केन्द्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण

विभाग, जल शक्ति मंत्रालय

भारत सरकार

Central Ground Water Board

Department of Water Resources, River Development and Ganga Rejuvenation,

Ministry of Jal Shakti

Government of India

AQUIFER MAPPING AND MANAGEMENT OF GROUND WATER RESOURCES

YAVATMAL DISTRICT MAHARASHTRA

मध्यक्षेत्र, नागपुर

Central Region, Nagpur

AQUIFER MAPS AND GROUND WATER MANAGEMENT PLAN, YAVATMAL DISTRICT, MAHARASHTRA

(AAP 2021-2022)

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YAVATMAL DISTRICT AT A GLANCE

1. GENERAL INFORMATION			
	Geographical Area	:	13582sq. km
	Administrative Divisions (2011)	:	Blocks-16: Yavatmal, Wani, Maregaon, Pandharkawada, Ghatanji, Ralegaon, Babulgaon, Kalamb, Darwha, Ner, Digras, Pusad, Mahagaon, Umarkhed, Zhari Zamni and Arni
	Villages (Census 2011)	:	2137 Nos.
	Population	:	27,72,348
	Rainfall 2020	:	853.9 mm
	Normal rainfall (2000-2020)	:	474.9 mm to 1209.50 mm
	Long term rainfall Trend (2000-2020)	:	Falling 6.1014 m/year
2. **GEOMORPHOLOGY**			
	Major Physiographic unit	:	Plateau and Penganga, Wardha plain
	Major Drainage	:	Two; Wardha and Penganga
3. LAND USE (sources: mahasdb.maharashtra.gov.in/district Report 2020)			
	Forest Area	:	2537.69 Sq. Km. (18.77 %)
	Net Area Sown	:	10712.36 Sq. Km.
	Cultivable Area	:	10117.09 Sq. Km.
4.	**SOIL TYPE**	:	Three types of soils: shallow coarse, medium black and deep black
5. PRINCIPAL CROPS(2018)			
	Cotton	:	4769.16 sq. km
	Oil Seeds (Soyabean)	:	2673.45 sq. km
	Wheat	:	456.33 sq. km
	Sugarcane	:	36.64 sq. km
	Citreous fruit	:	22.40 sq. km
	Horticulture crops	:	75.61 sq.km
6. IRRIGATION BY DIFFERENT SOURCES (2018) - Nos. / Potential Created (ha)			
	Dugwells	:	40945 / 94807
	Tubewells/Borewells	:	805 / 1921
	Surface Flow Schemes	:	52193
7. GROUND WATER MONITORING WELLS (March) 2021			
	Dugwells	:	75
	Piezometers	:	22
8. GEOLOGY			
	Recent	:	Alluvium
	Upper Cretaceous-Lower Eocene	:	Deccan Trap Basalt

	Cretaceous	:	Lameta Beds
	Upper Carboniferous - Permian	:	Gondwana
	Pre-Cambrian	:	Vindhyan /Pakhals/Penganga Beds
	Archean	:	Granites/ Gneisses
9. HYDROGEOLOGY			
	Water Bearing Formation	:	Alluvium- Sand and Gravel Aquifers belonging to Archaean, Penganga Beds, Gondwana, Lametas and Deccan Traps
	Depth to water level in Shallow Aquifer		
	Premonsoon Depth to Water Level (May-2021)	:	4.35 to 19.90 mbgl
	Post monsoon Depth to Water Level (Nov.-2021)	:	0.3 to 27.05 mbgl
	Depth to water level in Deeper Aquifer		
	Premonsoon Depth to Water Level (May-2021)	:	2.10 to 40 mbgl
	Post monsoon Depth to Water Level (Nov.-2021)	:	1.55 to 10.50 mbgl
	Water level Trend (2012-2021)		
	Premonsoon Water Level Trend (2012-2021)	:	Fall: 0.25 to 1.34 m/year
	Post monsoon Water Level Trend (2012-2021)	:	Rise: 0.0029 to 0.877 m/year
			Fall: 0.0054 to 0.82 m/year
10.GROUNDWATER EXPLORATION (As on March 2022)			
	Wells Drilled	:	EW-105, OW-30, Pz-27,Dp W-04
	Depth Range	:	18.40 to 470 mbgl
	Discharge	:	0.025 to 49.40 lps
	Storativity	:	8.76×10^{-5} to 4.4×10^{-4}
	Transmissivity	:	0.01 to 294.85 m^2/day (Basalt)
			2.26 to 60.97 m^2/day (Gondwana)
11. GROUNDWATER QUALITY			
	Good and suitable for drinking and irrigation purpose		
12. DYNAMIC GROUND WATER RESOURCES - (2020)			
	Annual Extractable Ground Water Recharge (MCM)	:	1186.27
	Current Annual Ground Water Extraction (Irrigation + Domestic+ Industrial) (MCM)	:	431.13
	Annual GW Allocation for Domestic Use as on 2025(MCM)	:	74.34
	Stage of Ground Water Extraction (%)	:	36.34 %
	Category	:	All Blocks are Safe
13. MAJOR GROUND WATER PROBLEMS AND ISSUES			

	• Declining water level trend of more than 0.2 m/year has been observed in major part of district • About 50% area of the district is having low yield potential (<1 lps). • Shallow and Deeper aquifers are affected by high Fluoride concentration in parts of Darvha,Digras,Pusad,Ghatanji,Kelapur,Wani,Maregaon,Wani and Yavatmal blocks. • The area has experienced declining rainfall trend 6.1 m/year and 4 time's moderate and three times severe droughts. • Low Development of Ground Water Resoureces.		
14.	**AQUIFER MANAGEMENT PLAN**		
	Supply side Management		Proposed AR structures: 275 Percolation tanks, 756 Check dams and 15 Recharge shafts
	Demand side Management		Micro irrigation techniques proposed in 36.64 sq.km area of sugarcane crop
	Development Plan		710.04 sq.km additional area can be brought under assured irrigation through 27692 dugwells and 4615 Borewells Even after above, SOD will be 70% (safe category) Increase in GW Availability & Sustainability

AQUIFER MAPS AND GROUND WATER MANAGEMENT PLAN YAVATMAL DISTRICT, MAHARASHTRA

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AQUIFER MAPS AND GROUND WATER MANAGEMENT PLAN YAVATMAL DISTRICT, MAHARASHTRA

1. INTRODUCTION

1.1 Objectives

Various developmental activities over the years have adversely affected the groundwater regime in the state. There is a need for scientific planning in development of groundwater under different hydrogeological situation and to evolve effective management practices with involvement of community for better ground water governance.

