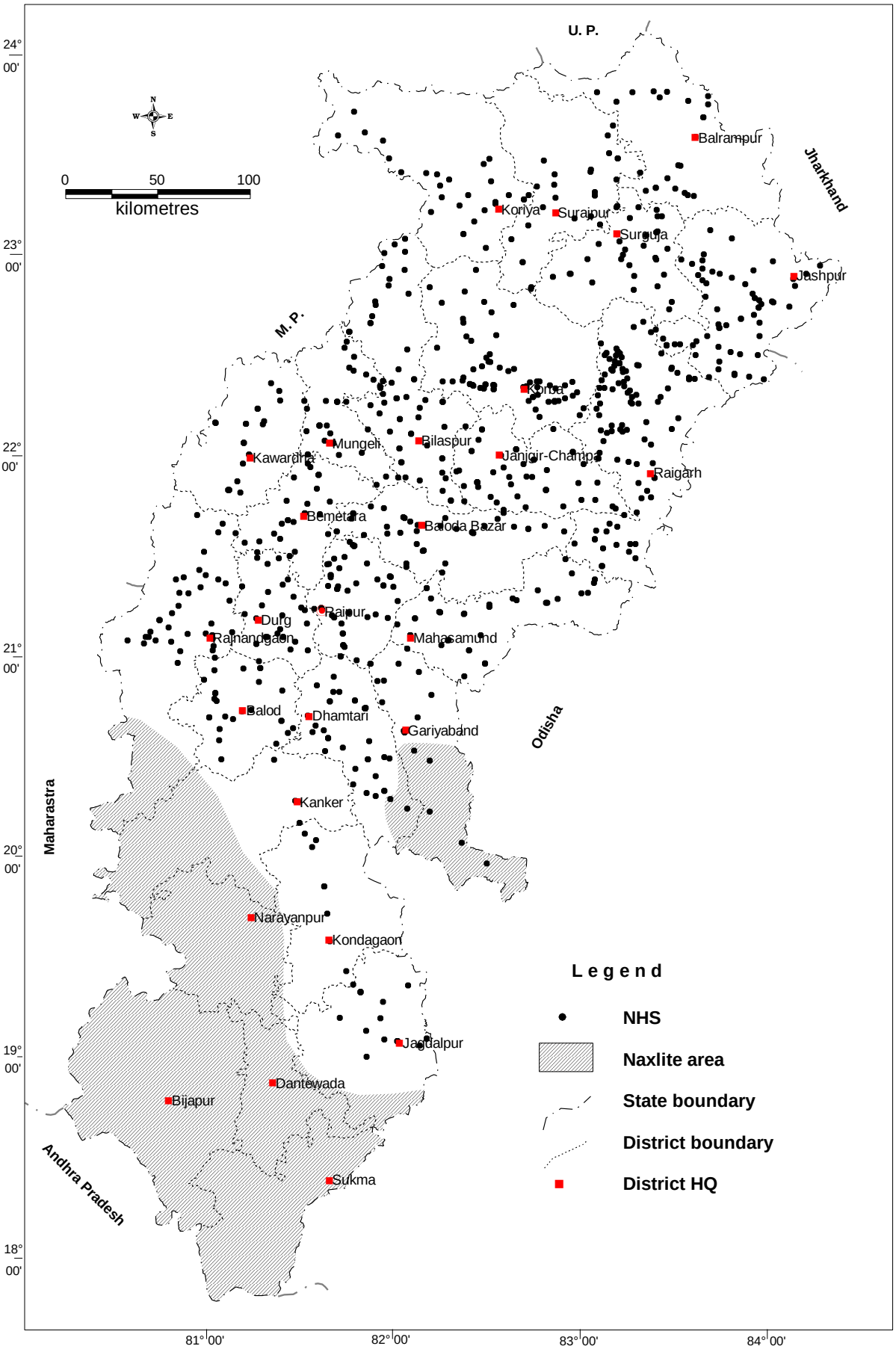


Fig 6.1 Location of NHS monitoring stations, Chhattisgarh State

7. ANALYSIS OF WATER LEVELS

The ground water levels observed over a period provides valuable information on the behaviour of the ground water regime, which is constantly subjected to changes due to recharge and discharge phenomena. A balance between these two factors results in the decline or rise in the ground water storage. When the recharge exceeds discharge there will be a rise in the ground water storage and vice versa. The decline in water level may be due to increase in draft (for different purposes) or decrease in precipitation (less recharge to ground water). On the other hand a rise in water level may be due to an increase in rainfall and/or due to changes in irrigation practices.

The dug wells are tapping the phreatic aquifer which is mostly limited to a depth of 15 m. The depth of piezometers which are tapping both the phreatic and deeper aquifers varies from 18 to 90 m. Hence the water level recorded in the piezometers may not be the same as that of dug wells for a particular period though both the structures are in the same place. In this report the water level data collected from the dug wells is presented. The water level in some of the wells on the southern part of the State could not be measured due to various reasons. Hence those areas are left blank while preparing different maps.

The NHS (dug wells) water level data collected four times during the year 2013-14 was analysed and for every set of measurements, write up and maps were prepared and are presented here under various paragraphs. The NHS (dug well) water level data is given in **Annexure-II**. The purpose of water level data analysis is;

i) Four measurements of depth to water level gives an overall idea regarding the ground water level in the state during the year of measurement.

ii) The fluctuation in comparison to the same month in the previous year gives an idea about the change in the ground water level for a particular period with respect to that of the level during the same month in the previous year. This gives an idea about the change in the amount of draft and rainfall between the two years.

iii) The water level fluctuation during the pre-monsoon period in comparison to last year gives an idea about the seasonal fluctuation, which ultimately reflects the change in dynamic ground water resources.

iv) The water level fluctuation during a particular month of measurement with reference to the decadal mean for the same months gives an idea of the behaviour of the ground water level on long-term basis.

7.1 Depth To Water Level

7.1.1 May 2013

In general, the depth to water level ranges up to 10 mbgl in approximately 79.35% of the observation wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 18.06% of the observation wells and mostly in parts of Bilaspur, Durg, Janjgir-Champa, Korba, Koriya, , , Raipur and Surguja districts. The deepest water level of 25.01 m bgl was monitored in Sambalpur observation well(Shallow piezometer) of Durg district

Only 13 wells (approximately 2.1% of the monitored wells) in the state are showing water levels between 0-2 m bgl in Dhamtari, Durg, Koriya and Janjgir Champa districts. Water levels in the range of 2-5 m bgl are recorded in about 126 of the observation wells monitored. The highest percentages of wells in this range are in Janjgir-Champa (29%) Dhamtari (24%), Durg (24%), Raigarh (28%) districts. Nearly 56.94% of observation wells are exhibiting water level in the range of 5-10 mbgl in all the districts of the state.

The district wise frequency distribution of different ranges of depth to water level are furnished in **table 7.1**. Different ranges of depth to water **Annexure-II** as observed in May 2013 are represented on a map and appended as **Fig 7.1**

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Table 7.1 District wise Distribution of Percentage of Observation Wells ,May 2013									
State	Chhattisgarh	Depth to Water Table (mbgl)		2013/May					
District	No. of Wells Analysed			No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of					
		Min	Max	0-2	2-5	5-10	10-20	20-30	30-40
Bastar	16	3.75	10.50	0	4	11	1		
					25.00	68.75	6.25		
Bilaspur	75	1.60	32.00	1	14	47	10	3	0
				1.33	18.67	62.67	13.33	4.00	0.00
Dhamtari	21	1.70	19.29	2	5	9	5	0	0
				10	24	43	24	0	0
Durg	62	1.78	31.00	1	15	34	9	3	0
				2	24	55	15	5	0
Janjgir-Champa	41	1.35	22.50	3	12	18	7	1	0
				7	29	44	17	2	0
Jashpur	54	2.75	16.45	0	8	40	6	0	0
				0	15	74	11	0	0
Kanker	4	5.25	9.70	0	0	4	0	0	0
				0	0	100	0	0	0
Kawardha	16	3.95	24.42	0	2	10	1	3	0
				0	13	63	6	19	0
Korba	45	2.20	13.47	0	11	27	7	0	0
				0	24	60	16	0	0
Koriya	5	3.07	12.80	0	1	2	2	0	0
				0	20	40	40	0	0
Mahasamund	34	2.05	25.00	0	6	13	12	3	0
				0	18	38	35	9	0
Raigarh	93	1.60	36.30	1	26	48	17	1	0
				1	28	52	18	1	0
Raipur	67	0.46	23.10	4	15	34	13	1	0
				6	22	51	19	1	0
Rajnandgaon	27	1.85	12.30	1	2	21	3	0	0
				4	7	78	11	0	0
Surguja	60	2.75	20.22	0	5	35	19	1	0
				0	8	58	32	2	0
Total	620	0.46	36.30	13	126	353	112	16	0

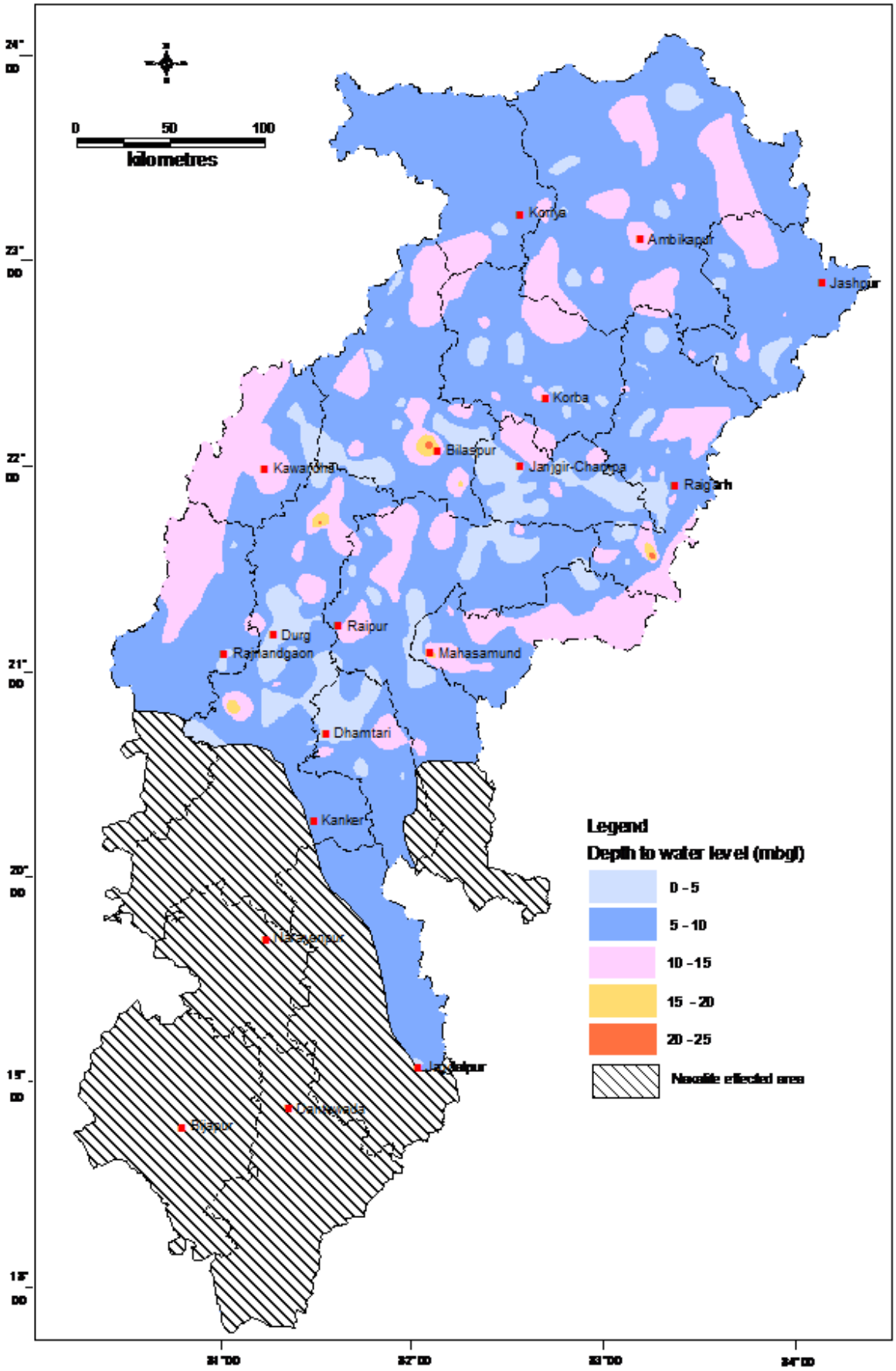

Fig 7.1 Depth to water level map May 2013

7.1.2 August 2013

In general, the depth to water level ranges up to 10 mbgl in approximately 96.3 % of the observation wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 3.3 % of the observation wells and mostly in parts of Bilaspur, Durg, and Korba and Koriya districts. The deepest water level of 19.7 m bgl was monitored in Chandkhuri observation well (Shallow piezometer) of Bilaspur district.

Only 389 wells (approximately 58.76% of the monitored wells) in the state are showing water levels between 0-2 m bgl in all the districts. Water levels in the range of 2-5 m bgl are recorded in about 30.06 % of the observation wells monitored. The highest percentages of wells in this range are in Jashpur (14%), Surguja (12%), Korba (15%) districts. Nearly 7.85% of observation wells are exhibiting water level in the range of 5-10 mbgl in all the districts of the state.

The district wise frequencies of distribution of different ranges of depth to water level are furnished in **Table 7.2**. Different ranges of depth to water table as observed in Aug' 2013 are represented on a map and appended as in **Fig 7.2**

Table 7.2 Depth to Water Level 2013/Aug									
	State	**Chhattisgarh**	**Distribution of Percentage of Observation Wells**						
	District	**No. of Wells Analysed**	**Depth to Water Table (mbgl)**		**No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of**				
			Min	**Max**	**0-2**	**2-5**	**5-10**	**10-20**	**20-40**
1	Bastar	15	0.24	5.40	8	6	1	0	
					53.33	40.00	6.67	0.00	
2	Bilaspur	72	0.01	19.70	43	19	6	4	
					59.72	26.39	8.33	5.56	
3	Dhamtari	21	0.18	6.00	16	4	1	0	
					76.19	19.05	4.76	0.00	
4	Durg	69	0.23	16.87	52	11	2	4	
					75.36	15.94	2.90	5.80	
5	Janjgir - champa	44	0.05	7.30	34	7	3	0	
					77.27	15.91	6.82	0.00	
6	Jashpur	58	0.38	17.40	23	26	8	1	
					39.66	44.83	13.79	1.72	
7	Kanker	3	0.85	3.93	1	2	0	0	
					33.33	66.67	0.00	0.00	
8	Kawardha	14	0.37	12.35	5	6	1	2	
					35.71	42.86	7.14	14.29	
9	Korba	47	0.22	15.80	22	15	7	3	
					46.81	31.91	14.89	6.38	
10	Koriya	16	0.20	3.56	12	4	0	0	
					75.00	25.00	0.00	0.00	
11	Mahasamund	28	0.08	3.40	22	6	0	0	
					78.57	21.43	0.00	0.00	
12	Raigarh	92	0.15	14.67	33	44	12	3	
					35.87	47.83	13.04	3.26	
13	Raipur	72	0.07	6.71	61	10	1	0	
					84.72	13.89	1.39	0.00	
14	Rajnandgaon	36	0.19	5.45	31	4	1	0	
					86.11	11.11	2.78	0.00	
15	Surguja	75	0.15	15.14	26	35	9	5	
					34.67	46.67	12.00	6.67	
	Total	662	0.01	19.70	389	199	52	22	
					58.76	30.06	7.85	3.32	

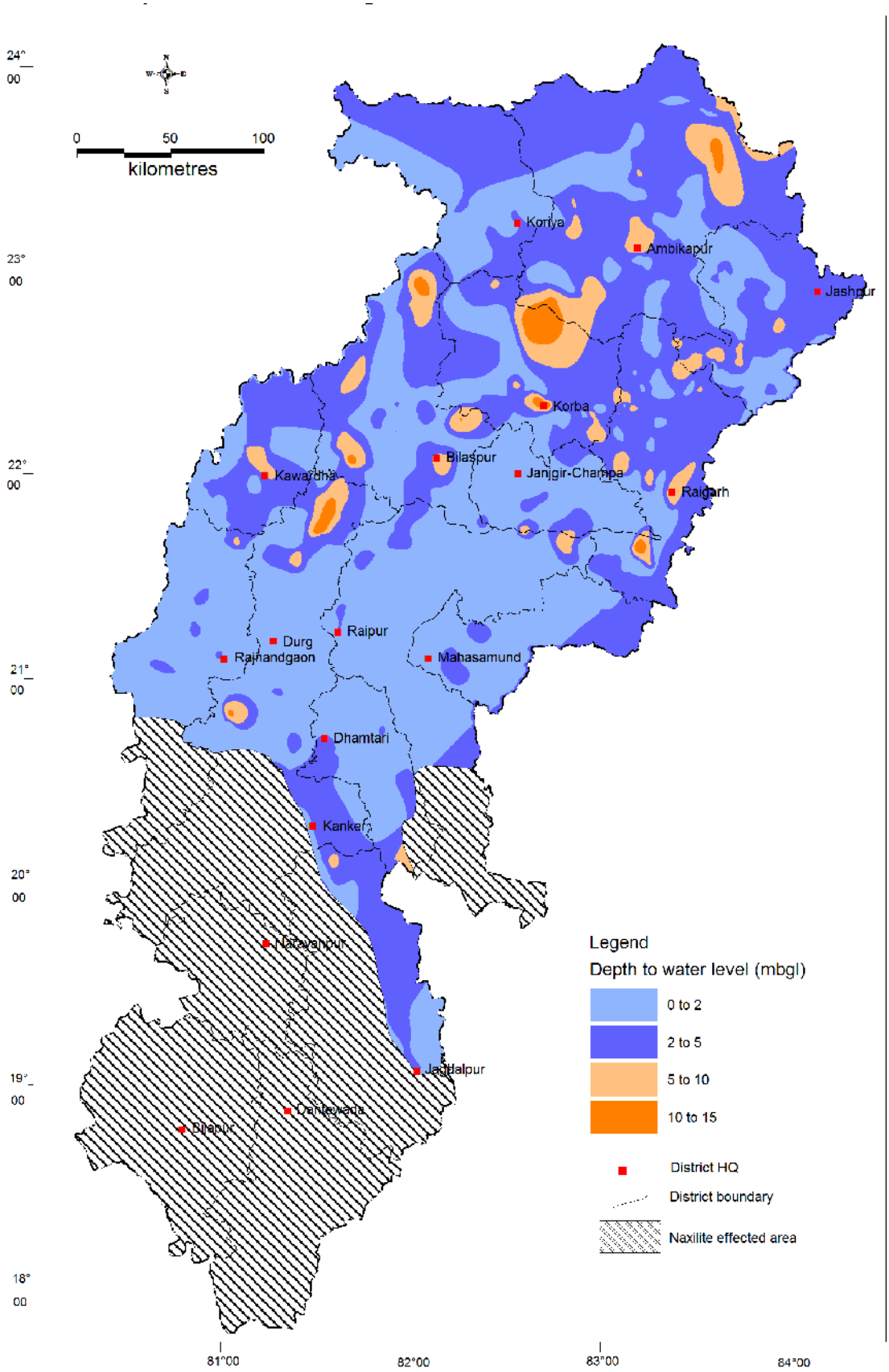

Fig 7.2 Depth to Water Level map , August 2013

7.1.3 November 2013

In general, the depth to water level ranges up to 10 mbgl in approximately 95.43% of the observation wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur only in 3.88% of the observation wells and mostly in parts of Bilaspur, Durg, Kawardha and Surguja districts. The deepest water level of 21.02 m bgl was monitored in Saroda Dadar observation well (Shallow piezometer) of Kawardha district.

Only 106wells (approximately 24.20% of the monitored wells) in the state are showing water levels between 0-2 m bgl in all the districts. Water levels in the range of 2-5 m bgl are recorded in about 55.25% of the observation wells monitored. The highest percentages of wells in this range are in Baster (72.73%), Jashpur (69.23%), Kawardha (70.59%), Koria (61.90%), Raipur (62.26%), and Rajnandgaon (62.50%) districts. Nearly 15.98% of observation wells are exhibiting water level in the range of 5-10 mbgl in all the districts of the state.

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The district wise frequencies of distribution of different ranges of depth to water level are furnished in **Table 7.3**. Different ranges of depth to water table as observed in Nov' 2013 are represented on a map and appended as **Fig. 7.3 and Table 7.3**.

Table 7.3	Depth to Water Table ,Nov 2013 , Distribution of Percentage of Observation Wells								
	District	No. of Wells Analysed	Depth to Water Table (mbgl)		No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of				
			Min	Max	0-2	2-5	5-10	10-20	20-40
1	Bsatar	21	1.66	13.18	1	16	3	1	0
					4.76	76.19	14.29	4.76	0
2	Bilaspur	78	0.60	19.10	11	47	12	8	0
					14.10	60.26	15.38	10.26	0
3	Dhamtari	31	0.76	12.85	10	13	7	1	0
					32.26	41.94	22.58	3.23	0
4	Durg	86	0.75	21.80	21	35	12	13	5
					24.42	40.70	13.95	15.12	5.81
5	Janjgir-Champa	49	1.02	8.90	16	20	13	0	0
					32.65	40.82	26.53	0.00	0.00
6	Jashpur	58	0.75	14.20	4	38	14	2	0
					6.90	65.52	24.14	3.45	0.00
7	Kanker	5	2.06	5.20	0	4	1	0	0
					0.00	80.00	20.00	0.00	0.00
8	Kawardha	22	0.97	19.40	2	15	1	4	0
					9.09	68.18	4.55	18.18	0.00
9	Korba	63	0.67	12.17	7	38	16	2	0
					11.11	60.32	25.40	3.17	0.00
10	Koriya	19	1.41	7.37	4	10	5	0	0
					21.05	52.63	26.32	0.00	0.00
11	Mahasamund	38	1.50	14.18	3	19	13	3	0
					7.89	50.00	34.21	7.89	0.00
12	Raigarh	97	0.90	18.00	9	52	32	4	0
					9.28	53.61	32.99	4.12	0.00
13	Raipur	90	0.55	16.40	18	54	17	1	0
					20.00	60.00	18.89	1.11	0.00
14	Rajnandgaon	38	0.70	7.45	10	22	6	0	0
					26.32	57.89	15.79	0.00	0.00
15	Surguja	79	0.85	13.90	4	36	29	10	0
					5.06	45.57	36.71	12.66	0.00
	Total	774	0.60	21.80	120	419	181	49	5

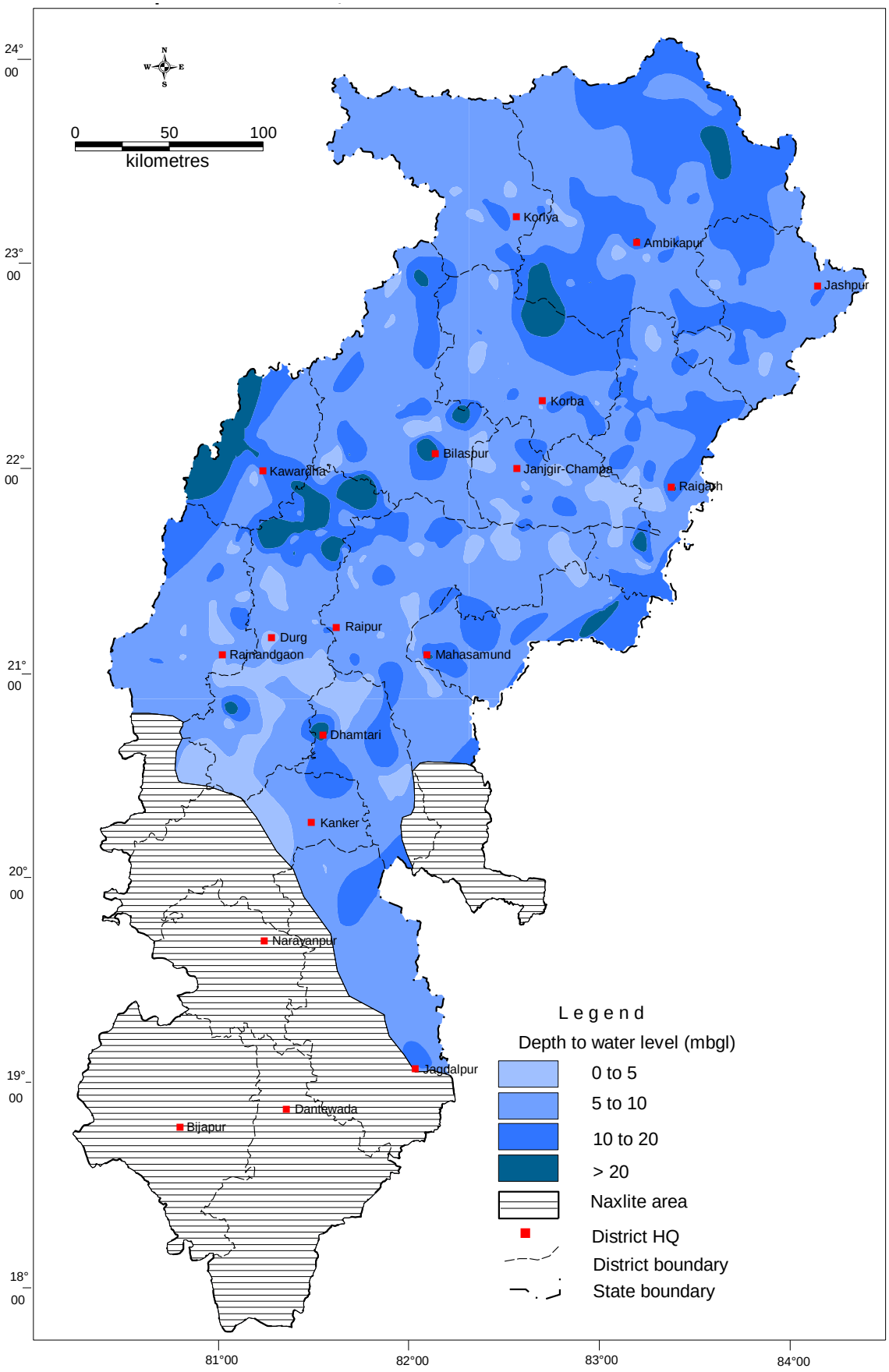

Fig 7.3 Depth to Water Level map ,November 2013

7.1.4 January 2014

In general, the depth to water level ranges upto 10 mbgl in approximately 90.44% of the observation wells in the state. Deeper water levels ranging between 10 and 20 mbgl occur approximately in 9.56% of the observation wells mostly in parts of Surguja, Bilaspur, Durg and Korba, Koriya, Raigarh, Raipur, Rajnandgaon districts. The deepest water level of 49.4 m bgl was monitored in Ganiyari observation well of the Bilaspur district

Around 4 .66% of the monitored wells are showing water levels between 0-2 m bgl covering almost all the districts of the state except Kawardha, Kanker districts. Water levels in the range of 2-5 m bgl are recorded in about 47.18% of the observation wells monitored. The highest percentages of wells in this range are in Bilaspur (54.12%), Dhamtari (45.45%), Janjgir-Champa(48%), Jashpur (62.71%) , Raipur (54.35%) districts. Nearly 38.6% of observation wells are exhibiting water level in the range of 5-10 mbgl mostly in Jashpur (36.00%), Korba(45.45%), Kawardha(40%), Raigarh(40.82%) , and Surguja(53.57%) districts.

The district wise frequency distributions of different ranges of depth to water level are furnished in **Table 7.4**. Different ranges of depth to water table as observed in January 2014 are represented on a map and appended as **Fig 7.4**

Table 7.4 Different ranges of depth to water ,January 2014									
No. / Percentage of Wells Showing Depth to Water January 2014									
District	**No. of Wells Analysed**	**Depth to Water Table (mbgl)**		**No. / Percentage of Wells Showing Depth to Water Table (mbgl) in the Range of**					
		Min	**Max**	**0.0 -2**	**2- 5**	**5-10**	**10-20**	**20-40**	**40-60**
Bastar	24	1.20	17.15	2	13	8	1	0	0
				8.33	54.17	33.33	4.17	0.00	0.00
Bilaspur	85	1.10	49.40	3	46	26	8	1	1
				3.53	54.12	30.59	9.41	1.18	1.18
Dhamtari	33	1.32	24.69	2	15	13	2	1	0
				6.06	45.45	39.39	6.06	3.03	0.00
Durg	92	0.97	33.48	7	38	28	9	10	0
				7.61	41.30	30.43	9.78	10.87	0.00
Janjgir-Champa	50	1.56	11.73	4	24	19	3	0	0
				8	48	38	6	0	0
Jsahpur	59	0.94	14.47	3	37	16	3	0	0
				5.08	62.71	27.12	5.08	0.00	0.00
Kanker	5	2.78	5.90	0	3	2	0	0	0
				0	60	40	0	0	0
Kawardha	25	2.73	20.82	0	9	10	5	1	0
				0	36	40	20	4	0
Korba	66	1.00	13.47	2	32	30	2	0	0
				3.03	48.48	45.45	3.03	0.00	0.00
Koriya	26	1.77	13.11	1	13	11	1	0	0
				3.85	50.00	42.31	3.85	0.00	0.00
Mahasamund	38	1.75	19.52	1	14	18	5	0	0
				2.63	36.84	47.37	13.16	0	0
Raigarh	98	1.12	22.20	3	50	40	4	1	0
				3.06	51.02	40.82	4.08	1.02	0
Raipur	92	1.12	16.60	5	50	33	4	0	0
				5.43	54.35	35.87	4.35	0	0
Rajnandgaon	39	1.10	10.74	4	18	16	1	0	0
				10.26	46.15	41.03	2.56	0	0
Surguja	84	1.02	14.80	1	23	45	15	0	0
				1.19	27.38	53.57	17.86	0	0
Total	816	0.94	49.40	38	385	315	63	14	1
				4.66	47.18	38.60	7.72	1.72	0.12

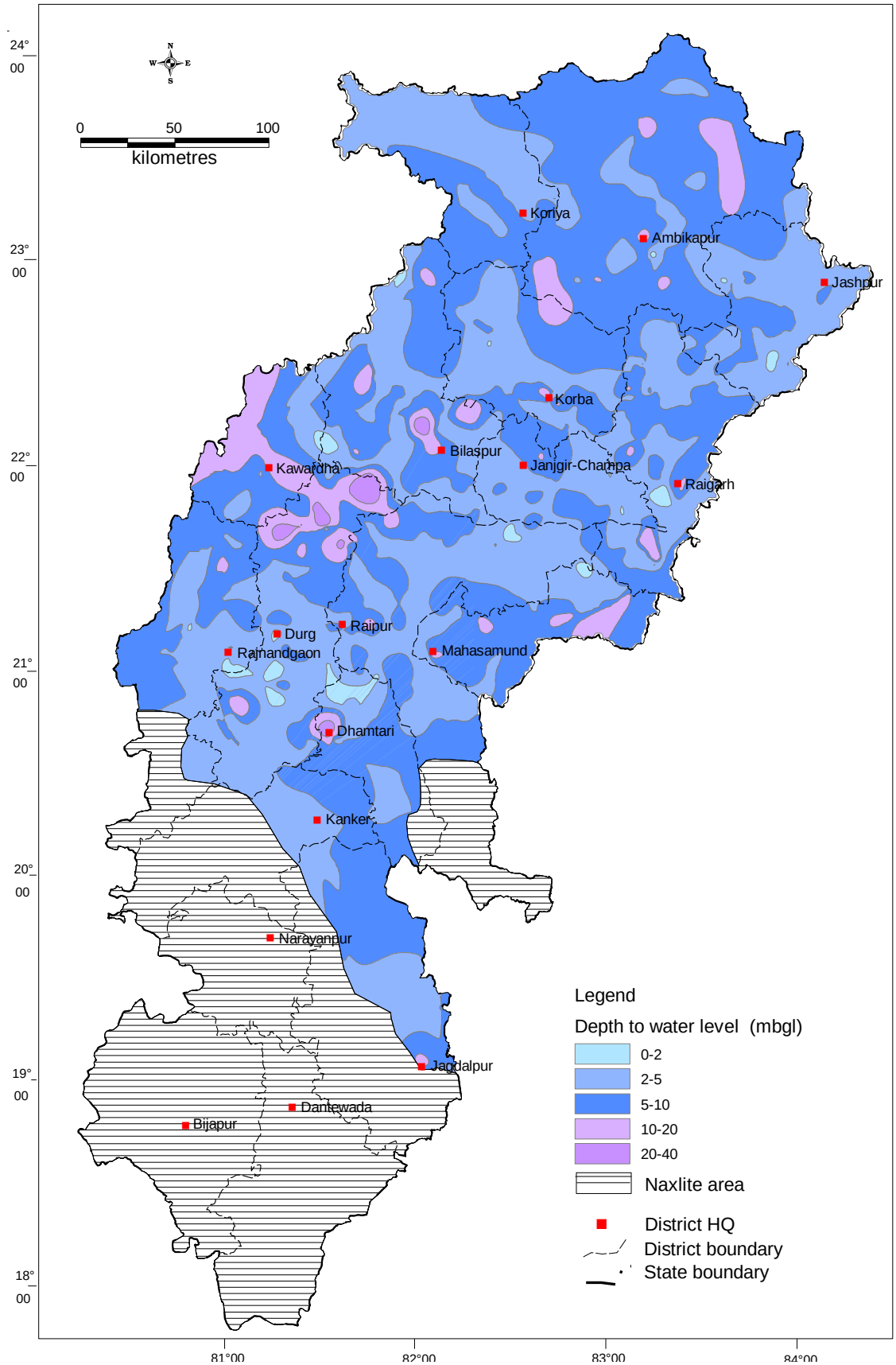

Fig 7.4 Depth to water level map, January 2014

7.2 Water Level Fluctuation

7.2.1 May 2012 vs May 2013

When compared to water level in May 2012, nearly 55.33% of the observation wells are showing fall in water level in May 2013, mostly in the range of 0-2 m.Fall of water level in the range of 0-2 m is observed in 45.77 % of the observation wells and are distributed in almost all the districts. Fall of water level in the range of 2-4 m is observed in 7.58 % of the wells monitored mostly in Janjgir Champa, Mahasamund and Surguja districts. Fall of water level by more than 4 m fall is observed in 2.04 % of the monitored wells (6 wells) in Bilaspur, Dhamtari, Durg, Janjgir-champa,Raigarh and Raipur districts. Rise of water level is recorded in nearly 44.61 % of the monitored wells. Rise of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 39.36 %, 4.08% and 1.17% of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in **Table 7.5**. Different ranges of fluctuation in May 2013 as compared to May 2012 are represented on a map and appended as **Fig 7.5 , Table 7.5**

Table 7.5 Water level fluctuation between May 2012 vs May 2013													
District Name	**No. of Wells**	**Range of Fluctuation (m)**				**No. of Wells/Percentage Showing Fluctuation**						Total no of wells	
		Rise		**Fall**		**Rise**			**Fall**			**Rise**	**Fall**
		Min	**Max**	**Min**	**Max**	**0 to 2**	**2 to 4**	**>4**	**0 to 2**	**2 to 4**	**>4**		
Bastar	6	0.36	0.36	0.10	0.89	1	0	0	5	0	0	1	5
						16.67	0.00	0.00	83.33	0.00	0.00	16.67	83.33
Bilaspur	51	0.05	4.97	0.02	6.47	13	2	2	28	5	1	17	34
						25.49	3.92	3.92	54.90	9.80	1.96	33.33	66.67
Dhamtari	15	0.02	2.24	0.08	2.09	5	1	0	8	1	0	6	9
						33.33	6.67	0.00	53.33	6.67	0.00	40.00	60.00
Durg	36	0.04	1.94	0.04	11.36	15	0	0	17	2	2	15	21
						41.67	0.00	0.00	47.22	5.56	5.56	41.67	58.33
Janjgir - champa	26	0.03	2.80	0.05	1.00	15	3	0	8	0	0	18	8
						57.69	11.54	0.00	30.77	0.00	0.00	69.23	30.77
Jashpur	26	0.10	1.70	0.10	2.90	7	0	0	18	1	0	7	19
						26.92	0.00	0.00	69.23	3.85	0.00	26.92	73.08
Kanker	2	-	-	1.36	1.36	0	0	0	2	0	0	0	2
						0	0	0	100	0	0	0	100
Kawardha	7	0.62	1.18	0.12	2.40	2	0	0	4	1	0	2	5
						28.57	0.00	0.00	57.14	14.29	0.00	28.57	71.43
Korba	18	0.20	1.30	0.22	2.30	9	0	0	8	1	0	9	9
						50.00	0.00	0.00	44.44	5.56	0.00	50.00	50.00
Koriya	2	0.10	0.80	-	-	2	0	0	0	0	0	2	0
						100	0	0	0	0	0	100	0
Mahasamund	19	0.01	11.00	0.05	1.71	8	1	1	9	0	0	10	9
						42.11	5.26	5.26	47.37	0.00	0.00	52.63	47.37
Raigarh	36	0.09	1.80	0.05	4.70	11	0	0	15	7	3	11	25
						30.56	0.00	0.00	41.67	19.44	8.33	30.56	69.44
Raipur	36	0.03	7.43	0.05	4.23	17	2	1	14	1	1	20	16
						47.22	5.56	2.78	38.89	2.78	2.78	55.56	44.44
Rajnandgaon	13	0.15	2.86	0.26	3.30	8	1	0	3	1	0	9	4
						61.54	7.69	0.00	23.08	7.69	0.00	69.23	30.77
Surguja	50	0.05	2.85	0.10	3.20	22	4	0	18	6	0	26	24
						44	**8**	**0**	**36**	**12**	**0**	**52**	**48**
Total	343	0.01	11	0.02	11.36	135	14	4	157	26	7	153	190

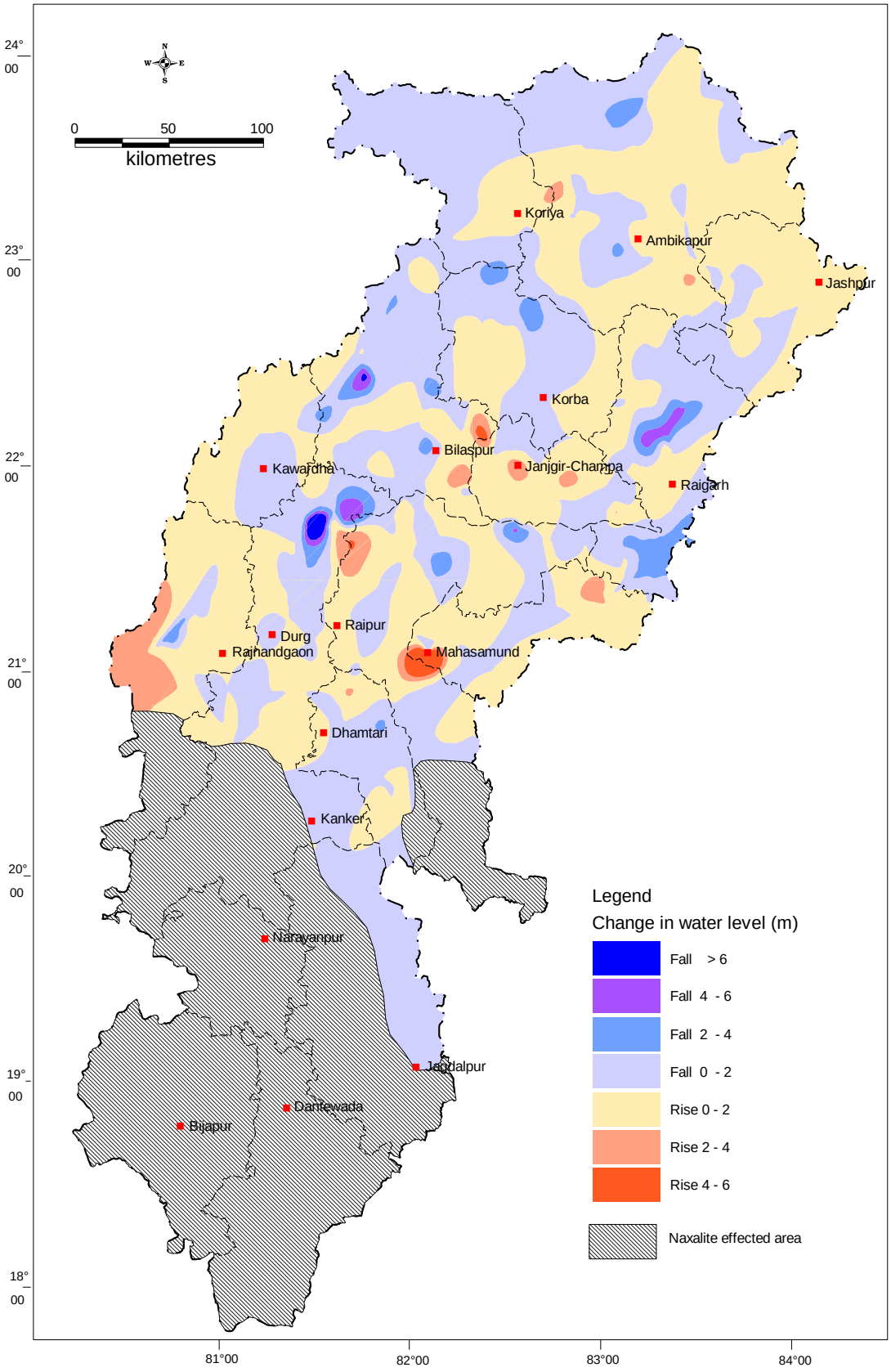

Fig 7.5 Water level fluctuation, May 2012 vs May 2013

7.2.2 August 2012 vs August 2013

When compared to water level in Aug' 2012, nearly 41.88% of the observation wells are showing fall in water level in Aug'2013, mostly in the range of 0-2 m. Fall of water level in the range of 0-2 m is observed in 34.76 % of the observation wells and are distributed in almost all the districts except Kanker district. Fall of water level in the range of 2-4 m is observed in 3.99% of the wells monitored mostly in Bilaspur, Dhamtari, Durg, Janjgir Champa, Korba, Koriya, and Surguja districts. Fall of water level by more than 4 m fall is observed in 3.13% of the monitored wells (6 wells) in Bilaspur, Dhamtari,Durg, and Mahasamund districts. Rise of water level is recorded in nearly 58.12 % of the monitored wells. Rise of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 47.58 %, 6.27 % and 4.27 % of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in **table 7.6**. Different ranges of fluctuation in Aug 2013 as compared to Aug 2012 are represented on a map and appended as **fig 7.6.**

7.2.3 November 2012 vs November 2013

When compared to water level in Nov' 2012, nearly 68.71% of the observation wells are showing fall in water level in Nov'2013, mostly in the range of 0-2 m. Fall of water level in the range of 0-2 m is observed in 56.63 % of the observation wells and are distributed in almost all the districts. Fall of water level in the range of 2-4 m is observed in 7.9 % of the wells monitored in Surguja,Raigarh, Bilaspur and Durg districst. Fall of water level by more than 4 m fall is observed in 4.1% of the monitored wells (21 wells) in Mahasamund, Raigarh and Surguja districts. Rise of water level is recorded in nearly 31.28 % of the monitored wells. Rise of water level in the range of 0-2 m, 2-4 m and more than 4 m are observed in 25.34 %, 3.3 % and 2.5 % of the monitored wells, respectively in the State.