The vagaries of rainfall, inherent heterogeneity & unsustainable nature of basalt aquifers, over exploitation of once copious alluvial aquifers, lack of regulation mechanism has a detrimental effect on ground water scenario of the Country in last decade or so. Thus, prompting the paradigm shift from “traditional groundwater development concept” to “modern groundwater management concept”.

Aquifer mapping can be understood as a scientific process wherein a combination of geological, geophysical, hydrological & chemical fields and laboratory analyses are applied to characterize the quantity, quality, and sustainability of ground water in aquifers. Aquifer mapping is expected to improve our understanding of the geological framework of aquifer, their hydrologic characteristics, and water level in aquifer and how they change over time and space and the occurrence of natural and anthropogenic contaminants that affect the portability of groundwater.

Varied and diverse hydrogeological settings demand precise and comprehensive mapping of aquifers down to the optimum possible depth at appropriate scale to arrive at the robust and implementable ground water management plans. The proposed management plans will provide the “Road Map” for ensuring sustainable management and equitable distribution of ground water resources, thereby primarily improving drinking water security and irrigation coverage. Thus the crux of NAQUIM is not merely mapping, but reaching the goal-that of ground water management through community participation. Results of these studies will contribute significantly to resource management tools such as long-term aquifer monitoring network and conceptual and quantitative regional groundwater flow models to be used by planners, policy makers and other stake holders.

1.2 Approach & Methodology

Aquifer mapping is an attempt to integrate the geological, geophysical, hydrological &chemicalfieldandlaboratoryanalysesandareappliedtocharacterizethequality,quantityandsustainabilityofgroundwaterinaquifer.UndertheNationalAquiferProgram,itispropo sedtogenerateAquiferMapson1:50000scale,whichbasicallyaimsatcharacterizingtheaq

uifergeometry,behaviourofgroundwaterlevelsandstatusofgroundwaterdevelopmenti nvariousaquifersystemtofacilitateplanningoftheirsuitablemanagement.Themajoractiv itiesinvolvedinthisprocessencompasscompilation of existingdata, identification of data gaps,generationofdata for feeling data gaps and preparation of different aquifer layers. Aquifer mapping is a process wherein a combination of geologic, geophysical, hydrologic and chemical analyses is applied to characterize the quantity, quality and sustainability of ground water in aquifers

1.3 Study Area

The Yavatmal district is one of the eleven districts of Vidarbha Region of Maharashtra. It is bounded on east by Yavatmal district, on south by Andhra Pradesh State and Nanded district on west by Washim and Hingoli districts and on north by Amravati and Wardha districts. Wardha River forms the north eastern boundary of the district. The district lies between 19°26’ and 20°42’ north latitudes and 77°18’ and 79°9’ east longitudes. It falls in parts of the Survey of India Toposheet No. 55L, 55I, 56E, 56I, 56M, covering an area of 13582sq. km.

The district headquarters is located at Yavatmal Town. The district is divided in 16 talukas viz. Yavatmal, Wani, Maregaon, Pandharkawada, Ghatanji, Ralegaon, Babulgaon, Kalamb, Darwha, Ner, Digras, Pusad, Mahagaon, Umarkhed, Zhari Zamni and Arni. It has a total population of 27, 72,348 as per 2011 census. The district has 16 towns and 2108 villages. The district is well drained by Wardha and Penganga rivers and their tributaries.

The total area of the district is **13582sq km**.All the Blocks are categorized as safe as per Ground Water Resources Estimation as on March 2020. The Administrative and Index map of the study area is presented in **Figure.1.1(a&b).**

Exploratory drilling in the district has been taken up in different phases since 1978. The ground water exploration has been done in Alluvial and hard rock areas occupied by Deccan Trap Basalt and Gondwana and Archeans. To establish the aquifer geometry, disposition and potential of aquifers, ground water exploration down to the depth of 200 m bgl has been taken up where the data gap exists and accordingly total of 105 EW, 30 OW, 27Piezometers and 4 deposit wells have been constructed till March 2022. Salient Features of Ground Water Exploration are given in **Annexure-I**.

A total of 97existing ground water monitoring stations were being monitored 4 times in a year to assess the ground water scenario of the district**.** The details of ground water monitoring stations and exploratory wells are shown in **Figure.1.2**