The district wise frequency for different fluctuation ranges is presented in **Table 7.7**. Different ranges of fluctuation in Nov' 2013 as compared to Nov' 2012 are represented on a map and appended as **Fig. 7.7.**

7.2.4 January 2013 vs January 2014

When compared to water level in January 2013, about 55.57% of the observation wells are showing fall in water level in January 2014, mostly in the range of 0-2 m. Fall of water level in the range of 0-2 m is observed in 47.34%, of the observation wells and are distributed in almost all the districts. Fall of water level in the range of 2-4 m is observed in about 6.86 % of the wells monitored mostly in Raipur,Koriya,Raigarh and Korba districts. Fall of water level by more than 4 m is observed in 1.37% of the observation wells in parts of Kankerr Raigarh and Koriya districts.Rise of water level is recorded in about 44.43% of the monitored wells the state. Rise of water level in the range of 0- 2 m. is observed in about 39.28% of the monitored wells. Rise in the range of 2 - 4 m and >4 m. is observed in 4.2% and 1.03% of the monitored wells respectively. Maximum rise of water level by 9.77 m as compared to January'13 is noted in Chhparawa observation well of Bilaspur district

The district wise frequency for different fluctuation ranges is presented in **Table 7.8**. Different ranges of fluctuation in January 2014 as compared to January 2013 are represented on a map and appended as **fig 7.8**

Table 7.6 Water level fluctuation beween Aug 2012 vs Aug 2013

SN	District	Total No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						No. of Wells	
			Rise		Fall		Rise			Fall			**Rise**	**Fall**
			Min	**Max**	**Min**	**Max**	**0 to 2**	**2 to 4**	**>4**	**0 to 2**	**2 to 4**	**>4**		
1	BASTAR	10	0.02	0.49	0.42	4.84	3	0	0	5	1	1	3	7
							30.00	0.00	0.00	50.00	10.00	10.00	30.00	70.00
2	BILASPUR	46	0.05	18.63	0.14	5.09	21	5	4	15	0	1	30	16
							45.65	10.87	8.70	32.61	0.00	2.17	65.22	34.78
3	DHAMTARI	15	0.03	4.11	0.15	2.43	8	2	1	3	1	0	11	4
							53.33	13.33	6.67	20.00	6.67	0.00	73.33	26.67
4	DURG	44	0.03	5.36	0.01	9.01	18	1	1	22	1	1	20	24
							40.91	2.27	2.27	50.00	2.27	2.27	45.45	54.55
5	JANJGIR - CHAMPA	25	0.01	2.00	0.18	0.88	20	0	0	5	0	0	20	5
							80.00	0.00	0.00	20.00	0.00	0.00	80.00	20.00
6	JASHPUR	32	0.05	3.10	0.04	3.40	12	2	0	17	1	0	14	18
							37.50	6.25	0.00	53.13	3.13	0.00	43.75	56.25
7	KANKER	1	0.20	0.20	-	-	1	0	0	0	0	0	1	0
							100.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
8	KAWARDHA	6	0.07	1.61	0.03	0.65	2	0	0	4	0	0	2	4
							33.33	0.00	0.00	66.67	0.00	0.00	33.33	66.67
9	KORBA	17	0.06	4.90	0.10	14.66	8	0	1	5	0	3	9	8
							47.06	0.00	5.88	29.41	0.00	17.65	52.94	47.06
10	KORIYA	11	0.03	4.59	0.29	2.13	4	2	1	3	1	0	7	4
							36.36	18.18	9.09	27.27	9.09	0.00	63.64	36.36
11	MAHASAMUND	18	0.02	7.81	-	-	11	2	4	1	0	0	17	1
							61.11	11.11	22.22	5.56	0.00	0.00	94.44	5.56
12	RAIGARH	35	0.01	2.61	0.04	5.38	16	2	0	12	2	3	18	17
							45.71	5.71	0.00	34.29	5.71	8.57	51.43	48.57
13	RAIPUR	36	0.01	3.56	0.01	6.16	22	4	0	8	1	1	26	10
							61.11	11.11	0.00	22.22	2.78	2.78	72.22	27.78
14	RAJNANDGAON	15	0.02	2.17	0.03	1.15	7	1	0	7	0	0	8	7
							46.67	6.67	0.00	46.67	0.00	0.00	53.33	46.67
15	SURGUJA	40	0.03	5.90	0.10	6.49	14	1	3	15	6	1	18	22
							35.00	**2.50**	**7.50**	**37.50**	**15.00**	**2.50**	**45.00**	**55.00**
	Total	351	0.01	0.2	0.01	14.66	167	22	15	122	14	11	204	147
							47.58	**6.27**	**4.27**	**34.76**	**3.99**	**3.13**	**58.12**	**41.88**

Table 7.7 District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other (Nov 2012 Vs Nov 2013)														
S.N.	District	No. of Wells	Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
			Rise		Fall		Rise			Fall			Rise	Fall
			Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
1	Bsatar	12	0.31	1.79	0.17	3.71	7	0	0	4	1	0	7	5
							58.33	0.00	0.00	33.33	8.33	0.00	58.33	41.67
2	Bilaspur	53	0.03	50.00	0.12	2.76	12	3	2	33	3	0	17	36
							22.64	5.66	3.77	62.26	5.66	0.00	32.08	67.92
3	Dhamtari	25	0.04	9.78	0.01	2.06	9	1	2	12	1	0	12	13
							36	4	8	48	4	0	48	52
4	Durg	61	0.08	11.86	0.02	4.45	17	0	4	38	1	1	21	40
							27.87	0.00	6.56	62.30	1.64	1.64	34.43	65.57
5	Janjgir-Champa	38	0.14	1.36	0.06	4.55	4	0	0	27	5	2	4	34
							10.53	0.00	0.00	71.05	13.16	5.26	10.53	89.47
6	Jashpur	37	0.02	1.97	0.18	4.90	11	0	0	21	4	1	11	26
							29.73	0.00	0.00	56.76	10.81	2.70	29.73	70.27
7	Kanker	2	1.19	1.19	0.20	0.20	1	0	0	1	0	0	1	1
							50	0	0	50	0	0	50	50
8	Kawardha	18	0.06	5.45	0.08	2.10	7	2	1	7	1	0	10	8
							38.89	11.11	5.56	38.89	5.56	0.00	55.56	44.44
9	Korba	30	0.54	2.91	0.02	9.00	2	1	0	25	1	1	3	27
							6.67	3.33	0.00	83.33	3.33	3.33	10.00	90.00
10	Koriya	15	0.05	1.42	0.18	2.92	3	0	0	10	2	0	3	12
							20	0	0	66.67	13.33	0	20	80
11	Mahasamund	32	0.07	13.46	0.09	8.96	10	2	1	17	0	2	13	19
							31.25	6.25	3.13	53.13	0.00	6.25	40.63	59.38
12	Raigarh	47	0.04	9.49	0.07	9.58	7	2	2	27	4	5	11	36
							14.89	4.26	4.26	57.45	8.51	10.64	23.40	76.60
13	Raipur	57	0.01	3.30	0.01	5.00	17	4	0	28	4	4	21	36
							29.82	7.02	0.00	49.12	7.02	7.02	36.84	63.16
14	Rajnandgaon	19	0.01	5.03	0.05	1.84	8	1	1	9	0	0	10	9
							42.11	5.26	5.26	47.37	0.00	0.00	52.63	47.37
15	Surguja	59	0.01	3.88	0.02	5.50	13	1	0	27	13	5	14	45
							22.03	1.69	0.00	45.76	22.03	8.47	23.73	76.27
	Total	505	0.01	13.46	0.01	9.58	128	17	13	286	40	21	158	347

Table 7.8 District Wise - Fluctuation and Frequency Distribution From Different Ranges from Jan 13 to Jan 14													
		Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						No. of Wells	
		Fall		Rise		Fall			Rise				
District	Total No. of Wells	Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Fall	Rise
Bastar	13	0.18	4.53	0.07	2.91	8	0	2	2	1	0	10	3
						61.54	0.00	15.38	15.38	7.69	0.00	76.92	23.08
Bilaspur	63	0.01	3.00	0.05	9.77	37	1	0	22	1	2	38	25
						58.73	1.59	0.00	34.92	1.59	3.17	60.32	39.68
Dhamtari	19	0.38	2.51	0.10	4.69	9	2	0	7	0	1	11	8
						47.37	10.53	0.00	36.84	0.00	5.26	57.89	42.11
Durg	74	0.02	4.57	0.02	1.98	33	2	2	37	0	0	37	37
						44.59	2.70	2.70	50	0	0	50	50
Janjgir-Champa	45	0.10	3.41	0.04	3.94	15	2	0	21	7	0	17	28
						33.33	4.44	0.00	46.67	15.56	0.00	37.78	62.22
Jsahpur	49	0.05	3.14	0.07	3.66	30	2	0	13	4	0	32	17
						61.22	4.08	0.00	26.53	8.16	0.00	65.31	34.69
Kanker	3	0.60	6.73	-	-	1	1	1	0	0	0	3	0
						33.33	33.33	33.33	0	0	0	100	0
Kawardha	21	0.19	3.22	0.12	0.45	12	1	0	8	0	0	13	8
						57.14	4.76	0.00	38.10	0.00	0.00	61.90	38.10
Korba	59	0.01	3.09	0.09	2.37	28	7	0	22	2	0	35	24
						47.46	11.86	0.00	37.29	3.39	0.00	59.32	40.68
Koriya	17	0.14	5.76	0.13	4.25	7	3	1	5	0	1	11	6
						41.18	17.65	5.88	29.41	0.00	5.88	64.71	35.29
Mahasamund	22	0.02	2.81	0.02	1.80	15	2	0	5	0	0	17	5
						68.18	9.09	0.00	22.73	0.00	0.00	77.27	22.73
Raigarh	62	0.03	5.28	0.01	4.49	24	9	1	25	2	1	34	28
						38.71	14.52	1.61	40.32	3.23	1.61	54.84	45.16
Raipur	47	0.15	3.00	0.08	4.76	17	3	0	23	3	1	20	27
						36.17	6.38	0.00	48.94	6.38	2.13	42.55	57.45
Rajnandgaon	26	0.49	2.86	0.09	3.75	13	2	0	10	1	0	15	11
						50	7.69	0.00	38.46	3.85	0.00	57.69	42.31
Surguja	63	0.10	4.31	0.02	3.56	27	3	1	29	3	0	31	32
						42.86	**4.76**	**1.59**	**46.03**	**4.76**	**0.00**	**49.21**	**50.79**
Total	583	0.01	6.73	0.01	9.77	276	40	8	229	24	6	324	259
						47.34	6.86	1.37	39.28	4.12	1.03	55.57	44.43

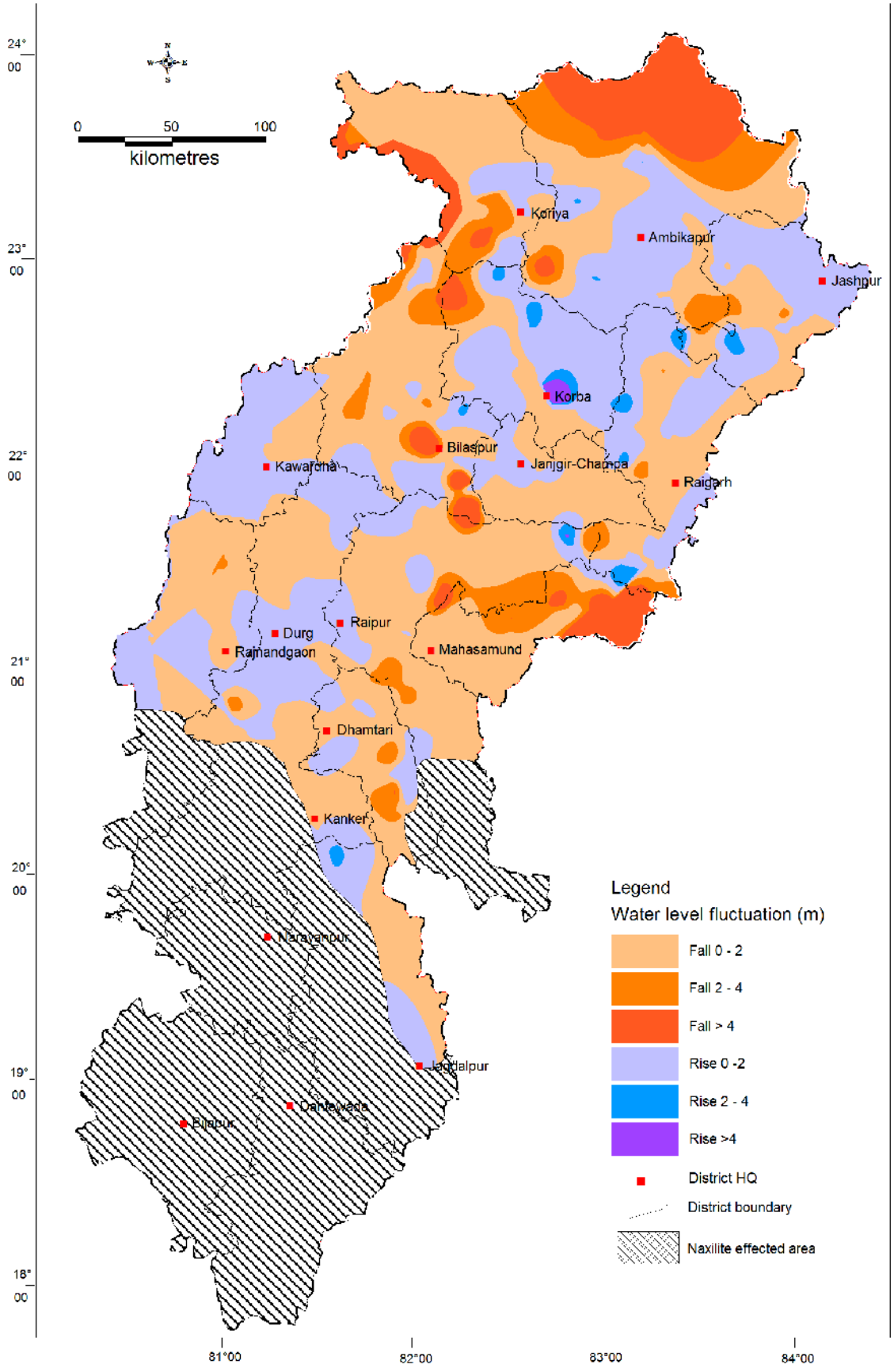

Fig 7.6 Water level fluctuation August 2012 vs August 2013

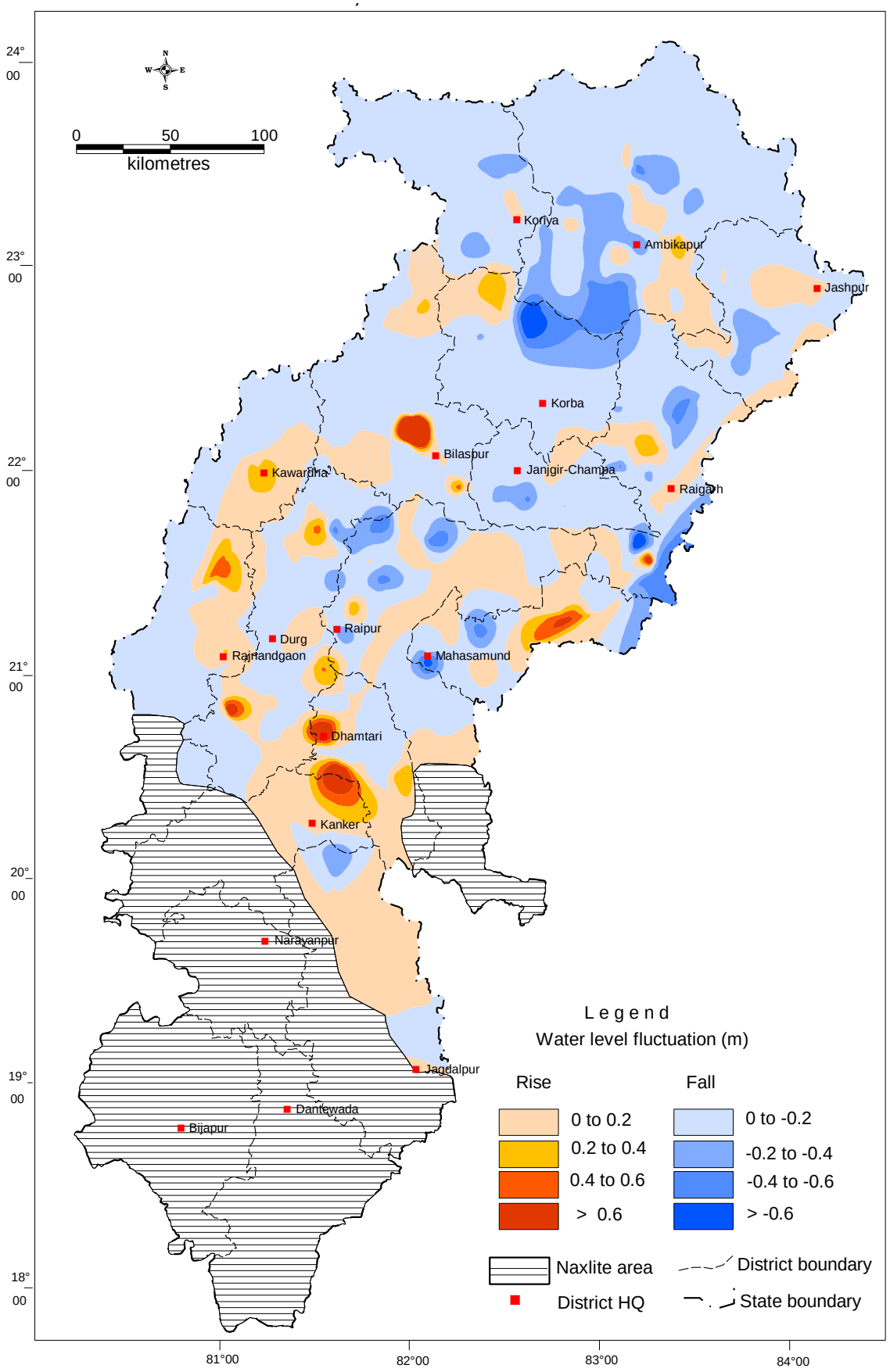

Fig 7.7 Water level fluctuation November 2012 vs November 2013

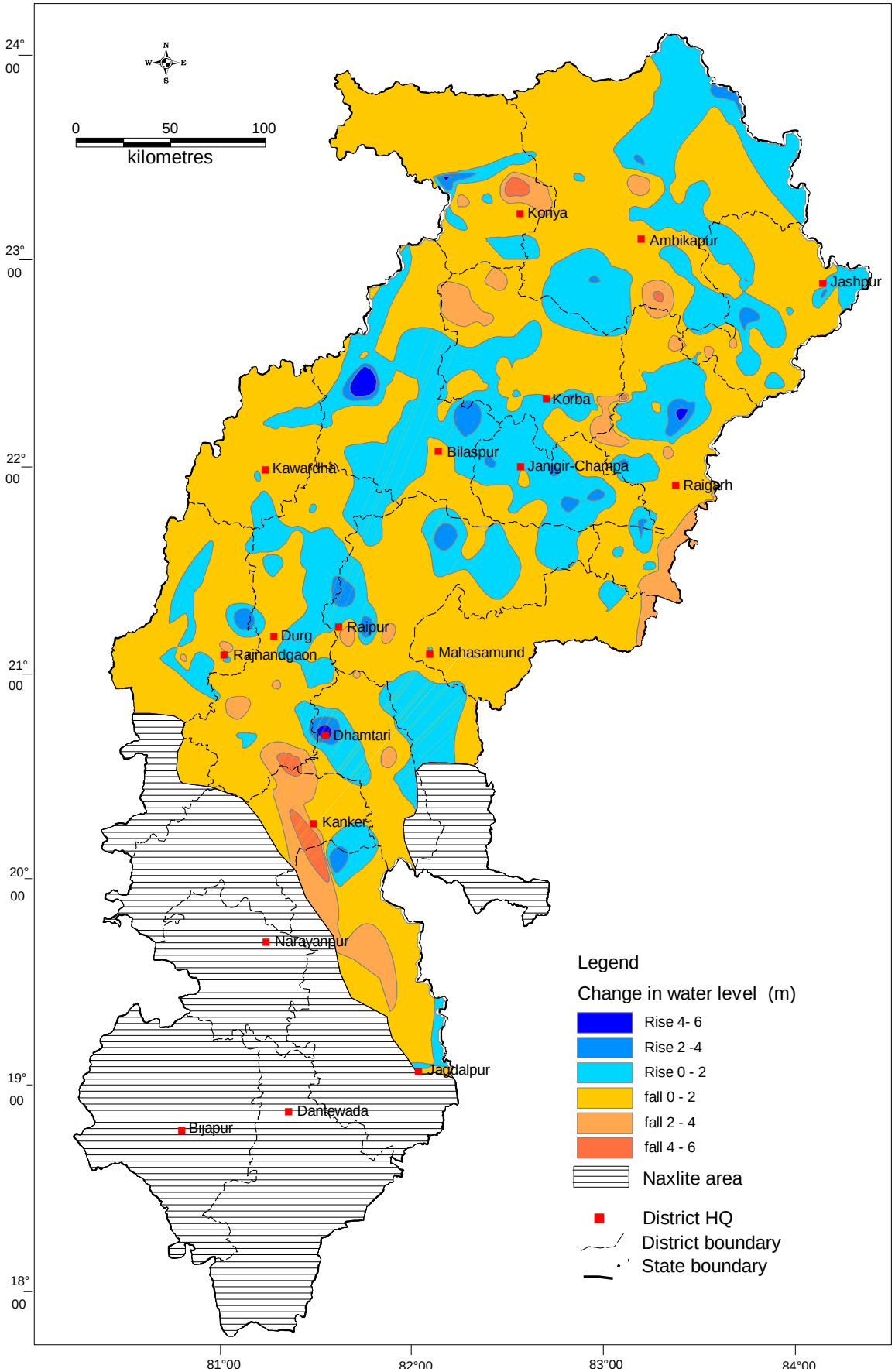

Fig 7.8 Water level fluctuation January 2013 vs January 2014

Water Level Fluctuation with Reference To Pre monsoon Water Level

7.3.1 May 2013 vs August 2013

There is mostly a rise in water level in Aug' 2013 when compared to water level in May',2013. About 100% of the monitored wells exhibit rise in the water level. Out of this, about 11.57% of the monitored wells exhibit rise of water level in the range of 0-2 m covering parts of all the districts. In 24.13 % of the monitored wells, the water levels show rise in the range of 2-4 m covering parts of all the districts monitored while the remaining 63.14% of the observation wells show rise of more than 4 m mostly in all parts of the district.

The district wise frequency for different fluctuation ranges is presented in **Table 7.9**. Fluctuation of water level (May' 2013 vs Aug' 2013) is represented on a map appended as **fig 7.9.**

7.2.5 May 2013 vs November 2013

There is mostly a rise in water level in November 2013 when compared to water level in May,2013. About 95.86% of the monitored wells exhibit rise in the water level. Out of this, about 24.58% of the monitored wells exhibit rise in the water level in the range of 0-2 m in parts of all the districts. In 31.38 % of the monitored wells the water levels show rise in the range of 2-4 m in most of the districts while the remaining 39.94% of the observation wells show rise of more than 4 m mostly in Bilaspur,Dhamtari, ,Janjgir-champa, Jashpur, Korba,,Raigarh Raipur, Durg etc. Fall of water level as compared to May'13 is observed in about 4.14% of the observation wells monitored.Most of the wells exhibit fall in the range of 0-2m.

The district wise distribution of different fluctuation ranges is presented in **Table 7.10** and is also shown in **Fig. 7.10**.

7.2.6 May 2012 vs January 2013

The water levels in nearly 90.60% of the observation wells were showing a rise for the month of January 2014 in comparison to that of the water levels measured during the

month of May 2013. The rise in water levels in the range of 0 to 2 m was observed in nearly 36.04% of the observations wells and in 33.24% of the observation wells it was in the range of 2 to 4 m. The rise of more than 4 m was recorded in 21.32% of wells. The fall in water levels was recorded in 9.4 % of the observation wells in Dhamtari and Bilaspur, districts.

The district wise distribution of different fluctuation ranges is presented in **Table 7.11** and is also shown in **Fig. 7.11**.

Table 7.9 District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other May 2013 vs Aug 2013														
SN	District	No. of Wells	No of wells Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation							
			Rise		Fall		Rise			Fall			Total No. of Wells	
			Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Rise	Fall
1	Bastar	15	2.10	8.05	-	-	0	6	9	0	0	0	15	0
							0.00	40.00	60.00	0.00	0.00	0.00	100.00	0.00
2	Bilaspur	71	0.70	28.15	2.70	2.70	9	15	46	0	1	0	70	1
							12.68	21.13	64.79	0.00	1.41	0.00	98.59	1.41
3	Dhamtari	19	1.15	16.27	-	-	3	2	14	0	0	0	19	0
							15.79	10.53	73.68	0.00	0.00	0.00	100.00	0.00
4	Durg	66	1.08	17.76	-	-	13	7	46	0	0	0	66	0
							19.70	10.61	69.70	0.00	0.00	0.00	100.00	0.00
5	Janjgir - champa	43	0.78	19.72	-	-	6	15	22	0	0	0	43	0
							13.95	34.88	51.16	0.00	0.00	0.00	100.00	0.00
6	Jashpur	53	0.50	8.35	0.75	0.95	3	20	28	2	0	0	51	2
							5.66	37.74	52.83	3.77	0.00	0.00	96.23	3.77
7	Kanker	3	3.07	6.70	-	-	0	1	2	0	0	0	3	0
							0.00	33.33	66.67	0.00	0.00	0.00	100.00	0.00
8	Kawardha	13	1.26	17.26	-	-	1	2	10	0	0	0	13	0
							7.69	15.38	76.92	0.00	0.00	0.00	100.00	0.00
9	Korba	40	0.07	9.21	0.41	1.73	6	15	17	2	0	0	38	2
							15.00	37.50	42.50	5.00	0.00	0.00	95.00	5.00
10	Koriya	8	4.29	12.08	0.08	0.08	0	0	7	1	0	0	7	1
							0.00	0.00	87.50	12.50	0.00	0.00	87.50	12.50
11	Mahasamund	27	1.60	18.30	-	-	2	1	24	0	0	0	27	0
							7.41	3.70	88.89	0.00	0.00	0.00	100.00	0.00
12	Raigarh	92	0.23	30.81	-	-	17	30	45	0	0	0	92	0
							18.48	32.61	48.91	0.00	0.00	0.00	100.00	0.00
13	Raipur	68	0.16	14.23	-	-	6	9	53	0	0	0	68	0
							8.82	13.24	77.94	0.00	0.00	0.00	100.00	0.00
14	Rajnandgaon	30	1.50	11.83	-	-	2	3	25	0	0	0	30	0
							6.67	10.00	83.33	0.00	0.00	0.00	100.00	0.00
15	Surguja	57	0.60	16.10	-	-	3	20	34	0	0	0	57	0
							5.26	35.09	59.65	0.00	0.00	0.00	100.00	0.00
	Total	605	0.07	19.72	0.08	2.7	71	146	382	5	1	0	599	6
							11.57	24.13	63.14	0.83	0.17	0	98.84	0.99

Table 7.10 District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other May 2013 vs Nov 2013													
		Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation							
		Rise		Fall		Rise			Fall			Total No. of Wells	
	No. of Wells	Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Rise	Fall
BASTAR	20	0.90	5.87	0.81	0.81	3	7	9	1	0	0	19	1
						15	35	45	5	0	0	95	5
BILASPUR	78	0.25	18.01	0.16	2.10	16	25	32	4	1	0	73	5
						20.51	32.05	41.03	5.13	1.28	0.00	93.59	6.41
DHAMTARI	24	0.84	10.09	0.07	0.27	4	9	8	3	0	0	21	3
						16.67	37.50	33.33	12.50	0.00	0.00	87.50	12.50
DURG	82	0.01	19.80	-	-	17	20	45	0	0	0	82	0
						20.73	24.39	54.88	0.00	0.00	0.00	100.00	0.00
JANJGIR - CHAMPA	48	0.26	15.47	0.01	0.90	16	13	15	4	0	0	44	4
						33.33	27.08	31.25	8.33	0.00	0.00	91.67	8.33
JASHPUR	53	1.00	10.00	0.40	0.40	17	27	8	1	0	0	52	1
						32.08	50.94	15.09	1.89	0.00	0.00	98.11	1.89
KANKER	5	2.35	7.54	-	-	0	2	3	0	0	0	5	0
						0.00	40.00	60.00	0.00	0.00	0.00	100.00	0.00
KAWARDHA	19	0.82	10.60	-	-	1	5	13	0	0	0	19	0
						5.26	26.32	68.42	0.00	0.00	0.00	100.00	0.00
KORBA	57	0.89	7.10	0.31	2.10	11	23	19	3	1	0	53	4
						19.30	40.35	33.33	5.26	1.75	0.00	92.98	7.02
KORIYA	8	0.72	7.93	-	-	2	2	4	0	0	0	8	0
						25.00	25.00	50.00	0.00	0.00	0.00	100.00	0.00
MAHASAMUND	36	0.21	13.33	0.53	0.53	6	6	23	1	0	0	35	1
						16.67	16.67	63.89	2.78	0.00	0.00	97.22	2.78
RAIGARH	97	0.10	27.55	1.10	3.25	38	28	28	1	2	0	94	3
						39.18	28.87	28.87	1.03	2.06	0.00	96.91	3.09
RAIPUR	81	0.19	11.50	0.06	0.55	20	20	37	4	0	0	77	4
						24.69	24.69	45.68	4.94	0.00	0.00	95.06	4.94
RAJNANDGAON	32	0.23	9.40	-	-	4	10	18	0	0	0	32	0
						12.50	31.25	56.25	0.00	0.00	0.00	100.00	0.00
SURGUJA	61	0.50	15.11	0.80	1.82	17	23	18	3	0	0	58	3
						27.87	37.70	29.51	4.92	0.00	0.00	95.08	4.92
Total	701	0.01	5.87	0.01	3.25	172	220	280	25	4	0	672	29
						24.54	**31.38**	**39.94**	**3.57**	**0.57**	**0.00**	**95.86**	**4.14**

Table 7.11 District Wise - Fluctuation and Frequency Distribution From Different Ranges from One Period to Other May 2013 vs Jan 2014															
			Range of Fluctuation (m)				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
			Rise		Fall		Rise			Fall				
	District Name		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Rise	Fall
1	BASTAR	20	1.00	5.10	0.32	1.60	4	11	3	2	0	0	18	2
							20	**55**	**15**	**10**	**0**	**0**	**90**	**10**
2	BILASPUR	82	0.11	13.06	0.33	9.60	28	29	18	5	1	1	75	7
							34.15	**35.37**	**21.95**	**6.10**	**1.22**	**1.22**	**91.46**	**8.54**
3	DHAMTARI	24	0.40	8.91	0.05	1.96	6	4	7	7	0	0	17	7
							25.00	**16.67**	**29.17**	**29.17**	**0.00**	**0.00**	**70.83**	**29.17**
4	DURG	84	0.10	9.79	0.19	0.95	31	26	24	3	0	0	81	3
							36.90	30.95	28.57	3.57	0.00	0.00	96.43	3.57
5	JANJGIR - CHAMPA	49	0.26	11.12	0.14	4.00	22	10	9	6	2	0	41	8
							44.90	20.41	18.37	12.24	4.08	0.00	83.67	16.33
6	JASHPUR	53	0.25	9.87	0.03	0.59	22	21	7	3	0	0	50	3
							41.51	39.62	13.21	5.66	0.00	0.00	94.34	5.66
7	KANKER	5	1.16	6.43	-	-	1	2	2	0	0	0	5	0
							20.00	40.00	40.00	0.00	0.00	0.00	100.00	0.00
8	KAWARDHA	21	0.55	9.52	-	-	12	7	2	0	0	0	21	0
							57.14	33.33	9.52	0.00	0.00	0.00	100.00	0.00
9	KORBA	59	0.07	6.38	0.78	2.45	18	28	8	3	2	0	54	5
							30.51	47.46	13.56	5.08	3.39	0.00	91.53	8.47
10	KORIYA	8	0.63	4.74	-	-	2	5	1	0	0	0	8	0
							25.00	62.50	12.50	0.00	0.00	0.00	100.00	0.00
11	MAHASAMUND	36	0.13	13.05	0.80	1.74	8	15	10	3	0	0	33	3
							22.22	41.67	27.78	8.33	0.00	0.00	91.67	8.33
12	RAIGARH	97	0.05	17.34	0.02	3.37	40	30	20	5	2	0	90	7
							41.24	30.93	20.62	5.15	2.06	0.00	92.78	7.22
13	RAIPUR	81	0.02	11.40	0.04	2.36	23	21	23	13	1	0	67	14
							28.40	25.93	28.40	16.05	1.23	0.00	82.72	17.28
14	RAJNANDGAON	32	0.03	9.01	0.29	0.29	10	13	8	1	0	0	31	1
							31.25	40.63	25.00	3.13	0.00	0.00	96.88	3.13
15	SURGUJA	62	0.09	8.30	0.20	2.10	29	15	10	6	1	0	54	7
							46.77	24.19	16.13	9.68	1.61	0.00	87.10	11.29
	Total	713	0.02	17.34	0.02	9.6	257	237	152	57	9	1	646	67
							36.04	33.24	21.32	7.99	1.26	0.14	90.60	9.40

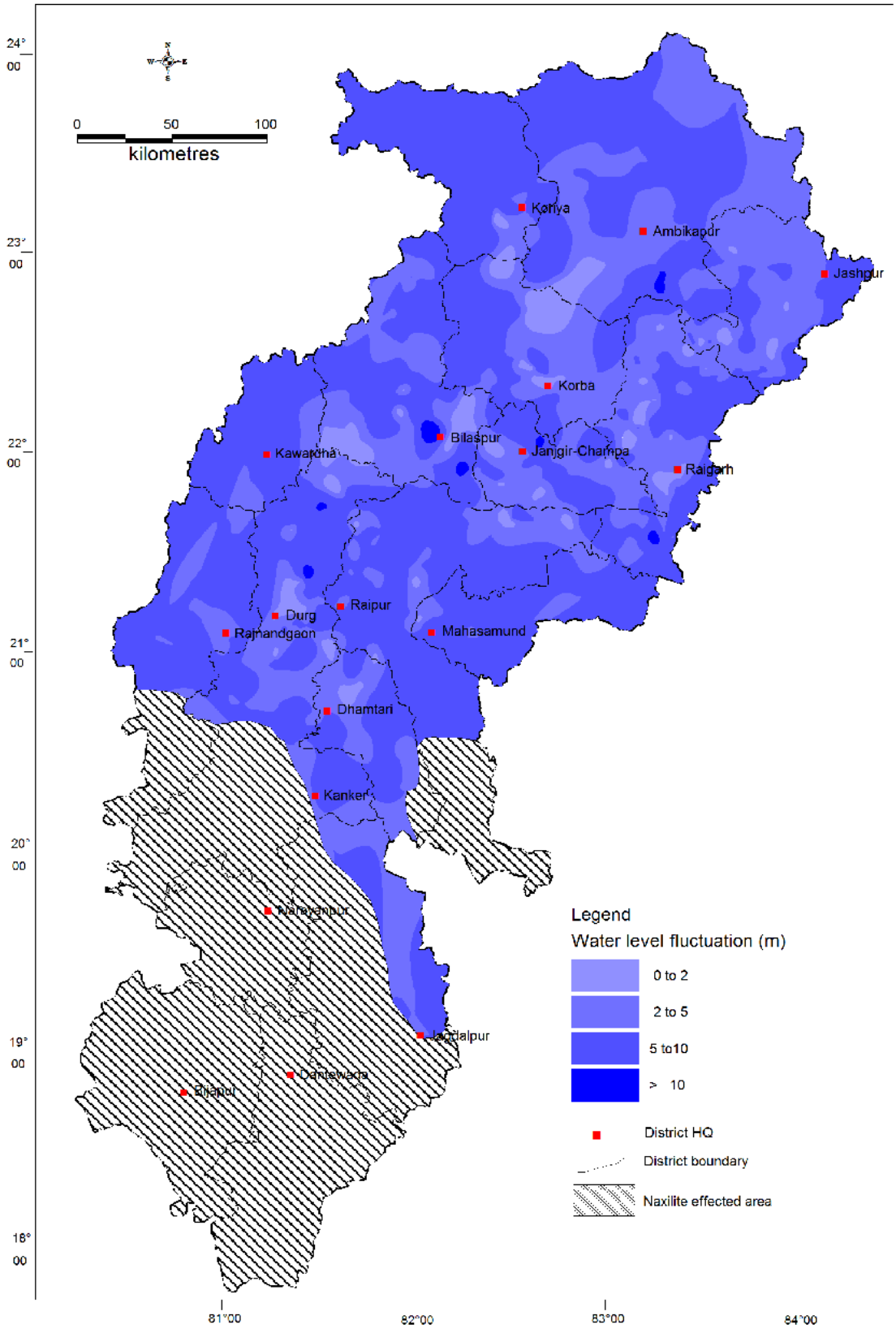

Fig 7.9 Water level fluctuation between May 2013 vs Aug 2013

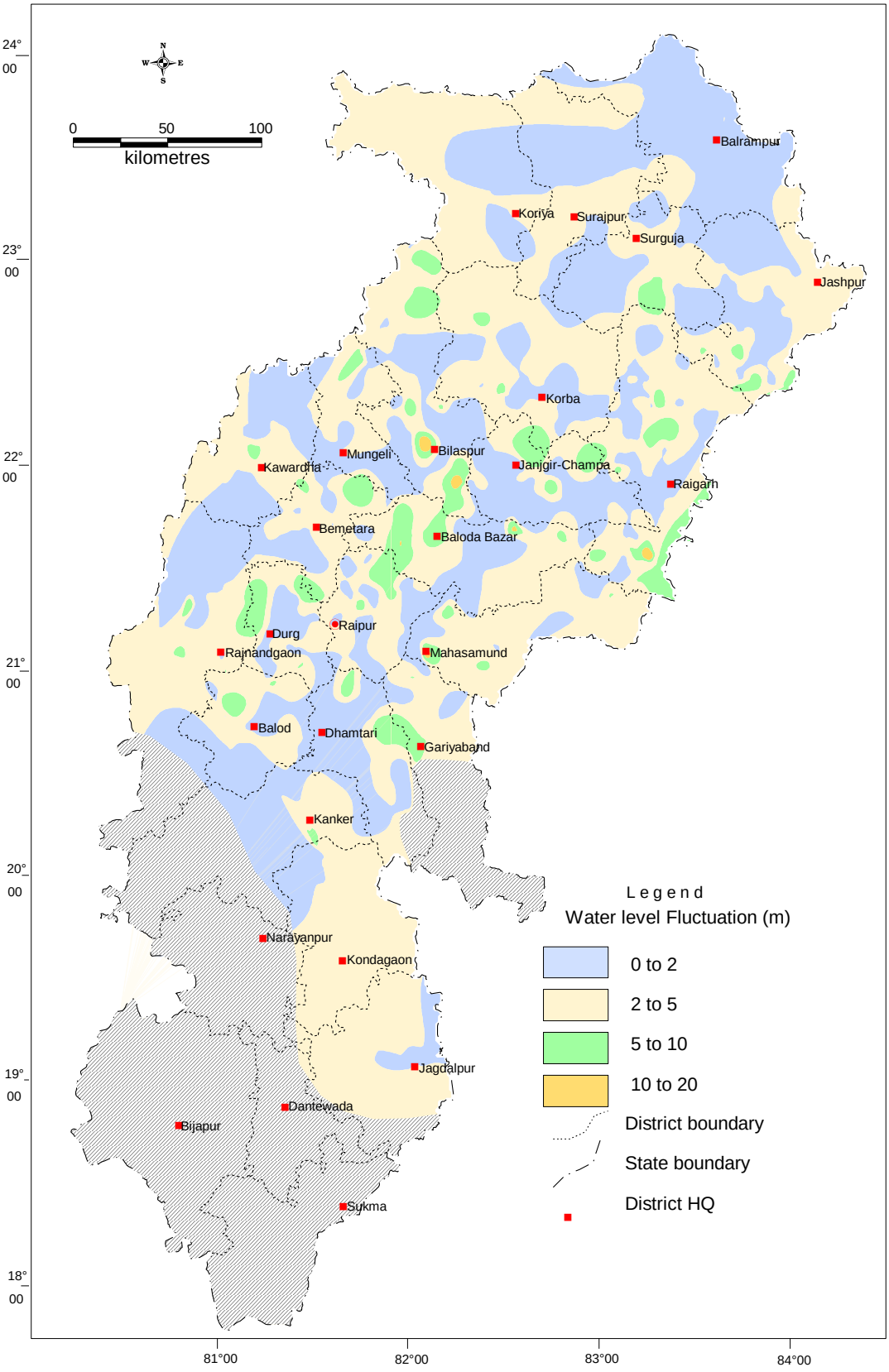

Fig 7.10 Water level fluctuation between May 2013 vs Nov 2013

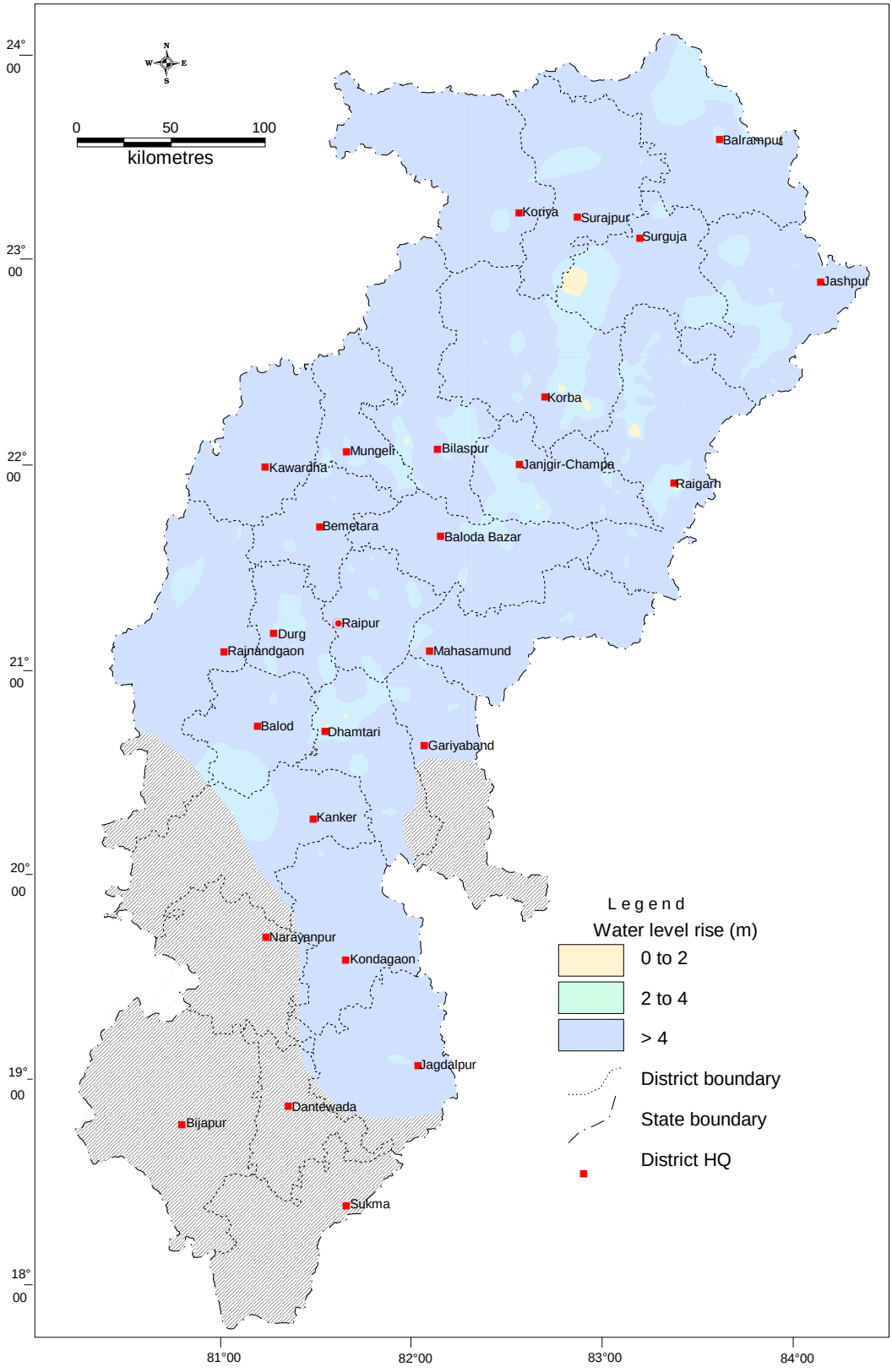

Fig 7.11 Water level fluctuation between May 2013 vs Jan 2014

7.3 Water Level Fluctuation With Reference To Decadal Mean

7.4.1 Mean of May (May 2003 to May 2012) Vs May 2013

When compared to the decadal mean water level (May 2003 to May 2012), 49.2% of observation wells are showing a fall in water level in May 2013. Out of the wells monitored, 37.97% of the wells are showing a fall upto 2 m 8.29% between 2 to 4 metres and 2.94 % of the monitored wells are showing a fall in water level of more than 4 m. Fall of water level as compared to the decadal mean by more than 4m is observed in Bilaspur, Janjgir-champa, Koriya districts. The rest 50.8% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (41.98%). About 6.95% of the monitored wells are showing a rise in the range of 2-4 metre whereas 1.87% of the monitored wells are showing a rise of more than 4 m

The district wise categorisation of decadal change in water level is presented in **Table 7.12**. The decadal range of fluctuation has been shown in the **Fig 7.12.**

7.4.2 Mean of August (Aug 2003 to August 2012) Vs August 2013

When compared to the decadal mean water level (Aug'2003 to Aug'2012), 31.99% of observation wells are showing a fall in water level in Aug' 2013. Out of the wells monitored, 27.31% of the wells are showing a fall up to 2 m 2.52 % between 2 to 4 meters and 1.76 % of wells showing a fall in water level of more than 4 m. The rest 67.76% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (50.88%). About 10.33 % of the monitored wells are showing a rise in the range of 2-4 meter whereas 6.55% of the monitored wells are showing a rise of more than 4 m

The district wise categorisation of decadal change in water level is presented in **Table 7.13**. The decadal range of fluctuation has been shown in the **Fig 7.13**

7.4.3 Mean of November (Nov 2003 to November 2012) Vs November 2013

When compared to the decadal mean water level (Nov'2003 to Nov'2012), 59.51% of observation wells are showing a fall in water level in Nov' 2013. Out of the wells monitored, 50.27% of the wells are showing a fall up to 2 m 6.65 % between 2 to 4 meters and 2.58% wells are showing a fall in water level of more than 4 m. The rest

40.49% of monitored wells are showing a rise in the water level, mostly in the range of 0-2 meter (33.45%). About 5.36 % of the monitored wells are showing a rise in the range of 2-4 meter whereas 1.66% of the monitored wells are showing a rise of more than 4 m

The district wise categorisation of decadal change in water level is presented in **Table 7.14**. The decadal range of fluctuation has been shown in the **Fig 7.14.**

7.4.4 **Mean of January (January 2004 to January 2013) Vs January** 2014

When compared to the decadal mean water level (January 2004 to January 2013), 48.44% of observation wells are showing a rise in water level in January 2014. Out of the wells monitored, 42.34% of the wells are showing a rise upto 2 m, 4.53% of the monitored wells are showing rise between 2 to 4 meters and 1.56% of the monitored wells are showing a rise in water level of more than 4 m. respectively. Fall of water level as compared to the decadal mean is observed in 51.56% of the monitored wells. Fall of water level by more than 4m is observed in 1.25 % of the monitored wells mostly in Rajnandgaon districts. About 3.57% of the monitored wells are showing a fall in the range of > 4 metre whereas 3.57% of the monitored wells are showing a fall in the range of 0-2m. Maximum fall of water level by 7.29 m. is observed in Bhatapara observation well in Raipur district. Whereas maximum rise of water level by 0.01m . is observed in Jagdapur observation well of Bastar district. Water level fluctuations during January 2014 with respect to the decadal mean(January 2004 to January 2013) are shown in **Fig 7.15**.

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Table 7. 12 District Wise - Fluctuation of Water Level with Mean (May 2003 - May 2012)vs May 2013													
District Name		Range of Fluctuation				No. of Wells/Percentage Showing Fluctuation							
		Rise (m)		Fall (m)		Rise (m(			Fall (m)			Total No. of Wells	
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Rise	Fall
Bastar	12	0.41	1.47	0.46	1.51	5	0	0	7	0	0	5	7
						41.67	0.00	0.00	58.33	0.00	0.00	41.67	58.33
Bilaspur	52	0.07	4.13	0.03	7.47	16	5	1	19	7	4	22	30
						30.77	9.62	1.92	36.54	13.46	7.69	42.31	57.69
Dhamtari	15	0.44	1.86	0.23	3.08	4	0	0	10	1	0	4	11
						26.67	0.00	0.00	66.67	6.67	0.00	26.67	73.33
Durg	41	0.08	4.11	0.13	9.55	15	2	1	19	2	2	18	23
						36.59	4.88	2.44	46.34	4.88	4.88	43.90	56.10
Janjgir - champa	26	0.05	3.59	0.16	5.86	12	5	0	5	3	1	17	9
						46.15	19.23	0.00	19.23	11.54	3.85	65.38	34.62
Jashpur	30	0.02	1.5	0.03	2.9	18	0	0	10	2	0	18	12
						60.00	0.00	0.00	33.33	6.67	0.00	60.00	40.00
Kanker	3	1.28	1.28	0.58	0.95	1	0	0	2	0	0	1	2
						33.33	0.00	0.00	66.67	0.00	0.00	33.33	66.67
Kawardha	8	0.34	1.6	0.18	2	3	0	0	4	1	0	3	5
						37.50	0.00	0.00	50.00	12.50	0.00	37.50	62.50
Korba	18	0.03	1.95	0.07	1.59	11	0	0	7	0	0	11	7
						61.11	0.00	0.00	38.89	0.00	0.00	61.11	38.89
Koriya	4	-	0.23	0.49	1.37	2	0	0	2	0	0	2	2
						50	0	0	50	0	0	50	50
Mahasamund	21	0.11	3.27	0.3	3.39	8	4	0	6	3	0	12	9
						38.10	19.05	0.00	28.57	14.29	0.00	57.14	42.86
Raigarh	36	0.05	5.02	0.11	5.55	13	4	1	12	4	2	18	18
						36.11	11.11	2.78	33.33	11.11	5.56	50.00	50.00
Raipur	44	-	7.12	0.01	6.19	18	4	2	15	3	2	24	20
						40.91	9.09	4.55	34.09	6.82	4.55	54.55	45.45
Rajnandgaon	13	0.1	1.95	0.06	3.04	7	0	0	5	1	0	7	6
						53.85	0.00	0.00	38.46	7.69	0.00	53.85	46.15
Surguja	51	0.03	6.84	0.02	3.13	24	2	2	19	4	0	28	23
						47.06	3.92	3.92	37.25	7.84	0.00	54.90	45.10
Total	374	0.02	7.12	0.01	9.55	157	26	7	142	31	11	190	184

Table 7.13 District Wise - Fluctuation of Water Level between Decadal mean (Aug 2003-2012) Vs Aug 2013													
District Name	No. of Wells	Range of Fluctuation				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		Rise (m)		Fall (m)		Rise (m)			Fall (m)			Rise	Fall
		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4		
BASTAR	11	0.11	0.49	0.07	4.86	5	0	0	5	0	1	5	6
						45.45	0.00	0.00	45.45	0.00	9.09	45.45	54.55
BILASPUR	51	0.02	18.6	0.06	5.09	25	6	7	11	1	1	38	13
						49.02	11.76	13.73	21.57	1.96	1.96	74.51	25.49
DHAMTARI	15	0.05	3.28	0.03	2.42	6	3	0	5	1	0	9	6
						40.00	20.00	0.00	33.33	6.67	0.00	60.00	40.00
DURG	47	0.02	12.4	0.02	8.33	23	3	4	14	2	1	30	17
						48.94	6.38	8.51	29.79	4.26	2.13	63.83	36.17
JANJGIR - CHAMPA	28	0.05	2.24	0.15	1.34	21	2	0	5	0	0	23	5
						75.00	7.14	0.00	17.86	0.00	0.00	82.14	17.86
JASHPUR	32	0.01	2.96	0.04	2.06	16	2	0	13	1	0	18	14
						50.00	6.25	0.00	40.63	3.13	0.00	56.25	43.75
KANKER	2	0.06	0.06	1.59	1.59	1	0	0	1	0	0	1	1
						50	0	0	50	0	0	50	50
KAWARDHA	8	0.13	4.24	0.10	0.10	3	3	1	1	0	0	7	1
						37.5	37.5	12.5	12.5	0	0	87.5	12.5
KORBA	17	0.10	5.21	0.24	14.72	8	1	1	4	1	2	10	7
						47.06	5.88	5.88	23.53	5.88	11.76	58.82	41.18
KORIYA	13	0.13	6.10	0.25	0.69	6	2	3	2	0	0	11	2
						46.15	15.38	23.08	15.38	0.00	0.00	84.62	15.38
MAHASAMUND	18	0.21	6.99	0.27	0.27	11	4	2	1	0	0	17	1
						61.11	22.22	11.11	5.56	0.00	0.00	94.44	5.56
RAIGARH	37	0.09	5.48	0.01	5.66	16	3	1	14	2	1	20	17
						43.24	8.11	2.70	37.84	5.41	2.70	54.05	45.95
RAIPUR	42	0.02	4.17	0.02	6.24	28	3	1	9	0	1	32	10
						66.67	7.14	2.38	21.43	0.00	2.38	76.19	23.81
RAJNANDGAON	19	0.04	3.40	1.05	1.05	15	3	0	1	0	0	18	1
						78.95	15.79	0.00	5.26	0.00	0.00	94.74	5.26
SURGUJA	57	0.01	7.00	0.04	3.04	19	6	6	24	2	0	31	26
						33.33	10.53	10.53	42.11	3.51	0.00	54.39	45.61
Total	397	0.01	13.46	0.08	9.58	202	41	26	110	10	7	269	127
						50.88	10.33	6.55	27.71	2.52	1.76	67.76	31.99

Table 7.14	District Wise - Fluctuation of Water Level with Mean and Selected Period Nov 2003-Nov 2012 vs Nov 2013													
			Range of Fluctuation				No. of Wells/Percentage Showing Fluctuation						Total No. of Wells	
		No. of Wells	Rise (m)		Fall (m)		Rise (m)			Fall (m)				
SN	District		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Rise	Fall
1	Bsatar	17	0.10	0.48	0.02	3.24	5	0	0	11	1	0	5	12
							29.41	0.00	0.00	64.71	5.88	0.00	29.41	70.59
2	Bilaspur	55	0.04	50.00	0.04	2.76	18	5	2	28	2	0	25	30
							32.73	9.09	3.64	50.91	3.64	0.00	45.45	54.55
3	Dhamtari	27	0.01	9.06	0.00	2.06	8	1	1	16	1	0	10	17
							29.63	3.70	3.70	59.26	3.70	0.00	37.04	62.96
4	Durg	64	0.02	5.10	-	1.54	28	1	2	32	1	0	31	33
							43.75	1.56	3.13	50.00	1.56	0.00	48.44	51.56
5	Janjgir-Champa	39	0.01	1.17	0.12	4.55	13	0	0	19	6	1	13	26
							33.33	0.00	0.00	48.72	15.38	2.56	33.33	66.67
6	Jashpur	39	0.01	2.04	0.05	4.90	12	1	0	22	3	1	13	26
							30.77	2.56	0.00	56.41	7.69	2.56	33.33	66.67
7	Kanker	4	0.26	1.06	1.71	1.71	3	0	0	1	0	0	3	1
							75.00	0.00	0.00	25.00	0.00	0.00	75.00	25.00
8	Kawardha	19	0.36	3.04	0.04	1.72	8	3	0	8	0	0	11	8
							42.11	15.79	0.00	42.11	0.00	0.00	57.89	42.11
9	Korba	31	0.18	3.22	0.02	5.77	6	2	0	21	1	1	8	23
							19.35	6.45	0.00	67.74	3.23	3.23	25.81	74.19
10	Koriya	17	0.01	4.75	0.10	1.75	8	1	1	7	0	0	10	7
							47.06	5.88	5.88	41.18	0.00	0.00	58.82	41.18
11	Mahasamund	34	0.02	13.46	0.06	8.96	11	2	1	17	2	1	14	20
							32.35	5.88	2.94	50.00	5.88	2.94	41.18	58.82
12	Raigarh	48	0.02	9.49	0.02	9.58	10	4	1	26	4	3	15	33
							20.83	8.33	2.08	54.17	8.33	6.25	31.25	68.75
13	Raipur	63	0.01	3.30	0.01	4.86	19	3	0	32	6	3	22	41
							30.16	4.76	0.00	50.79	9.52	4.76	34.92	65.08
14	Rajnandgaon	21	0.01	2.22	0.26	4.54	14	1	0	5	0	1	15	6
							66.67	4.76	0.00	23.81	0.00	4.76	71.43	28.57
15	Surguja	63	0.07	4.26	0.08	4.69	18	5	1	27	9	3	24	39
							28.57	7.94	1.59	42.86	14.29	4.76	38.10	61.90
	Total	541	0.48	0.36	0.00	9.58	181	29	9	272	36	14	219	322

Table 7.15 District Wise - Fluctuation of Water Level with Decadal Mean (Jan 2004-2013) Vs Jan 2014															
		Total No. of Wells	Fall (m)		Rise (m)		No. of Wells/Percentage Showing Fluctuation						No. of Wells	
S.n.	District		Min	Max	Min	Max	0 to 2	2 to 4	>4	0 to 2	2 to 4	>4	Fall	Rise
1	Bastar	20	0.01	1.95	0.08	3.94	14	0	0	4	2	0	14	6
							70	0	0	20	10	0	70	30
2	Bilaspur	66	0.07	3.77	0.06	9.62	32	8	0	23	1	2	40	26
							48.48	12.12	0.00	34.85	1.52	3.03	60.61	39.39
3	Dhamtari	25	0.11	1.43	0.10	7.91	9	0	0	14	1	1	9	16
							36	0	0	56	4	4	36	64
4	Durg	80	0.05	5.43	0.04	3.55	28	3	1	42	6	0	32	48
							35	3.75	1.25	52.5	7.5	0	40	60
5	Janjgir-Champa	45	0.06	3.41	0.01	4.93	13	2	0	25	4	1	15	30
							28.89	4.44	0.00	55.56	8.89	2.22	33.33	66.67
6	Jsahpur	50	0.26	3.30	0.01	3.66	23	6	0	19	2	0	29	21
							46	12	0	38	4	0	58	42
7	Kanker	4	0.43	2.97	-	-	3	1	0	0	0	0	4	0
							75	25	0	0	0	0	100	0
8	Kawardha	24	0.47	3.22	0.04	5.81	10	1	0	12	0	1	11	13
							41.67	4.17	0.00	50.00	0.00	4.17	45.83	54.17
9	Korba	61	0.10	3.34	0.09	2.92	27	8	0	23	3	0	35	26
							44.26	13.11	0.00	37.70	4.92	0.00	57.38	42.62
10	Koriya	20	0.01	2.80	0.09	4.11	10	2	0	7	0	1	12	8
							50	10	0	35	0	5	60	40
11	Mahasamund	29	0.01	1.75	0.05	2.04	19	0	0	9	1	0	19	10
							65.52	0.00	0.00	31.03	3.45	0.00	65.52	34.48
12	Raigarh	64	0.11	5.28	0.02	2.99	27	10	2	24	1	0	39	25
							42.19	15.63	3.13	37.50	1.56	0.00	60.94	39.06
13	Raipur	58	0.08	7.29	0.05	6.04	23	3	2	24	3	3	28	30
							39.66	5.17	3.45	41.38	5.17	5.17	48.28	51.72
14	Rajnandgaon	28	0.04	4.22	0.15	4.46	12	1	1	12	1	1	14	14
							42.86	3.57	3.57	42.86	3.57	3.57	50.00	50.00
15	Surguja	66	0.07	5.86	0.10	3.84	26	1	2	33	4	0	29	37
							39.39	1.52	3.03	50.00	6.06	0.00	43.94	56.06
	Total	640	0.01	7.29	0.01	9.62	276	46	8	271	29	10	330	310
							43.13	7.19	1.25	42.34	4.53	1.56	51.56	48.44

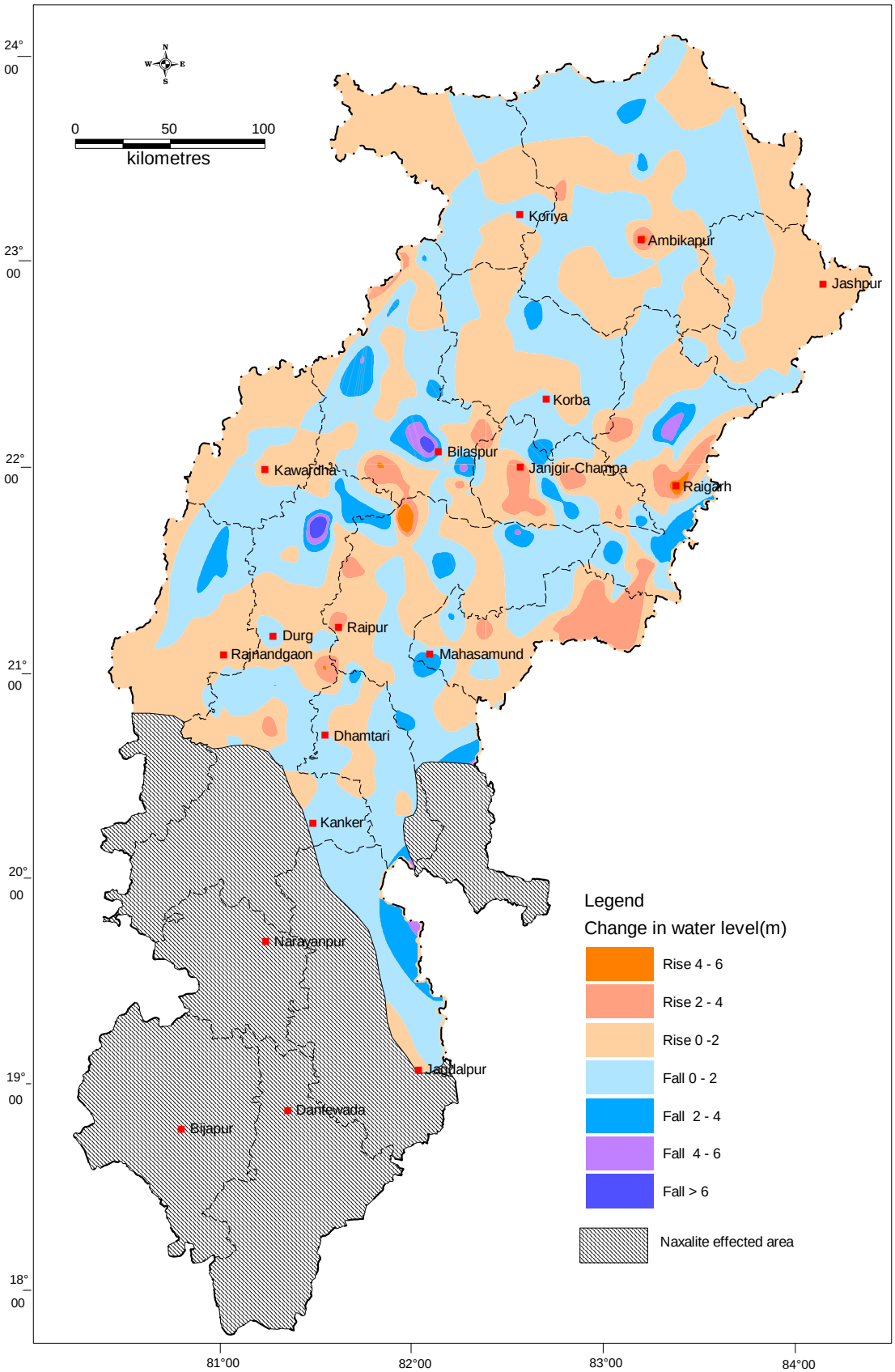


Fig 7.12 Depth to water level fluctuation (Decadal mean May 2003-2012 Vs May 2013

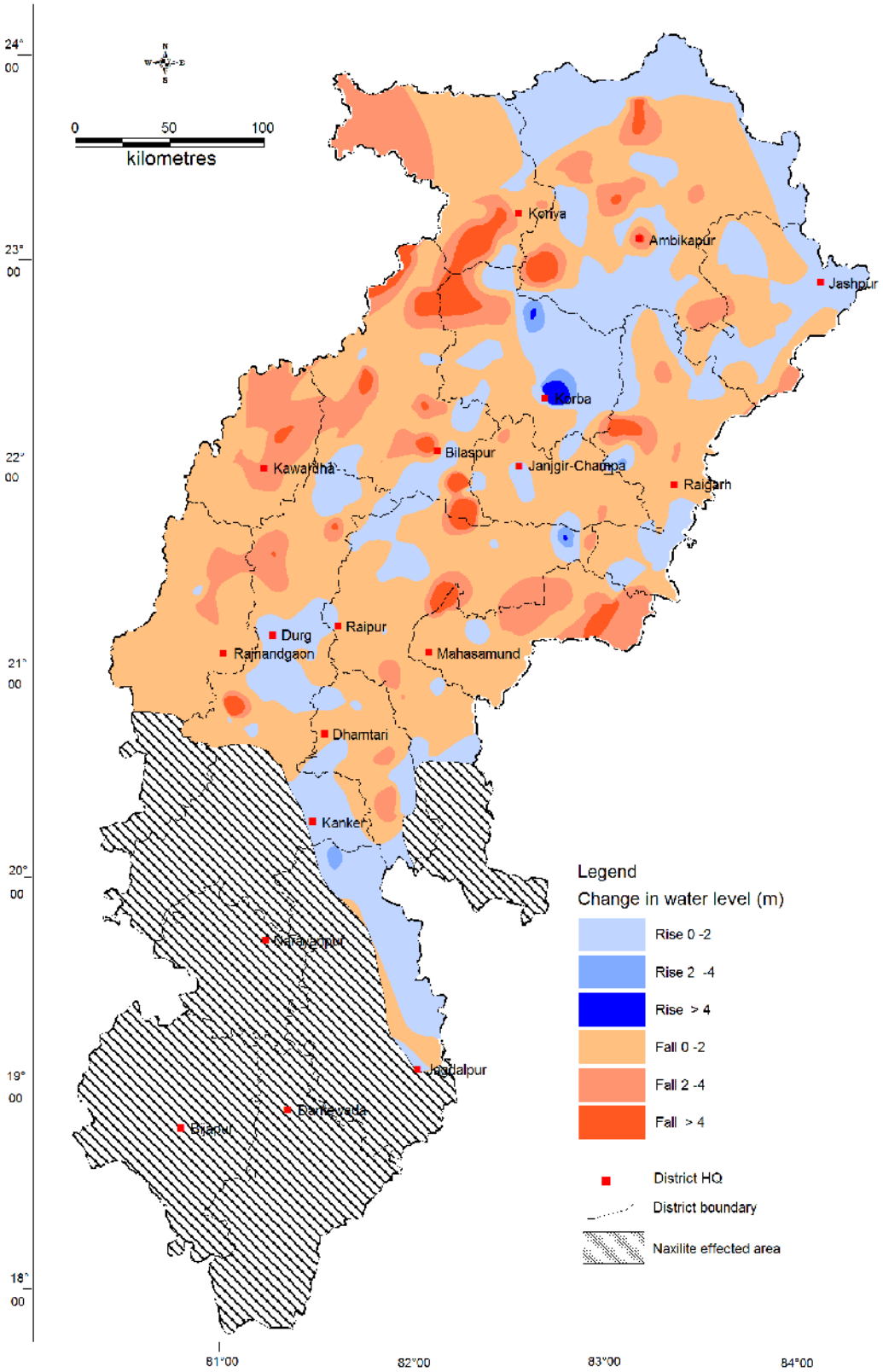


Fig 7.13 Depth to water level fluctuation (Decadal mean Aug. 2003-2012 Vs Aug. 2013

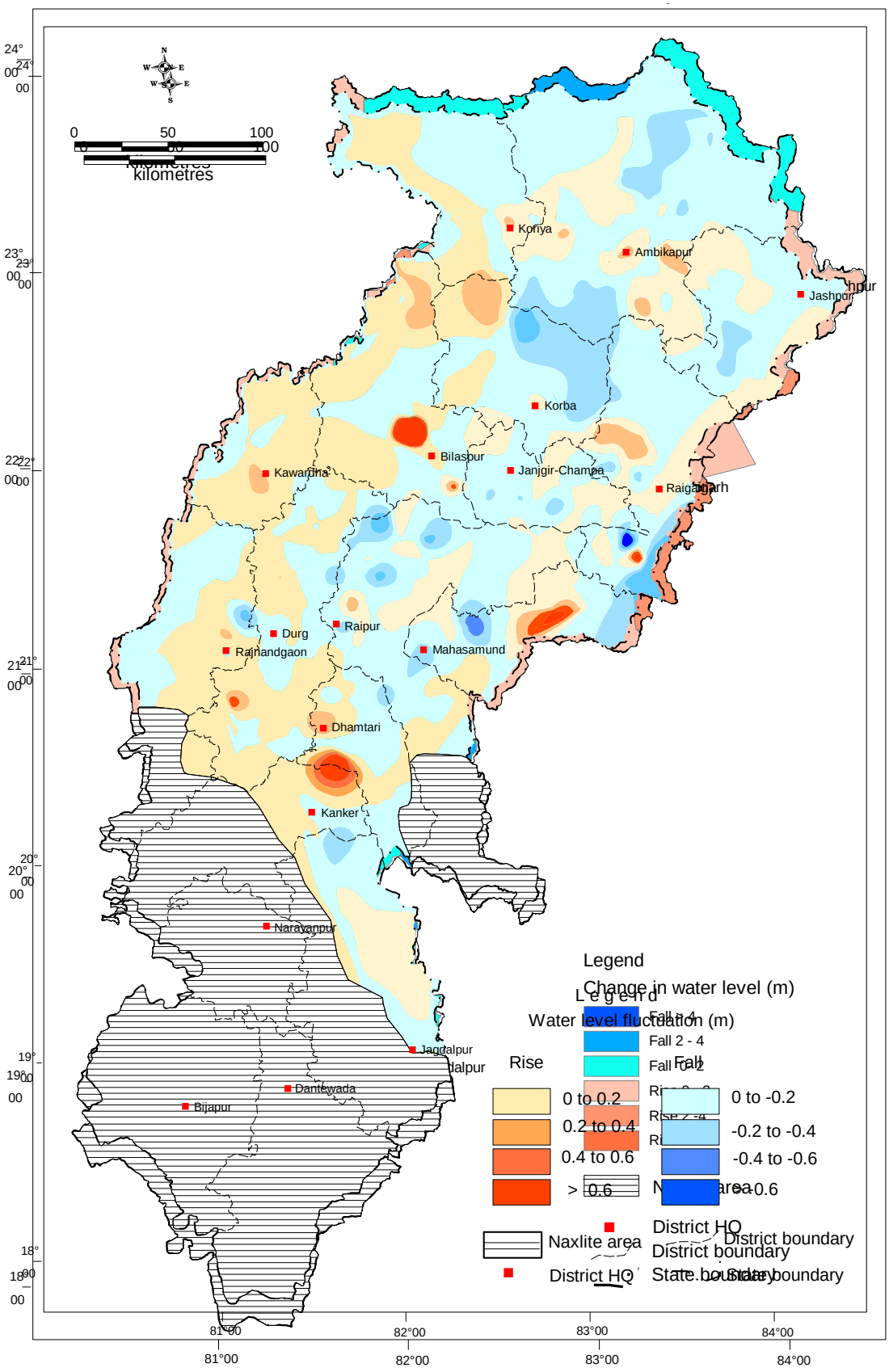
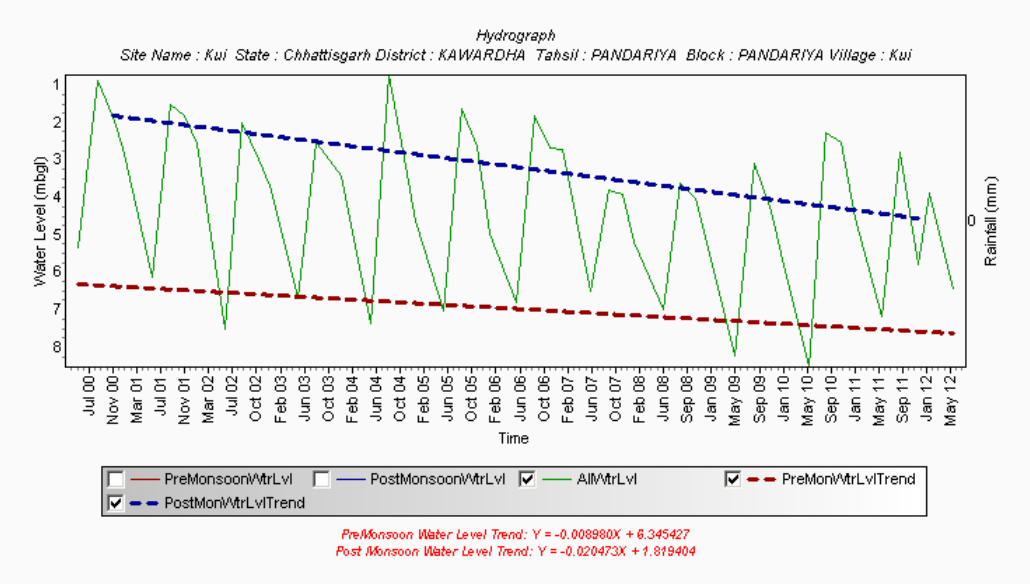


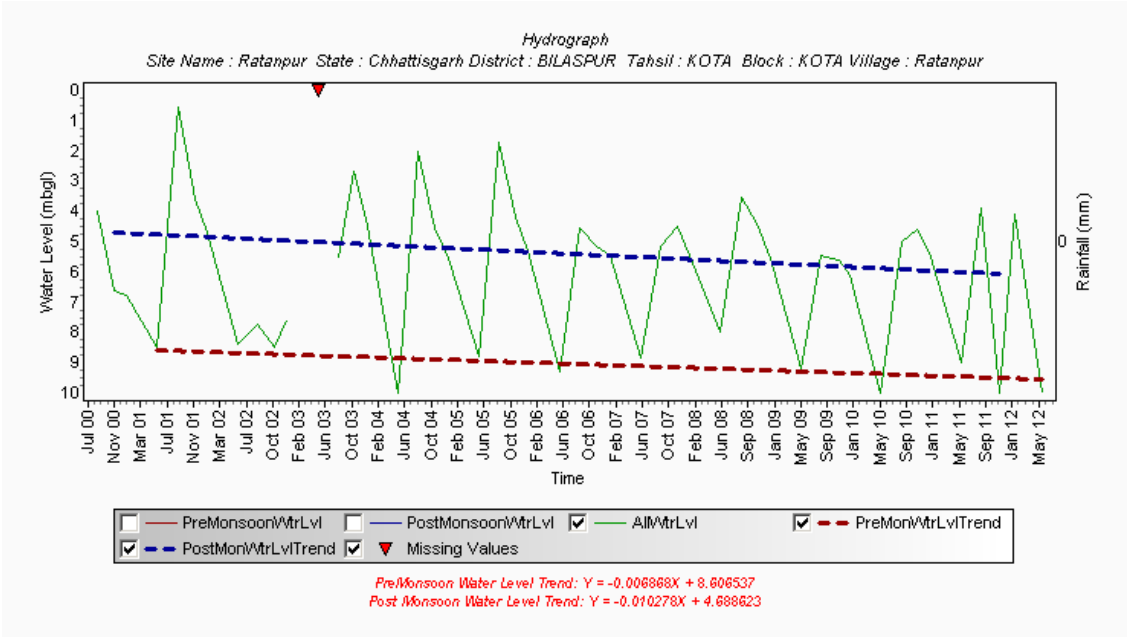
Fig 7.14 Depth to water level fluctuation (Decadal mean Nov 2003-2012 Vs Nov 2013

7.5 Long Term Water Level Trend (2002-2011)

The long term water level trend (2002-2012) of the phreatic aquifer was plotted for both the pre and post monsoon periods. .For the pre monsoon period, the major part of Chhattisgarh shows water level trend between -10 to +10 cm/yr which can be categorized as safe but many parts of Jashpur, Surguja, Korba, Janjgir-Champa,Kawardha, Rajnandgaon show significant falling trend of more than 20 cm/yr which is a cause of concern.



The post monsoon decadal water level trend map of the phreatic aquifer presents a more alarming picture.(Fig 7.17) It shows large tracts of Surguja, Koriya, Jashpur, Kawardha, Rajnandgaon etc with significant decline in water level of more than 20 cm/yr during the last 10 years.This long term trend is also depicted from the individual hydrographs of network stations. Some representative hydrographs are given below.



8. GROUNDWATER QUALITY MONITORING

8.1 Factors controlling ground water quality

The factors contributing to the ground water quality are the chemical composition of the rainwater, the soil types and the mineralogy of the rock formations. The geochemical processes in the soil zone and in the underlying unsaturated and saturated zones, temperature, pressure, duration of contact of the percolating water and the surrounding media, and other associated factors determine the chemical composition of the ground water. Pollution from near surface sources arising out of the human activities like industrial wastes disposal, use of fertilizers, pesticides also influence the ground water quality.

Climate and precipitation: The temperature and precipitation influence weathering, climate, vegetation, soil types and the composition of the water draining the area. The rainwater containing SiO_2, CO_2, O_2 picks up organic acids after reaching the earth's surface and reacts with the minerals, which get dissolved. In humid temperate climate the bicarbonates are predominant and are rather high in arid climate. The wet and dry climate promotes release of considerable soluble inorganic matter through weathering. Very cold climate inhibit weathering and restrict solute concentration in water.

Soil forming process : The geochemical reactions involved in the soil forming processes also dictate the chemical composition of the ground water. In soils dissolution of CO_2 and the H^+, HCO_3 CO_3^{2-} ions in percolatin water control pH of water and thereby increaseing its capacity to react with rocks and minerals.

Geological factors : The mineral constituents in rock influence the geochemical evolution of water passing through the rock. The mineralogical sources of major ions are listed in **Table 8.1**.