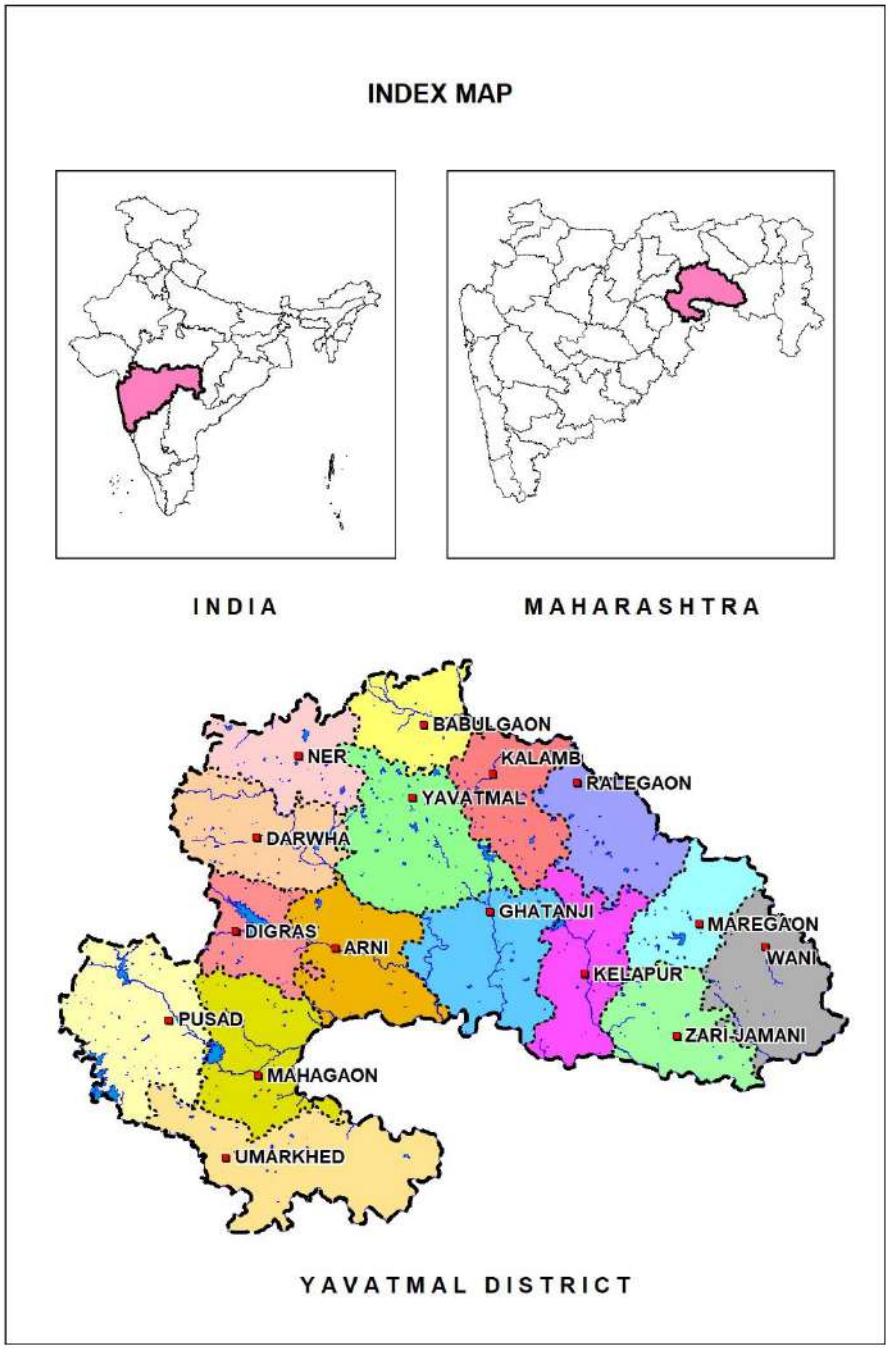


Figure 1.1(A) Index map of Yavatmal District

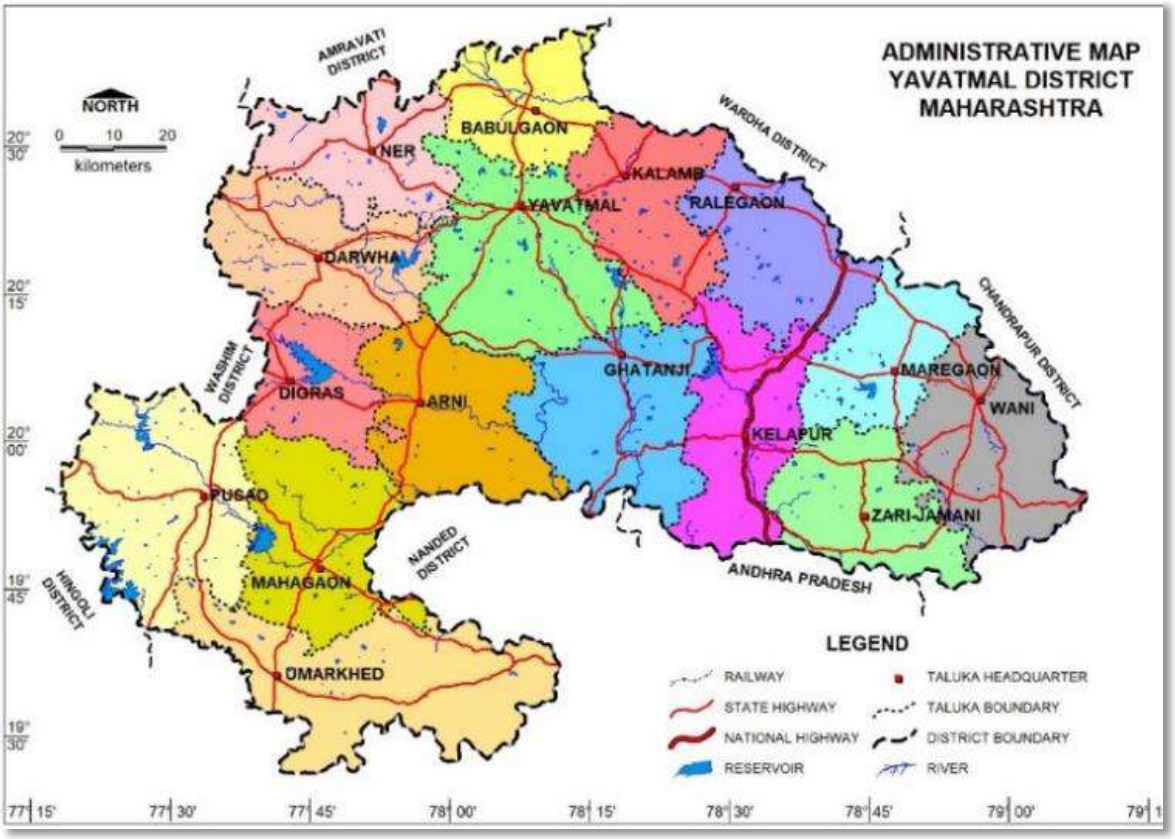


Figure 1.2 (B) Administrative map, Yavatmal District

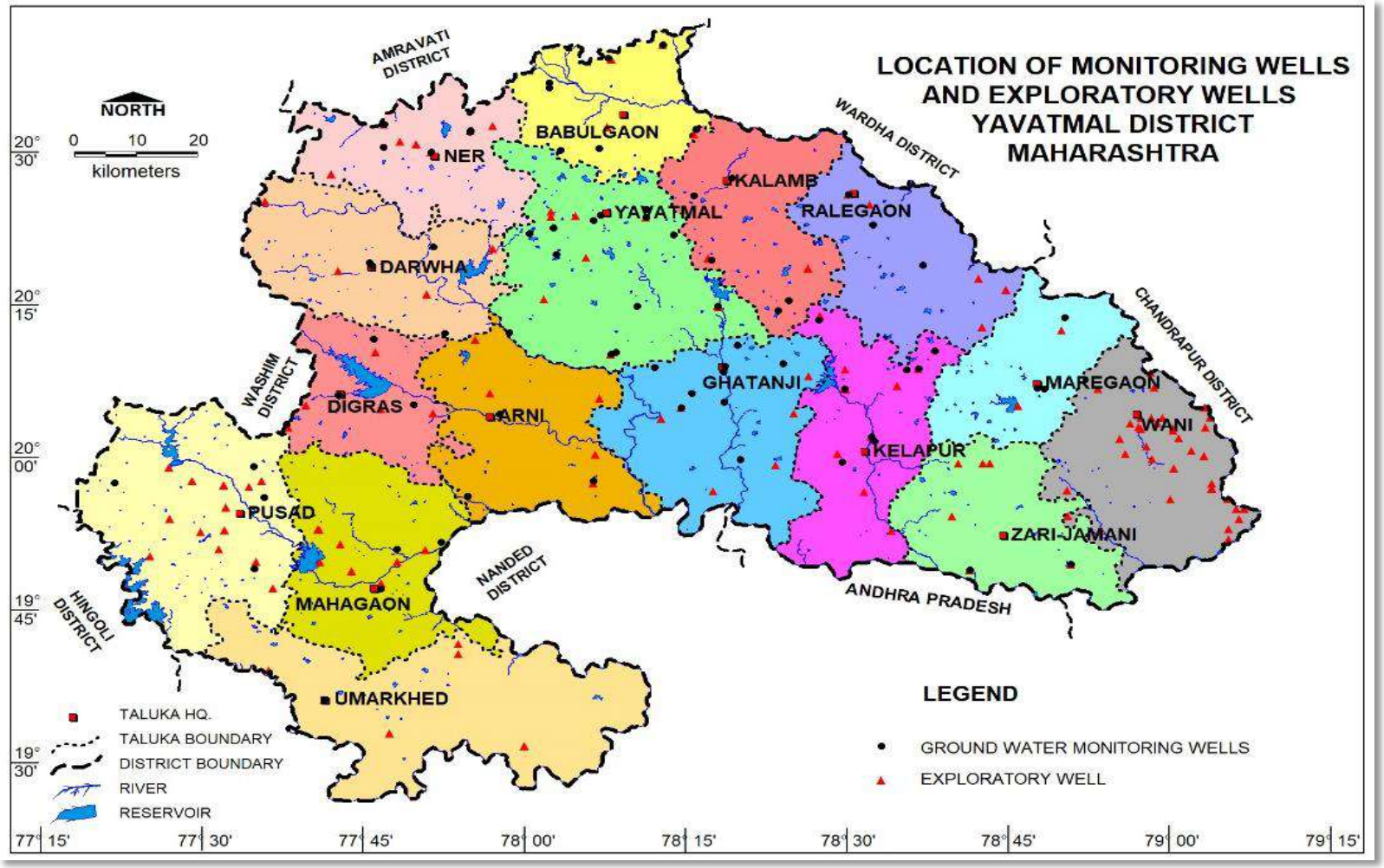


Figure 1.3 Locations of Existing Exploratory wells and Monitoring Well

1.4 Climate and Rainfall

The Climate of the district is characterised by a hot summer and general dryness throughout the year except during the south-west monsoon season, i.e., June to September. The temperature rises rapidly after February till May, which is the hottest month of the year. The mean daily maximum temperature during May is 41.8°C and the mean daily minimum temperature during December is 15.1°C.The monthly minimum, maximum and average temperatures are shown in **figure 1.3.**