Table 8.1: Mineralogical Sources of Major Chemical Constituents

Chemical constituents	**Source Minerals**
Silica	Feldspars, Feldspathoids, Amphiboles, Pyroxenes, Mica.
Iron	Pyroxenes, Amphiboles, Mica, Pyrites, Chalcopyrite, Magnetite and Haematite.
Mn	Common Mn. bearing minerals in metamorphic & sedimentary rocks as oxides, hydroxides, carbonates, silicates.
Ca	Plagioclase, Pyroxene, Amphibole, among igneous and

	metamorphic rocks. Limestone, dolomite, gypsum among sedimentary rocks.
Mg	Dunites, Pyrozenites, Amphibolites, Basalt, Talc, Tremolite Schists, Dolomite.
Na	Sodium salts in soils, sea water ingress, ground water, also due to base exchange reactions with clays.
K	Orthoclase, Microcline, Nephaline, Lucite, Biotite in igneous and metamorphic rocks, Evaporites in sedimentary rocks.
HCO_3 & CO_3	Dissolved CO_2 in rains, water charged with CO_2 dissolves carbonate minerals, in solid rocks to give bicarbonate.
SO_4	Sulphides of heavy metals igneous and metamorphic rocks. Gypsum and hydrite in sedimentary rocks.
Cl	Atmospheric sources and sea water contamination.
F	Fluorite, Apatite, Amphiboles and Micas.

Human activities *:* The untreated industrial effluents discharged through nearby streams and unlined drains may percolate underground and reaches the aquifers on the downstream side thereby affecting the quality of ground water. The migration of the pollutant to the saturated zone is considerable in sandy strata. The urban areas in India also generate substantial quantity of wastewater and find its way into the natural water courses causing contamination of surface and ground water. The solid waste dumped in low-lying areas becomes a potential source of ground water pollution.

Organic and inorganic fertilizers, pesticides, insecticides and other chemicals used in the agricultural fields, are often leached to the ground water. Nitrate, potassium and phosphate are the common fertilizer used in agriculture land and are the potential pollutants in the ground water. The major contaminants associated with the waste disposal practices are summarized in **Table 8.2**.

Table 8.2: Contaminants Associated With the Waste Disposal Practices

Source	**Possible contaminants**
Landfills:	
Municipal	Heavy metals, chlorides, sodium, calcium
Industrial	Wide variety of inorganic and organic constituents.
Hazardous waste disposal sites	Wide variety of inorganic (particularly heavy metals) and organic

	compounds (pesticides, priority pollutants, etc).
Liquid waste storage ponds (Lagoons, leaching ponds, compounds reaching basins)	Heavy metals, Solvents, inorganic, Compounds
Subsurface sewage disposal systems	Organic compounds (degreasers, solvents), nitrogen compounds, sulphates, sodium, microbiological contaminants.
Deep-well waste injection.	Variety of inorganic and/or organic compounds.
Agricultural activities.	Fertilizers, herbicides, pesticides.
Land application (sludge, waste water)	Heavy metals, inorganic compounds, organic compounds.
Urban runoff infiltration.	Inorganic compounds, heavy metals, petroleum products.
Decaying activities.	Chlorides, sodium, calcium radioactivity.
Radioactive wastes.	Radioactive wastes and radionuclides.

8.2 Hydrochemical quality evolution

As ground water moves along the flow paths in the saturated zone, it is enriched with total dissolved solids and with major ions. The shallow zone is charactrerized by active ground water flushing through relatively well-leached rocks has HCO_3^- as the dominant anion and is low in total dissolved solids. The intermediate zone has less active ground water circulation, and higher total dissolved solids while sulphate is normally the dominant anion in this zone. The lower zone with very little ground water flushing has high Cl^- concentration and high total dissolved solids. The HCO_3^- content in ground water is normally derived from soil zone CO_2 and from dissolution of calcite and dolomite. There are several soluble sedimentary minerals that release SO_4^- or Cl^- upon dissolution. The process of evolution from stage to stage is controlled by the availability of minerals along

the ground water flow paths. In some ground water flow system the water does not evolve past the HCO_3^- stage or past the SO_4^-.

The notable in this regard is the increase in HCO_3^- and decrease in SO_4^- that can occur as a result of biochemical SO_4^- reduction. Large variations in major cations occur in ground water flow systems because of cation exchange process.

8.3 Ground water quality sampling

The purpose of ground water quality sampling are varied viz. evaluation of regional water quality, detection and assessment of the extent of the contaminant release. In this context the important attributes are location and number of monitoring wells for ground water sampling. The information from the ground water sampling network is related to the number of stations to be sampled and the frequency of sampling. Due to slow rate of ground water movement, the ground water quality does not change rapidly. Similarly in contrast to unconfined aquifers, the quality change in confined aquifer is rather slow.

Sample location : The factors that influence sampling location are site geology, hydrology, source characteristic, contaminant characteristic and size of the area under investigation. The degree and details of temporal and spatial variations, which also characterise sub-surface hydrogeochemical conditions, are also considered. The existing wells may be used to gather information on the regional ground water quality and ambient trends. Disused wells are not selected for water sampling. Hydrogeological information on ground water flow paths and gradients will initially guide the sampling network. The vertical control of sampling location is another important factor for sampling the ground water.

Sampling frequency :More the water quality varies, the more samples will be required to obtain reliable estimate of statistical parameters used to describe its behavior. Variance should determine sampling frequency. The commonly used statistical parameter for water quality variable in selecting sampling frequencies is the “mean”. The approach is to select a sampling frequency, which yields an estimate of the “mean” within a prescribed degree of accuracy (confidence limits). The “population mean” of random variable will lie within a certain interval (the confidence interval) around the “sample mean”. The confidence limit on the mean quantitatively relates sampling frequency to the variation in water quality.

The simplest case of sampling frequency design would be to select the sampling frequency, which results in the desired confidence intervals width about the annual mean for a specified water quality variable at a specified station.

In case of single station and multiple variable separate sampling frequencies for each water quality variable may be computed and then all such values averaged to decide the designed frequency.

In general, changes in the ground water quality take place much slower than the surface water quality. Experience shows that the changes in ground water quality usually can be described satisfactorily by seasonal or annual sampling schedules. Studies corroborate that the quality of the ground water outside the influence of the polluting sources, hardly shows any short-term changes. Hence, the current annual sampling schedule in the month of May serves the purpose of regional background monitoring and for study of long-term quality changes.

8.4 Results and Discussion

The chemical quality of ground water was determined from 117 water samples collected from the phreatic aquifer randomly distributed throughout Chhattisgarh . The samples were collected in pure cleaned polythene containers after rinsing with the water samples and were stored in cool place. These samples were collected during the month of May 2009 in the pre monsoon period, when the concentrations of ions were maximum. The water samples were analyzed for the major ions viz. pH, EC, CO_3, HCO_3, CI, Ca, Mg, TH, Na, K, SO_4, NO_3 and F. The chemical analysis data are given in Annexure IV. From the annexure it may be seen that the chemical quality of the ground water is suitable for drinking, domestic, industrial and agriculture uses.

The chemical analysis shows that the ground water is neutral to low alkaline in nature. The pH value was determined with direct reading pH meter. The determination of pH is an important factor because the solubility of CO_2 and the concentration of the various carbonate species depend on the pH value. The pH value is in between 7.6 and 9. The

electrical conductivity of water is also expressed as inverse of the electrical resistance across one cm cube of water. It is related to the TDS because it is a function of concentration of all ionic solutes. The EC is temperature dependent and all the readings are related to the equivalent reading at 25° C. The EC values for the groundwater in Chhattisgarh varied between 36 and 2900 micro-siemens/cm at 25° C. In around 89.74% of the water samples(105 samples), the EC values are found less than 1000 micro-siemens/cm at 25° C (i.e. 650 mg/l TDS) and is within the prescribed BIS limit for drinking purposes. In about 8.5%(10samples) water samples the EC values are found in between 1000 and 2000 micro-siemens/cm at 25° C. Exceptionally higher EC values are observed at Khamaria I (2161 micro-siemens/cm at 25° C) observation well in Bilaspur district and Lawan (2900 microsiemens/cm at 25° C) in Raipur district. Distribution of EC in the State is presented as contour map in **Fig 8.1**.

Calcium (Ca^{+2}) was the predominant ion in the ground water of the state and in certain regions Magnesium (Mg^{+2}) was high. As per the BIS guidelines the desirable and permissible limits for Ca in drinking water are 75 mg/l and 200 mg/l, respectively. The concentration of Ca in about 83.76%(98 samples) of the samples was within the desirable limits and in only around 13.68%(16 samples) the concentration was greater than the desirable and within the permissible limits. In three samples in Khurmuri(Durg district), Lawan(Raipur district) and Khamharia I(Bilaspur district) observation wells, the Ca concentration was 224mg/l, 284mg/l & 426mg/l respectively. Similarly the desirable limit for Mg in drinking water are 30 mg/l. There is no relaxation beyond this limit.The undesirable affect outside the acceptable limit include encrustation in water supply structure and adverse affects on domestic uses. The concentration of Mg in about 87.18%(102 samples) of the samples was within the desirable limit and in the remaining samples(16 samples) the concentration was greater than the desirable limit. Very high concentrations of Mg were found in Rajnandgaon (49mg/l), Thathari(50mg/l), Saragaon(66 mg/l), Sipat(67 mg/l) and Gunderdehi (72 mg/l) . The Ca and Mg when combined with HCO_3, SO_4 and other ions contribute to the hardness in the water. As per the BIS guidelines the desirable and permissible limits for the hardness as $CaCO_3$ are 200 and 600 mg/l, respectively. In about 65.81 % (77 samples) of the ground water samples, hardness is within the desirable limit and in 30.77% of the samples analysed, the hardness is greater than the desirable and within the permissible limit thereby indicating that the

ground water is soft or moderately hard in nature. Only in 3.4 % of samples (4 samples) the hardness values are above the BIS limits. The high hardness values are found at Saragaon (685 mg/l) in Janjgir-Champa, Khurmuri (750 mg/l) in Durg, Lawan (820 mg/l) in Raipur district and Khamharia I (1200 mg/l)in Bilaspur district.

The chloride (Cl^-) concentration in the ground water was within the BIS prescribed limits for drinking purposes. Desirable and maximum permissible limit (IS 10500,1991) in drinking water are 250 and 1000 mg/l respectively. In about 98.3% of the analysed samples , Cl concentration was below 250 mg/land in the remaining samples, Cl concentration was above desirable limit and within permissible limit. The distribution of chloride in the State is shown in **Fig. 8.2**.

Higher content of Sulphate (SO_4^{-2}) in drinking water causes gastrointestinal irritation. The SO_4 concentration in the State was between nil and 990 mg/l. As per the BIS guidelines the desirable and permissible limits for SO_4 in drinking water are 200mg/l and 400 mg/l, respectively. The Sulphate concentration in 96% of the water samples was within the desirable limits and only in around 2% of cases(3 samples) it was within permissible limits. In just two water samples analysed, the SO_4 concentration were beyond the permissible limits. The villages with high SO_4^{-2} are Khurmuri (560mg/l) in Durg and Khamharia I (990mg/l) in Bilaspur districts. The high concentration of sulphate is due to the dissolution of gypsum veins present within shale formation. The distribution of Sulphate is shown in **Fig. 8.3**.

The bicarbonate values were in between 18 and 445 mg/l. Among the samples analysed only in one village, Bilaigarh in Raipur district ,the bicarbonate values was found more than 400mg/l.

Very high value of fluoride in ground water causes mottling of teeth and fluorosis. High values also cause dental carries and teeth decay. In 91.45% of samples the fluoride concentration was within the desirable value (1 mg/l) recommended by BIS and only in 4.27% of samples the fluoride concentration was more than the prescribed limits (>1.5 mg/l). The maximum fluoride concentration was recorded at Baikunthpur(2.5 mg/l) in Koriya district, Keskal(2.3 mg/l) and Dhanpur(2.3 mg/l) observation wells in Bastar and Bilaspur districts respectively. The distribution of fluoride is shown in **Fig. 8.3**.

The higher concentration of nitrate (NO_3) in ground water is due to the anthropogenic activities (animal waste disposal) and it causes methaemoglobinamia (Blue babies). At very high concentrations it causes gastric cancer and adversely affects central nervous system and cardiovascular system. There is no relaxation beyond the acceptable limit of 45 mg/l for nitrate. In about 87% of the samples analysed,NO_3 concentration was within the permissible limit. Very high values of nitrate (>100 mg/l) was observed at Dongargarh(150 mg/l) in Rajnandgaon district, Pathalgaon(180 mg/l) in Jashpur district and Sipat(190 mg/l) observation wells in Bilaspur district.. The nitrate values are shown in **Fig. 8.3**.

Fig 8.1 EC distribution map of Chhattisgarh State

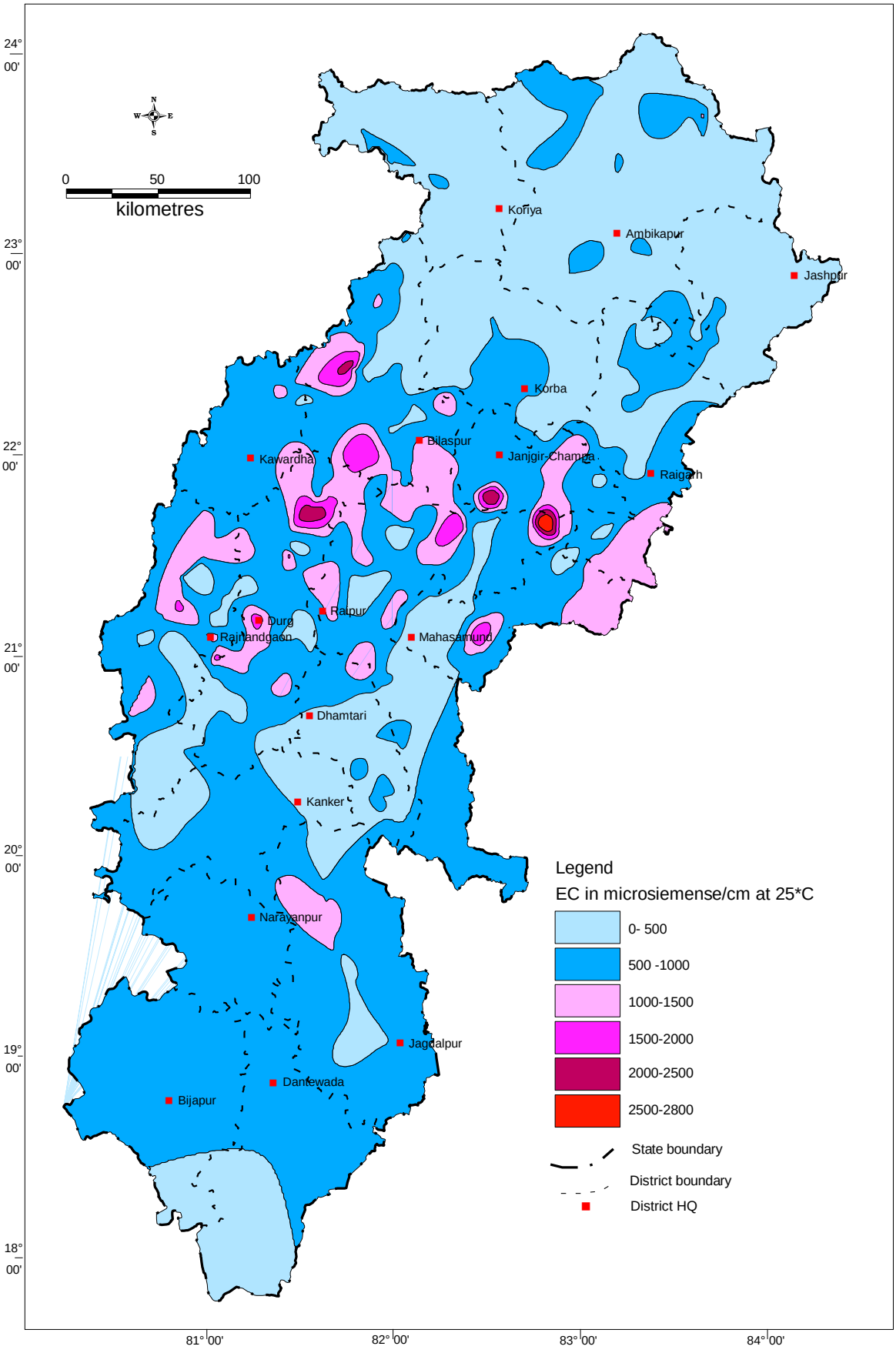


Fig 8.2 Choride distribution map of Chhattisgarh State

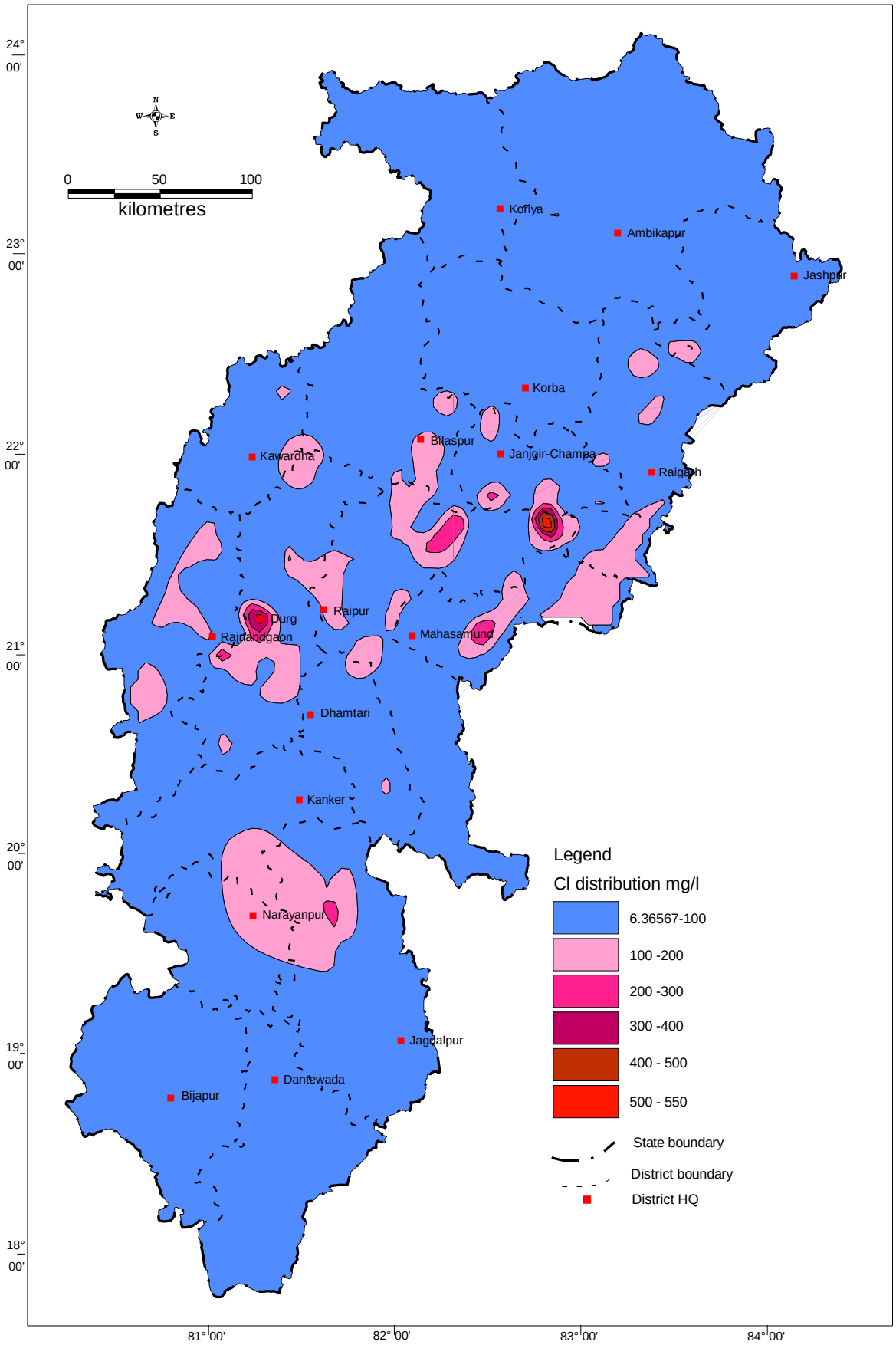
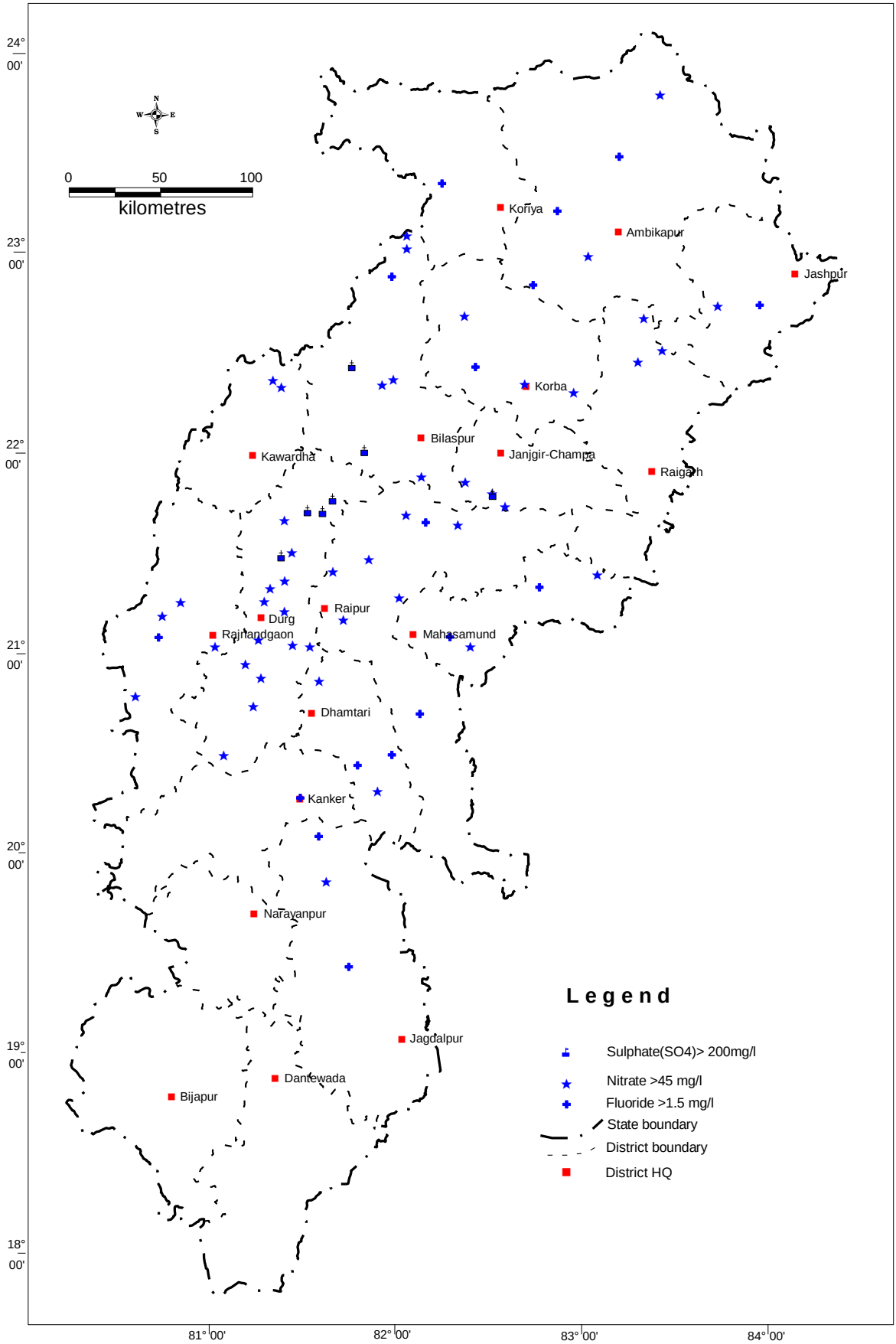


Fig 8.3 Fluoride,NO3 and SO4 distribution map of Chhattisgarh State



Details of National Hydrographs Stations				Annexure I
SN	**Location**	**Depth of well**	**Basin**	**Geology**
1	Arjunda	17.25	Mahanadi	Shale
2	Armarikalan	8.18	Mahanadi	Limestone/Dolomite
3	Baklitola	8	Mahanadi	Quartzite
4	Balod	11.65	Mahanadi	Compact Sandstone
5	Balod Gahan	7.1	Mahanadi	Compact Sandstone
6	Batera	5.43	Mahanadi	Compact Sandstone
7	Bharnabhat	15.22	Mahanadi	Limestone Cavernous
8	Danitola	7.8	Mahanadi	Quartzite
9	Delli Rajhara	3.55	Mahanadi	Conglomerate/Metasedimentaries
10	Dondi	13.75	Mahanadi	Gneiss/Amphibolite/Granulite
11	Gunderdehi	10.3	Mahanadi	Shale
12	Gunderdehi1	48.66	Mahanadi	Shale
13	Gurur	12.17	Mahanadi	Compact Sandstone
14	Gurur-s	24.28	Mahanadi	Compact Sandstone
15	Jagtara	12.45	Mahanadi	Compact Sandstone
16	Kodiya	13.3	Mahanadi	Limestone Cavernous
17	Kusumkasa	9.3	Mahanadi	Acidic Rocks
18	Lohara	7.5	Mahanadi	Granite Gneiss
19	Markatola	10.27	Mahanadi	Compact Sandstone
20	Nahalda	7.75	Mahanadi	Shale
21	Paplatola	8.7	Mahanadi	Quartzite
22	Sambalpur	25.5	Mahanadi	Not Available
23	Sambalpur Pz I	151.9	Mahanadi	Maniyari shale
24	Sambalpur Pz Ii	63	Mahanadi	Maniyari shale
25	Sambalpur2	42.49	Mahanadi	Not Available
26	Sikosa	6.14	Mahanadi	Limestone/Dolomite
27	Umradah	12.5	Mahanadi	Shale With Limestone/Sandstone Band/Lens
28	Aouri	9.8	Mahanadi	Compact Sandstone
29	Arjuni	10.8	Mahanadi	Not Available
30	Arjuni S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
31	Baloda bazar	15.4	Mahanadi	Shale
32	Baloda bazar1	67.15	Mahanadi	Limestone Cavernous
33	Bhatgaon	9.05	Mahanadi	Not Available
34	Bhattapara-S	28	Mahanadi	Limestone/Dolomite
35	Biladi	18	Mahanadi	Limestone
36	Bilaigarh	5.35	Mahanadi	Limestone/Dolomite
37	Bilaigarh S	50	Mahanadi	Limestone/Dolomite
38	Chanderi	9.8	Mahanadi	Limestone Cavernous
39	Chandi	7	Mahanadi	Not Available
40	Chicholi	15.5	Mahanadi	Limestone Cavernous
41	Darchura	10.7	Mahanadi	Shell Limestone/Limestone
42	Dhamarkhera	11.36	Mahanadi	Limestone/Dolomite
43	Haswa	14.83	Mahanadi	Limestone/Dolomite
44	Kasdol	9.27	Mahanadi	Limestone/Dolomite

SN	Location	Depth of well	Basin	Geology
45	Kasdol-d	75	Mahanadi	Limestone/Dolomite
46	Kasdol-s PZ	33.5	Mahanadi	Limestone/Dolomite
47	Khapri	13.5	Mahanadi	Not Available
48	Kharora	12.1	Mahanadi	Limestone/Dolomite
49	Lahaud	10.9	Mahanadi	Shale
50	Lahaud S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
51	Lawan	9.69	Mahanadi	Limestone/Dolomite
52	Mahasamund-s PZ	36.5	Mahanadi	Shale
53	Mudhipar	6.9	Mahanadi	Limestone Cavernous
54	Pandan Bhata	10.45	Mahanadi	Limestone
55	Panderbhata S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
56	Raita Satna Ni Para	10	Mahanadi	Limestone
57	Risda	12	Mahanadi	Limestone
58	Saragaon	7.2	Mahanadi	Limestone/Dolomite
59	Sarsiwa	10.14	Mahanadi	Granite/Granodiorite
60	Sel	9.3	Mahanadi	Limestone
61	Simga	10.43	Mahanadi	Shale
62	Simga-s	30.93	Mahanadi	Shale
63	Suhela	13.5	Mahanadi	Limestone Cavernous
64	Tarenga	17.11	Mahanadi	Shale
65	Tarpongi	8.25	Mahanadi	Limestone/Dolomite
66	Tatibandh MVM	13.1	Mahanadi	Limestone
67	Tilda	10.9	Mahanadi	Not Available
68	Tilda Purani Basti	15.53	Mahanadi	Limestone
69	Tilda S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
70	Tundei	10.45	Mahanadi	Limestone
71	Urela	11.6	Mahanadi	Conglomerate/Metasedimentaries
72	Alkadih	3	Mahanadi	Granite Gneiss
73	Amdih	7.8	Mahanadi	Granite Gneiss
74	Aragahi	11.2	Lower Ganges	Granite/Granodiorite
75	Bachwar	8	Lower Ganges	Gneiss/Amphibolite/Granulite
76	Bagra	8.35	Mahanadi	Sandstone
77	Balrampur	18	Lower Ganges	Granite/Granodiorite
78	Balrampur D	50	Lower Ganges	Granite Gneiss
79	Balrampur S	32.55	Lower Ganges	Granite Gneiss
80	Basin	7.5	Mahanadi	Granite Gneiss
81	Bhadori	6.75	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
82	Bulga	11	Lower Ganges	Compact Sandstone
83	Chandora	7.01	Lower Ganges	Compact Sandstone
84	Dhamni	11.7	Lower Ganges	Gneiss/Amphibolite/Granulite
85	Dhaurpur	9	Lower Ganges	Gneiss/Amphibolite/Granulite
86	Dhaurpur S	50	Lower Ganges	Granite Gneiss
87	Gonda	16.47	Lower Ganges	Compact Sandstone
88	Jagannathpur	8.35	Lower Ganges	Sandstone
89	Karmdiha	10.17	Lower Ganges	Gneiss/Amphibolite/Granulite

SN	Location	Depth of well	Basin	Geology
90	Kurji	9.15	Mahanadi	Sandstone
91	Lamgaon	6.7	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
92	Lundra	10	Lower Ganges	Gneiss/Amphibolite/Granulite
93	Lundra S	50	Lower Ganges	Granite Gneiss
94	Mahavirganj	8.6	Lower Ganges	Granite/Granodiorite
95	Mahewa	9.85	Lower Ganges	Compact Sandstone
96	Makanpur	12.2	Lower Ganges	Sandstone
97	Nawdih	10.5	Mahanadi	Limestone
98	Pasta	12	Lower Ganges	Granite/Granodiorite
99	Pasta S	50	Lower Ganges	Granite Gneiss
100	Pratappur	12	Lower Ganges	Granite/Granodiorite
101	Pratappur - 1	12	Lower Ganges	Granite/Granodiorite
102	Rajpur	14.56	Lower Ganges	Compact Sandstone
103	Rajpur1	30.9	Lower Ganges	Schist/Talc
104	Ramanujganj	12.8	Lower Ganges	Gneiss/Amphibolite/Granulite
105	Reonti	13.05	Lower Ganges	Sandstone
106	Sargaon	9.4	Mahanadi	Granite Gneiss
107	Shankargarh S	50	Lower Ganges	Granite Gneiss
108	Songara	15	Lower Ganges	Compact Sandstone
109	Songara1	31	Lower Ganges	Compact Sandstone
110	Tattapani	12.9	Lower Ganges	Compact Sandstone
111	Tattapani1	30.52	Lower Ganges	Granite Gneiss
112	Veria	11	Mahanadi	Sandstone With Shale/Coal Partings
113	Wadrafnagar	14	Lower Ganges	Compact Sandstone
114	Bare arapur	20	Godavari	Gneiss/Amphibolite/Granulite
115	Bastar	14	Godavari	Limestone/Dolomite
116	Bhanpuri	6.55	Godavari	Limestone/Dolomite
117	Bhanpuri-d	42.53	Godavari	Limestone/Dolomite
118	Bhanpuri-s	30.92	Godavari	Limestone/Dolomite
119	Chhapanbhanpuri	9.4	Godavari	Limestone/Dolomite
120	Chitrakot	9.9	Godavari	Compact Sandstone
121	Jagdalpur	11	Godavari	Limestone/Dolomite
122	Jagdalpur.1	8.17	Godavari	Not Available
123	Jagdalpur-s PZ	28.07	Godavari	Alluvium
124	Karpawand	8.5	Godavari	Limestone/Dolomite
125	Kumharwand	9.5	Godavari	Limestone/Dolomite
126	Markel	9.86	Godavari	Shale
127	Nagarnar1	9.3	Godavari	Shaly Limestone
128	Neganar	12.58	Godavari	Limestone/Dolomite
129	Sonarpal	9.75	Godavari	Compact Sandstone
130	Andhiyarkhor	12.02	Mahanadi	Compact Sandstone
131	Ashoga	10.95	Mahanadi	Limestone/Dolomite
132	Bemetara New	16.78	Mahanadi	Shale
133	Bemetera-s	39.83	Mahanadi	Shale
134	Berla	7.4	Mahanadi	Limestone/Dolomite

SN	Location	Depth of well	Basin	Geology
135	Bitkuli	8.8	Mahanadi	Shale
136	Dadhi1	12	Mahanadi	Shale
137	Deorbija	9.63	Mahanadi	Limestone/Dolomite
138	Ganiya	5.55	Mahanadi	Shale
139	Gatapar	9.5	Mahanadi	Limestone/Dolomite
140	Jamgaon	9.5	Mahanadi	Limestone/Dolomite
141	Kathiya	16.1	Mahanadi	Shale With Sandstone Partings
142	Kedwa	6.6	Mahanadi	Limestone/Dolomite
143	Khati	8.23	Mahanadi	Shale
144	Khurmuri	14	Mahanadi	Shale
145	Medasar	10.7	Mahanadi	Quartzite
146	Nawagarh1	8.5	Mahanadi	Shale
147	Nawagarh-d	75.62	Mahanadi	Shale
148	Nawagarh-s	30.5	Mahanadi	Shale
149	Ninwa	11.32	Mahanadi	Shale
150	Parpoda	14	Mahanadi	Limestone/Dolomite
151	Saja Pz Ii	51.3	Mahanadi	Maniyari shale
152	Saja Pzi	151.9	Mahanadi	Maniyari shale
153	Semariya	151.3	Mahanadi	Maniyari shale
154	bakarkuda	0	Mahanadi	Limestone
155	Bansajhal	8.33	Mahanadi	Compact Sandstone
156	Bansajhal1 PZ	37.22	Mahanadi	Schist/Talc
157	Bartoli	9.45	Mahanadi	Limestone
158	Belgahana	11	Mahanadi	Phyllite
159	Beltara	9.65	Mahanadi	Compact Sandstone
160	Bilaspur	15.5	Mahanadi	Limestone/Dolomite
161	Bilha	13.7	Mahanadi	Limestone/Dolomite
162	Chakrabhata-d PZ	54.8	Mahanadi	Limestone/Dolomite
163	Chandkhuri (d)	74.4	Mahanadi	Not Available
164	Chandkhuri (s)	50	Mahanadi	Not Available
165	Chilhati	10.2	Mahanadi	Limestone/Dolomite
166	chilhati	50	Mahanadi	Limestone
167	Dagauri	11.38	Mahanadi	Not Available
168	Danikundi	20	Lower Ganges	Granite/Granodiorite
169	Dhanpur	10.8	Lower Ganges	Granite/Granodiorite
170	Ganiyari	50	Mahanadi	Not Available
171	Ganiyari.2	11.4	Mahanadi	Shale
172	Gatori	6.45	Mahanadi	Limestone/Dolomite
173	Gaurela	8.79	Lower Ganges	Granite/Granodiorite
174	Hemu Nagar	7.92	Mahanadi	Limestone/Dolomite
175	Hirri	11.15	Mahanadi	Limestone/Dolomite
176	Jhingatpur	9.1	Mahanadi	Phyllite
177	Jogipur	12.1	Mahanadi	Quartzite
178	Kargikhurud	13.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
179	Kenda	10.9	Mahanadi	Phyllite

SN	Location	Depth of well	Basin	Geology
180	Keonchi	10.56	Mahanadi	Granite/Granodiorite
181	Keonchi (D)	100	Mahanadi	Not Available
182	Keonchi (s)	50	Mahanadi	Not Available
183	Khamharia1	17	Mahanadi	Shale
184	Khamharia2	10.9	Mahanadi	Quartzite
185	Kota PZ	31.07	Mahanadi	Shale
186	Kota(kargi)	19.82	Mahanadi	Limestone/Dolomite
187	Kotmi.1	17.75	Mahanadi	Granite/Granodiorite
188	Madanpur	15.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
189	Malhar	7.85	Mahanadi	Limestone/Dolomite
190	Marwahi	14.12	Lower Ganges	Compact Sandstone
191	Masturi	12	Mahanadi	Shale
192	Masturi1	10.95	Mahanadi	Shale
193	Neora	12.6	Mahanadi	Limestone Cavernous
194	Nimdha	8.5	Lower Ganges	Granite Gneiss
195	Panchpedi	10.4	Mahanadi	Limestone/Dolomite
196	Patera	6.8	Mahanadi	Granite Gneiss
197	Pendra Road	50	Lower Ganges	Not Available
198	Piparkhuti	7	Mahanadi	Granite/Granodiorite
199	Piperkhutinew	6.8	Mahanadi	Granite Gneiss
200	Ranka Pz I	149.2	Mahanadi	Maniyari shale
201	Ranka Pz Ii	51.6	Mahanadi	Maniyari shale
202	Ratanpur	10.78	Mahanadi	Shale
203	Rupandand	4.8	Mahanadi	Granite Gneiss
204	Saraipalli	11.3	Mahanadi	Granite/Granodiorite
205	Seoni	11.6	Lower Ganges	Granite/Granodiorite
206	Sewra	8.8	Lower Ganges	Granite Gneiss
207	Shivtarai New	10.5	Mahanadi	Granite Gneiss
208	Sipat	50	Mahanadi	Shaly Limestone
209	Takhatpur.1	10	Mahanadi	Sandy Shale
210	Tendumuda	13.2	Lower Ganges	Sandstone
211	Tenduwa	11.1	Mahanadi	Granite/Granodiorite
212	Tikthi	12	Lower Ganges	Compact Sandstone
213	Udaypur	7.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
214	Arsi-kanhar	12	Mahanadi	Granite/Granodiorite
215	Banraud - I	7	Mahanadi	Compact Sandstone
216	Banraud D	81	Mahanadi	Quartzite
217	Banraud S	50	Mahanadi	Quartzite
218	Banspani	12.54	Mahanadi	Granite/Granodiorite
219	Bhoyana	8.7	Mahanadi	Limestone Cavernous
220	Birgudi	11	Mahanadi	Granite/Granodiorite
221	Budepara	7.6	Mahanadi	Sandstone
222	Chataud S	50	Mahanadi	Compact Sandstone
223	Chhati	10.65	Mahanadi	Limestone/Dolomite
224	Chhati S	50	Mahanadi	Limestone Cavernous

SN	Location	Depth of well	Basin	Geology
225	Dhamtari1 PZ	51.75	Mahanadi	Limestone Cavernous
226	Dorgardula	11.21	Mahanadi	Granite/Granodiorite
227	Dugli	7.8	Mahanadi	Granite/Granodiorite
228	Dugli - I	7.7	Mahanadi	Granite/Granodiorite
229	Gangrel S	50	Mahanadi	Granite Gneiss
230	Gattasilli	9.1	Mahanadi	Not Available
231	Jabarra	6.1	Mahanadi	Not Available
232	Keregaon	8	Mahanadi	Granite/Granodiorite
233	Kondapar	10.6	Mahanadi	Shale
234	Kosmarra	8.2	Mahanadi	Not Available
235	Kurud S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
236	Kurud.1	9.4	Mahanadi	Limestone Cavernous
237	Magarlod	12	Mahanadi	Compact Sandstone
238	Magarlod D	61	Mahanadi	Shaly Limestone
239	Magarlod S	36.66	Mahanadi	Shaly Limestone
240	Marod	10.66	Mahanadi	Laterite
241	Mega	11	Mahanadi	Limestone
242	Murrumsilli S	50	Mahanadi	Granite Gneiss
243	Nagari PZ	36.58	Mahanadi	Granite/Granodiorite
244	Nagri	7.25	Mahanadi	Granite/Granodiorite
245	Nagri-1	10.05	Mahanadi	Granite/Granodiorite
246	Sankra	11.5	Mahanadi	Granite/Granodiorite
247	Seadei	7.6	Mahanadi	Sandstone
248	Sihawa	7.12	Mahanadi	Granite/Granodiorite
249	Singhpur	10.68	Mahanadi	Compact Sandstone
250	Ahiwara	10.55	Mahanadi	Limestone/Dolomite
251	Anda	7.12	Mahanadi	Shale
252	Anda-I	9	Mahanadi	Shale
253	Bhailai	8.2	Mahanadi	Limestone/Dolomite
254	Charoda	7.05	Mahanadi	Limestone/Dolomite
255	Dargaon	8.65	Mahanadi	Limestone/Dolomite
256	Dhamdha-s	30.55	Mahanadi	Limestone Cavernous
257	Durg	10.23	Mahanadi	Limestone/Dolomite
258	Funda	9.44	Mahanadi	Limestone/Dolomite
259	Ganiyari	13.1	Mahanadi	Limestone/Dolomite
260	Girhola	20.5	Mahanadi	Shale
261	Jeora Sirsa	9.8	Mahanadi	Limestone/Dolomite
262	Kachundur	8.9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
263	Kandraka	8.6	Mahanadi	Limestone
264	Kumhari	30.46	Mahanadi	Limestone/Dolomite
265	Litai	14	Mahanadi	Limestone/Dolomite
266	Marra	11.2	Mahanadi	Limestone/Dolomite
267	Motipur	9.83	Mahanadi	Limestone/Dolomite
268	Paoowara	9.45	Mahanadi	Limestone Cavernous

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269	Patan	14.4	Mahanadi	Shale
270	Pawa Pz	149.2	Mahanadi	Maniyari shale
271	Pendri	9.3	Mahanadi	Limestone
272	Powara	7.4	Mahanadi	Limestone Cavernous
273	Ravelidih	9.3	Mahanadi	Limestone/Dolomite
274	Selud1	10	Mahanadi	Limestone/Dolomite
275	Selud2	27.03	Mahanadi	Limestone/Dolomite
276	Tarkori	9.05	Mahanadi	Shale With Limestone/Sandstone Band/Lens
277	Utai-Adarshnagar	6	Mahanadi	Shale With Limestone/Sandstone Band/Lens
278	Bindra nawagarh	8.75	Mahanadi	Granite/Granodiorite
279	Chhura	11.25	Mahanadi	Granite/Granodiorite
280	Gariabandh-s	75.62	Mahanadi	Granite/Granodiorite
281	Gariyaband	10.55	Mahanadi	Granite/Granodiorite
282	Gariyaband -1	10.75	Mahanadi	Granite/Granodiorite
283	Gohrapadar - 1	7.35	Mahanadi	Granite/Granodiorite
284	Indagaon	8.1	Mahanadi	Granite/Granodiorite
285	Jalkhamar	9.35	Mahanadi	Granite/Granodiorite
286	Jhariabara	10.6	Mahanadi	Granite Gneiss
287	Joba	6.52	Mahanadi	Granite/Granodiorite
288	Panduka	10.77	Mahanadi	Compact Sandstone
289	Adbhar	8.3	Mahanadi	Shale
290	Akaltara	13.76	Mahanadi	Limestone/Dolomite
291	Akaltara S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
292	Baloda -r	14.83	Mahanadi	Limestone/Dolomite
293	Baloda S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
294	Bamhani	15.4	Mahanadi	Gneiss/Amphibolite/Granulite
295	Bamnidihi	10	Mahanadi	Shale
296	Baradwar D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
297	Baradwar S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
298	Budena	13.1	Mahanadi	Granite Gneiss
299	Champa	12.3	Mahanadi	Limestone/Dolomite
300	Champa-d PZ	65.5	Mahanadi	Shaly Limestone
301	Champa-s PZ	41.87	Mahanadi	Shaly Limestone
302	Chandrapur1	23.32	Mahanadi	Alluvium
303	Dabra	9.87	Mahanadi	Compact Sandstone
304	Damau	7.92	Mahanadi	Sandstone
305	Dhardei	11.48	Mahanadi	Shale
306	Dhurkot Nhs	12.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
307	Dongakahrod	13.9	Mahanadi	Limestone/Dolomite
308	Ghoghari	8.52	Mahanadi	Shale
309	Hasoud	9.54	Mahanadi	Shale
310	Jaijaipur	12.13	Mahanadi	Shale
311	Jaijaipur D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
312	Jaijaipur S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
313	Janjgir	19.95	Mahanadi	Shale

SN	Location	Depth of well	Basin	Geology
314	Janjgir S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
315	Jewara	12.14	Mahanadi	Limestone
316	Jhulan Pakariya	11.8	Mahanadi	Limestone/Dolomite
317	Kera	8.73	Mahanadi	Shale
318	Khartal	10.72	Mahanadi	Limestone/Dolomite
319	Konargarh	6.36	Mahanadi	Shale
320	Latesara	10.52	Mahanadi	Shale
321	Loharsi	10.2	Mahanadi	Granite Gneiss
322	Malkhroda	15.37	Mahanadi	Shale
323	Mulmula	10	Mahanadi	Limestone Cavernous
324	Pamgarh	18.33	Mahanadi	Shale
325	Pamgarh D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
326	Pamgarh S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
327	Sakti	20.81	Mahanadi	Shale
328	Sakti S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
329	Saliabhata	13.1	Mahanadi	Granite Gneiss
330	Sapos	10.5	Mahanadi	Granite Gneiss
331	Saragaon2	13.12	Mahanadi	Shale
332	Sasaha	6.9	Mahanadi	Shale
333	Semra	15.4	Mahanadi	Limestone/Dolomite
334	Seorinarayan	11.4	Mahanadi	Alluvium
335	Seorinarayan1 PZ	30.15	Mahanadi	Alluvium
336	Somthi	10.9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
337	Sukda	7.4	Mahanadi	Compact Sandstone
338	Thathari	11.3	Mahanadi	Shale
339	Amatolli	5.2	Mahanadi	Granite/Granodiorite
340	Bagbahar S	50	Mahanadi	Granite Gneiss
341	Bagicha	6.82	Mahanadi	Gneiss/Amphibolite/Granulite
342	Bagicha PZ	41.63	Mahanadi	Gneiss/Amphibolite/Granulite
343	Balachhappar	12.25	Mahanadi to Ganges Water Resources Region	Granite Gneiss
344	Bandarchuwa	10.75	Mahanadi	Granite/Granodiorite
345	Banderchua S	50	Mahanadi	Granite Gneiss
346	Bangaon	8.24	Mahanadi	Granite/Granodiorite
347	Bangaon B	50	Mahanadi	Granite Gneiss
348	Bataikela	8.87	Mahanadi	Gneiss/Amphibolite/Granulite
349	Bewrapali	8	Mahanadi	Not Available
350	Bildagi	8.5	Mahanadi	Granite Gneiss
351	Binjapur	7.5	Mahanadi	Granite/Granodiorite
352	Bthighara	12.1	Mahanadi	Granite Gneiss
353	Chhapartoli	7.5	Mahanadi	Not Available
354	Dhodidand	6.6	Mahanadi	Granite/Granodiorite
355	Farsabahar	4.65	Mahanadi	Not Available

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356	Farsakanhi	8.44	Mahanadi	Granite/Granodiorite
357	Ghatmunda	9.4	Mahanadi	Granite/Granodiorite
358	Jakba	10	Mahanadi to Ganges Water Resources Region	Granite Gneiss
359	Jashpurnagar	10.35	do	Granite/Granodiorite
360	Kachhor	9.8	Mahanadi	Granite Gneiss
361	Kandaibahar	6.1	Mahanadi	Granite Gneiss
362	Kandora	10.5	Mahanadi	Granite Gneiss
363	Kansabel	12.3	Mahanadi	Granite/Granodiorite
364	Kasawel S	50	Mahanadi	Granite Gneiss
365	Kersai	7.98	Mahanadi	Granite/Granodiorite
366	Khutsera	7.45	Mahanadi	Not Available
367	Kotba	6.85	Mahanadi	Granite/Granodiorite
368	Kunjara	7.8	Mahanadi	Granite/Granodiorite
369	Kunkuri S	50	Mahanadi	Granite Gneiss
370	Kunkuri1	7.4	Mahanadi	Granite/Granodiorite
371	Lavakera	9.25	Mahanadi	Gneiss/Amphibolite/Granulite
372	Lavakera1	41.5	Mahanadi	Gneiss/Amphibolite/Granulite
373	Ludeg	6.99	Mahanadi	Gneiss/Amphibolite/Granulite
374	Maini	8.5	Mahanadi	Granite/Granodiorite
375	Mauhadih	9.1		Gneiss/Amphibolite/Granulite
376	Muskuti	7.99	Mahanadi	Granite/Granodiorite
377	Narayanbaheli	8.25	Mahanadi	Granite Gneiss
378	Narayanpur S	50	Mahanadi	Granite Gneiss
379	Nawaguda	9.6	Mahanadi	Granite Gneiss
380	Palidih	10.5	Mahanadi	Granite Gneiss
381	Pathalgaon	14.23	Mahanadi	Granite/Granodiorite
382	Pathalgaon S	50	Mahanadi	Granite Gneiss
383	Pathalgaon1 PZ	26.93	Mahanadi	Gneiss/Amphibolite/Granulite
384	Patratoli	7.8	Mahanadi	Granite Gneiss
385	Peta	7.73	Mahanadi	Granite Gneiss
386	Phooldih	6	Lower Ganges	Granite Gneiss
387	Raikera	7	Mahanadi	Granite/Granodiorite
388	Raikera(Kunkuri)	7.75	Lower Ganges	Granite Gneiss
389	Raoni	5.65	Mahanadi	Granite Gneiss
390	Rupsera	7.79	Mahanadi to Ganges Water Resources Region	Granite/Granodiorite
391	Sanna	14.8	Lower Ganges	Granite Gneiss
392	Saraipani	8.3	Mahanadi	Granite/Granodiorite
393	Sarhapani	9.8	Lower Ganges	Gneiss/Amphibolite/Granulite

SN	Location	Depth of well	Basin	Geology
394	Sarkardih	9.93	Mahanadi to Ganges Water Resources Region	Granite/Granodiorite
395	Sonquari	16	Mahanadi	Granite Gneiss
396	Srishringa	6.9	Mahanadi	Granite/Granodiorite
397	Surangpani New	8.4	Mahanadi	Granite/Granodiorite
398	Tapkara	11	Mahanadi	Granite/Granodiorite
399	Tapkara S	50	Mahanadi	Granite Gneiss
400	Charama2	8.82	Mahanadi	Granite/Granodiorite
401	Govindpur	7.15	Mahanadi	Gneiss/Amphibolite/Granulite
402	Kanker	14	Mahanadi	Gneiss/Amphibolite/Granulite
403	Kanker1 PZ	30.56	Mahanadi	Granite/Granodiorite
404	Kulgaon	9.9	Mahanadi	Gneiss/Amphibolite/Granulite
405	Bharamdeo D	100	Mahanadi	Shale
406	Bharamdeo S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
407	Bodla	14.5	Mahanadi	Limestone/Dolomite
408	Bodla1 PZ	27.73	Mahanadi	Schist/Talc
409	Chilpi	9.85	Narmada	Schist/Talc
410	Danganiya	10.3	Mahanadi	Limestone/Dolomite
411	Dhandgaon	12.4	Mahanadi	Limestone
412	Kapada	10	Mahanadi	Limestone/Dolomite
413	Kawardha S	50	Mahanadi	Shale
414	Kawardha1	11	Mahanadi	Limestone/Dolomite
415	Khadoula	8.75	Mahanadi	Shale
416	Kharoda Kalan	9.2	Mahanadi	Limestone/Dolomite
417	Kui	9.75	Mahanadi	Granite/Granodiorite
418	Lohara-d PZ	52	Mahanadi	Shale
419	Lohara-s PZ	24.56	Mahanadi	Shale
420	Munmuna	9.8	Mahanadi	Phyllite
421	Rajnanwagaon	5.52	Mahanadi	Schist/Talc
422	Sagona S	27.9	Mahanadi	Granite Gneiss
423	Sahaspur lohara	6.39	Mahanadi	Limestone/Dolomite
424	Sahaspur Lohara.1	11.15	Mahanadi	Not Available
425	Sarai Patera S	16	Mahanadi	Granite Gneiss
426	Saroda Dadar S	50	Mahanadi	Granite Gneiss
427	Singhari D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
428	Singhari S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
429	Uria Khurud	9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
430	Batrail	9.07	Godavari	Gneiss/Amphibolite/Granulite
431	Ghodagaon	9.6	Godavari	Compact Sandstone
432	Joba	8	Godavari	Compact Sandstone
433	Keskal	9	Mahanadi	Gneiss/Amphibolite/Granulite
434	Kondagon New	12.1	Godavari	Granite/Granodiorite
435	Lanjora	11	Godavari	Granite/Granodiorite

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436	Murwand1	10	Godavari	Granite Gneiss
437	Pharasgaon	9.9	Godavari	Granite/Granodiorite
438	Pharasgaon1 PZ	27.4	Godavari	Schist/Talc
439	Andhiarkhor Pz I	51.3	Mahanadi	Maniyari shale
440	Banbandha	5.36	Mahanadi	Compact Sandstone
441	Bandhakhar	6.82	Mahanadi	Sandstone
442	Batati Junction	11.27	Mahanadi	Sandstone
443	Bhilai Nagar Pz Ii	92	Mahanadi	Sandstone With Shale/Coal Partings
444	Chaitama	15	Mahanadi	Compact Sandstone
445	Champa Mode	7.5	Mahanadi	Sandstone
446	Charmar	9.4	Mahanadi	Sandstone
447	Churi	12.8	Mahanadi	Granite Gneiss
448	Dhegurdih Manzipara	9.4	Mahanadi	Sandstone
449	Dhourabhata	8.37	Mahanadi	Sandstone
450	Dumardih New	8.86	Mahanadi	Sandstone
451	Gopalpur	12.71	Mahanadi	Granite/Granodiorite
452	Jamchuwa	9.5	Mahanadi	Sandstone
453	Jatgan	11.4	Mahanadi	Granite/Granodiorite
454	Jhabar	8.35	Mahanadi	Sandstone With Shale/Coal Partings
455	Jhingatpur	10.3	Mahanadi	Sandstone
456	Jogipali	10.4	Mahanadi	Sandstone
457	Kartala	10.95	Mahanadi	Compact Sandstone
458	Katghora	11.65	Mahanadi	Compact Sandstone
459	Khodri	4.8	Mahanadi	Granite Gneiss
460	Korba	14.47	Mahanadi	Compact Sandstone
461	Korba Home Gaurd Pz Ii	37.48	Mahanadi	Compact Sandstone
462	Korba-S	193	Mahanadi	Sandstone With Shale/Coal Partings
463	Korkoma Junction	8.15	Mahanadi	Sandstone
464	Kotmer Upper	8.2	Mahanadi	Sandstone
465	Kurtha	8.9	Mahanadi	Shale With Limestone/Sandstone Band/Lens
466	Lenga	9.98	Mahanadi	Granite Gneiss
467	Madai	8.73	Mahanadi	Compact Sandstone
468	Morga	14	Mahanadi	Compact Sandstone
469	Nagai	11.77	Mahanadi	Compact Sandstone
470	Naktikhar	10.27	Mahanadi	Sandstone With Shale/Coal Partings
471	Naraibodh	7.5	Mahanadi	Sandstone
472	Nawapara	7.3	Mahanadi	Sandstone
473	Nonbirra	10.5	Mahanadi	Sandstone
474	Nonbirra	8.2	Mahanadi	Sandstone
475	Nonbirra New	13.2	Mahanadi	Granite Gneiss
476	Numera	12.17	Mahanadi	Sandstone With Shale/Coal Partings
477	Nunera Pz I	142.25	Mahanadi	Sandstone With Shale/Coal Partings
478	Nunera Pz II	70.41	Mahanadi	Sandstone With Shale/Coal Partings

SN	Location	Depth of well	Basin	Geology
479	Pali	10.25	Mahanadi	Compact Sandstone
480	Pasan	13.88	Mahanadi	Granite/Granodiorite
481	Pasarkhet	7.6	Mahanadi	Sandstone
482	Pondi	115	Mahanadi	Sandstone With Shale/Coal Partings
483	Ponri	12.98	Mahanadi	Granite/Granodiorite
484	Rajkamma	72.53	Mahanadi	Sandstone With Shale/Coal Partings
485	Ralia Pz Ii	6.95	Mahanadi	Sandstone
486	Ralia Pz Iii	12.1	Mahanadi	Granite Gneiss
487	Rampur	150	Mahanadi	Sandstone With Shale/Coal Partings
488	Ramtarai Pz I	105	Mahanadi	Sandstone With Shale/Coal Partings
489	Ramtarai Pz Ii	6.98	Mahanadi	Sandstone
490	Ramtarai Pz Iii	78	Mahanadi	Sandstone With Shale/Coal Partings
491	Rewa	150	Mahanadi	Sandstone With Shale/Coal Partings
492	Rishdi	50.82	Mahanadi	Sandstone With Shale/Coal Partings
493	Sakdukala	11.1	Mahanadi	Granite Gneiss
494	Salihabhata	7.29	Mahanadi	Sandstone
495	Sindhiya	8.61	Mahanadi	Sandstone
496	Sirki Pz I	7.7	Mahanadi	Compact Sandstone
497	Sirki Pz Ii	9.32	Mahanadi	Sandstone
498	Sutarra	161	Mahanadi	Sandstone With Shale/Coal Partings
499	Sutera	85	Mahanadi	Sandstone With Shale/Coal Partings
500	Tikeja	11.68	Mahanadi	Sandstone
501	Tiwarta Pz I	9.3	Mahanadi	Sandstone With Shale/Coal Partings
502	Tiwarta Pz Ii	10.6	Mahanadi	Granite Gneiss
503	Tuman	15.55	Mahanadi	Granite/Granodiorite
504	Tuman	11.5	Mahanadi	Granite Gneiss
505	Urga.1	7.05	Mahanadi	Gneiss/Amphibolite/Granulite
506	Baharsi.1	5.52	Lower Ganges	Compact Sandstone
507	Baikunthpur	7	Mahanadi	Compact Sandstone
508	Baikunthpur-s	24.67	Mahanadi	Compact Sandstone
509	Banjaridad S	50	Mahanadi	Sandstone
510	Belbehra	7.28	Mahanadi	Compact Sandstone
511	Biharpur	15.3	Mahanadi	Sandstone
512	Bikrampur	6.4	Mahanadi	Sandstone With Shale/Coal Partings
513	Chutki	5.4	Lower Ganges	Compact Sandstone
514	Garundol	11	Mahanadi	Sandstone With Shale/Coal Partings
515	Girjapur	3	Mahanadi	Sandstone
516	Jamgahana	6.5	Mahanadi	Sandstone
517	Janakpur	10	Lower Ganges	Compact Sandstone
518	Kelhari	11.52	Lower Ganges	Compact Sandstone
519	Khadgaon	13.2	Mahanadi	Compact Sandstone
520	Khadgaon - 1	11.6	Mahanadi	Compact Sandstone
521	Khatgori	15.74	Mahanadi	Compact Sandstone
522	Kiwarpur	9.35	Lower Ganges	Shale With Limestone/Sandstone Band/Lens

SN	Location	Depth of well	Basin	Geology
523	Manendragarh	10.48	Mahanadi	Compact Sandstone
524	Mansukha	12	Mahanadi	Shale
525	Pendri	8.36	Mahanadi	Compact Sandstone
526	Pouri	11.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
527	Ranai	13.06	Lower Ganges	Compact Sandstone
528	Ranai1	14	Lower Ganges	Compact Sandstone
529	Sarbhoka	8.89	Mahanadi	Compact Sandstone
530	Sonhat	7	Mahanadi	Compact Sandstone
531	Tarabahara	8.83	Lower Ganges	Compact Sandstone
532	Tilokhan	10	Lower Ganges	Compact Sandstone
533	Ujiyarpur1	10.36	Mahanadi	Compact Sandstone
534	Awaradawri S	50	Mahanadi	Granite Gneiss
535	Bag bahera	11.26	Mahanadi	Granite/Granodiorite
536	Bagbahara S	50	Mahanadi	Granite Gneiss
537	Baldidih	9.75	Mahanadi	Granite Gneiss
538	Barbaspur	8.55	Mahanadi	Granite Gneiss
539	Basna	11.65	Mahanadi	Granite Gneiss
540	Basna S	50	Mahanadi	Granite Gneiss
541	Belsunda	14.85	Mahanadi	Shell Limestone/Limestone
542	Jagdishpur	10.76	Mahanadi	Granite/Granodiorite
543	Jhalap	9.35	Mahanadi	Granite/Granodiorite
544	Jhalap S	32.8	Mahanadi	Granite Gneiss
545	Jogideepa D	64.4	Mahanadi	Granite Gneiss
546	Jogideepa S	50	Mahanadi	Granite Gneiss
547	Jogidipa	10.65	Mahanadi	Granite Gneiss
548	Keshwa S	50	Mahanadi	Compact Sandstone
549	Khallari	5.35	Mahanadi	Not Available
550	Mahasamund Contractual S	50	Mahanadi	Compact Sandstone
551	Mahasamund.	14.32	Mahanadi	Compact Sandstone
552	Mahasamund.1	14.32	Mahanadi	Compact Sandstone
553	Mandalpur	6.6	Mahanadi	Quartzite
554	Marban	8.4	Mahanadi	Sandstone
555	Palsipani - 1	10.05	Mahanadi	Granite/Granodiorite
556	Patsenduri	9.59	Mahanadi	Compact Sandstone
557	Phusera	12.1	Mahanadi	Limestone/Dolomite
558	Pithora	11.4	Mahanadi	Granite/Granodiorite
559	Pithora - 1	12.85	Mahanadi	Granite/Granodiorite
560	Pithora PZ	27.43	Mahanadi	Granite/Granodiorite
561	Sagrapali	8.5	Mahanadi	Compact Sandstone
562	Sakra S	50	Mahanadi	Granite Gneiss
563	Saraipali	12.48	Mahanadi	Compact Sandstone
564	Saraipalli-S PZ	30.58	Mahanadi	Shale
565	Sirpur	13.15	Mahanadi	Limestone/Dolomite
566	Sirpur1 PZ	60	Mahanadi	Limestone/Dolomite

SN	Location	Depth of well	Basin	Geology
567	Suarmar	13.95	Mahanadi	Granite/Granodiorite
568	Suarmar1 PZ	42.94	Mahanadi	Granite/Granodiorite
569	Tendukonda	12.98	Mahanadi	Granite/Granodiorite
570	Tumgaon	11.31	Mahanadi	Compact Sandstone
571	Tumgaon S	50	Mahanadi	Granite Gneiss
572	Achanakmar1	10.3	Mahanadi	Phyllite
573	Amadob	9.15	Mahanadi	Sandy Shale
574	Amerikhapa	8.44	Mahanadi	Sandstone With Shale/Coal Partings
575	Attaria	11.5	Mahanadi	Granite Gneiss
576	Baitalpur	14.99	Mahanadi	Limestone/Dolomite
577	Barighat	13.08	Mahanadi	Compact Sandstone
578	Bindabal	13.5	Mahanadi	Granite Gneiss
579	Chattan	9.2	Mahanadi	Granite Gneiss
580	Chhaparwa	16.87	Mahanadi	Granite/Granodiorite
581	Chirhula	16	Mahanadi	Limestone/Dolomite
582	Darhi Pz I	57.5	Mahanadi	Maniyari shale
583	Darhi Pz Ii	121.8	Mahanadi	Maniyari shale
584	Deori	9.3	Mahanadi	Limestone/Dolomite
585	Godkhami	9.2	Mahanadi	Shale With Limestone/Sandstone Band/Lens
586	Kanteli.1	11.2	Mahanadi	Shale
587	Karesara Pz I	149.2	Mahanadi	Maniyari shale
588	Karesara Pz Ii	57.7	Mahanadi	Maniyari shale
589	Lamni	16	Mahanadi	Granite/Granodiorite
590	lormi	16.3	Mahanadi	Shale
591	Lormi (d)	70	Mahanadi	Not Available
592	Lormi1	4.95	Mahanadi	Shale
593	Mungeli	13.5	Mahanadi	Limestone/Dolomite
594	Mungeli(d)	100	Mahanadi	Not Available
595	Mungeli(s)	50	Mahanadi	Not Available
596	Pali	9.2	Mahanadi	Shale With Limestone/Sandstone Band/Lens
597	Patharia (chorbhatti)	15.4	Mahanadi	Shale
598	Saragaon1	7	Mahanadi	Shale
599	Setganga	6.2	Mahanadi	Limestone/Dolomite
600	Sitalkunda	9.4	Mahanadi	Limestone/Dolomite
601	Tilaidabra	10.8	Mahanadi	Granite Gneiss
602	Chhal	7.9	Mahanadi	Granite Gneiss
603	Amapali	10.5	Mahanadi	Granite Gneiss
604	Amlipur Amlitikra	5.7	Mahanadi	Sandstone
605	Auranar	13.9	Mahanadi	Sandstone
606	Bakaruma	11.25	Mahanadi	Granite/Granodiorite
607	Bamsjer	7.8	Mahanadi	Sandstone
608	Baramkela	15.5	Mahanadi	Limestone/Dolomite
609	Baramkela S	37	Mahanadi	Shale With Limestone/Sandstone Band/Lens
610	Barpali	11.48	Mahanadi	Compact Sandstone

SN	Location	Depth of well	Basin	Geology
611	Bartapali	11.4	Mahanadi	Sandstone
612	Bataupali	9	Mahanadi	Compact Sandstone
613	Bayasi	7.5	Mahanadi	Granite Gneiss
614	Behramar	8.6	Mahanadi	Gneiss/Amphibolite/Granulite
615	Bhangari	11.5	Mahanadi	Not Available
616	Bhupdeopur S	50	Mahanadi	Compact Sandstone
617	Bijapara	10.4	Mahanadi	Sandstone
618	Bojia	9.2	Mahanadi	Sandstone
619	Bonda	10	Mahanadi	Limestone/Dolomite
620	Boro	10.5	Mahanadi	Sandstone
621	Chaple	10.36	Mahanadi	Limestone/Dolomite
622	Chaple S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
623	Charmar	9.8	Mahanadi	Gneiss/Amphibolite/Granulite
624	Chimtapani	14.15	Mahanadi	Compact Sandstone
625	Chunkunidad	11.8	Mahanadi	Sandstone
626	Damdarha	9.85	Mahanadi	Compact Sandstone
627	Deridih	9.5	Mahanadi	Gneiss/Amphibolite/Granulite
628	Derpani	4.8	Mahanadi	Granite Gneiss
629	Dharamjaigarh PZ	29.91	Mahanadi	Compact Sandstone
630	Dharan Pz Ii	56	Mahanadi	Sandstone With Shale/Coal Partings
631	Dharmajaigarh	12.55	Mahanadi	Compact Sandstone
632	Dharmajaigarh	12.55	Mahanadi	Compact Sandstone
633	Dongabhona	7.5	Mahanadi	Gneiss/Amphibolite/Granulite
634	Duliamuda	9.4	Mahanadi	Gneiss/Amphibolite/Granulite
635	Dumarpali	9.3	Mahanadi	Granite Gneiss
636	Durgapur	9.7	Mahanadi	Sandstone
637	Edu	7.56	Mahanadi	Compact Sandstone
638	Farkanara	11.25	Mahanadi	Sandstone
639	Gare Nhs	10	Mahanadi	Sandstone With Shale/Coal Partings
640	Gersa	12.5	Mahanadi	Gneiss/Amphibolite/Granulite
641	Gharghoda	13.38	Mahanadi	Compact Sandstone
642	Golabuda	10.2	Mahanadi	Granite/Granodiorite
643	Hati	9.56	Mahanadi	Compact Sandstone
644	Hirri1	9.72	Mahanadi	Limestone/Dolomite
645	Kanakbira	11	Mahanadi	Granite/Granodiorite
646	Kandadand	10.4	Mahanadi	Sandstone
647	Kapu	9.75	Mahanadi	Granite/Granodiorite
648	Kedar S	50	Mahanadi	Limestone Cavernous
649	Keradih	3.95	Mahanadi	Sandstone
650	Kerajhar	12.36	Mahanadi	Compact Sandstone
651	Kerigarhi	11.5	Mahanadi	Sandstone
652	Khadgaon1	13.5	Mahanadi	Laterite
653	Kharasia S	50	Mahanadi	Compact Sandstone
654	Kharsia	17.63	Mahanadi	Compact Sandstone
655	Kondatalai S	50	Mahanadi	Compact Sandstone

SN	Location	Depth of well	Basin	Geology
656	Kotra	9.46	Mahanadi	Limestone/Dolomite
657	Kurekela	14.55	Mahanadi	Compact Sandstone
658	Lailunga1	11.22	Mahanadi	Granite/Granodiorite
659	Lailunga2	46.62	Mahanadi	Granite/Granodiorite
660	Lakha.1	8.55	Mahanadi	Not Available
661	Lakshmipur	4.4	Mahanadi	Sandstone
662	Laripani	10.35	Mahanadi	Compact Sandstone
663	Lendra S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
664	Lipti	7.5	Mahanadi	Granite Gneiss
665	Malda B	9.27	Mahanadi	Granite/Granodiorite
666	Milupara-Sidarpara	13.8	Mahanadi	Gneiss/Amphibolite/Granulite
667	Mumund	6.2	Mahanadi	Granite Gneiss
668	Nawadih	8.2	Mahanadi	Gneiss/Amphibolite/Granulite
669	Nawagaon	6.5	Mahanadi	Gneiss/Amphibolite/Granulite
670	Nawapara Pz	48.79	Mahanadi	Sandstone With Shale/Coal Partings
671	Ongana	8.4	Mahanadi	Gneiss/Amphibolite/Granulite
672	Pakargaon	5.8	Mahanadi	Granite/Granodiorite
673	Pandripani	12.3	Mahanadi	Gneiss/Amphibolite/Granulite
674	Phuthamuda	7.3	Mahanadi	Gneiss/Amphibolite/Granulite
675	Pindri	7.97	Mahanadi	Granite/Granodiorite
676	Porda Pz	30	Mahanadi	Sandstone With Shale/Coal Partings
677	Potiya	9.5	Mahanadi	Gneiss/Amphibolite/Granulite
678	Pusalda	11.8	Mahanadi	Gneiss/Amphibolite/Granulite
679	Raigarh	17.66	Mahanadi	Compact Sandstone
680	Raiharg S	50	Mahanadi	Compact Sandstone
681	Rajpur.1	8.6	Mahanadi	Not Available
682	Rajpur2	8.16	Mahanadi	Gneiss/Amphibolite/Granulite
683	Ramnagar	5.6	Mahanadi	Gneiss/Amphibolite/Granulite
684	Rera	8.5	Mahanadi	Granite Gneiss
685	Salkhiya	7.8	Mahanadi	Granite/Granodiorite
686	Samaruma	6.67	Mahanadi	Sandstone
687	Saraipali	13.2	Mahanadi	Gneiss/Amphibolite/Granulite
688	Sarangarh	12.62	Mahanadi	Compact Sandstone
689	Sarangarh S	50	Mahanadi	Limestone Cavernous
690	Sarangarh1	34.21	Mahanadi	Compact Sandstone
691	Saria1	12	Mahanadi	Limestone/Dolomite
692	Shahpur Colony	12	Mahanadi	Sandstone
693	Sirsinga Temple	8.2	Mahanadi	Granite/Granodiorite
694	Sisringa	13.6	Mahanadi	Compact Sandstone
695	Sithra New	11.5	Mahanadi	Sandstone
696	Sukwasuava	8.4	Mahanadi	Granite/Granodiorite
697	Tadola	6.8	Mahanadi	Shale With Limestone/Sandstone Band/Lens
698	Taraimal1.1	8	Mahanadi	Compact Sandstone
699	Taraimar	10.4	Mahanadi	Gneiss/Amphibolite/Granulite
700	Tendumar	6.8	Mahanadi	Gneiss/Amphibolite/Granulite

SN	Location	Depth of well	Basin	Geology
701	Tetla	13.17	Mahanadi	Compact Sandstone
702	Abhanpur	19.9	Mahanadi	Shale
703	Abhanpur D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
704	Abhanpur S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
705	Amapara NHS	8	Mahanadi	Limestone
706	Amera	8	Mahanadi	Shale With Sandstone Partings
707	Amethi	6.4	Mahanadi	Limestone Cavernous
708	Arang	9.15	Mahanadi	Limestone/Dolomite
709	Arang S	50	Mahanadi	Limestone Cavernous
710	Bajrangpur	12.45	Mahanadi	Shale
711	Bohardih Pzi	149.2	Mahanadi	Maniyari shale
712	Bohardih Pzii	51.6	Mahanadi	Maniyari shale
713	Bothi Pzi	100.3	Mahanadi	Maniyari shale
714	Bothi Pzii	39.4	Mahanadi	Maniyari shale
715	Charauda	7.8	Mahanadi	Limestone
716	Devpuri	14.04	Mahanadi	Limestone/Dolomite
717	Devri	11.5	Mahanadi	Limestone Cavernous
718	Dharsiwa	13	Mahanadi	Limestone/Dolomite
719	Dharsiwa S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
720	Dumartarai	11.2	Mahanadi	Limestone
721	Fingeshwar- I	10.5	Mahanadi	Limestone/Dolomite
722	Kanekera	3.9	Mahanadi	Compact Sandstone
723	Kanki	7.25	Mahanadi	Sandy Shale
724	Kanki D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
725	Kanki S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
726	Kusrangi	7.85	Mahanadi	Sandy Shale
727	Manabasti	12.2	Mahanadi	Limestone/Dolomite
728	Mandhar	7.2	Mahanadi	Limestone
729	Mandhar D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
730	Mandhar S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
731	Mandirhasud	14.5	Mahanadi	Limestone/Dolomite
732	Palari	11.5	Mahanadi	Shale
733	Palari D	100	Mahanadi	Shale With Limestone/Sandstone Band/Lens
734	Palari S	50	Mahanadi	Shale With Limestone/Sandstone Band/Lens
735	Raipur	16.87	Mahanadi	Limestone/Dolomite
736	Raipur (IGKV)-S	122.08	Mahanadi	Limestone/Dolomite
737	Rajim	10.95	Mahanadi	Shale
738	Rajim-s PZ	27.38	Mahanadi	Shale
739	Ranisagar	7.85	Mahanadi	Not Available
740	Rsu Raipur	10.4	Mahanadi	Limestone
741	Sakara	21.55	Mahanadi	Limestone
742	Sandi	10.9	Mahanadi	Shale
743	Sandi1	30.8	Mahanadi	Shale
744	Semariya	11.15	Mahanadi	Limestone
745	Sursabandha	8.16	Mahanadi	Alluvium

SN	Location	Depth of well	Basin	Geology
746	Umaria station	8.84	Mahanadi	Shale
747	Badaitola	14.3	Mahanadi	Sandstone
748	Baigatola	8.3	Mahanadi	Granite/Granodiorite
749	Birampurkala	7.9	Mahanadi	Limestone
750	Chinohola	11.7	Mahanadi	Granite Gneiss
751	Chirchari	12.02	Mahanadi	Granite/Granodiorite
752	Chuikhadan	12	Mahanadi	Phyllite
753	Dhaba	13	Mahanadi	Limestone Cavernous
754	Dhaneli	9	Mahanadi	Limestone
755	Dhara	9.3	Mahanadi	Granite/Granodiorite
756	Diwanbhedi	9.8	Mahanadi	Granite Gneiss
757	Dongargaon.1	10.52	Mahanadi	Granite/Granodiorite
758	Dongargarh	11.4	Mahanadi	Granite/Granodiorite
759	Dongargarh-d PZ	51.59	Mahanadi	Granite/Granodiorite
760	Dongargarh-sPZ	30.44	Mahanadi	Granite/Granodiorite
761	Gandaipandaria	10.05	Mahanadi	Limestone/Dolomite
762	Govindpur	8	Mahanadi	Granite/Granodiorite
763	Khairagarh	8	Mahanadi	Compact Sandstone
764	Lal bhadurnagar	12.02	Mahanadi	Granite/Granodiorite
765	Madrakuhi	7.2	Mahanadi	Limestone
766	Mohgaon	13	Mahanadi	Compact Sandstone
767	Mutpar	10	Mahanadi	Granite Gneiss
768	Narmada	9.65	Mahanadi	Limestone
769	Rajnandgaon	11.8	Mahanadi	Shale
770	Rajnandgaon-S PZ	30.46	Mahanadi	Shale
771	Ramatola	13.5	Mahanadi	Granite/Granodiorite
772	Rampur	7.4	Mahanadi	Shaly Sandstone
773	Rangkathera	10.81	Mahanadi	Shale
774	Ranitarai	10.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
775	Ravagahan	9.1	Mahanadi	Shale With Limestone/Sandstone Band/Lens
776	Reevagaon	10.75	Mahanadi	Granite/Granodiorite
777	Sahaspur Dalli	16	Mahanadi	Shale With Sandstone Partings
778	Salgapat	10.18	Mahanadi	Rhyolite
779	Salhe Bara	12.45	Mahanadi	Compact Sandstone
780	Saloni	12.25	Mahanadi	Shale
781	Singhola	6.5	Mahanadi	Limestone/Dolomite
782	Somni	13.88	Mahanadi	Shale
783	Talai	15	Mahanadi	Limestone/Dolomite
784	Tappa	12.71	Mahanadi	Gneiss/Amphibolite/Granulite
785	Uraidabritola	12.05	Mahanadi	Shale With Limestone/Sandstone Band/Lens
786	Ajabnagar	6	Lower Ganges	Compact Sandstone
787	Badsara	10.3	Lower Ganges	Sandy Shale
788	Bhaiyathan	31.01	Lower Ganges	Gneiss/Amphibolite/Granulite
789	Deonagar	8.3	Lower Ganges	Compact Sandstone
790	Ganeshpur	14.06	Mahanadi	Compact Sandstone

SN	Location	Depth of well	Basin	Geology
791	Jaynagar	10.28	Lower Ganges	Compact Sandstone
792	Jhasi	10.2	Lower Ganges	Compact Sandstone
793	Kalyanpur	9.5	Mahanadi	Gneiss/Amphibolite/Granulite
794	Kanakpur	9.7	Mahanadi	Sandstone With Shale/Coal Partings
795	Latori	11.08	Lower Ganges	Compact Sandstone
796	Odigi	8	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
797	Premnagar	13.65	Mahanadi	Compact Sandstone
798	Premnagar D	50	Mahanadi	Granite Gneiss
799	Ramanuj nagar	12.05	Mahanadi	Compact Sandstone
800	Sirsi	8.5	Lower Ganges	Quartzite
801	Surajpur	10	Lower Ganges	Compact Sandstone
802	Tara	15.44	Mahanadi	Compact Sandstone
803	Tara1	37.04	Mahanadi	Compact Sandstone
804	Ambikapur	11.14	Lower Ganges	Compact Sandstone
805	Ambikapur-D	49.1	Lower Ganges	Compact Sandstone
806	Ambikapur-s	30.94	Lower Ganges	Compact Sandstone
807	Baghima	6	Lower Ganges	Compact Sandstone
808	Bandana	9.43	Mahanadi	Granite/Granodiorite
809	Batauli	10	Mahanadi	Granite/Granodiorite
810	Batauli S	50	Mahanadi	Granite Gneiss
811	Chatakpur	5.7	Mahanadi	Sandstone
812	Dandgaon	7.71	Mahanadi	Compact Sandstone
813	Darima	8.35	Lower Ganges	Sandstone With Shale/Coal Partings
814	Ghorghadi	8	Mahanadi	Granite Gneiss
815	Kakalo	9.55	Mahanadi	Sandstone
816	Kamleswarpur	21.27	Mahanadi	Basalt
817	Kunni	9.7	Lower Ganges	Granite/Granodiorite
818	Laxmanpur	14	Lower Ganges	Compact Sandstone
819	Mangari	10.4	Mahanadi	Granite/Granodiorite
820	Nagadand	20	Mahanadi	Granite Gneiss
821	Nawapara	9.1	Lower Ganges	Gneiss/Amphibolite/Granulite
822	Parsa	10	Lower Ganges	Shale With Limestone/Sandstone Band/Lens
823	Pratapgarh	11.3	Mahanadi	Granite/Granodiorite
824	Rajpari	7	Mahanadi	Sandstone
825	Sitapur-s	30.94	Mahanadi	Compact Sandstone
826	Udaipur	14.58	Lower Ganges	Compact Sandstone
827	Udaipur Dhah	10.6	Lower Ganges	Compact Sandstone
828	Udaipur-s	30.99	Lower Ganges	Compact Sandstone