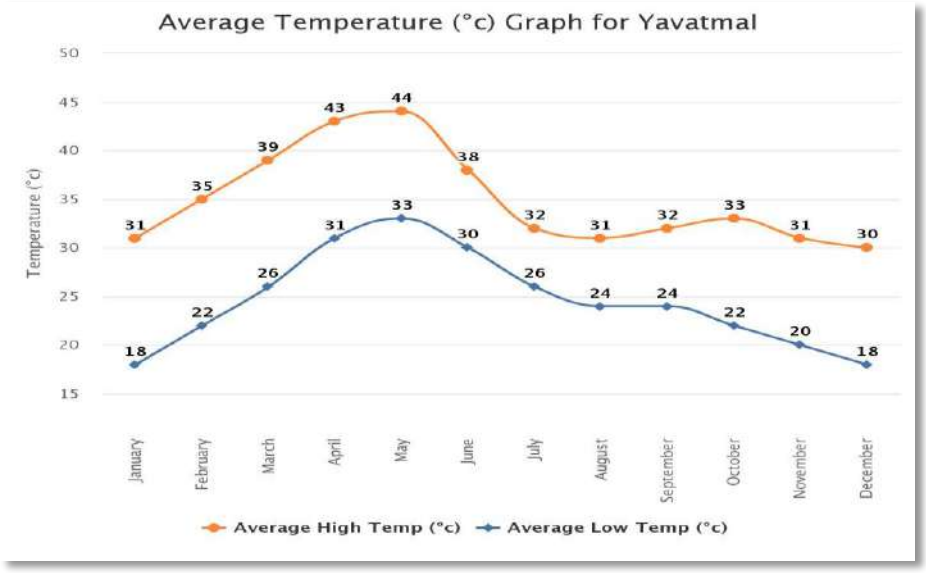


Figure 1.4 Monthly Temperature Graph of Yavatmal District

The normal annual rainfall varies from about 850 to 1150 mm and it increases from NW to SE direction in the district and reaches maximum around Pandharkawada (Kelapur). The spatial distribution of the rainfall is given in **figure 1.4.**

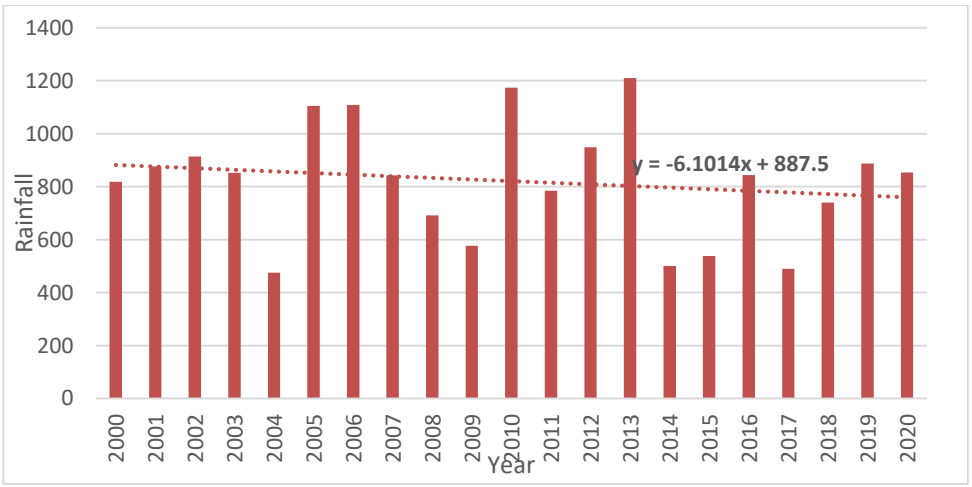


Figure 1.5 Rainfall Analysis (2000-2020), Yavatmal District

Based on long term rainfall analysis it is observed that:

- The coefficient of variation of the annual rainfall from the normal rainfall is 26.9 %.
- The probability of receiving moderate rainfall is observed to be 19 %, severe rainfall is observed to be 14 % and Normal rainfall to be 67 %.