Depth to water level of National Hydrograph Stations								Annesure II
S.N	**District**	**Location**	**Lat**	**Long**	**May 2013 Depth to water level (mbgl)**	**2013 Aug (mbgl)**	**2013 Nov (mbgl)**	Jan 14 DTW(mbgl)
1	Bastar	Bare arapur	19.00833333	81.86277778	11	3.4	4.2	6.72
2	Bastar	Bastar	19.20138889	81.93611111	9.7	1.65	3.93	5
3	Bastar	Batrail	20.05416667	81.57222222	6.4	1.50	1.66	3.12
4	Bastar	Bhanpuri	19.33055556	81.83194444	3.75	1.20	2.67	2.75
5	Bastar	Bhanpuri-d	19.3325	81.83194444	8.76	3.08	5.64	6.21
6	Bastar	Bhanpuri-s	19.3325	81.83194444	8.9	3.19	5.75	6.02
7	Bastar	Chhapanbhanpuri	19.13805556	81.86083333	8	0.90	1.00	1.2
8	Bastar	Chitrakot	19.20277778	81.71944444	7.5	3.95	3.57	4.4
9	Bastar	Ghodagaon	19.36944444	81.79166667	7.9	2.40	3.78	3.98
10	Bastar	Jagdalpur	19.08611111	82.02777778	4.9	2.65	3.8	5.57
11	Bastar	Jagdalpur.1	19.08611111	82.02777778	3.97	1.17	4.78	6.1
12	Bastar	Jagdalpur-s PZ	19.08611111	82.02833333	10.5	13.05	13.18	17.15
13	Bastar	Joba	19.43611111	81.75555556	6.38	0.53	2.24	3.09
14	Bastar	Karpawand	19.36388889	82.085			2.52	4.02
15	Bastar	Keskal	20.08888889	81.59444444	8.5	5.40	4.60	5.6
16	Bastar	Kondagon New	19.58333333	81.66666667	7.1	2.50	4.30	4.8
17	Bastar	Kumharwand	19.09583333	81.95833333	4.1	1.50	2.67	3.09
18	Bastar	Lanjora	19.72083333	81.65416667	10.5	3.67	4.86	6.94
19	Bastar	Markel	19.06388889	82.14722222	7.68	0.24	2.26	2.87
20	Bastar	Murwand1	20.12083333	81.53333333		1.55	2.75	3.97
21	Bastar	Nagarnar1	19.1	82.18333333	7.2		3.80	5.5
22	Bastar	Neganar	19.1	82.18333333	8	2		1.87
23	Bastar	Pharasgaon	19.85833333	81.6375	6.5	0.65	2.17	3.02
24	Bastar	Pharasgaon1 PZ	19.85833333	81.6375	14	7.03	8.36	9.13
25	Bastar	Sonarpal	19.28333333	81.95	6.8	2.40	3.70	4
26	Bilaspur	Achanakmar1	22.40833333	81.85972222	7	0.18	2.76	3.75
27	Bilaspur	Amadob	22.15222222	81.61138889	6.74		2.74	2.78
28	Bilaspur	Amerikhapa	21.89527778	82.0325	6	3.34	4.12	4.9
29	Bilaspur	Attaria	22.57	81.75694444	4.7		2.40	2.75
30	Bilaspur	Baitalpur	21.85833333	81.91666667	5.45	0.80	2.55	2.9
31	Bilaspur	bakarkuda	21.91805556	82.2675	22.01	0.37	4.00	8.95
32	Bilaspur	Bansajhal	22.38333333	82.11666667	5.85	1.20	3.85	4.01
33	Bilaspur	Bansajhal1 PZ	22.38333333	82.11666667	6	1.73	3.09	4.29
34	Bilaspur	Barighat	22.38138889	81.89972222	9.25	0.45	4.35	5.45
35	Bilaspur	Bartoli	21.87972222	82.1475	7.65	1.07	3.65	3.9
36	Bilaspur	Belgahana	22.43333333	82.03333333	6.55	2.06	3.17	4.44
37	Bilaspur	Beltara	22.27222222	82.26805556	5.8	0.69	2.85	3.12
38	Bilaspur	Bilaspur	22.1125	82.1	11	5.56	6.3	7.1
39	Bilaspur	Bilha	21.96944444	82.04722222	7.5	2.10	4.80	5.8
40	Bilaspur	Bindabal	22.42666667	81.795	7.82	0.40	2.80	4
41	Bilaspur	Chakrabhata-d PZ	22.1125	82.1	32	3.85	16.00	18.96
42	Bilaspur	Chandkhuri (d)	22.27222222	82.26805556	17	20.70	19.10	26.6
43	Bilaspur	Chandkhuri (s)	22.27222222	82.26805556		19.70	17.16	19.2
44	Bilaspur	Chattan	22.15222222	81.61138889	7.5		3.92	3.99

S.N	District	Location	Lat	Long	May 2013 Depth to water level (mbgl)	2013 Aug (mbgl)	2013 Nov (mbgl)	Jan 14 DTW(mbgl)
45	Bilaspur	Chhaparwa	22.44166667	81.77083333	15.77	3.92		15.77
46	Bilaspur	Chilhati	21.77944444	82.31361111	9.9	1.57	4.05	4.78
47	Bilaspur	chilhati	21.78055556	82.3125	8.21	0.97	3.84	5.38
48	Bilaspur	Chirhula	22.00638889	81.71611111	2.92	2.17	3.10	3.25
49	Bilaspur	Dagauri	21.89388889	82.07055556	6	3.89	4.07	4.27
50	Bilaspur	Danikundi	22.92916667	82.06666667	15.7	13.47	11.22	11.98
51	Bilaspur	Deori	22.115	81.67055556	8.65	7.73	7.15	7.3
52	Bilaspur	Dhanpur	22.88333333	81.98611111	9	3.92	4.55	4.8
53	Bilaspur	Ganiyari	22.18611111	82.04166667		24.83	24.00	49.4
54	Bilaspur	Ganiyari.2	22.18611111	82.04166667	10.6	0.01	2.1	3.7
55	Bilaspur	Gatori	22.19444444	82.13888889	3.3	0.90	1.90	2.78
56	Bilaspur	Gaurela	22.75416667	81.91111111	6.85	0.15	1.75	2.82
57	Bilaspur	Godkhami	22.27555556	81.64555556	7.7	3.12	4.60	5
58	Bilaspur	Hemu Nagar	22.05333333	82.18638889	7.22	6.23	6.12	6.84
59	Bilaspur	Hirri	21.97083333	82.05	7.43	2.65	5.52	6.25
60	Bilaspur	Jhingatpur	22.36666667	81.99722222	6.9	0.70	2.42	3.78
61	Bilaspur	Jogipur	22.29583333	82.075	11.7	4.52	7.35	9.7
62	Bilaspur	Kanteli.1	22.15277778	81.65	9.15	6.55	6.75	7.77
63	Bilaspur	Kargikhurud	22.2675	81.95861111	9.5	1.25	6.12	6.4
64	Bilaspur	Kenda	22.53194444	82.08055556	7.8	3.08	5.25	7.06
65	Bilaspur	Keonchi	22.62083333	81.77083333	9	2.65	3.60	3.7
66	Bilaspur	Keonchi (D)	22.62083333	81.77083333	7.1	4.20	5.20	5.5
67	Bilaspur	Keonchi (s)	22.62083333	81.77083333		4.94	4.60	5.55
68	Bilaspur	Khamharia1	22.12222222	81.9875		0.29	4.48	4.77
69	Bilaspur	Khamharia2	22.15	82.39166667	4		1.52	2.42
70	Bilaspur	Kota PZ	22.28888889	82.02222222	26.15		12.85	15.45
71	Bilaspur	Kota(kargi)	22.28888889	82.025	8	0.35	1.60	1.75
72	Bilaspur	Kotmi.1	22.81111111	82.0875	13.7	6.10	5.35	6.9
73	Bilaspur	Lamni	22.54166667	81.74583333	15.55	7.14	6.85	7.57
74	Bilaspur	lormi	22.27083333	81.70694444	8.8	0.45	3.00	3.95
75	Bilaspur	Lormi (d)	22.27083333	81.70694444		3.03	6.38	6.8
76	Bilaspur	Lormi1	22.27083333	81.70694444	4.5	1.00	2.75	4.1
77	Bilaspur	Madanpur	22.24111111	82.14722222	3	0.62	1.25	4.51
78	Bilaspur	Malhar	21.89138889	82.28583333	6.8	1.67	2.35	2.8
79	Bilaspur	Marwahi	23.02	82.06944444	13.07	4.40		6.05
80	Bilaspur	Masturi	21.99027778	82.26666667	10	0.39	1.76	2.89
81	Bilaspur	Masturi1	21.99027778	82.26666667		0.70	2.57	3.2
82	Bilaspur	Mungeli	22.06555556	81.68611111	12.3	11.60	10.50	11.3
83	Bilaspur	Mungeli(d)	22.06555556	81.68611111		15.20	10.27	10.78
84	Bilaspur	Mungeli(s)	22.06555556	81.68611111	16.2	13.20	10.27	10.78
85	Bilaspur	Neora	22.2125	81.93166667	3.3	2.02	2.85	3
86	Bilaspur	Nimdha	22.94694444	81.945	3.8	0.98	1.05	1.35
87	Bilaspur	Pali	22.15222222	81.61138889	8.4	3.13	4.98	5.6
88	Bilaspur	Panchpedi	21.82805556	82.27	9.6	0.72	3.40	3.56
89	Bilaspur	Patera	22.30944444	81.94972222	1.6	0.02	1.80	2.2

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90	Bilaspur	Patharia (chorbhatti)	22.01666667	81.83888889	4.18	1.48	2.38	4.07
91	Bilaspur	Pendra Road	22.77222222	81.90972222	8.6	1.00	3.82	5.03
92	Bilaspur	Piparkhuti	22.66388889	81.88333333	6.38	0.65	3.08	3.88
93	Bilaspur	Piperkhutinew	22.66388889	81.88305556			3.46	4.24
94	Bilaspur	Ratanpur	22.28055556	82.17777778	10	1.35	3.79	4.69
95	Bilaspur	Rupandand	22.6975	81.89333333	3.6	0.09	1.60	2.47
96	Bilaspur	Saragaon1	21.9	81.96666667	6	2.8	4.2	6
97	Bilaspur	Saraipalli	22.34166667	81.93611111	9.3	3.00	5.35	6.95
98	Bilaspur	Seoni	23.0125	81.95833333	7	1.79	3.37	3.63
99	Bilaspur	Setganga	22.125	81.54166667	2.3	0.30	0.00	1.1
100	Bilaspur	Sewra	22.85166667	81.98055556	8.2	4.92	3.90	5.12
101	Bilaspur	Shivtarai New	22.34888889	81.93416667	6.6	1.92	3.45	4.25
102	Bilaspur	Sipat	22.14583333	82.27916667	2.45	0.88	2.20	3.1
103	Bilaspur	Sitalkunda	22.07805556	81.64027778	3.1	1.98	0.30	2.23
104	Bilaspur	Takhatpur.1	22.13333333	81.86944444	8.5	0.35	3.61	5.03
105	Bilaspur	Tendumuda	23.05666667	82.01222222	5.9	0.20	2.63	4
106	Bilaspur	Tenduwa	22.25416667	81.88333333	8.1	0.47	3.80	4.97
107	Bilaspur	Tikthi	23.08444444	82.06944444	9.7	1.72	3.80	6.55
108	Bilaspur	Tilaidabra	22.49611111	81.79527778	4.1	1.76	2.19	2.41
109	Bilaspur	Udaypur	22.2725	81.75444444	7	0.77	2.67	4.45
110	Dhamtari	Arsi-kanhar	20.24583333	82.07916667	10.11	6.00	5.66	7.66
111	Dhamtari	Banraud - I	20.59583333	81.65833333	6.33	0.48	3.34	4.19
112	Dhamtari	Banraud D	20.59583333	81.65833333		2.11	4.50	7.5
113	Dhamtari	Banraud S	20.59583333	81.65833333	6.44	2.27	4.30	7.39
114	Dhamtari	Banspani	20.36666667	81.79166667			3.7	5.9
115	Dhamtari	Bhoyana	20.65833333	81.59166667	4.78	0.54	2.60	3.66
116	Dhamtari	Birgudi	20.32222222	81.8625			3.28	4.87
117	Dhamtari	Budepara	20.78305556	81.80055556	1.78	0.30	1.85	2.37
118	Dhamtari	Chataud S	21.00416667	81.725				6.4
119	Dhamtari	Chhati	20.77916667	81.66666667	1.7	0.55	1.81	2.54
120	Dhamtari	Chhati S	20.77916667	81.66666667			1.30	3.7
121	Dhamtari	Dhamtari1 PZ	20.70833333	81.55		10.13	12.85	24.69
122	Dhamtari	Dorgardula	20.40555556	81.91111111	8.39	0.18	1.81	3.8
123	Dhamtari	Dugli	20.49166667	81.87083333			1.80	2.6
124	Dhamtari	Dugli - I	20.49166667	81.87083333	7.1	0.34	1.80	2.52
125	Dhamtari	Gangrel S	20.62666667	81.57472222	11.48	4.54	7.48	9.8
126	Dhamtari	Gattasilli	20.44361111	81.80277778	7	1.20	3.80	5.5
127	Dhamtari	Jabarra	20.49555556	81.98583333	3.99	0.50	2.10	3
128	Dhamtari	Keregaon	20.54861111	81.7375	4.55	0.42	3.61	5.01
129	Dhamtari	Kondapar	21.00416667	81.725	9.51	0.38	3.15	4.34
130	Dhamtari	Kosmarra	20.85972222	81.59861111	2.83	0.57	1.54	1.64
131	Dhamtari	Kurud S	20.8275	81.68555556				3.7
132	Dhamtari	Kurud.1	20.8275	81.71888889	2.41	1.15	1.57	2.01
133	Dhamtari	Magarlod	20.74722222	81.85833333	7.63	1.37	4.91	5.47

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134	Dhamtari	Magarlod D	20.74527778	81.85416667		2.89	9.40	12.4
135	Dhamtari	Magarlod S	20.74527778	81.85416667	19.29	3.02	9.20	10.38
136	Dhamtari	Marod	20.90277778	81.68888889	7.71	0.25	0.76	1.32
137	Dhamtari	Mega	20.78305556	81.80055556	10.16	0.98	6.20	7.18
138	Dhamtari	Murrumsilli S	20.53055556	81.64277778	9.9		6.34	8.6
139	Dhamtari	Nagari PZ	20.50055556	81.95833333	4.86	2.56	1.23	5.78
140	Dhamtari	Nagri	20.33333333	81.95833333	5.6	1.4	3.03	4.48
141	Dhamtari	Nagri-1	20.33333333	81.95833333	5.38	0.96	2.83	4.57
142	Dhamtari	Sankra	20.29305556	81.99027778	10.92		3.52	5.54
143	Dhamtari	Seadei	20.63583333	81.63472222		0.88	2.60	5.29
144	Dhamtari	Sihawa	20.30833333	81.9125	5.79	0.48	4.32	4.82
145	Dhamtari	Singhpur	20.58194444	81.87777778		0.64	6.67	8.09
146	Durg	Ahiwara	21.36111111	81.41666667	3.69	1.82	3.14	3.45
147	Durg	Anda	21.06666667	81.275	3.36	1.42	2.28	2.31
148	Durg	Anda-I	21.06666667	81.275		0.83	1.69	1.79
149	Durg	Andhiarkhor Pz I	22.54111111	82.23944444	11.49	4.90	8.70	9.4
150	Durg	Andhiyarkhor	21.83833333	81.5975		11.49	11.11	11.39
151	Durg	Arjunda	20.94305556	81.20555556	5.3	1.07	1.80	2.03
152	Durg	Armarikalan	20.83333333	81.41388889		1.03	2.43	3.53
153	Durg	Ashoga	21.96388889	81.55	2.3	1.06	1.69	3
154	Durg	Baklitola	20.69916667	81.02305556	7.65	1.61	1.61	4.15
155	Durg	Balod	20.72916667	81.2	5.1	1.41	2.95	3.64
156	Durg	Balod Gahan	20.64611111	81.47166667	4.5	1.30	2.65	2.85
157	Durg	Batera	20.78055556	81.06416667	4.12	0.57	1.09	1.62
158	Durg	Bemetara New	21.71666667	81.53333333	9.28	2.08	2.58	4.08
159	Durg	Bemetera-s	21.71666667	81.53333333	31	13.34	16.10	26.14
160	Durg	Berla	21.525	81.48055556	6.55	0.95	2.70	6.55
161	Durg	Bhailai	21.20722222	81.41388889	2.65	1.42	2.64	3.6
162	Durg	Bharnabhat	20.8875	80.99722222	7.12	0.45	2.31	5.42
163	Durg	Bitkuli	21.775	81.6675	8.25	2.40	3.25	5.25
164	Durg	Bohardih Pzi	21.11833333	81.73666667	9	2.60	4.20	6.45
165	Durg	Bohardih Pzii	21.11833333	81.73666667	9.4	2.67	4.29	6.4
166	Durg	Bothi Pzi	21.35611111	81.95305556		6.30	7.80	8.06
167	Durg	Bothi Pzii	21.35611111	81.95305556		5.80	8.10	8.2
168	Durg	Charoda	21.24638889	81.51583333	4.15	0.92	1.77	3.65
169	Durg	Dadhi1	21.89583333	81.475		3.54	5.09	5.27
170	Durg	Danitola	20.69166667	81.15027778	6.5	0.30	1.57	3.95
171	Durg	Dargaon	21.49166667	81.39444444	6.6	1.16	2.75	3.83
172	Durg	Darhi Pz I	22.00833333	81.55		7.75	14.10	18
173	Durg	Darhi Pz Ii	22.00833333	81.55		8.05	14.50	18.6
174	Durg	Delli Rajhara	20.58611111	81.07777778	2.33	0.79	1.94	2.06
175	Durg	Deorbija	21.66527778	81.4125	7.29	0.36	3.57	6.92
176	Durg	Dhamdha-s	21.465	81.33472222		0.80	1.91	5.31
177	Durg	Dondi	20.49166667	81.08888889			1.12	3.01
178	Durg	Durg	21.19166667	81.275	2.73	1.06	1.37	1.56

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179	Durg	Funda	21.07638889	81.48333333	5.19	0.69	2.03	3.33
180	Durg	Ganiya	21.94722222	81.56388889	5.05			4.65
181	Durg	Ganiyari	21.21527778	81.21388889	12.7	0.73	3.10	4.8
182	Durg	Gatapar	21.56944444	81.21388889		0.54	3.98	7.1
183	Durg	Girhola	21.38666667	81.44472222	18	1.12	3.00	9.5
184	Durg	Gunderdehi	20.94444444	81.29583333	7.47	0.50	2.75	2.83
185	Durg	Gunderdehi1	20.94444444	81.29527778	16.12	4.40	5.39	9.48
186	Durg	Gurur	20.68333333	81.40833333	5.35	0.33	2.02	2.26
187	Durg	Gurur-s	20.68333333	81.40833333	13.55	4.73	7.00	10.68
188	Durg	Jagtara	20.62222222	81.4425	6.3	0.60	3.56	4.6
189	Durg	Jamgaon	21.575	81.29166667		3.37	4.66	7.8
190	Durg	Jeora Sirsa	21.25694444	81.30638889		1.57	5.02	7.07
191	Durg	Kachundur	20.97888889	81.28888889	2.07	0.34	0.75	0.97
192	Durg	Kandraka	21.29972222	81.47472222	7	0.26	2.80	3.5
193	Durg	Karesara Pz I	22.37444444	81.95166667		15.70	20.60	22.83
194	Durg	Karesara Pz Ii	22.37444444	81.95166667		15.62	20.55	22.8
195	Durg	Kathiya	21.61194444	81.65722222		1.40	2.60	4.73
196	Durg	Kedwa	21.61444444	81.37055556	5.7	4.04	5.18	5.7
197	Durg	Khati	21.77777778	81.4375	7.7	1.22	4.47	5.92
198	Durg	Khurmuri	21.7125	81.61388889	11.7	3.37	6.45	9.72
199	Durg	Kodiya	20.69916667	81.02305556	11	1.14	4.30	6.16
200	Durg	Kumhari	21.23333333	81.53333333	9.57	2.11	2.75	4.91
201	Durg	Kusumkasa	20.64166667	81.08055556	8.9	0.67	3.10	5.06
202	Durg	Litai	21.35277778	81.2		0.25	2.35	2.81
203	Durg	Lohara	20.7925	81.05138889	7.1	1.00	3.20	5.8
204	Durg	Markatola	20.56861111	81.38111111	8.75	1.65	2.87	4.29
205	Durg	Marra	21.0375	81.45833333	8.08	0.67	1.25	3.04
206	Durg	Medasar	21.52138889	81.28	7.9	0.63	1.88	3.69
207	Durg	Motipur	21.16666667	81.54583333	7.75	0.45	2.06	2.94
208	Durg	Nahalda	20.93333333	81.05138889	7.03	1.63	2.18	3.84
209	Durg	Nawagarh1	21.90833333	81.60833333	7.62	2.07	5.60	7.34
210	Durg	Nawagarh-d	21.90833333	81.60833333		17.50	10.68	15.81
211	Durg	Nawagarh-s	21.90833333	81.60833333	18.84	16.87	10.05	15.07
212	Durg	Ninwa	21.67194444	81.47305556	10	3.34	7.37	8.85
213	Durg	Paoowara	21.13888889	81.40305556	7.4	0.98	3.60	3.95
214	Durg	Paplatola	20.70388889	81.11027778	7.6	1.00	2.80	4.28
215	Durg	Parpoda	21.58805556	81.40138889	12.16	6.71	10.20	11.42
216	Durg	Patan	21.03333333	81.55	1.78	0.61	1.71	1.97
217	Durg	Pawa Pz	21.1	81.325	7	3.45	5.75	9.6
218	Durg	Pendri	21.49527778	81.27916667		1.58	1.71	3.5
219	Durg	Powara	21.09944444	81.33194444	6.3	0.88	1.54	2.93
220	Durg	Ranka Pz I	22.03972222	82.03944444		13.40	16.50	21.5
221	Durg	Ranka Pz Ii	22.03972222	82.03944444		13.60	17.00	21.53
222	Durg	Ravelidih	21.325	81.3375	2.4	0.78	1.62	2.08
223	Durg	Saja Pz Ii	21.68055556	81.44444444		15.20	19.80	23.3

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224	Durg	Saja Pzi	21.68055556	81.44444444		14.70	20.10	23.19
225	Durg	Sambalpur	20.82083333	81.05722222	24.9	7.14	13.04	15.98
226	Durg	Sambalpur Pz I	20.82083333	81.05722222	25.3	14.50	21.10	32.52
227	Durg	Sambalpur Pz Ii	20.82083333	81.05722222		15.45	21.80	33.48
228	Durg	Sambalpur2	20.82083333	81.05722222		14.62	13.06	16
229	Durg	Selud1	21.1	81.41944444	4.16	1.37	3.25	2.5
230	Durg	Selud2	21.1	81.41944444	5.96	1.32	2.66	5.4
231	Durg	Semariya	21.76388889	81.54722222		9.10	16.80	20.5
232	Durg	Sikosa	20.87638889	81.28888889	2.47	0.23	0.79	1.16
233	Durg	Tarkori	21.50305556	81.45333333	8.7	0.72	3.67	4.57
234	Durg	Umradah	20.73611111	81.24722222	4.96	0.57	1.85	3.96
235	Durg	Utai-Adarshnagar	21.11666667	81.38888889	2.12	1.04	1.53	1.96
236	Janjgir-Champa	Adbhar	21.9625	83.01944444	2.2	0.62	1.44	1.94
237	Janjgir-Champa	Akaltara	22.02638889	82.42222222	1.65	0.87	1.74	2.25
238	Janjgir-Champa	Akaltara S	22.02638889	82.42222222	1.35	0.52	1.36	5.35
239	Janjgir-Champa	Baloda -r	22.13333333	82.47777778	12	1.60	3.45	5.25
240	Janjgir-Champa	Baloda S	22.13472222	82.47833333	8.95	1.52	6.28	6.95
241	Janjgir-Champa	Bamhani	22.0825	82.46	4.25	0.31	3.05	2.13
242	Janjgir-Champa	Bamnidihi	21.9	82.71666667	9.5	2.35	2.98	4.51
243	Janjgir-Champa	Baradwar D	21.98333333	82.75416667		3.08	1.60	8.82
244	Janjgir-Champa	Baradwar S	21.98333333	82.75416667		2.50	1.50	8.38
245	Janjgir-Champa	Budena	21.89694444	82.62305556	2.8	0.85	1.73	2.4
246	Janjgir-Champa	Champa	22.03527778	82.66111111	11.8	0.35	2.90	6.95
247	Janjgir-Champa	Champa-d PZ	22.03527778	82.66111111	22.5	3.20	7.43	11.68
248	Janjgir-Champa	Champa-s PZ	22.03527778	82.66111111		2.78	7.03	11.73
249	Janjgir-Champa	Chandrapur1	21.70833333	83.2375	12.74	6.89	8.90	9.44
250	Janjgir-Champa	Dabra	21.78333333	83.08333333	5.24	0.60	1.34	1.92
251	Janjgir-Champa	Damau	22.13555556	82.85944444	7.5	3.92	3.65	4.56
252	Janjgir-Champa	Dhardei	21.79722222	82.525	3.31	0.23	1.85	2.74
253	Janjgir-Champa	Dhurkot Nhs	21.94472222	82.59472222	7.63	0.79	2.08	4.41
254	Janjgir-Champa	Dongakahrod	21.84666667	82.45805556	2	0.30	1.30	3.4

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255	Janjgir-Champa	Ghoghari	21.78333333	83.00972222	6.11	0.35	4.35	5.35
256	Janjgir-Champa	Hasoud	21.75138889	82.9125		4.59	4.74	5.53
257	Janjgir-Champa	Jaijaipur	21.83333333	82.82083333	10.03	0.30	6.13	8.37
258	Janjgir-Champa	Jaijaipur D	21.83333333	82.82083333		3.10	5.87	7.07
259	Janjgir-Champa	Jaijaipur S	21.83333333	82.82083333	8.1	2.87	5.84	7.02
260	Janjgir-Champa	Janjgir	22.00416667	82.57916667	4.3	1.25	3.50	4.8
261	Janjgir-Champa	Janjgir S	21.86972222	82.45361111	8.11	0.95	4.00	5
262	Janjgir-Champa	Jewara	21.85277778	82.38277778	5.36	1.26	2.76	4.54
263	Janjgir-Champa	Jhulan Pakariya	21.92083333	82.53944444	4.26	0.56	3.75	4.4
264	Janjgir-Champa	Kera	21.74583333	82.71111111	5.65	1.72	4.06	4.6
265	Janjgir-Champa	Khartal	21.8	82.66666667	2.58	1.08	2.76	3.83
266	Janjgir-Champa	Konargarh	21.925	82.34166667		0.80		4.7
267	Janjgir-Champa	Latesara	21.73916667	83.19194444	8.7	0.30	3.74	5.32
268	Janjgir-Champa	Loharsi	21.77083333	82.55666667	2.9	0.10	1.19	2.2
269	Janjgir-Champa	Malkhroda	21.86666667	82.99166667			1.68	4.17
270	Janjgir-Champa	Mulmula	21.93027778	82.35666667		1.40	3.10	3.8
271	Janjgir-Champa	Pamgarh	21.87083333	82.45277778	2.52	0.35	1.70	2.04
272	Janjgir-Champa	Pamgarh D	21.87083333	82.45277778		1.45	7.80	10.1
273	Janjgir-Champa	Pamgarh S	21.87083333	82.45277778	9.3	1.03	5.12	5.14
274	Janjgir-Champa	Sakti	22.02083333	82.9625	10.56	0.38	1.37	1.56
275	Janjgir-Champa	Sakti S	22.02083333	82.9625	11.41	0.05	5.13	5.5
276	Janjgir-Champa	Saliabhata	21.89611111	82.74611111	12.6	1.32	4.18	4.82
277	Janjgir-Champa	Sapos	21.75111111	83.17361111	5.2	1.11	2.90	3.3
278	Janjgir-Champa	Saragaon2	21.98333333	82.75416667	2.68	0.20	1.02	1.57
279	JanjgirChampa	Sasaha	21.77583333	82.38444444	6.02	2.20	3.94	4.83
280	Janjgir-Champa	Semra	21.86111111	82.63333333	6.26	3.25	6.00	6.63

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281	Janjgir-Champa	Seorinarayan	21.73333333	82.59444444	9.65	7.30	7.90	8.48
282	Janjgir-Champa	Seorinarayan1 PZ	21.71805556	82.59444444	8.21	5.97	6.48	6.92
283	Janjgir-Champa	Somthi	21.96138889	82.70055556	7.48	0.78	4.33	5.2
284	Janjgir-Champa	Sukda	21.86944444	83.09444444	3.02	0.41	1.10	2.15
285	Janjgir-Champa	Thathari	21.93194444	82.825	3.86	0.80	1.87	2.52
286	Jashpur	Amatolli	22.47111111	83.74416667	5	1.20	3.20	3.27
287	Jashpur	Bagbahar S	22.54444444	83.73888889	13.2	5.38	6.65	6.8
288	Jashpur	Bagicha	22.97638889	83.65416667	4.85	0.38	1.95	2.12
289	Jashpur	Bagicha PZ	22.87638889	83.65416667	5.27	2.01	3.77	5.31
290	Jashpur	Balachhappar	22.84944444	84.14777778	9.05	2.36	6.55	6.7
291	Jashpur	Bandarchuwa	22.68611111	83.85833333	7.4	3.37	4.10	4.93
292	Jashpur	Banderchua S	22.68611111	83.85833333	8.4	5.40	8.80	8.99
293	Jashpur	Bangaon	22.6	83.67916667	7.63	4.04	3.09	3.37
294	Jashpur	Bangaon B	22.89055556	83.81138889	7.5	4.63	3.30	3.57
295	Jashpur	Bataikela	22.73333333	83.73333333	7.85	1.50	6.45	6.71
296	Jashpur	Bewrapali	22.90833333	83.7475	8	1.60	5.60	5.87
297	Jashpur	Bildagi	22.57305556	83.62305556	5.8	6.55	3.20	3.37
298	Jashpur	Binjapur	22.76666667	84.03333333	6.2	2.10	3.20	3.4
299	Jashpur	Bthighara	22.92083333	83.70722222	6.7	1.40	3.90	4.12
300	Jashpur	Chhapartoli	22.80944444	83.92166667	6.1	1.73	3.80	4.17
301	Jashpur	Dhodidand	22.77777778	83.95555556	6.2	2.75	4.10	4.36
302	Jashpur	Farsabahar	22.50861111	83.85527778	2.75	1.75	0.75	0.94
303	Jashpur	Farsakanhi	22.70416667	83.92916667	7.64	5.09	5.84	6.13
304	Jashpur	Ghatmunda	22.78805556	83.93305556	6.4	3.19	4.55	4.94
305	Jashpur	Jakba	22.90888889	84.20694444		3.69		4
306	Jashpur	Jashpurnagar	22.88333333	84.13888889	7.6	2.85	4.20	4.41
307	Jashpur	Kachhor	22.55833333	83.535	9.8	4.30	3.85	4
308	Jashpur	Kandaibahar	22.39555556	83.90388889	4.8	2.29	3.10	3.57
309	Jashpur	Kandora	22.75861111	83.96805556	7.6	2.75	3.75	5.03
310	Jashpur	Kansabel	22.64027778	83.74305556	9.25	4.01		
311	Jashpur	Kasawel S	22.64027778	83.74305556	13.8	7.90	9.80	10.05
312	Jashpur	Kersai	22.6	83.95833333	4.34	1.84	2.84	3.04
313	Jashpur	Khutsera	22.4125	83.82555556	6.9	1.60	3.40	3.68
314	Jashpur	Kotba	22.43333333	83.74027778	5.05	2.10	3.65	3.75
315	Jashpur	Kunjara	22.66527778	83.95833333	6.75	3.65	5.05	5.29
316	Jashpur	Kunkuri S	22.74194444	83.95416667	16.45	17.40	14.20	14.47
317	Jashpur	Kunkuri1	22.74194444	83.95416667	5.2	2.25	2.90	3.31
318	Jashpur	Lavakera	22.38472222	83.98194444	8.6	1.30	3.15	3.28
319	Jashpur	Lavakera1	22.40416667	83.825		1.45	3.30	3.43
320	Jashpur	Ludeg	22.55416667	83.60416667	3.98	1.38	1.98	2
321	Jashpur	Maini	22.98055556	83.54027778	7.65	0.80	2.40	3.13

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322	Jashpur	Mauhadih	22.92611111	83.92611111	7.4	1.60	4.10	4.41
323	Jashpur	Muskuti	22.8625	83.675		1.56	3.24	3.55
324	Jashpur	Narayanbaheli	22.65305556	83.78138889	6.2	2.20	3.55	3.75
325	Jashpur	Narayanpur S	22.85722222	83.8825	5.8	1.56	4.00	4.2
326	Jashpur	Nawaguda	22.58638889	83.44416667	7.4	2.10	3.40	3.6
327	Jashpur	Palidih	22.55805556	83.50694444	8.7	8.20	6.00	6.07
328	Jashpur	Pathalgaon	22.55472222	83.4625	10.73	7.43	6.93	7.15
329	Jashpur	Pathalgaon S	22.55472222	83.4625			7.65	8.18
330	Jashpur	Pathalgaon1 PZ	22.55194444	83.4625	14.25	5.90	11.25	13
331	Jashpur	Patratoli	22.74444444	84.11861111	7	2.41	3.60	3.87
332	Jashpur	Peta	22.95944444	83.59833333	7.7	2.45	3.80	4.09
333	Jashpur	Phooldih	22.90277778	83.63055556	4.2	0.87	1.40	1.64
334	Jashpur	Raikera	22.93472222	83.65416667	5.85	2.00	3.75	3.92
335	Jashpur	Raikera(Kunkuri)	22.77083333	84.025	6.85	2.35	4.25	4.38
336	Jashpur	Raoni	23.00666667	83.66138889	4.3	2.37	2.95	4.33
337	Jashpur	Rupsera	22.95	84.28194444		2.34	2.80	3.25
338	Jashpur	Sanna	23.08611111	83.81111111	14.38			
339	Jashpur	Saraipani	22.79444444	83.66944444	7	1.31	5.60	5.77
340	Jashpur	Sarhapani	22.65694444	83.74027778	8.2	1.60	6.10	6.9
341	Jashpur	Sarkardih	22.97222222	84.03055556	6.03	2.62	4.06	4.36
342	Jashpur	Sonquari	23.12638889	83.69638889		1.14	6.90	
343	Jashpur	Srishringa	22.51888889	83.80361111	5.8	1.43	4.80	4.97
344	Jashpur	Surangpani New	22.39444444	83.68777778	8.4	2.16	3.25	3.47
345	Jashpur	Tapkara	22.50416667	83.95	8.25	1.31	4.75	5.04
346	Jashpur	Tapkara S	22.50361111	83.61666667		1.59	4.60	5.5
347	Kanker	Charama2	20.48944444	81.37083333	7	3.93	4.65	5.84
348	Kanker	Govindpur	20.28333333	81.48333333	5.25	0.85	2.50	2.78
349	Kanker	Kanker	20.27916667	81.49583333	9.7	3.00	5.20	5.9
350	Kanker	Kanker1 PZ	20.27916667	81.49583333		1.97	2.57	3.17
351	Kanker	Kulgaon	20.175	81.50694444	9.6		2.06	3.17
352	Kawardha	Bharamdeo D	22.0675	81.20833333		11.96	13.10	15.5
353	Kawardha	Bharamdeo S	22.06805556	81.20833333	24.42	12.35	14.19	14.9
354	Kawardha	Bodla	22.16111111	81.22083333	13.88	4.34	6.28	13.88
355	Kawardha	Bodla1 PZ	22.16111111	81.22083333			3.24	5.8
356	Kawardha	Chilpi	22.16666667	81.05833333	7.75	1.27	4.18	5.32
357	Kawardha	Danganiya	21.96388889	81.20416667		0.71	0.97	4.7
358	Kawardha	Dhandgaon	21.81888889	81.19083333	9.5		4.00	8.38
359	Kawardha	Kapada	22.2375	81.54583333	9.5		2.80	6.8
360	Kawardha	Kawardha S	22.00916667	81.23527778	20.57	11.19	13.40	17.31
361	Kawardha	Kawardha1	22.00722222	81.23833333	6.01	0.46	1.35	2.73
362	Kawardha	Khadoula	22.16	81.30888889	7.5	0.60	3.30	6.02
363	Kawardha	Kharoda Kalan	22.175	81.31666667	8.65	0.37	3.35	5.41
364	Kawardha	Kui	22.36388889	81.35277778				
365	Kawardha	Lohara-d PZ	21.83333333	81.125		2.58	2.62	3.62
366	Kawardha	Lohara-s PZ	21.83333333	81.125			2.54	3.53

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367	Kawardha	Munmuna	22.32638889	81.39722222	5.32		3.10	4.28
368	Kawardha	Rajnanwagaon	22.06805556	81.20833333	4.53	3.27	3.71	3.91
369	Kawardha	Sagona S	22.27916667	81.40305556	3.95			3.4
370	Kawardha	Sahaspur lohara	21.83333333	81.12916667	5.51	2.99		3.86
371	Kawardha	Sahaspur Lohara.1	21.83333333	81.12916667		3.11	3.41	3.92
372	Kawardha	Sarai Patera S	22.27555556	81.53138889		1.50	3.65	5.95
373	Kawardha	Saroda Dadar S	22.16805556	81.05611111	22.86	5.60	19.40	20.82
374	Kawardha	Singhari D	22.23722222	81.2825		2.06	4.18	6.42
375	Kawardha	Singhari S	22.23722222	81.2825	8.28	2.09	4.11	6.32
376	Kawardha	Uria Khurud	21.87527778	81.17333333	8.7	2.47	3.78	7.9
377	Korba	Banbandha	22.39166667	82.38055556	3.46	1.03	0.67	1
378	Korba	Bandhakhar	22.35138889	82.43333333		0.63	3.45	4.75
379	Korba	Batati Junction	22.35416667	82.92027778	9.23	4.17	6.18	7.28
380	Korba	Bhilai Nagar Pz Ii	22.307	82.775		5.20	6.70	9.32
381	Korba	Chaitama	22.43333333	82.43333333	6.42	0.80	3.20	4.15
382	Korba	Champa Mode	22.31944444	82.98472222	3.5	1.00	1.72	2.6
383	Korba	Charmar	22.24	83.02027778	7.2	4.65	5.15	5.29
384	Korba	Churi	22.42555556	82.61861111	2.91	1.45	3.22	3.69
385	Korba	Dhegurdih Manzipara	22.35277778	82.84027778	8.7	5.31	6.55	7.62
386	Korba	Dhourabhata	22.37638889	82.37583333	6.36	3.16	3.34	5.19
387	Korba	Dumardih New	22.37194444	82.78416667	3.06	3.47	4.56	4.84
388	Korba	Gopalpur	22.43472222	82.65	8.3	0.54	2.99	3.6
389	Korba	Jamchuwa	22.44194444	82.5725	7.29	5.99	3.29	3.85
390	Korba	Jatgan	22.68527778	82.37666667	10.6		3.50	4.22
391	Korba	Jhabar	22.35555556	82.53861111	8	2.00	4.20	5.6
392	Korba	Jhingatpur	22.33333333	82.54138889		1.00		4.77
393	Korba	Jogipali	22.20583333	83.00027778	8.1	5.80	5.55	5.71
394	Korba	Kartala	22.30277778	82.9625	9.95	6.66	8.75	9.86
395	Korba	Katghora	22.50833333	82.52083333	4.75	0.70	1.98	2.6
396	Korba	Khodri	22.59722222	82.39611111	2.2		0.69	1.6
397	Korba	Korba	22.34583333	82.7	13.47	13.40		13.47
398	Korba	Korba Home Gaurd Pz Ii	22.35	82.71666667		1.00	1.92	4
399	Korba	Korba-S	22.346	82.7		2.23	3.03	3.53
400	Korba	Korkoma Junction	22.33777778	82.87138889	3.04	2.02	4.54	5.49
401	Korba	Kotmer Upper	22.28972222	82.92166667	2.83	0.46	4.93	5.23
402	Korba	Kurtha	22.92833333	82.44583333	5.45	5.15	1.84	2.98
403	Korba	Lenga	22.765	82.26361111	7.78		4.50	4.73
404	Korba	Madai	22.71666667	82.52916667	8.09	1.42	4.44	4.93
405	Korba	Morga	22.75416667	82.64722222	11.97	13.70	12.17	10
406	Korba	Nagai	22.66666667	82.38055556	10.04		5.74	6.33
407	Korba	Naktikhar	22.345	82.77388889	5.65	2.36	3.59	4.37
408	Korba	Naraibodh	22.33472222	82.54138889		3.05	4.80	5.2