Annual Average rainfall data of last twenty one years is analysed and presented in **Table 1.1.** This indicates that minimum rainfall occurred in 2004 (474 mm) and maximum in 2013 (1209 mm). Normal rainfall isohyet map of the district is presented in **Figure 1.5.**

Table 1.1 Long-term rainfall analysis 2000-2020, Yavatmal district

Period = 2000 to 2020 (21 Years)			
Year	**Annual**	**Normal**	**Departure**
2000	818.6	1051.6	-22
2001	876	1051.6	-17
2002	914	1051.6	-13
2003	852.3	1051.6	-19
2004	474.9	1051.6	-55
2005	1104.4	1051.6	5
2006	1107.9	1051.6	5
2007	842.5	1051.6	-20
2008	691.3	1051.6	-34
2009	576.5	1051.6	-45
2010	1173.7	1051.6	12
2011	784.4	1051.6	-25
2012	949.2	1051.6	-10
2013	1209.5	1051.6	15
2014	500.3	1051.6	-52
2015	537.3	1051.6	-49
2016	843.8	1051.6	-20
2017	489.8	1051.6	-53
2018	740	1051.6	-30
2019	887.8	1051.6	-16
2020	853.9	1051.6	-19

Normal Rainfall = 1051.6 mm		
Standard Deviation = 220.33 mm		
Coefficient of Variation = 26.9 %		
Slope= -6.1 mm/year		
Intercept= 887.5 mm		
Equation of Trend Line= -6.101x + 887.5		
Departures		
Category	No. of Years	% of total Years
Positive	4	19
Negative	17	81
Droughts		
Moderate	4	19
Severe	3	14
Acute	0	0
Normal & Excess R/F		
Normal	14	67
Excess	0	0

NOTE: Rainfall departure: EXCESS: > +25;

NORMAL: +25 TO -25; MODERATE: -25 TO -50;

SEVERE: -50 TO -75; ACUTE: < -75

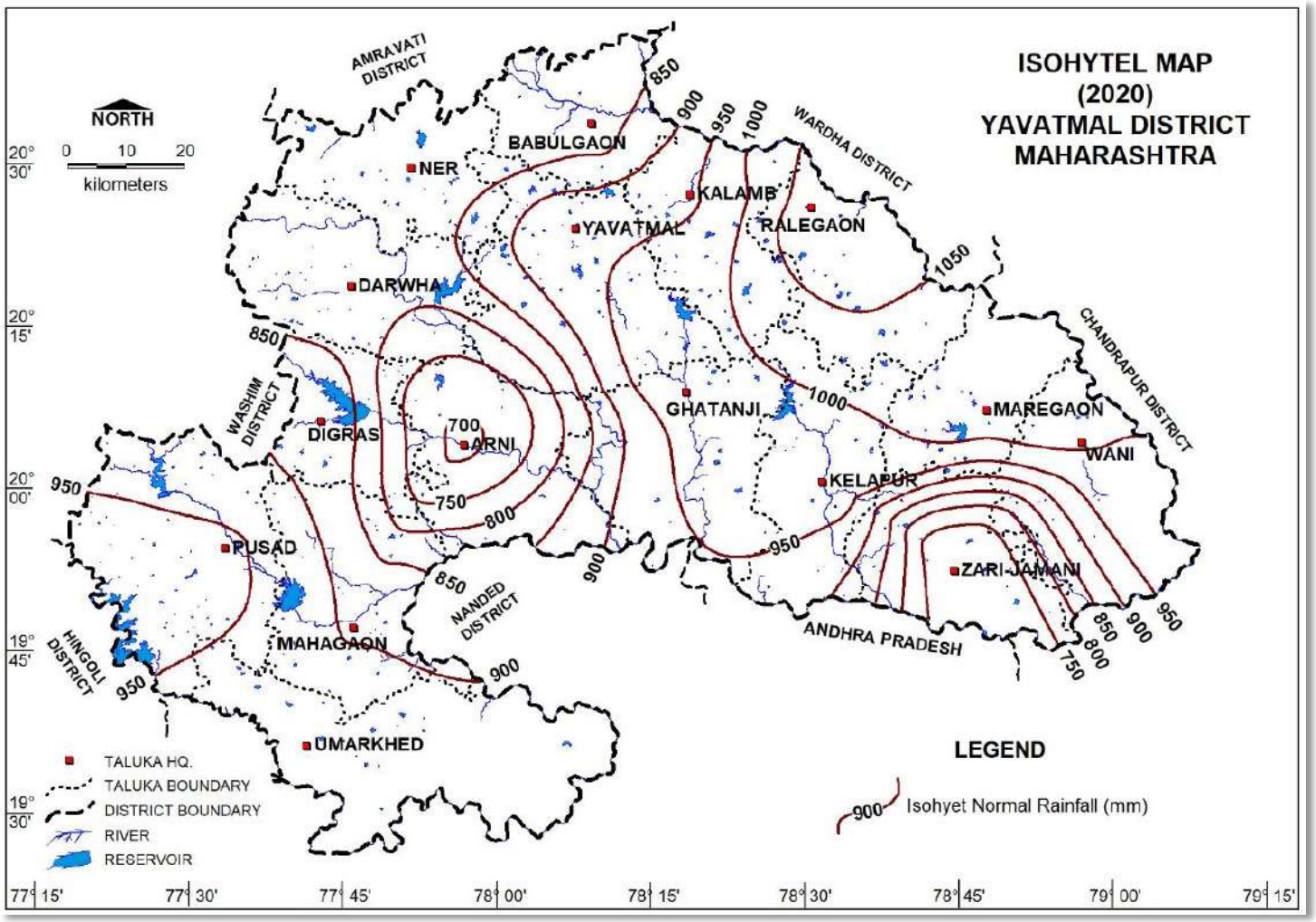


Figure 1.6 Isohyet map of Yavatmal District

1.5 Physiography and Geomorphology

Physiographically, the district can be divided in to three units; Hilly region, Plateau region and plains of Wardha and Penganga rivers. Hilly Region: The south-western part of the district constitutes a hilly region, Pusad, Umarkhed and Mahagaon talukas and some part of Digras and Arni talukas lie in hilly region. Plateau Region: The northern part of the district is a plateau. It covers Darwha, Ner and Yavatmal talukas and some parts of Arni and Digras talukas. The Plains: The region on the banks of the rivers Penganga, Wardha and their tributaries comprises of plains. It includes the Babulgaon, Kalamb, Ralegaon, Maregaon, Wani, Kelapur, Zhari Zamni and Ghatanji talukas. The district consists of masses of hilly country broken by broad valley and partially surrounded by plains. The whole district is occupied by a number of east west hill ranges. The central portion is a plateau with very steep sides and attains an elevation between 300 and 600 meters above the mean sea level. The geomorphological map of Yavatmal district is shown in **Figure. 1.6**

1.6 Drainage

The district lies in Godavari basin. The chief rivers of the district are the Wardha and Penganga both of which flow along the north eastern and southern district boundaries respectively.

The Wardha River rises in the east of Multai in Madhya Pradesh. In general it flows in south easterly direction along the north- eastern boundary of the district. The bed of the river is broad and deep, but the banks are sometimes overflowed in times of exceptional floods. The Bembla River and the Nirguda River are the main tributaries of the Wardha River within the district and both are perennial. The Bembla River rises in Amravati district and only the last 30 km or so of it drains Yavatmal district. The Nirguda River rises with in the district itself and has a length of about 165 km.

The Penganga River in parts has very rough course. Its general direction is almost due east, but it flows in a great curve to the North West round the extremity of Pusad taluka. It is a major tributary of the Wardha River. The river is deeply entrenched and has a meandering course. The Pus, Arha, Aran, Waghavi and Kunj and the major tributaries of the Penganga River within the district. The district having dendritic to sub dendritic pattern. The district is divided into 64 watersheds. The drainage map of Yavatmal district is shown in **figure. 1.7**

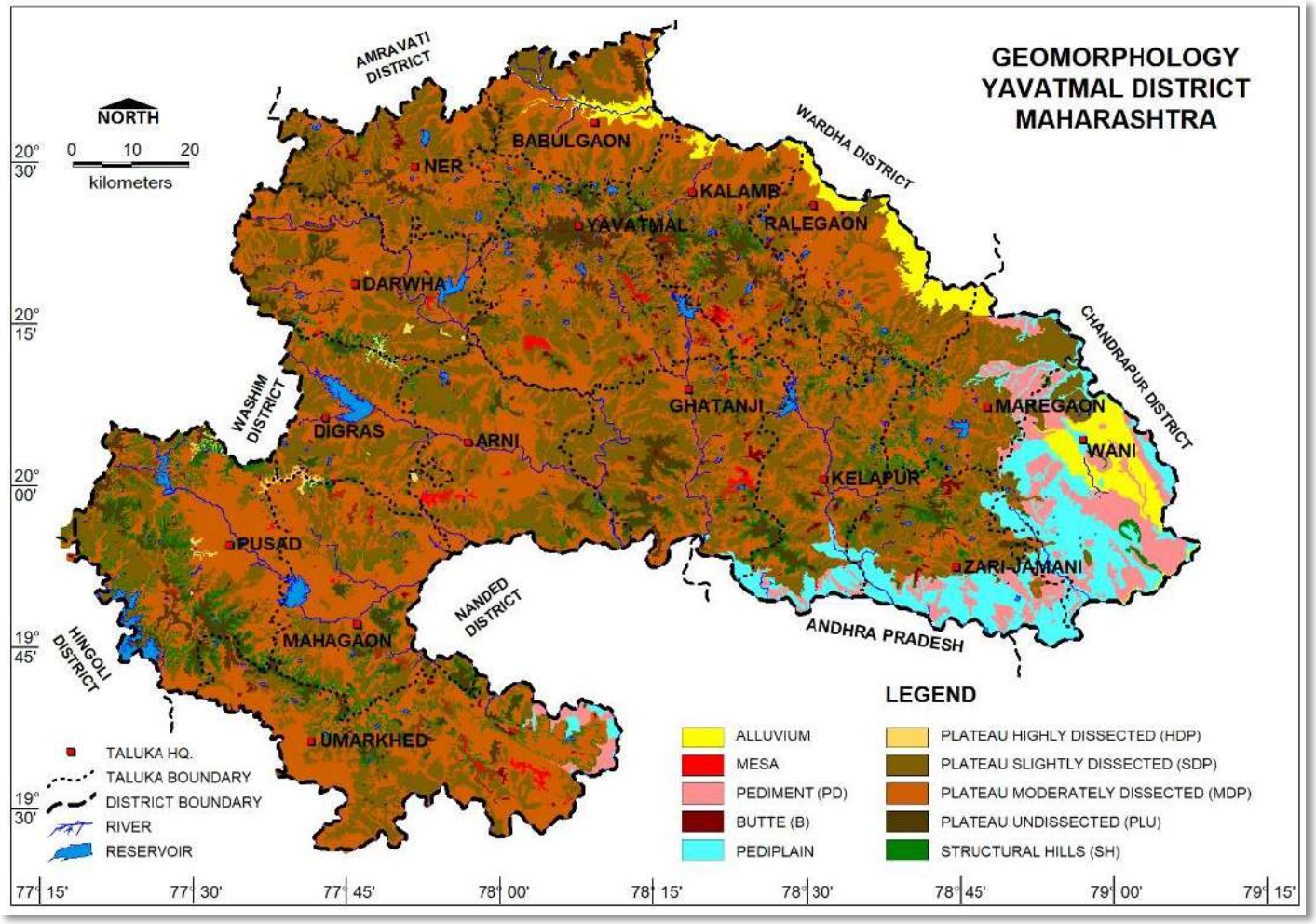


Figure 1.7 Geomorphology, Yavatmal District

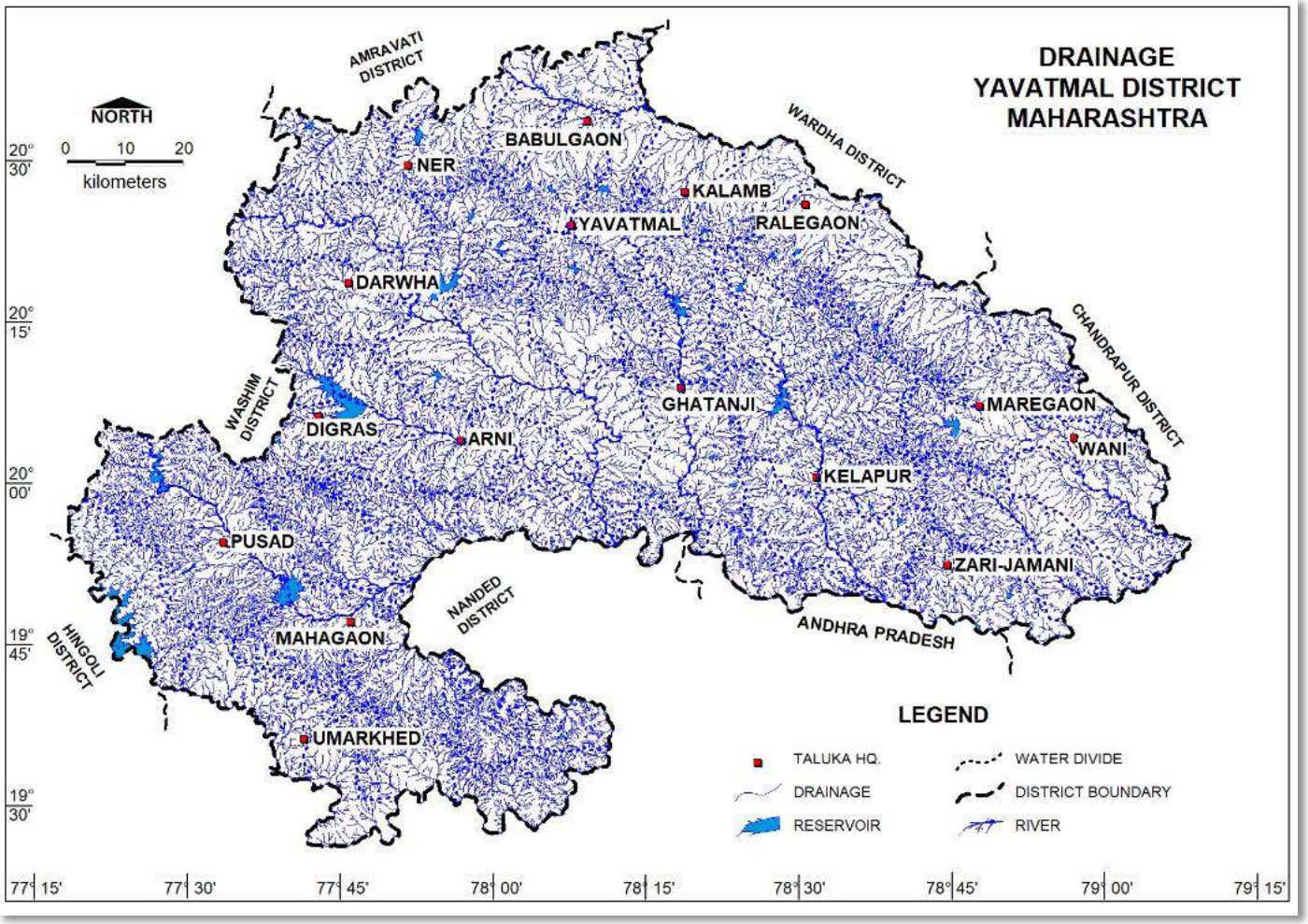


Figure 1.8 Drainage map, Yavatmal District

1.7 Landuse

The socio-cultural and economic factors have significantly influenced over land use both in rural and urban areas in the district. Land forms, slope, soils and natural resources are some of the important which control the land use pattern of the district. The land use pattern of district is based on the statistical outline of the district 2020, published by Government of Maharashtra and is presented in **table 1.2** and **figure 1.8.** Detailed landuse pattern is shown in landuse map in **figure 1.9.**

Table 1.2 Land Use Pattern of Yavatmal District

S.No.	Land Use	Area in sq.km	%
1	Total geographical area	13519.26	
2	Forest	2537.69	18.77
3	Uncultivable Land	1016.36	7.52
4	Land not cultivated including pasture land; barren land; trees, grooves and orchards	564.43	4.18
5	Fallow and current fallow land	683.79	5.06
6	Actual sown area(Subtracting double)	8868.87	65.60
7	Gross sown area	10117.09	74.83
8	Area sown more than once	1843.49	13.64