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409	Korba	Nawapara	22.76944444	82.49027778	6.7	0.37	2.42	3.13
410	Korba	Nonbirra	22.34027778	82.46833333	7.5	2.84		5.27
411	Korba	Nonbirra	22.27638889	82.86666667	10.02	3.17	4.32	5.4
412	Korba	Nonbirra New	22.27083333	82.86555556		5.94	2.50	5.65
413	Korba	Numera	22.35638889	82.42805556	10.28	5.77	5.78	7.23
414	Korba	Nunera Pz I	22.359	82.415		4.46	4.85	6
415	Korba	Nunera Pz II	22.359	82.415		3.10	3.71	6.19
416	Korba	Pali	22.37222222	82.32222222	6.95	0.33	2.15	2.34
417	Korba	Pasan	22.84166667	82.2	10.77	1.56	5.50	6.5
418	Korba	Pasarkhet	22.36972222	82.95972222	6.6		3.50	3.65
419	Korba	Pondi	22.358	82.498	3.33	0.53	2.30	4.18
420	Korba	Ponri	22.60416667	82.55416667		0.97	2.67	3.71
421	Korba	Rajkamma	22.358	82.498	6.48	0.62	1.90	2.82
422	Korba	Ralia Pz Ii	22.37361111	82.26833333		5.70	11.90	13
423	Korba	Ralia Pz Iii	22.4475	82.47833333		3.50	7.19	8.49
424	Korba	Rampur	22.296	82.75	4.04	2.55	2.95	3.97
425	Korba	Ramtarai Pz I	22.296	82.75		3.55	5.22	6.45
426	Korba	Ramtarai Pz Ii	22.36916667	82.73333333		3.50	5.15	6.49
427	Korba	Ramtarai Pz Iii	22.339	82.487		3.62	5.22	6.6
428	Korba	Rewa	22.339	82.487	7.45		3.45	4.46
429	Korba	Rishdi	22.339	82.487	5.81	1.98	3.61	4.11
430	Korba	Sakdukala	22.82138889	82.38694444	8.01	4.69	6.05	7.25
431	Korba	Salihabhata	22.37333333	82.77027778	4.3	0.52	3.04	4.22
432	Korba	Sindhiya	22.27638889	82.88583333	12	1.11	2.88	3.25
433	Korba	Sirki Pz I	22.27083333	82.83472222	11.00	2.70	7.80	7.99
434	Korba	Sirki Pz Ii	22.49055556	82.5025	10.60	2.60	7.32	7.5
435	Korba	Sutarra	22.353	82.544	8.08	2.83	3.90	5.05
436	Korba	Sutera	22.353	82.544		0.95	2.42	5
437	Korba	Tikeja	22.47	82.52194444	6.86	2.46	2.60	3.07
438	Korba	Tiwarta Pz I	22.47138889	82.51305556		2.60	3.75	3.93
439	Korba	Tiwarta Pz Ii	22.23333333	82.76333333		2.90	4.40	4.47
440	Korba	Tuman	22.575	82.42083333	9.47	2.64	3.17	5.04
441	Korba	Tuman	22.19666667	82.78527778	5.69	2.65	4.80	5.05
442	Korba	Urga.1	22.275	82.72777778	6.35	0.22	2.80	3.6
443	Koriya	Baharsi.1	23.6125	81.85416667	8.90	1.8	3.6	
444	Koriya	Baikunthpur	23.25833333	82.55		1.45	2.71	3.09
445	Koriya	Baikunthpur-s	23.26666667	82.55	7.33	3.04	4.01	4.36
446	Koriya	Banjaridad S	23.17083333	82.43638889	3.07	3.15	2.35	2.44
447	Koriya	Belbehra	23.29111111	82.265		2.03	2.65	3.61
448	Koriya	Biharpur	23.40444444	82.23805556	9.9	2.50		8.22
449	Koriya	Bikrampur	23.45527778	82.48805556	10	1.70		3.42
450	Koriya	Chutki	23.57361111	81.95				
451	Koriya	Garundol	23.37944444	82.30388889				6.05
452	Koriya	Girjapur	23.30194444	82.72805556		0.34	1.60	1.77
453	Koriya	Jamgahana	23.30194444	82.62111111		1.15	2.93	3.77

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454	Koriya	Janakpur	23.71666667	81.79583333			3.30	4.14
455	Koriya	Kelhari	23.41527778	82.04861111				6.16
456	Koriya	Khadgaon	23.10833333	82.37916667	12.8	0.72	4.87	8.06
457	Koriya	Khadgaon - 1	23.10833333	82.37916667		0.20	4.27	8.33
458	Koriya	Khatgori	23.37083333	82.52638889		1.31	1.41	2.33
459	Koriya	Kiwarpur	23.59777778	81.71083333				4.47
460	Koriya	Manendragarh	23.21666667	82.20583333		0.25	2.40	2.6
461	Koriya	Mansukha	23.225	82.49166667	8.9	0.30	7.37	8.08
462	Koriya	Pendri	23.34861111	82.25555556			1.96	2.43
463	Koriya	Pouri	23.03861111	82.49944444		3.56	5.60	7.4
464	Koriya	Ranai	23.28055556	82.70277778		0.55	5.70	9.17
465	Koriya	Ranai1	23.28055556	82.70277778	11.25	0.45	5.69	9.16
466	Koriya	Sarbhoka	23.25	82.35833333		0.95	1.58	2.9
467	Koriya	Sonhat	23.48194444	82.51888889			3.34	3.45
468	Koriya	Tarabahara	23.41111111	82.18055556	9.50	2.6		6.69
469	Koriya	Tilokhan	23.48333333	81.98333333	8.90	3.1	4.5	
470	Koriya	Ujiyarpur1	23.30138889	82.405		0.25	5.15	6.25
471	Mahasamund	Awaradawri S	21.08472222	82.30055556	12.22		5.63	8.42
472	Mahasamund	Bag bahera	21.03333333	82.40833333	10.07	0.20	2.69	4.05
473	Mahasamund	Bagbahara S	21.03333333	82.40833333	10.6	2.11	3.24	5.72
474	Mahasamund	Baldidih	21.29166667	82.64166667	8.91	0.47	3.59	4.96
475	Mahasamund	Barbaspur	21.29055556	82.88138889	7.64	0.16	3.00	3.66
476	Mahasamund	Basna	21.26944444	82.82638889	2.05	0.08	1.58	1.75
477	Mahasamund	Basna S	21.26944444	82.82083333	20.89		5.38	19.52
478	Mahasamund	Belsunda	21.16333333	82.02694444	2.11	0.51	1.90	3.71
479	Mahasamund	Jagdishpur	21.33333333	82.775	10.05	0.35	4.19	5.42
480	Mahasamund	Jhalap	21.21583333	82.38305556	4.6	1.42	5.13	5.4
481	Mahasamund	Jhalap S	21.215	82.38277778	21.07	3.37	14.18	15.89
482	Mahasamund	Jogideepa D	21.22333333	82.25444444		2.13	4.85	6.52
483	Mahasamund	Jogideepa S	21.22333333	82.25444444	8.75	2.21	5.14	6.83
484	Mahasamund	Jogidipa	21.22583333	82.25027778	9.35	1.20	3.15	6.55
485	Mahasamund	Keshwa S	21.05916667	82.26305556	11.15	3.40	6.83	8.6
486	Mahasamund	Khallari	21.08333333	82.29722222	4.49	0.42	2.21	3.1
487	Mahasamund	Mahasamund Contractual S	21.1075	82.09555556	19.4	1.10	6.10	6.35
488	Mahasamund	Mahasamund.	21.10833333	82.09583333	13		8.93	9.32
489	Mahasamund	Mahasamund.1	21.10833333	82.09583333	12	1.22	8.78	8.28
490	Mahasamund	Mahasamund-s PZ	21.675	82.09583333	25		11.67	12
491	Mahasamund	Marban	21.3875	83.08055556	7.25	0.24	3.05	3.77
492	Mahasamund	Palsipani - 1	20.90416667	82.38333333		0.60	2.50	4.65
493	Mahasamund	Patsenduri	21.36944444	83.075	8.79	0.18	1.50	3
494	Mahasamund	Phusera	21.29166667	82.20555556	10.19	0.56	2.50	3.47
495	Mahasamund	Pithora	21.25138889	82.51666667	8.64		3.14	4.35
496	Mahasamund	Pithora - 1	21.26111111	82.51805556	8.6	0.61	3.60	4.7

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497	Mahasamund	Pithora PZ	21.25138889	82.51666667	13.15	1.75	6.28	7.47
498	Mahasamund	Sagrapali	21.41666667	82.95833333	4.7		2.75	3.75
499	Mahasamund	Sakra S	21.28388889	82.66222222	12.71		5.97	9.6
500	Mahasamund	Saraipali	21.31666667	83.00833333			4.05	5.58
501	Mahasamund	Saraipalli-S PZ	21.32027778	83.04305556	13.89	2.43	10.70	11.66
502	Mahasamund	Sirpur	21.34305556	82.18333333	9.79	0.78	5.14	7.51
503	Mahasamund	Sirpur1 PZ	21.34305556	82.18333333		3.29	7.94	10.92
504	Mahasamund	Suarmar	20.96944444	82.49583333	8.45	0.53	4.33	5.56
505	Mahasamund	Suarmar1 PZ	20.96666667	82.49583333	8.07	2.88	5.21	5.63
506	Mahasamund	Tendukonda	21.10833333	82.47083333	6.96	0.59	4.68	5.01
507	Mahasamund	Tumgaon	21.19166667	82.12083333	4.3	0.21	3.23	4.17
508	Mahasamund	Tumgaon S	21.19166667	82.12083333	6.4	1.91	3.66	4.86
509	Raigarh	Chhal	22.12972222	83.11333333	6.3		2.60	2.77
510	Raigarh	Amapali	22.37055556	83.23416667	6.75	3.50	5.15	5.46
511	Raigarh	Amlipur Amlitikra	22.50222222	83.1925	3.3	0.80	1.60	1.73
512	Raigarh	Auranar	22.1525	83.16944444	4.1	3.87	6.55	6.59
513	Raigarh	Bakaruma	22.5125	83.43611111	9.2	8.25	7.70	7.94
514	Raigarh	Bamsjer	22.4925	83.22416667	4.75		2.40	2.68
515	Raigarh	Baramkela	21.525	83.2625	5.2	0.30	1.35	1.95
516	Raigarh	Baramkela S	21.56361111	83.26944444	36.3	5.49	8.75	18.96
517	Raigarh	Barpali	22.32777778	83.26666667	8.06	3.21	6.46	6.55
518	Raigarh	Bartapali	22.33333333	83.17388889	7.6	5.33	5.65	5.73
519	Raigarh	Bataupali	21.54166667	83.125	4.4	1.60	3.00	3.12
520	Raigarh	Bayasi	22.43416667	83.16722222	5.5	2.15	4.10	4.17
521	Raigarh	Behramar	22.2625	83.10722222	6.4	3.49	4.50	5.62
522	Raigarh	Bhangari	22.13277778	83.25083333	10.5	1.75	2.45	2.92
523	Raigarh	Bhupdeopur S	21.97277778	83.26083333	11.75	7.31	8.90	9.05
524	Raigarh	Bijapara	22.42611111	83.175	10.4	4.65	6.20	6.21
525	Raigarh	Bojia	22.125	83.16944444	7.75	2.22	4.40	5.05
526	Raigarh	Bonda	21.71944444	83.30416667	4.15	0.15	2.15	2.27
527	Raigarh	Boro	22.56333333	83.11194444	9.5	3.55	6.05	6.16
528	Raigarh	Chaple	21.98333333	83.2	4.8	0.95	1.10	3.3
529	Raigarh	Chaple S	21.65	83.2	17.2	13.63	15.10	15.45
530	Raigarh	Charmar	22.12333333	83.22861111	7.5	3.50	4.20	4.25
531	Raigarh	Chimtapani	22.27222222	83.41666667	13.6	2.16	6.95	9.65
532	Raigarh	Chunkunidad	22.52416667	83.20166667	11.3	5.95	6.50	6.99
533	Raigarh	Damdarha	21.45416667	83.11666667	9.1	7.38	5.05	6.1
534	Raigarh	Deridih	22.42083333	83.22944444	7.5	2.35	4.70	5.07
535	Raigarh	Derpani	22.64416667	83.28694444	3	1.40	1.40	2.4
536	Raigarh	Dharamjaigarh PZ	22.46388889	83.2125	4.93	2.33	4.13	
537	Raigarh	Dharan Pz Ii	22.15638889	83.22611111		13.80	16.50	22.2
538	Raigarh	Dharmajaigarh	22.46388889	83.2125	6.35	2.70	3.20	4.52
539	Raigarh	Dharmajaigarh	22.46388889	83.2125		2.25	5.15	5.27

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540	Raigarh	Dongabhona	22.13333333	83.21583333	5.3	3.85	4.15	4.27
541	Raigarh	Duliamuda	22.40777778	83.13388889	8.1	4.35	6.50	6.59
542	Raigarh	Dumarpali	22.29472222	83.27861111	6.6	2.25	5.20	5.27
543	Raigarh	Durgapur	22.48388889	83.15972222	9	3.20	7.20	7.43
544	Raigarh	Edu	22.07555556	83.12694444	6.81	5.66	5.16	5.33
545	Raigarh	Farkanara	22.0175	83.10638889	8.9	7.80	8.10	8.17
546	Raigarh	Gare Nhs	22.13638889	83.49027778		2.15	3.38	4.95
547	Raigarh	Gersa	22.34861111	83.23666667	5.2	2.35	4.80	5.01
548	Raigarh	Gharghoda	22.17083333	83.35416667	12.73	2.70	3.95	5.55
549	Raigarh	Golabuda	22.63055556	83.40416667	9.6	7.30	5.20	5.25
550	Raigarh	Hati	22.30416667	83.09583333	8.4	5.08	5.20	5.92
551	Raigarh	Hirri1	21.625	83.14166667	7.74	0.24	2.74	2.99
552	Raigarh	Kanakbira	21.45333333	83.11944444	8	0.95	7.60	8
553	Raigarh	Kandadand	22.53666667	83.195	7.5	4.45	5.20	5.35
554	Raigarh	Kapu	22.67083333	83.3375	7.75	3.30	4.15	4.7
555	Raigarh	Kedar S	21.56555556	82.97166667	11.2	3.50	5.00	5.43
556	Raigarh	Keradih	22.50416667	83.13388889	3.15	0.85	1.91	3
557	Raigarh	Kerajhar	21.96111111	83.30416667	4.6	0.39	3.10	3.45
558	Raigarh	Kerigarhi	22.51472222	83.1425	10.6	7.00	3.90	4.07
559	Raigarh	Khadgaon1	22.37916667	83.11666667	12.54	10.24	10.84	11.21
560	Raigarh	Kharasia S	21.98888889	83.09861111	16.1	1.05	4.00	4.27
561	Raigarh	Kharsia	21.98888889	83.09861111	3.5	0.30	3.50	3.65
562	Raigarh	Kondatalai S	21.82861111	83.35888889	13.3			
563	Raigarh	Kotra	21.86666667	83.3125	1.6	0.23	0.90	1.12
564	Raigarh	Kurekela	22.20416667	83.10416667	7.55	0.95	3.25	3.32
565	Raigarh	Lailunga1	22.38333333	83.58333333	7.59	3.09	4.89	5.34
566	Raigarh	Lailunga2	22.39166667	83.58333333		3.10	4.90	5.35
567	Raigarh	Lakha.1	21.96583333	83.38833333	7.00	1.20	3.50	5.1
568	Raigarh	Lakshmipur	22.5125	83.21472222	3.7	2.51	3.55	3.65
569	Raigarh	Laripani	22.3375	83.47083333	9.7	2.32	5.65	5.9
570	Raigarh	Lendra S	21.49194444	83.29638889	11.65	4.36	5.75	5.85
571	Raigarh	Lipti	22.6175	83.37972222	5.8	3.20	2.80	3.01
572	Raigarh	Malda B	21.55888889	83.19555556	8.42	0.85	1.95	2.45
573	Raigarh	Milupara-Sidarpara	22.18916667	83.52611111	10.8	2.69	8.60	9.32
574	Raigarh	Mumund	22.23722222	83.08916667	4.6	1.95	2.90	3.1
575	Raigarh	Nawadih	22.27	83.27222222	4.1	2.15	2.70	2.79
576	Raigarh	Nawagaon	22.36388889	83.20694444	4.8	3.40	4.25	4.54
577	Raigarh	Nawapara Pz	22.11666667	83.145		4.60	5.58	6.62
578	Raigarh	Ongana	22.42472222	83.24722222	4.7	2.65	3.45	3.77
579	Raigarh	Pakargaon	22.38555556	83.6125	5.8	2.75	3.30	3.7
580	Raigarh	Pandripani	22.31611111	83.255	9.15	4.65	5.15	5.42
581	Raigarh	Phuthamuda	22.29611111	83.43	4.8	2.85	3.10	3.9
582	Raigarh	Pindri	21.66388889	83.15777778	3.95	0.98	2.65	2.74
583	Raigarh	Porda Pz	22.2625	83.27861111		5.00	6.62	8.8

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584	Raigarh	Potiya	22.38694444	83.25361111	7.6	2.06	3.70	3.88
585	Raigarh	Pusalda	22.30694444	83.30222222	9.3	2.39	2.60	2.71
586	Raigarh	Raigarh	21.89166667	83.39722222	2.3	1.20	2.30	2.38
587	Raigarh	Raiharg S	21.89166667	83.39722222	16.9	14.67	18.00	18.57
588	Raigarh	Rajpur.1	22.43527778	83.48722222	5.7	1.45	2.60	3.5
589	Raigarh	Rajpur2	22.44166667	83.49166667		1.25	3.90	4.35
590	Raigarh	Ramnagar	22.34083333	83.13	3.85	0.99	3.75	3.87
591	Raigarh	Rera	21.63	83.08805556	5	0.70	1.40	2.07
592	Raigarh	Salkhiya	22.41527778	83.52055556	7.3	5.40	4.30	4.63
593	Raigarh	Samaruma	22.08416667	83.34583333	4.55	2.95	2.50	2.76
594	Raigarh	Saraipali	22.26305556	83.31416667	9.8	1.78	5.40	5.79
595	Raigarh	Sarangarh	21.5875	83.07916667	11.84	1.77	2.82	6.99
596	Raigarh	Sarangarh S	21.5875	83.07916667	4.5	3.42	7.75	7.87
597	Raigarh	Sarangarh1	21.5875	83.07916667	15.37	3.44	3.02	3.29
598	Raigarh	Saria1	21.56388889	83.29583333	5.9	1.19	2.60	2.69
599	Raigarh	Shahpur Colony	22.47416667	83.18555556	8.7	4.30	6.90	6.95
600	Raigarh	Sirsinga Temple	22.45277778	83.31416667	7.3	1.70	1.60	2.03
601	Raigarh	Sisringa	22.45555556	83.30694444	9.5	0.54	3.64	4.11
602	Raigarh	Sithra New	22.34138889	83.10583333	6.9	3.05	4.20	4.27
603	Raigarh	Sukwasuava	22.45277778	83.31416667	4.9	2.00	2.10	2.21
604	Raigarh	Tadola	21.79583333	83.38055556	6.8	0.89	2.10	2.28
605	Raigarh	Taraimal1.1	22.05833333	83.37916667	7.5	2.66	4.20	4.58
606	Raigarh	Taraimar	22.45027778	83.18305556	7.2	1.90	6.60	6.72
607	Raigarh	Tendumar	22.43472222	83.22694444	4.25	0.60	2.45	3.7
608	Raigarh	Tetla	21.79166667	83.32916667	3.27	1.32	2.02	2.1
609	Raipur	Abhanpur	21.05	81.74583333	5.16	0.37	4.22	4.5
610	Raipur	Abhanpur D	21.05833333	81.73888889		1.88	6.05	6.66
611	Raipur	Abhanpur S	21.05833333	81.73888889	8.71	1.73	5.68	6.78
612	Raipur	Amapara NHS	21.23833333	81.625		2.09	2.79	3.2
613	Raipur	Amera	21.5625	82.13083333		1.00	3.80	4.02
614	Raipur	Amethi	20.925	82.14305556	5.7	0.32	1.60	2.53
615	Raipur	Aouri	21.42083333	82.26666667	6.8	1.00	5.00	7.73
616	Raipur	Arang	21.19444444	81.975	5.47	0.16	2.18	3.08
617	Raipur	Arang S	21.2125	81.91138889	8.51		5.04	6.33
618	Raipur	Arjuni	21.69166667	82.06527778	6.91	0.68	3.17	3.7
619	Raipur	Arjuni S	21.6975	82.05944444	11.1	1.73	4.82	6.7
620	Raipur	Bajrangpur	20.98333333	81.81111111	1.67	0.10	1.47	1.82
621	Raipur	Baloda bazar	21.65555556	82.16666667	14.4	0.40	7.89	8.02
622	Raipur	Baloda bazar1	21.65833333	82.13472222		1.86	8.55	8.66
623	Raipur	Bhatgaon	21.65361111	82.81222222	7.9	6.71	1.51	2.45
624	Raipur	Bhattapara-S	21.74166667	81.95555556	14.33	2.41	5.93	6.39
625	Raipur	Biladi	21.57416667	81.7725		3.80	1.80	6.6
626	Raipur	Bilaigarh	21.6375	82.725	4.36	0.30	0.93	1.12
627	Raipur	Bilaigarh S	21.6375	82.725	6.39		3.20	4.6
628	Raipur	Bindra nawagarh	20.48333333	82.2	7.1	2.5	4.1	

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629	Raipur	Chanderi	21.4975	81.74666667	8.15	0.60	2.43	5
630	Raipur	Chandi	21.61916667	82.0425	6.4	0.21	1.50	2.69
631	Raipur	Charauda	21.39805556	81.67277778		1.10	2.47	3.21
632	Raipur	Chhura	20.8125	82.20833333	5.66	0.48	3.98	4.2
633	Raipur	Chicholi	21.46583333	81.865	15	0.77	6.20	6.96
634	Raipur	Darchura	21.715	81.79055556		2.25	3.55	5.55
635	Raipur	Devpuri	21.20833333	81.67777778	12.4	1.03	6.26	7.66
636	Raipur	Devri	20.88277778	81.95583333	5.37	0.20	4.90	5.26
637	Raipur	Dhamarkhera	21.69083333	81.78138889	4.45	0.72	9.15	4.35
638	Raipur	Dharsiwa	21.40833333	81.67222222	4.94	1.24	2.46	7.3
639	Raipur	Dharsiwa S	21.40833333	81.67222222	11	2.73	5.35	9.89
640	Raipur	Dumartarai	21.19777778	81.68972222	10.1	0.24	1.62	3.33
641	Raipur	Fingeshwar- I	20.96666667	82.03333333	7.80	0.33	4.02	4.4
642	Raipur	Gariabandh-s	20.62527778	82.06666667	10.60		2.99	6.92
643	Raipur	Gariyaband	20.625	82.06666667	9.1	0.07	2.40	3.28
644	Raipur	Gariyaband -1	20.63194444	82.06111111	8.90	2.51	2.60	3.51
645	Raipur	Gohrapadar - 1	19.97083333	82.50416667	10.5			10.67
646	Raipur	Haswa	21.6875	82.56111111	14.06	0.10	2.56	2.66
647	Raipur	Indagaon	20.075	82.37083333				
648	Raipur	Jalkhamar	20.7	82.13611111	8.36	0.33		5.72
649	Raipur	Jhariabara	20.23055556	82.2	9.86			
650	Raipur	Joba	20.53333333	82.11666667	9.5	2.3	4.2	5.8
651	Raipur	Kanekera	21.04166667	82.07916667	1.25		0.85	1.99
652	Raipur	Kanki	21.40027778	81.99194444	4.8	0.34	3.66	3.58
653	Raipur	Kanki D	21.40194444	81.98805556		1.69	3.17	5.5
654	Raipur	Kanki S	21.40194444	81.98805556	5.23		3.03	5.38
655	Raipur	Kasdol	21.61666667	82.43333333	5.32	0.44	2.26	4.99
656	Raipur	Kasdol-d	21.62083333	82.42638889		1.88	2.38	5.93
657	Raipur	Kasdol-s PZ	21.62083333	82.42638889	6.16		2.38	4.28
658	Raipur	Khapri	21.65	81.97083333		3.40	5.48	6.26
659	Raipur	Kharora	21.3875	81.92083333	11.75	0.30	2.87	5.55
660	Raipur	Kusrangi	21.34944444	82.00611111	1.62	0.50	0.55	2.01
661	Raipur	Lahaud	21.65416667	82.25833333	7.81	0.17	3.54	4.4
662	Raipur	Lahaud S	21.69194444	82.28194444	5.38	1.46	5.09	6.05
663	Raipur	Lawan	21.63888889	82.34166667	2.75	0.18	1.15	2.67
664	Raipur	Manabasti	21.16666667	81.72916667		1.15	2.76	3.19
665	Raipur	Mandalpur	21.4875	82.92277778	3.43	0.56	1.13	1.73
666	Raipur	Mandhar	21.35277778	81.71027778		0.75	2.37	4.2
667	Raipur	Mandhar D	21.33888889	81.70583333	11.00	1.2	2.60	6.65
668	Raipur	Mandhar S	21.33888889	81.70583333	11.50	1.43	2.62	6.72
669	Raipur	Mandirhasud	21.22083333	81.76666667	10.81	0.63	3.27	12.39
670	Raipur	Mudhipar	21.46666667	82.28333333	4.1		2.33	2.47
671	Raipur	Palari	21.52916667	82.1625	8.72	0.20	2.84	3.32
672	Raipur	Palari D	21.53083333	82.16833333		1.21	2.17	3.76
673	Raipur	Palari S	21.53083333	82.16833333	5.35	1.14	2.10	3.92

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674	Raipur	Pandan Bhata	21.46333333	81.66333333		0.22	1.90	3.73
675	Raipur	Panderbhata S	21.46277778	81.6525	9.52	2.17	5.50	6.7
676	Raipur	Panduka	20.775	81.94583333	8.94	0.26	3.08	3.6
677	Raipur	Raipur	21.24444444	81.62083333	3.27		3.64	3.94
678	Raipur	Raipur (IGKV)-S	21.24444444	81.62083333	14.71			
679	Raipur	Raita Satna Ni Para	21.44277778	81.7175	6.4	0.71	1.95	3.63
680	Raipur	Rajim	20.96666667	81.88333333	9.03	1.27	6.79	7.25
681	Raipur	Rajim-s PZ	20.96666667	81.88333333	9.15	2.54	6.24	7.12
682	Raipur	Ranisagar	21.27833333	82.02805556	4.16	0.50	1.75	2.69
683	Raipur	Risda	21.62694444	82.13027778	10	1.35	2.45	2.73
684	Raipur	Rsu Raipur	21.23944444	81.58388889	8.6	1.22	3.29	4.18
685	Raipur	Sakara	21.35416667	81.65694444	9.8	2.16	4.20	6.81
686	Raipur	Sandi	21.45	82.075	7.05	1.62	2.80	2.96
687	Raipur	Sandi1	21.46666667	82.075	6.09	1.43	3.00	3.16
688	Raipur	Saragaon	21.36666667	81.80694444	2.37	0.26	2.18	2.41
689	Raipur	Sarsiwa	21.625	82.91666667	9.25	0.18	4.73	7.95
690	Raipur	Sel	21.65222222	82.49138889	0.46	0.30	1.01	1.21
691	Raipur	Semariya	21.33027778	81.76222222	10.85	0.69	3.20	3.9
692	Raipur	Simga	21.625	81.70416667	2.45	0.81	3.32	3.52
693	Raipur	Simga-s	21.625	81.70416667	23.1		16.40	16.6
694	Raipur	Suhela	21.61583333	81.97388889	12.75	1.00	2.42	2.66
695	Raipur	Sursabandha	20.88055556	81.92083333	7.34	0.60	5.51	5.84
696	Raipur	Tarenga	21.75	81.88611111	15.02	1.69	8.04	13.04
697	Raipur	Tarpongi	21.49055556	81.68916667	2.95	0.53	1.88	2.93
698	Raipur	Tatibandh MVM	21.715	81.79055556	11	0.85	3.92	4.52
699	Raipur	Tilda	21.55138889	81.79583333	3.1	0.55	2.19	
700	Raipur	Tilda Purani Basti	21.55444444	81.79777778	2.85	0.27	1.98	3.38
701	Raipur	Tilda S	21.55833333	81.78888889	9.76	2.03	4.69	6.72
702	Raipur	Tundei	21.64916667	82.64916667	4.93	0.42	2.35	2.81
703	Raipur	Umaria station	21.2	81.86666667	7.15	0.16	1.88	2.71
704	Raipur	Urela	21.60916667	81.85	6.86	1.80	2.73	3.82
705	Rajnandgaon	Badaitola	21.3475	80.97888889	7.55	0.90	1.91	5.02
706	Rajnandgaon	Baigatola	21.3875	80.84583333	3.8	0.36	2.67	2.85
707	Rajnandgaon	Birampurkala	21.61611111	81.16416667	8.8	1.03	2.60	6.7
708	Rajnandgaon	Chinohola	21.06777778	80.67611111	8.96	4.54	5.67	6.9
709	Rajnandgaon	Chirchari	21.08333333	80.5875	8.64	1.33	4.58	5.7
710	Rajnandgaon	Chuikhadan	21.525	80.99583333	10.74	0.19	5.71	10.74
711	Rajnandgaon	Dhaba	21.11444444	80.90916667	7.2	0.55	2.60	4.95
712	Rajnandgaon	Dhaneli	21.40861111	81.00638889	8	2.00	3.41	6.72
713	Rajnandgaon	Dhara	21.255	80.85944444	6.78	2.76	4.35	5.3
714	Rajnandgaon	Diwanbhedi	21.03	80.87055556	7	1.02	4.13	4.52
715	Rajnandgaon	Dongargaon.1	20.97083333	80.85694444	5	0.46	2.45	2.97
716	Rajnandgaon	Dongargarh	21.18472222	80.75972222	10.75	1.70	5.03	6.23
717	Rajnandgaon	Dongargarh-d PZ	21.18472222	80.75972222		0.47	4.14	5.39

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718	Rajnandgaon	Dongargarh-sPZ	21.18472222	80.75972222			4.03	5.26
719	Rajnandgaon	Gandaipandaria	21.66444444	81.09527778	7.45	5.45	6.00	7.4
720	Rajnandgaon	Govindpur	21.09972222	80.70138889	6.9	1.06	2.95	3.84
721	Rajnandgaon	Khairagarh	21.43333333	80.97083333	6.83	1.70	4.85	6.35
722	Rajnandgaon	Lal bhadurnagar	21.1	80.68611111	6.75	0.41	1.83	2.77
723	Rajnandgaon	Madrakuhi	21.38694444	81.07222222	6.45	1.45	3.25	3.95
724	Rajnandgaon	Mohgaon	21.70694444	80.95916667		1.10		4.46
725	Rajnandgaon	Mutpar	21.14666667	80.80777778	9	1.21	3.04	4.52
726	Rajnandgaon	Narmada	21.62138889	81.07222222	4.35	0.57	0.96	4.19
727	Rajnandgaon	Rajnandgaon	21.09166667	81.04166667	1.85	0.35	1.62	1.82
728	Rajnandgaon	Rajnandgaon-S PZ	21.10833333	81.04055556		2.52	5.10	5.37
729	Rajnandgaon	Ramatola	21.12555556	80.71138889	9.78	0.84	4.97	7.02
730	Rajnandgaon	Rampur	21.05527778	81.0475	6.55	0.25	2.55	3.35
731	Rajnandgaon	Rangkathera	21.36722222	81.1125	6.36	0.29	1.45	4.06
732	Rajnandgaon	Ranitarai	20.99777778	81.05416667	6.18	0.19	0.70	1.1
733	Rajnandgaon	Ravagahan	21.11833333	81.00583333	6.93	2.60	3.15	4.16
734	Rajnandgaon	Reevagaon	21.21944444	80.82555556		0.65	1.25	1.45
735	Rajnandgaon	Sahaspur Dalli	21.32027778	80.86472222	12.3	0.47	2.90	3.29
736	Rajnandgaon	Salgapat	21.31666667	80.9125	8.31	0.50	2.45	8.6
737	Rajnandgaon	Salhe Bara	21.39833333	80.8875		3.40	4.15	7.66
738	Rajnandgaon	Saloni	21.28194444	81.13305556		0.79	7.45	8.25
739	Rajnandgaon	Singhola	21.03333333	81.04166667	3.66	0.97	1.38	1.56
740	Rajnandgaon	Somni	21.12388889	81.14666667	6.15	0.82	2.61	3.49
741	Rajnandgaon	Talai	21.16666667	81.03611111		0.20	0.96	2.34
742	Rajnandgaon	Tappa	21.07638889	80.82111111	8.82	0.61	1.82	2.88
743	Rajnandgaon	Uraidabritola	21.08222222	80.73805556	9.8	1.50	3.60	4.8
744	Surguja	Ajabnagar	23.15416667	83.10833333	7.90	3.94	5.10	5.9
745	Surguja	Alkadih	23.38444444	83.46694444	7.1	0.30	2.70	2.91
746	Surguja	Ambikapur	23.10833333	83.2	6.94	2.91	5.27	5.6
747	Surguja	Ambikapur-D	23.10833333	83.2	20.22	12.31	12.71	14.8
748	Surguja	Ambikapur-s	23.10833333	83.2	17.45	15.14	13.14	14.24
749	Surguja	Amdih	23.22722222	83.40972222		1.85	3.91	5.21
750	Surguja	Aragahi	23.75416667	83.68333333	7.35	2.18	5.15	5.97
751	Surguja	Bachwar	23.30083333	83.57555556		3.35	4.75	4.92
752	Surguja	Badsara	23.34444444	82.77083333	6.8	2.22	2.45	4.53
753	Surguja	Baghima	23.24166667	83.31388889	3.5	0.65	2.60	3.5
754	Surguja	Bagra	23.81638889	83.46527778		2.00	3.05	4.1
755	Surguja	Balrampur	23.59027778	83.61666667	17.32	11.50	12.52	13.74
756	Surguja	Balrampur D	23.59027778	83.61666667	14.35		13.40	14.02
757	Surguja	Balrampur S	23.59027778	83.61666667	13.1		13.90	14.2
758	Surguja	Bandana	22.84722222	83.41388889	8.05	4.25	5.60	6.47
759	Surguja	Basin	23.41722222	83.05777778		1.07	3.07	3.93
760	Surguja	Batauli	22.98055556	83.40694444	9.72	2.12	3.12	6.35
761	Surguja	Batauli S	22.98805556	83.40305556	11.00			4.88

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762	Surguja	Bhadori	23.33305556	83.50861111		0.15	5.55	5.6
763	Surguja	Bhaiyathan	23.40416667	82.86666667	8.11	2.31	5.41	7.2
764	Surguja	Bulga	23.1	83.35416667	6.7	3.14	2.65	3.1
765	Surguja	Chandora	23.51111111	83.15694444	5.33	1.19	2.17	5.99
766	Surguja	Chatakpur	22.98222222	83.22027778		2.75	4.75	5.29
767	Surguja	Dandgaon	22.895	82.85694444	2.75	1.45	4.57	4.67
768	Surguja	Darima	23.00305556	83.23027778	7.1	2.87	3.90	5.37
769	Surguja	Deonagar	23.24	82.80333333	4.45	1.51	1.69	2.21
770	Surguja	Dhamni	23.78888889	83.425		4.75	9.23	9.55
771	Surguja	Dhaurpur	23.195	83.43833333	6.9	0.40	3.20	5.8
772	Surguja	Dhaurpur S	23.195	83.41333333	7.5	0.65	3.90	4.4
773	Surguja	Ganeshpur	23.08055556	82.63527778	7	2.82	3.50	5.8
774	Surguja	Ghorghadi	23.03333333	83.4675		2.42	2.95	3.5
775	Surguja	Gonda	23.42916667	83.05833333	5.95	2.07	3.42	4.15
776	Surguja	Jagannathpur	23.37861111	83.195	7.6	1.40	2.05	3.2
777	Surguja	Jaynagar	23.18472222	82.97166667	9.48	3.21	7.51	8.28
778	Surguja	Jhasi	23.28916667	82.87083333	9.85	4.97	5.35	5.5
779	Surguja	Kakalo	23.07111111	83.21194444		1.26	4.65	6.46
780	Surguja	Kalyanpur	23.24722222	83.2	5.5	2.00	2.60	4.14
781	Surguja	Kamleswarpur	22.82916667	83.28805556	17.49	1.55	2.55	9.19
782	Surguja	Kanakpur	23.19472222	83.05916667		4.15	6.31	6.85
783	Surguja	Karmdiha	23.81388889	83.28055556	6.2	3.30	5.30	6.4
784	Surguja	Kunni	22.86666667	83.06666667	8.7	3.93	6.70	7.85
785	Surguja	Kurji	23.32305556	83.35305556		3.35	5.54	5.7
786	Surguja	Lamgaon	23.04916667	83.34		4.10	6.04	6.1
787	Surguja	Latori	23.24166667	83.19444444	11	8.49	9.75	9.8
788	Surguja	Laxmanpur	22.98305556	83.04027778		1.10	2.90	3.31
789	Surguja	Lundra	23.11666667	83.40833333	7.5	3.50	5.92	6.45
790	Surguja	Lundra S	23.12111111	83.41333333	6.25		4.82	5
791	Surguja	Mahavirganj	23.77083333	83.57916667	5.5	1.70	3.22	6.2
792	Surguja	Mahewa	23.81388889	83.09166667		4.35	5.70	7.75
793	Surguja	Makanpur	23.41333333	83.32333333	9.5	3.32	5.84	7
794	Surguja	Mangari	22.90555556	83.45	7.52	2.72	3.67	5.22
795	Surguja	Nagadand	22.89944444	83.29027778	17.2	1.10	2.09	11.43
796	Surguja	Nawapara	22.95222222	83.26388889	7.1	2.40	3.10	4.93
797	Surguja	Nawdih	23.81722222	83.39388889	3.8	1.20	2.90	3.3
798	Surguja	Odigi	23.47388889	82.80888889	4.7	1.00	4.20	6.8
799	Surguja	Parsa	23.18777778	83.2675	8	5.26	5.76	6.52
800	Surguja	Pasta	23.45	83.525	8.09	1.67	3.67	6.19
801	Surguja	Pasta S	23.44805556	83.53555556				4.4
802	Surguja	Pratapgarh	22.73333333	83.47638889	8.05	2.35	5.35	7.82
803	Surguja	Pratappur	23.48333333	83.20277778	10.1	5.45	8.30	8.82
804	Surguja	Pratappur - 1	23.48333333	83.20277778		5.05	8.20	8.56
805	Surguja	Premnagar	22.96666667	82.69583333	13	1.61	10.68	11
806	Surguja	Premnagar D	22.96666667	82.69583333	15.15	0.67	11.39	11.68

S.N	District	Location	Lat	Long	May 2013 Depth to water level (mbgl)	2013 Aug (mbgl)	2013 Nov (mbgl)	Jan 14 DTW(mbgl)
807	Surguja	Rajpari	23.03027778	83.24111111	9.73	0.90	0.85	1.02
808	Surguja	Rajpur	23.3375	83.40416667		2.53	4.03	7.05
809	Surguja	Rajpur1	23.3375	83.40416667	11.25	2.55	4.86	6.25
810	Surguja	Ramanuj nagar	23.15	82.725	9.87	3.12	3.97	5.22
811	Surguja	Ramanujganj	23.79444444	83.68333333	9.1	6.10	7.60	8
812	Surguja	Reonti	23.64777778	83.17638889	11.6	1.70	9.43	10.6
813	Surguja	Sargaon	23.31166667	83.56027778	11.75	2.02	4.05	5.16
814	Surguja	Shankargarh S	23.29583333	83.60888889				10.68
815	Surguja	Sirsi	23.35277778	82.86305556	7.95	5.15	5.35	5.63
816	Surguja	Sitapur-s	22.76944444	83.49166667				6.99
817	Surguja	Songara	23.3	83.07916667		3.31	5.42	
818	Surguja	Songara1	23.31666667	83.07916667	11.00	3.2	5.7	6.95
819	Surguja	Surajpur	23.21194444	82.87277778	9.35	5.97	1.51	5
820	Surguja	Tara	22.84166667	82.74166667	14.28	12.08	11.90	12.59
821	Surguja	Tara1	22.83333333	82.73972222	12.57	11.61	11.94	12.4
822	Surguja	Tattapani	23.68888889	83.65833333	11.56	2.4	5.9	10.16
823	Surguja	Tattapani1	23.68888889	83.65833333	11.82		9.04	9.1
824	Surguja	Udaipur	22.90833333	82.95	9.07	8.47	9.88	10.16
825	Surguja	Udaipur Dhah	23.05833333	83.1	7.14	2.19	1.34	4.26
826	Surguja	Udaipur-s	22.90833333	82.94722222	12.39	9.83	10.30	10.67
827	Surguja	Veria	23.59861111	83.15027778		1.90	3.90	4.88
828	Surguja	Wadrafnagar	23.76666667	83.19583333	12.33	2.17	5.53	8.03

Water quality data for National Hydrograph Monitoring Stations															Annexure III
SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
1	Baster	Baster	7.9	690		378	28	0	13	10.4	0.9	112	7	320	0.2
2	Baster	Bhanpuri	8.4	635		294	45	15	0	6.4	0.4	80	28	315	0.2
3	Baster	Garka	8.1	172		66	18	5	5	10.6	4.4	18	5	65	0.1
4	Baster	Jagdalpur	7.9	754		416	28	5	13	11.9	1.1	122	8	340	0.2
5	Baster	Joba	8.2	304		152	18	5	4	24.5	0.5	28	8	105	1.6
6	Baster	Kendagaon	8.3	1148		385	153	5	20	141.2	39	10	10	290	0.2
7	Baster	Keshkal	7.8	277		111	28	5	9	18.5	0.9	32	6	105	1.5
8	Baster	Kumharaward	8.2	445		250	11	10	0	6.1	0.6	44	22	200	0.2
9	Baster	Lanjora	7.7	1286		294	241	10	0	29.7	1.1	130	50	535	0.2
10	Baster	Phasgaon	7.3	543		89	89	15	68	27.5	4.5	60	11	195	0.1
11	Bilaspur	Achanakmar	7.7	366		195	21	14	0.79	19.5	4.2	30	20	160	0.5
12	Bilaspur	Amerikapa	7.7	1110		342	131	70	24.6	48.8	2	64	56	395	0.5
13	Bilaspur	Baitalpur	7.8	864		305	32	143	0	23.4	2.2	54	60	385	0.2
14	Bilaspur	Banabel	7.6	1002		451	85	26	1.8	100	1.4	86	7	245	1
15	Bilaspur	Bansajhal	7.6	282		140	21	1	0.8	2.6	1.1	34	8	120	0.2
16	Bilaspur	Bartoli	7.4	1283		354	138	78	67.5	90.9	7	72	56	415	0.1
17	Bilaspur	Belgahana	7.7	528		226	39	7	14.8	28.8	3.8	40	18	175	0.2
18	Bilaspur	Beltara	7.5	1514		348	195	92	42	90.7	1	146	41	535	0.5
19	Bilaspur	Bilha	7.7	999		275	110	90	15.3	74	11	62	35	300	0.1
20	Bilaspur	Chhaparwa	7.5	2130		530	57	298	42.7	110	11	150	72	675	0.4
21	Bilaspur	Chilhati	8.8	1031		378	71	108	10.2	68	2	122	14	365	1.2
22	Bilaspur	Dagauri	7.8	744		372	18	60	12.2	19.2	27	70	30	300	0.5
23	Bilaspur	Dhanpur	7.4	658		195	67	54	8.5	47.5	0.6	58	22	235	1.8
24	Bilaspur	Gatori	8	466		289	21	3	7	11.5	2.1	60	10	240	0.4
25	Bilaspur	Gaurela	7.4	1058		299	89	62	13	97.3	1.8	78	29	315	0.1
26	Bilaspur	Hemunagar	7.7	1127		378	156	63	1.3	68	2.3	82	49	410	0.3
27	Bilaspur	Hirri	7.4	793		403	32	52	1.2	39.6	2.1	56	40	305	0.2
28	Bilaspur	Jingatpur	7.6	602		226	46	21	47	42.6	1	72	5	200	0.2
29	Bilaspur	Jogipur	7.9	508		305	32	6	6.5	40.7	0.7	46	20	205	0.1
30	Bilaspur	Kanteli1	7.7	519		281	18	8	2.6	27.5	0.9	30	31	210	0.4
31	Bilaspur	Kenda	7.9	349		207	18	1	1.4	23	2.7	46	4	130	0.2
32	Bilaspur	Khamaria1	7.9	494		244	25	16	13.9	12.9	1	58	19	225	0.5
33	Bilaspur	Khamaria2	7.8	749		263	18	159	6.6	27.1	0.9	128	2	330	0.2

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
34	Bilaspur	Kota(kargi)	7.8	741		317	60	14	10.4	60.8	1.4	82	2	215	0.3
35	Bilaspur	Kotmi1	7.1	406		116	50	13	26.5	22.3	1.4	38	14	155	0.4
36	Bilaspur	Malhar	7.9	1173		433	64	86	9	9.5	4.9	80	43	380	0.2
37	Bilaspur	Marwahi	7.3	409		305	36	13	48.5	21.1	3.3	44	13	165	0.4
38	Bilaspur	Patharia(Chorbhatti)	7.5	1914		24	99	509	24.8	125	5.2	90	108	675	0.5
39	Bilaspur	Piparkuti	7.3	514		152	46	30	41.2	31.2	1.5	50	18	200	1
40	Bilaspur	Ratanput	7.8	575		232	59	19	15.1	28.8	0.5	74	6	210	0.2
41	Bilaspur	Saraipali	7.8	896		427	71	21	63.6	37.4	1.4	34	67	365	0.4
42	Bilaspur	Seoni	7.9	331		250	32	9	0	29.9	2.7	38	14	155	1.1
43	Bilaspur	Sipat	7.7	544		232	39	13	29.7	19.9	6.2	50	28	240	0.5
44	Bilaspur	Tendua	7.9	696		360	18	19	4.6	10.6	0.6	90	18	300	0.4
45	Bilaspur	Tikhti	7.6	524		244	57	10	46	8.9	1.5	62	24	255	0.2
46	Dhamtari	Arsi-Kanhar	7.4	498		275	14	15	0	26.8	4.4	54	13	190	1
47	Dhamtari	Banraud	7	89		37	14	5	2	4.9	1	14	2	45	0.2
48	Dhamtari	Banspani	7.1	478		134	39	50	25.8	21.7	2.8	46	16	180	0.4
49	Dhamtari	Brigudi	7.1	397		110	50	15	26.8	11.2	6.5	44	10	150	0.3
50	Dhamtari	Chhati	7.2	526		220	43	21	0	23.4	1	40	19	180	0.6
51	Dhamtari	Dongardula	7.3	463		238	25	9	1.5	9.3	7.6	62	4	170	0.4
52	Dhamtari	Dugli	7.4	488		159	39	33	32.5	23.8	2	52	11	175	0.2
53	Dhamtari	Gattasilli	7.4	613		153	53	63	38.5	31.6	1.4	62	13	210	1.6
54	Dhamtari	Jabbara	7.4	195		78	11	20	3.5	10.8	3.6	16	7	70	1.5
55	Dhamtari	Keregaon	7.8	210		116	18	5	0	10.1	3.9	24	6	85	0.2
56	Dhamtari	Kondapara	7.6	707		183	60	39	11	31.3	0.8	66	19	245	0.7
57	Dhamtari	Kossmarra	7.6	706		214	36	37	56.8	37.2	26	82	12	255	0.5
58	Dhamtari	Kurud	7.7	711		244	43	37	30.3	38.9	1	42	12	180	0.6
59	Dhamtari	Magarlod	7.7	229		37	25	6	38.9	21.6	2.1	22	1	60	0.3
60	Dhamtari	Marod	7.8	728		275	46	19	0	29.3	1.2	76	19	270	0.8
61	Dhamtari	Nagari	7.8	965		177	170	54	3	47.7	8.3	126	14	375	0.4
62	Dhamtari	Sankra	7.9	361		171	31	11	0	12	1.6	16	6	165	0.5
63	Dhamtari	Sihawa	7.8	601		177	53	33	51.8	27	9.3	66	17	240	0.6
64	Dhamtari	singhpur	7.9	499		293	18	10	0	10	1.1	58	24	245	0.7
65	Durg	Ahiwara	7.6	715		177	85	42	63	28	1.5	100	11	295	0.2
66	Durg	Amaiekalam	7.6	1057		244	153	51	39.5	138	3.6	58	13	200	0.6
67	Durg	Anda	7.5	1400		256	209	100	72	58	4.5	182	17	525	0.4

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
68	Durg	Andhiyarkhor	7.7	733		281	21	100	16	67	1.3	62	19	235	0.6
69	Durg	Arjunda	7.4	1043		214	163	39	60	43.9	0.6	130	16	390	0.3
70	Durg	Balod	7.7	339		177	11	10	1.8	15	2.3	48	3.6	135	0.4
71	Durg	Bemetra	7.6	2280		244	39	763	8	38.9	2	378	13	1000	0.6
72	Durg	Berla	7.4	364		73	50	60	0	54	9.5	28	4	85	0.4
73	Durg	Bharnabhatu	7.7	347		153	21	14	5	12	0.2	54	1	140	0.6
74	Durg	Bhilai	7.5	554		104	64	50	55	41.4	2.9	60	5	170	0.1
75	Durg	Biranpur Kalan	7.6	792		317	64	41	15.8	85	0.7	50	24	225	0.6
76	Durg	Bitkuli	7.5	2320		238	28	1056	0	74	2.5	440	80	1445	1.1
77	Durg	Dalli-Rajhara	7.7	994		244	121	104	23	24	2.6	92	41	400	0.4
78	Durg	Dargaon	7.2	833		214	21	226	7.5	50.5	1.7	92	23	325	0.6
79	Durg	Deorbija	8	739		248	25	0	85	67.7	0.5	56	20	225	0.9
80	Durg	Dhamdha	7.6	800		268	60	62	34.6	45	9.6	78	22	285	0.5
81	Durg	Dhodi	7.6	955		348	99	42	67	48.3	0.2	66	47	370	0.5
82	Durg	DURG	7.5	1593		98	426	91	2	40	4	230	23	670	0.5
83	Durg	funda	7.7	523		146	50	23	20	15.6	0.3	80	1	205	0.2
84	Durg	Ganiyari	7.6	1127		244	188	42	33	21.7	1.3	122	28	465	0.4
85	Durg	Gatapara	8	1280		140	21	44	12	66	1.4	164	26	520	0.4
86	Durg	Gunderdehi	8.3	686		256	50	55	1.4	55	3	56	13	195	0.5
87	Durg	Gurur	8.3	520		253	43	5	5	12.6	1.8	72	18	255	0.4
88	Durg	Janegai	8	571		244	28	40	2	30	1	48	24	220	0.5
89	Durg	Jeora-Sirsa	7.7	788		195	99	80	75	38	18	104	12	310	0.3
90	Durg	Kachandur	7.6	740		250	117	0	5	36	1.5	68	29	290	0.4
91	Durg	Kcenapari	8	704		268	46	35	45	49.7	1	94	4	250	0.4
92	Durg	Khurmuri	7.3	2191		238	36	960	0	44	4.5	488	26	1330	0.8
93	Durg	Kodwa	7.8	584		281	28	10	9	30.7	0.9	58	19	225	0.4
94	Durg	Kusumkasa	7.8	766		445	14	0	0	28	1.2	42	34	245	0.3
95	Durg	Litai	8	385		165	11	21	24	8.7	0.8	60	6	175	0.2
96	Durg	Lohara	7.9	400		183	36	5	2	29	2.9	48	16	185	0.5
97	Durg	Markatola	8.2	400		227	25	0	3	22.6	2.4	52	7	160	0.3
98	Durg	Marra	7.4	938		220	131	21	67	49.9	1.8	106	14	325	0.2
99	Durg	Motipur	7.6	401		214	7	17	3	16.8	0.4	58	6	170	0.3
100	Durg	Nahaida	7.5	662		207	67	42	21	38	2.2	80	8	235	0.4
101	Durg	Nawaghar	8	713		268	32	100	8	62.5	1.1	76	18	265	0.5

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
102	Durg	Paipoda	8.1	730		329	36	44	20	42.5	2.1	68	29	290	0.4
103	Durg	Patan	7.8	497		146	53	15	45	29	2.1	70	2	185	0.4
104	Durg	Ravelidih	7.3	578		128	60	38	70	15.5	0.6	78	13	250	0.4
105	Durg	Sambalpur	8.1	417		220	21	5	11	11	0.5	68	2	169	0.5
106	Durg	Selud	7.8	401		159	25	39	7	13.8	0.4	62	7	185	0.2
107	Durg	Sikosa	7.2	888		232	92	50	70	50	4.9	114	6	315	0.5
108	Durg	Tarkori	7.8	1565		293	245	96	75	192	13	140	19	430	0.5
109	Durg	Uneradha	7.4	717		195	92	28	55	23	0.3	116	6	315	0.3
110	Durg	UtaiAdarshnagar	7.5	810		201	110	66	24	35.9	0.5	110	10	315	0.6
111	JanjgirChapa	Adbhar	8	777		311	25	163	2.1	75	1.8	58	16	210	0.6
112	JanjgirChapa	Akaltra	7.8	886		329	28	56	36.2	62	27	40	37	255	0.2
113	JanjgirChapa	Baloda	7.7	876		232	117	37	21.2	32.1	1	108	19	350	0.2
114	JanjgirChapa	Bamnidihi	7.8	593		250	32	9	19.4	46.9	0.6	68	2	180	0.2
115	JanjgirChapa	Champa	7.8	641		281	36	17	6.4	83	0.9	44	7	140	0.2
116	JanjgirChapa	Dabra1	7.9	935		335	107	23	32.4	50.1	3.7	84	43	390	0.2
117	JanjgirChapa	Damau	7.9	427		250	7	2	9.2	5.9	2.4	56	17	210	0.4
118	JanjgirChapa	Dhardei	7.7	2480		323	231	352	68.7	100	16	250	43	800	0.2
119	JanjgirChapa	Ghoghari	7.7	793		353	67	25	15	43.3	1.1	58	46	335	0.3
120	JanjgirChapa	Hasoud	7.8	1104		561	60	42	2.2	70	2.6	50	48	325	0.4
121	JanjgirChapa	Jaijaipur	7.5	1021		214	137	38	24.8	39.7	1	80	56	435	0.3
122	JanjgirChapa	Janjgir	8	841		256	82	40	20.5	53	0.9	86	22	305	0.2
123	JanjgirChapa	Jewara	7.3	702		195	64	31	80	26.6	21	90	6	250	0.3
124	JanjgirChapa	Keregaon	7.8	709		262	57	29	17.8	2.9	18	80	26	310	0.2
125	JanjgirChapa	Khartal	8.3	781		232	99	28	9	49.1	7.5	58	36	295	0.2
126	JanjgirChapa	Latesara	7.4	940		244	89	93	36.8	72.3	3.4	94	18	285	0.3
127	JanjgirChapa	pamgarh	7.8	520		281	28	6	22.5	16.4	0.7	56	20	225	0.2
128	JanjgirChapa	Sakti	8.3	1432		543	75	65	0.25	290	3.1	30	7	105	0.4
129	JanjgirChapa	Saragaon	8	632		299	107	70	22.7	57.7	1.5	102	12	305	0.3
130	JanjgirChapa	Sasaha	7.5	652		348	39	20	6.6	33.4	0.9	50	32	260	0.2
131	JanjgirChapa	Semra	8	503		159	57	8	21.4	13.5	0.2	86	4	230	0.2
132	JanjgirChapa	Seorinarayan	7.9	1007		311	75	42	79	35	19	108	23	365	0.2
133	JanjgirChapa	Sukda	8.3	422		262	11	2	2.7	16.2	0.2	60	13	205	0.6
134	JanjgirChapa	Thathari	7.5	1140		421	67	48	28.6	31.5	1.3	60	80	485	0.2

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
135	Jaspur	Bagicha	7.7	254		110	36	14	3.9	7.1	0.9	16	16	105	0.9
136	Jaspur	Balachhapar	7.9	134		49	11	13	5.9	1.7	0.9	20	4	65	0.9
137	Jaspur	Bangaon	7.7	595		220	60	15	29.3	39.2	1.1	68	5	195	0.4
138	Jaspur	Bataikela	7.5	628		165	57	12	80	15	1.7	34	41	155	0.4
139	Jaspur	Bewrapali	7.7	202		73	11	9	28	8.3	1.1	26	4	80	0.5
140	Jaspur	Bildegi	8.5	413		122	43	13	32.3	8.4	1	52	17	200	0.5
141	Jaspur	Binjapur	7.5	352		61	64	20	24.8	25.4	7	38	6	120	0.2
142	Jaspur	Farsabahar	7.6	266		92	28	13	16.2	11.3	0.6	32	2	90	0.3
143	Jaspur	Kachhar	7.7	413		146	50	22	13.1	16.2	3.5	56	6	165	0.9
144	Jaspur	Kandaibahar	7.7	387		140	39	11	25	11	0.3	50	10	170	0.3
145	Jaspur	Kersai	7.8	376		153	32	12	11	30.9	0.9	38	4	110	0.6
146	Jaspur	Kotba	7.2	303		128	36	12	0	20.5	2.3	24	11	105	1
147	Jaspur	Kunjara	8.1	480		158	43	10	24	17.5	1	26	29	185	0.4
148	Jaspur	Kunkuri	7.4	202		31	36	14	2	17.6	0.7	16	2	50	1.5
149	Jaspur	Ludeg	7.7	819		244	128	19	1	24.6	1.7	112	16	345	0.4
150	Jaspur	Muskuti	8.1	282		104	25	14	8.5	15	2.2	58	11	100	0.7
151	Jaspur	Narayanbehli	7.5	338		134	36	17	11.9	25.5	1.6	20	13	105	0.6
152	Jaspur	Nawaguda	7.8	302		122	21	13	2	7.4	2.4	44	5	130	0.3
153	Jaspur	Pathalgaon	7.6	795		201	121	13	39.2	23.8	1.7	96	13	295	0.9
154	Jaspur	Peta	7.5	227		73	32	14	10.2	10.9	1.6	24	7	90	0.5
155	Jaspur	Phooldhi	7.95	166		67	14	0	0	10.7	0.9	22	2	65	0.9
156	Jaspur	Raikera	7.6	95		31	7	17	3.8	5.9	0.8	12	1	35	0.5
157	Jaspur	Saraipali	7.6	231		73	14	8	24.2	10.3	1.1	40	2	90	0.6
158	Jaspur	Tapkara	8.1	389		177	28	16	0	18.1	0.8	36	13	145	0.4
159	Kanker	Charama	8	280		119	18	5	19	18.5	0.9	32	6	105	0.5
160	Kanker	Kankar	8	281		124	25	0	0	26.5	1.2	30	4	90	2.1
161	Kanker	Kulgaon	8.2	640		333	28	5	12	26.5	0.4	82	16	270	0.9
162	Kanker	Lakhanpuri	8	280		121	18	0	19	19.7	0.9	28	8	105	0.5
163	Kawardha	Bodla	7.6	668		287	39	73	13.5	20.3	3.6	48	35	265	0.4
164	Kawardha	Chilpi	7.6	565		281	18	23	9	34.4	1.1	58	17	215	0.4
165	Kawardha	Dangania	7.9	730		323	36	30	32	35	0.9	80	20	285	0.6
166	Kawardha	Kapada	7.2	670		311	18	49	8.7	40	0.9	54	28	250	0.5
167	Kawardha	Kawardha	7.3	589		311	14	27	7	48	0.6	70	7	205	0.3
168	Kawardha	Kharada Kalan	7.7	709		409	7	13	0	84	0.7	50	13	185	0.4

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
169	Kawardha	Kui	7.7	906		293	67	50	85	26	1.3	96	40	405	0.5
170	Kawardha	Menenmuna	7.8	1193		372	149	10	85	78	1	128	13	375	0.3
171	Kawardha	Pandariya	7.1	528		299	11	5	0	45	0.9	54	6	160	0.5
172	Kawardha	Sagauna	7.6	240		140	7	0	0	13.5	0.5	44	1	105	0.2
173	Kawardha	Sahaspurlohara	7.7	982		226	92	141	40	105	1	80	10	260	0.8
174	Kawardha	Saraipatera	7.8	385		165	4	40	4	8	0.5	34	17	155	0.3
175	Kawardha	Uriakhurd	7.7	532		268	21	26	3	45	0.7	58	7	175	0.3
176	Korba	Pali	7.5	295		128	7	9	2.2	4.4	3.6	30	6	100	0.8
177	Korba	Bandha	7.6	424		189	32	12	14.4	10.1	2.1	44	20	195	0.2
178	Korba	Chitma	8	545		250	25	56	0	64.7	0.9	38	7	125	3.1
179	Korba	Gopalpur	7.7	602		226	43	36	7	23.8	0.5	62	11	200	0.3
180	Korba	Gurusia	8.1	369		195	21	11	6.1	4.7	1.5	58	12	195	0.4
181	Korba	Jatga	7.7	309		140	14	15	58.8	15.4	3.9	38	5	115	0.4
182	Korba	Kartala1	7.4	377		79	21	4	71.5	9.7	18	20	7	95	0.2
183	Korba	Katghora	7.8	632		299	43	35	0	69.8	5.5	44	7	140	0.3
184	Korba	Korba	7.8	948		275	82	72	82.3	64	24	66	28	280	0.2
185	Korba	Kurtha	8.1	79		55	25	4	0	11.7	4.9	20	1	55	0.3
186	Korba	Madai	8.2	498		244	36	16	3.4	33.4	6	60	12	200	0.4
187	Korba	Morga	8.14	288		128	25	5	0	21.6	1.9	30	6	100	0.9
188	Korba	Nagai	7.3	400		128	39	10	28.6	22.1	1.2	42	11	150	0.2
189	Korba	Nawaparachoti	7.8	385		134	43	3	31.6	7.2	2	54	12	185	0.6
190	Korba	Pasan	7.3	394		146	43	15	27.9	22	1	36	22	180	0.5
191	Korba	Pondi	8.2	512		275	28	5	2.5	39.5	0.6	50	16	190	0.9
192	Korba	Salihabhat	7.8	230		98	25	10	15.4	8.5	3.9	22	12	105	0.2
193	Korba	Tuman	7.6	249		128	14	10	4.4	14.1	2.2	26	12	115	0.2
194	Korba	Urga1	7.6	323		92	32	27	16.2	26	1.4	16	13	95	0.5
195	Koriya	Baharsi.i	8.3	509		159	50	25	38.6	26.3	1	72	5	200	0.5
196	Koriya	Baikunthpur	8.3	206		79	25	3	16.6	10.2	0.5	26	6	90	0.5
197	Koriya	Belbehra	8.3	306		122	36	8	12	3.6	0.6	56	2	150	0.3
198	Koriya	Jankpur	8.3	387		146	32	22	14	6	4.8	48	17	190	0.6
199	Koriya	Kelhari	8.2	225		67	39	6	24	11.2	1.3	30	2	85	0.4
200	Koriya	Khadgaon	8.3	153		43	32	6	1.2	20.6	1.2	10	2	35	0.2
201	Koriya	Khatgori	7.9	98		37	7	1	14	0.5	0.8	10	5	45	0.6
202	Koriya	Kuwarpura	8.4	389		183	32	16	0	32	2.5	50	2	135	0.6

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
203	Koriya	Manendraghar	8.3	329		140	36	8	5	14.4	0.9	38	12	145	0.6
204	Koriya	Mansukha	8.2	307		179	25	2	4	6.5	1.9	40	16	165	0.6
205	Koriya	Pendri	8.5	555		232	57	5	8	53.8	1	52	5	150	1.5
206	Koriya	Pouri	7.7	394		189	14	3	1	12.5	8	28	16	135	0.5
207	Koriya	Ranai	7.8	312		73	50	17	36	24.7	11	24	8	95	0.2
208	Koriya	Sarbhoka	8.1	197		67	25	4	13.3	4.7	0.8	28	4	85	0.9
209	Koriya	Sonhat	8.4	135		134	11	1	0	13.1	0.9	36	2	100	0.3
210	Koriya	Tarabahar	8.3	496		238	25	24	18	4.1	5.5	62	22	249	0.3
211	Koriya	Tilokhan	8.1	577		146	57	27	39.5	24.2	0.5	74	7	220	0.5
212	Koriya	Ujiyerpur	8	161		85	14	4	3.8	8.7	0.5	22	4	70	0.5
213	Mahasamund	Bagbahara	7.8	1118		195	142	103	94	78.8	4.4	116	12	240	0.2
214	Mahasamund	Baldidih	7.9	823		226	142	50	7	37.9	0.8	80	29	320	0.9
215	Mahasamund	Basna	7.9	667		201	53	54	5.6	41.7	4.2	50	23	220	0.7
216	Mahasamund	Bodesara	7.6	1469		315	184	23	75	60.7	2.4	150	42	550	0.2
217	Mahasamund	Jagdishpur	7.9	628		299	50	17	8.7	53.9	0.6	44	29	230	2.7
218	Mahasamund	Jhalap	7.9	418		140	28	25	4	20.1	0.8	38	18	170	0.8
219	Mahasamund	Khallari	8	385		183	60	13	0	13.7	1	44	16	175	2.2
220	Mahasamund	Mahasmund	7.9	261		18	53	2	38.6	8.5	1.5	34	4	100	0.1
221	Mahasamund	Phusera	7.9	464		159	78	9	3	7.5	12	52	18	205	0.9
222	Mahasamund	Pithora	7.9	639		177	39	57	25.6	47.4	5.2	58	1	195	0.3
223	Mahasamund	Sagarpali	8	580		159	89	33	0	15	0.3	36	44	275	0.6
224	Mahasamund	Saraipali	7.9	1035		262	180	76	26.4	89.6	5.9	64	29	280	0.9
225	Mahasamund	Sirpur	8.1	649		336	36	7	5.6	14.6	34	76	14	250	0.4
226	Mahasamund	Suarmar	8.1	688		256	71	11	2.4	25.4	10	96	7	270	0.5
227	Mahasamund	Tendukona	8.1	1837		506	291	41	7.2	170	129	92	12	280	0.4
228	Mahasamund	Tumgaon	7.6	270		43	43	7	26.5	14	2.9	28	5	90	0.1
229	Raighar	Amapale	7.3	76		24	11	20	0	2.7	0.7	10	12	35	0
230	Raighar	Bakanema	7.6	758		220	75	15	87.6	19.1	4.5	94	16	295	0.3
231	Raighar	Barpali	7.14	131		31	18	20	7.8	3.2	3	12	6	55	0.3
232	Raighar	Bayasi	7.4	205		73	21	19	12	8.4	11	22	2	65	0.3
233	Raighar	Chaple	7.9	702		214	93	20	19	10.7	0.5	50	22	255	0.6
234	Raighar	Chhal	7.5	600		275	14	16	1	21.4	1.4	70	8	215	0.5
235	Raighar	Dharijaygarh	7.6	568		140	75	20	31.1	42.5	16	40	7	150	0.3
236	Raighar	Dumarpali	8	590		275	28	23	0	28.1	15	40	28	215	1.1

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
237	Raighar	Edu	7.5	234		61	43	14	4.7	8.4	5.5	28	7	100	0.3
238	Raighar	Farkanara	7.8	576		171	53	20	44.8	20.9	19	58	12	195	0.2
239	Raighar	Gharghoda	8.1	380		189	128	19	0	7	2	52	7	165	0.6
240	Raighar	Golabuda	7.7	148		43	11	21	11.4	9.8	2.1	16	2	50	1
241	Raighar	Hati	7.2	129		24	18	23	22.7	5.6	6.3	8	4	35	0.2
242	Raighar	Hirri	7.7	412		195	11	16	9.6	17.4	0.7	50	96	165	0.1
243	Raighar	isrinagar	7.5	805		85	160	14	60	37.8	10	80	16	275	0.4
244	Raighar	Kapu	7.6	501		31	71	23	89	27	4.4	50	5	145	0.2
245	Raighar	Kerajhar	7.6	92		24	18	12	3	6	2.2	12	2	40	0.1
246	Raighar	Khadgaon	7.7	198		61	39	10	6.2	24.1	0.7	8	7	50	0.6
247	Raighar	Kharsiya	7.5	1004		177	185	18	26	55.6	1.1	116	18	365	0.5
248	Raighar	Kundekela	7.9	356		159	28	18	3	7.7	17	40	8	135	1
249	Raighar	Laikunda	7.6	503		92	75	20	39.7	34.5	2.2	50	10	165	0.2
250	Raighar	Lipti	7.2	65		18	7	22	0	6.5	2.8	2	1	10	0.2
251	Raighar	Munund	8	89		24	14	10	0	2.3	0	14	1	40	0.2
252	Raighar	Raigarh	7.6	926		226	78	29	0	44.5	1.3	102	6	315	0.5
253	Raighar	Raikera	7.6	212		104	18	13	18.2	14.6	5	26	2	75	0.5
254	Raighar	Rajpur	7.6	631		140	88	21	38.2	28.6	2.2	74	11	230	0.3
255	Raighar	Reda	7	500		189	53	15	0	19.6	3.4	64	16	225	0.4
256	Raighar	Samaruma	7.2	93		37	4	14	11	2.3	0.6	8	4	35	0.1
257	Raighar	Tetla	7.7	906		366	89	23	0	68.6	1.8	102	18	325	0.5
258	Raipur	Abhanpur	7.9	626		293	36	8	8.5	41.9	0.8	50	18	200	0.3
259	Raipur	Amethi	7.8	391		153	32	7	15.7	25.6	0.9	46	7	145	0.6
260	Raipur	Arang	8.1	1145		451	114	6	7.4	47.7	6.7	136	5	360	0.5
261	Raipur	Arguni	8	1165		262	160	34	45	50.9	4.1	134	16	405	0.3
262	Raipur	Bajrangpur	7.9	1310		266	195	6	6.1	60.1	4.7	124	24	410	0.3
263	Raipur	Balodabazar	8.4	634		250	50	16	11	100	2.3	36	2	100	1.5
264	Raipur	Bhatgaon	8	3020		512	571	95	11.9	232	9.6	68	8	520	1.4
265	Raipur	Bilaighar	8.1	999		311	99	17	29.2	54.1	3.2	80	6	240	0.4
266	Raipur	Chandi	7.9	304		153	106	7	5.7	58.8	0.2	50	4	140	0.5
267	Raipur	Chhura	7.6	253		31	32	9	32.6	12.6	1.1	28	1	75	0.2
268	Raipur	Chicholi	7.7	1041		238	99	35	70	51.7	27	84	17	280	0.3
269	Raipur	Damakheda	7.8	1046		323	89	119	42	78.5	5.6	100	40	415	0.2
270	Raipur	Deopuri	7.7	1105		238	160	28	14	58.1	3.4	124	11	145	0.3

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
271	Raipur	Devri	8.1	579		329	25	6	0	39.7	11	76	2	200	0.7
272	Raipur	Dharsiwa	7.4	1256		189	149	100	145	78	6.4	156	11	435	0.4
273	Raipur	Fingeshwar	8	326		128	28	2	6.4	9.8	1.5	38	7	125	0.3
274	Raipur	Gariyabandh	7.8	686		189	96	6	3.2	44.1	9.7	74	13	240	0.3
275	Raipur	Haswa	8.1	482		183	46	2	20.9	39.6	1.3	66	2	175	0.2
276	Raipur	Jhalkmhar	7.8	294		98	28	8	7.3	9.1	0.6	30	11	120	1.7
277	Raipur	Kasdol	7.8	460		177	28	10	9.4	25	3.5	52	8	165	0.5
278	Raipur	Kharora	8.2	288		140	14	4	6.5	29.9	0.3	28	4	85	0.4
279	Raipur	Lawan	7.7	1997		500	291	53	55	235	3.5	100	40	415	0.5
280	Raipur	Mana	7.6	908		171	128	22	85	49.8	19	104	10	300	0.3
281	Raipur	Mandalpur	7.9	334		55	50	9	22.7	25.8	4.4	26	8	100	0.1
282	Raipur	Mandirhasod	8.1	454		165	25	8	33	46.1	0.4	64	2	170	0.4
283	Raipur	Palari	7.8	1189		244	199	13	4.7	48.2	5.7	138	23	440	0.7
284	Raipur	Panduka	7.8	228		85	21	8	2.1	23	1.9	24	7	90	0.5
285	Raipur	Ranisagar	8.2	1109		329	124	17	60	61.3	1.1	108	31	400	0.5
286	Raipur	Sandi	8.1	685		287	50	8	2.8	42.4	2.9	82	10	245	0.8
287	Raipur	Saragao	8.2	350		171	21	8	8.4	25.6	5.6	48	2	130	0.2
288	Raipur	Sarsiwa	7.4	1068		214	156	27	33	49.1	21	126	11	360	0.4
289	Raipur	Simga	7.9	909		323	25	123	6.5	72.3	10	66	34	305	0.2
290	Raipur	Sursabhata	8.1	732		360	43	5	10	53.8	0.4	54	32	270	1.2
291	Raipur	Tarenga	7.6	989		299	43	172	7.7	72	2.2	86	37	370	0.3
292	Raipur	Tarpongi	7.3	962		250	117	50	38.8	51	4.1	122	18	380	0.2
293	Raipur	Umariyastation	8.1	509		268	18	6	2.6	4.3	40	60	6	175	0.5
294	Rajnandgaon	Baigatola	7.8	1353		537	114	40	36.6	114.3	0.6	48	77	440	0.9
295	Rajnandgaon	Bateia	7.9	486		177	39	48	1.6	29.6	2.7	50	14	185	0.5
296	Rajnandgaon	Cheeikadana	7.5	1146		201	149	142	11.7	46	0.8	122	46	495	0.8
297	Rajnandgaon	Chinckola	7.8	1158		281	149	131	65	104	0.9	90	32	360	0.2
298	Rajnandgaon	Chirchari	7.7	536		122	57	54	40	25	0.6	40	25	206	0.4
299	Rajnandgaon	Dhaba	7.2	350		79	36	29	38	12	2.2	30	18	150	0.4
300	Rajnandgaon	Dhara	7.9	1552		494	167	75	65	114.4	17	70	90	550	1.2
301	Rajnandgaon	Dongargarh	7.2	958		98	138	72	100	60	13	94	16	300	0.2
302	Rajnandgaon	Gandai	7.9	519		275	14	21	7	54.6	1.5	46	10	155	0.1
303	Rajnandgaon	Gangai-pandariya	7.8	823		317	28	100	17.5	18.4	1.3	66	46	355	0.4
304	Rajnandgaon	Khairagarh	7.7	207		95	7	25	0	4.9	1.7	24	12	110	0.4

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
305	Rajnandgaon	Lalbahadurnagar	7.9	170		49	25	0	11	13.5	0.2	18	2	55	0.4
306	Rajnandgaon	Rajnandgaon	7.9	1150		433	96	128	1	158.6	1.3	66	30	290	0.8
307	Rajnandgaon	Rangkathera	7.6	621		311	18	21	5.7	42	0.5	56	23	235	0.5
308	Rajnandgaon	Ranitarai	7.3	1610		214	302	130	42	88.6	4.7	180	28	565	0.5
309	Rajnandgaon	Rivagahan	8	1000		262	131	76	31	118	2.4	82	8	240	0.6
310	Rajnandgaon	Salgapat	7.6	533		281	18	21	0	32	1.3	62	11	210	0.3
311	Rajnandgaon	Salhebhara	8	435		232	7	25	3	15.7	0.4	50	17	195	0.4
312	Rajnandgaon	Saloni	8	484		207	21	28	18.3	10	0.6	68	10	210	0.4
313	Rajnandgaon	Seingola	7.6	723		214	71	36	45	51	0.8	86	11	260	0.6
314	Rajnandgaon	Somni	7.7	514		275	14	19	4	50.5	1.2	46	10	160	0.4
315	Rajnandgaon	Talai	8	435		214	14	3	15	15	0.6	62	6	180	0.2
316	Rajnandgaon	Tappa	8	320		140	18	17	6	8.3	0.9	26	19	145	0.2
317	Rajnandgaon	Thelkadhi	7.7	524		165	46	35	38	11.5	0.3	90	2	235	1
318	Rajnandgaon	Uraidabritola	8.1	544		232	43	9	21	25	1	80	4	215	2.9
319	Surguja	Ajbnagar	7.6	90		37	7	5	5	1.6	8.7	8	4	35	0.3
320	Surguja	Ambikapur	8.1	183		61	21	5	14.3	6.7	0.9	22	5	75	0.3
321	Surguja	Aragahi	8.1	391		158	43	37	39.8	30.5	1.2	50	2	145	0.7
322	Surguja	Badsara	8.2	173		92	7	3	4.5	2.2	1.6	24	5	80	0.4
323	Surguja	Baghima	8.3	303		165	18	9	2	9.4	3.5	40	5	120	0.5
324	Surguja	Balrampur	8.1	264		134	14	4	6.6	13.9	1	32	7	110	0.7
325	Surguja	Bandana	8.3	388		183	28	14	1.6	11.7	2	44	16	175	0.4
326	Surguja	Batauli	8.3	445		183	32	18	19	12.1	6	62	17	215	0.7
327	Surguja	Bhadari	8	154		55	25	2	21.1	12.2	0.5	14	6	60	0.4
328	Surguja	Bulga	7.7	328		37	75	6	37	14.3	2.1	36	6	115	0.3
329	Surguja	Chandora	8	146		73	14	1	10	6.9	0.8	10	7	55	0.5
330	Surguja	Darima	7.9	367		134	39	12	27	11	0.6	46	10	155	0.4
331	Surguja	Deonagar	8.2	443		153	64	13	14.1	23	0.7	26	20	160	0.4
332	Surguja	Dhamni	7.7	987		299	89	65	100	48.7	1.5	8	73	325	0.7
333	Surguja	Dhangaon	8	320		128	28	10	13.7	12.9	0.5	26	25	155	0.5
334	Surguja	Dhaurpur	8.1	333		165	28	16	0	12	3.6	20	19	130	0.4
335	Surguja	Ganeshpur	8.1	241		92	25	11	19	18.4	0.5	20	6	75	0.6
336	Surguja	Gonda	8.1	67		18	11	2	6	3.1	3.5	6	1	20	0.2
337	Surguja	Jagannathpur	8.2	491		146	75	8	36.5	19.3	1.5	32	22	170	0.5

SN	District	Location	pH	EC	CO3	HCO3	Cl	SO4	NO3	Na	K	Ca	Mg	TH	F
					Concentration in ppm										
338	Surguja	Jaynagar	8.1	76		24	11	9	15.2	4.1	6.5	8	1	25	0.2
339	Surguja	Jhasi	8.1	267		122	21	6	1	22.3	1.3	28	1	65	0.4
340	Surguja	Kamleshpur	8.4	350		170	28	13	0	40	10	22	4	70	0.4
341	Surguja	Kramdiha	8.2	148		55	21	3	0	9.2	2.4	14	4	50	0.3
342	Surguja	Kunni	7.7	236		36	53	6	30.5	10	5	16	13	95	0.3
343	Surguja	Lamgaon	8.2	739		256	46	90	43.5	19.7	0.3	120	10	340	0.4
344	Surguja	Latori	8.1	237		98	25	12	0	6.1	2.6	30	7	105	0.6
345	Surguja	Laxmanpur	8.2	789		293	71	11	55	39.3	1	94	19	315	0.6
346	Surguja	Mahavirganj	8.1	612		250	53	24	9.9	52.6	1	46	22	205	0.7
347	Surguja	Makanpur	7.9	199		85	11	23	0	2.8	4.1	34	19	105	0.5
348	Surguja	Mangari	8	141		73	14	1	9.7	5.8	5	16	4	55	0.3
349	Surguja	Meahewa	8.4	528		299	18	10	0	49.4	2.8	66	6	190	0.8
350	Surguja	Nawapara	7.9	92		24	21	7	10.1	4.1	5.7	8	4	35	0.2
351	Surguja	Odigi	7.9	636		238	53	31	21.3	44.5	0.9	66	14	225	1
352	Surguja	Parsa	8.4	487		293	11	3	0	23.1	1.1	60	16	215	0.6
353	Surguja	Partapghar	8.1	740		214	36	150	0	46.2	0.3	90	4	240	0.9
354	Surguja	Pasta	8.2	289		140	21	5	1	13.1	2.1	32	12	130	0.4
355	Surguja	Pratappur	7.8	555		305	21	7	0	17.6	0.1	48	26	230	2
356	Surguja	Premnagar	7.2	239		31	57	1	10	4.2	1.7	28	14	130	0.3
357	Surguja	Rajpur	7.7	494		214	36	34	0	16.4	2.3	50	16	190	0.4
358	Surguja	Ramanuganj	7.4	244		244	36	34	38	53.5	0.7	60	6	175	0.7
359	Surguja	Ramanuj nagar	7.4	24		24	11	1	12	1.7	1.1	10	5	45	0.2
360	Surguja	Reonti	7.3	12		12	21	5	0	2.9	0.3	8	4	35	0.2
361	Surguja	Sirsi	6.4	18		18	36	16	37.1	11.8	1	28	5	90	0.3
362	Surguja	Songara	7.5	171		171	18	6	4.4	13.8	0.1	44	6	135	0.4
363	Surguja	surajpur	8.1	37		37	110	108	0	84.5	0.1	28	7	110	3
364	Surguja	Tara	7.7	408		85	60	19	0	38.3	1.5	38	8	130	1.6
365	Surguja	Tattapani	7.9	1042		409	67	98	6	59.4	7	72	26	290	0.2
366	Surguja	Udaipur	7.6	507		205	50	58	37.2	24.2	0.1	68	16	235	0.5
367	Surguja	Udaipur Dhah	7.8	506		226	28	25	11.4	22.3	0.4	66	8	200	0