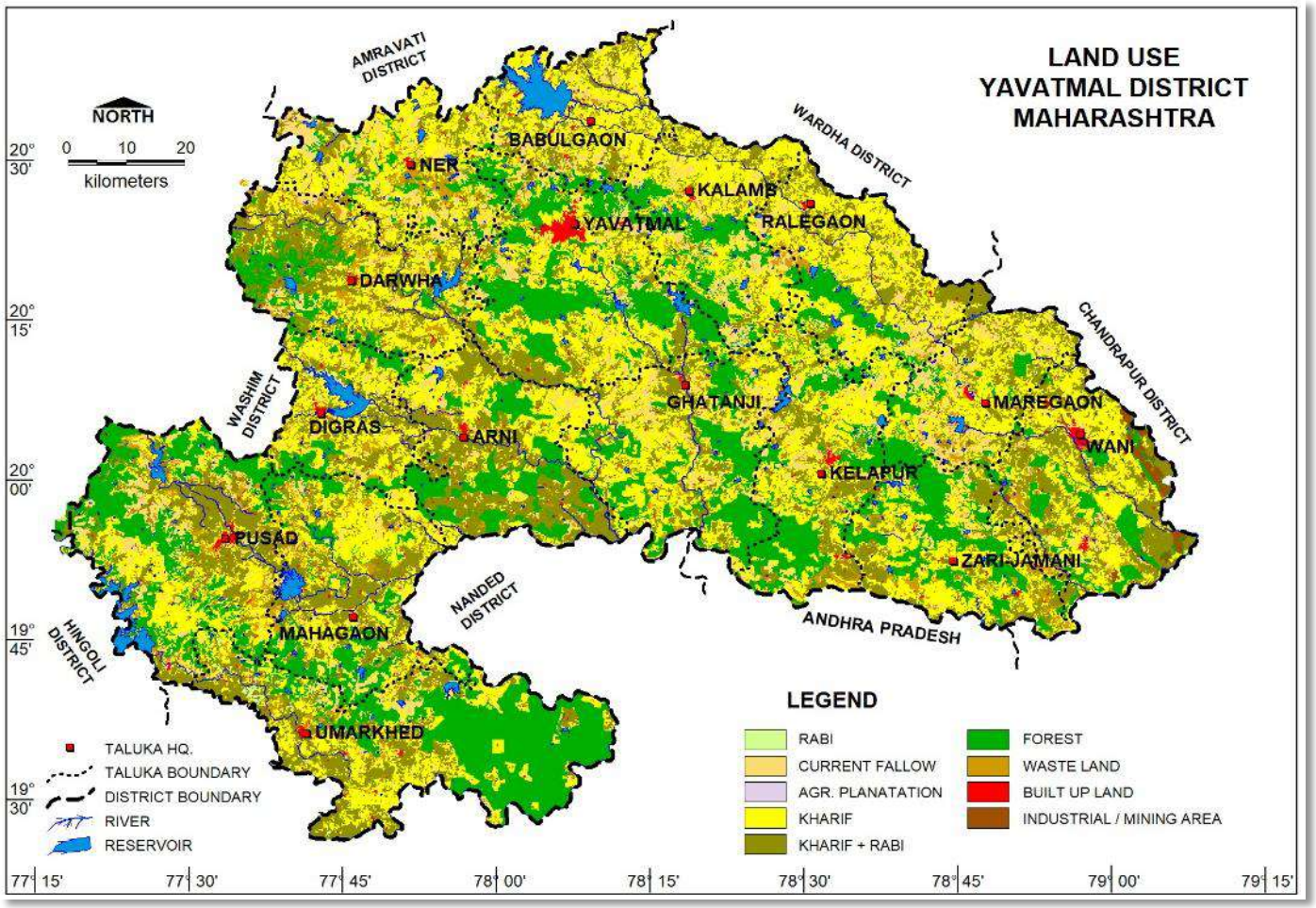


Figure 1.9 Land use, Yavatmal District

1.8 Agriculture

Agriculture activity in the district is, by and large, confined to traditional kharif cultivation depending on monsoon rainfall and rabi cultivation is prevailing in areas where irrigation facilities are available. The major crops grown in the area are given in Table no. 1.3. Cotton is the most important crop under the rain fed. Soybean, pigeon pea, Sourghum, green pea, black gram also grown in this rain fed. Although some crops like gram, wheat and safflower were grown in rabbi season. The main crop remains wheat in Yavatmal district during post rainy season. The most prominent cropping pattern followed by the farmers of Yavatmal was Cotton and Tur.

Table 1.3 Major crops of Yavatmal District

Food Grain	Wheat, Jowar, , Barley, Maize,
Cereals	Gram, other kharif cereals, Tur, other rabbi cereals
Oil seeds	Soyabean and Ground Nut
Non-food grains	Sugarcane, Cotton, Onion, Red chilli, Mango, Banana, Potato, Tomato, Brinjal,

1.9 Irrigation

The principal means of irrigation in the district are through wells though very small areas irrigated by canals (0.075 sq.km.). Ground water plays an important role for irrigation contribute almost 100% and is utilized through dug wells, dug cum bore wells and bore wells run almost by electricity in the area. There are total 73652 utilizable wells 268 ponds and 65089 irrigation Tubewells in the district. Details of Area irrigated with sources in Yavatmal District is given in Table 1.4.

Table 1.4 Details of Area irrigated with sources in Yavatmal District

District	Dugwells	Ponds	Canals	Other	Total
Yavatmal	65089	268	225	1189	66771

Source: District Outline, Yavatmal, 2020

1.10Forest

The area under forests in the district is 2537.69 sq. km. The forests in this district lie well distributed except in the northern portions. The forests, however, are confined to blocks of various sizes. Yavatmal has one fifth of its area covered by forests of various kinds. Most of these forests are found in Digras, Ghatanji, Pusad and Yavatmal talukas.

1.11Hydrology

About 14 irrigation projects exists in the area (5 Major And 9 Minor) which have been taken up on different tributaries of Wardha and Penganga River. The Gross command area and current command area of these projects is presented in table-3.8. There are

many man-made surface reservoirs. The various tanks and bunds made are used for irrigation and other purposes, details of Minor Irrigation Schemes are given in **table 1.5.**

Table 1.5 Block-wise Major/ Medium Irrigation Schemes in Yavatmal District

S.no	Block	Project name	Major/ Medium	Gross Command Area(ha)	Current Command Area(ha)
1	Ner	-	-	-	-
2	Babulgaon	Bembada	Major	67813	14621
		Wardha Bairage	Medium	7855	0
3	Kalamb	-	-	-	-
4	Yavatmal	Waghadi	Medium	15276	4295
		Borgaon	Medium		
5	Darva	Talki Do	Medium	27234	7711
		Goki	Medium		
		Adan	Medium		
6	Digras	Arunawati	Major	30170	786
7	Pusad	Esapur	Major	41199	18317
		Pus	Major		
8	Umerkhed	-	-	-	-
9	Mohagaon	Adharpus	Medium	10732	6197
10	Arni	-	-	-	-
11	Ghatanji	Painganga	Major	218129	0
12	Kelapur	Saikheda	Medium	4865	2551
13	Ralegaon	-	-	-	-
14	Maregaon	Navargaon	Medium	2878	1229
15	Zarijamni	-	-	-	-
16	Wani				

Source: District Outline, Yavatmal, 2020

Table 1.6 Block-wise Minor Irrigation Schemes in Yavatmal District

S.no	Block	ZP level	local level	Percolation tank	KT	Storage Bhandara
1	Arni	1	6	7	5	61
2	Babulgaon	4	4	6	31	14
3	Darva	5	12	21	19	149
4	Digras	3	3	8	6	52
5	Ghatanji	4	4	16	11	83
6	Kalamb	8	18	18	30	81
7	Kelapur	7	6	16	15	51
8	Maregaon	7	8	10	23	20
9	Mohagaon	6	9	18	19	42
10	Ner	11	13	20	26	64
11	Pusad	3	14	39	16	38
12	Ralegaon	14	2	28	31	31
13	Umerkhed	9	4	15	3	53
14	Wani	2	0	4	6	51
15	Yavatmal	10	16	33	53	77
16	Zhari Zamni	8	4	9	8	20

Source: District Outline, Yavatmal, 2020

1.12Soil Types

Most of the land in the district is of good standard and is covered by black cotton soil. The soils are classified into three major groups based on the physical characteristics. The distribution of major types of soils in the district is shown in **Figure-1.9**

Shallow coarse soil

II) Medium black soil

III) Deep black soil

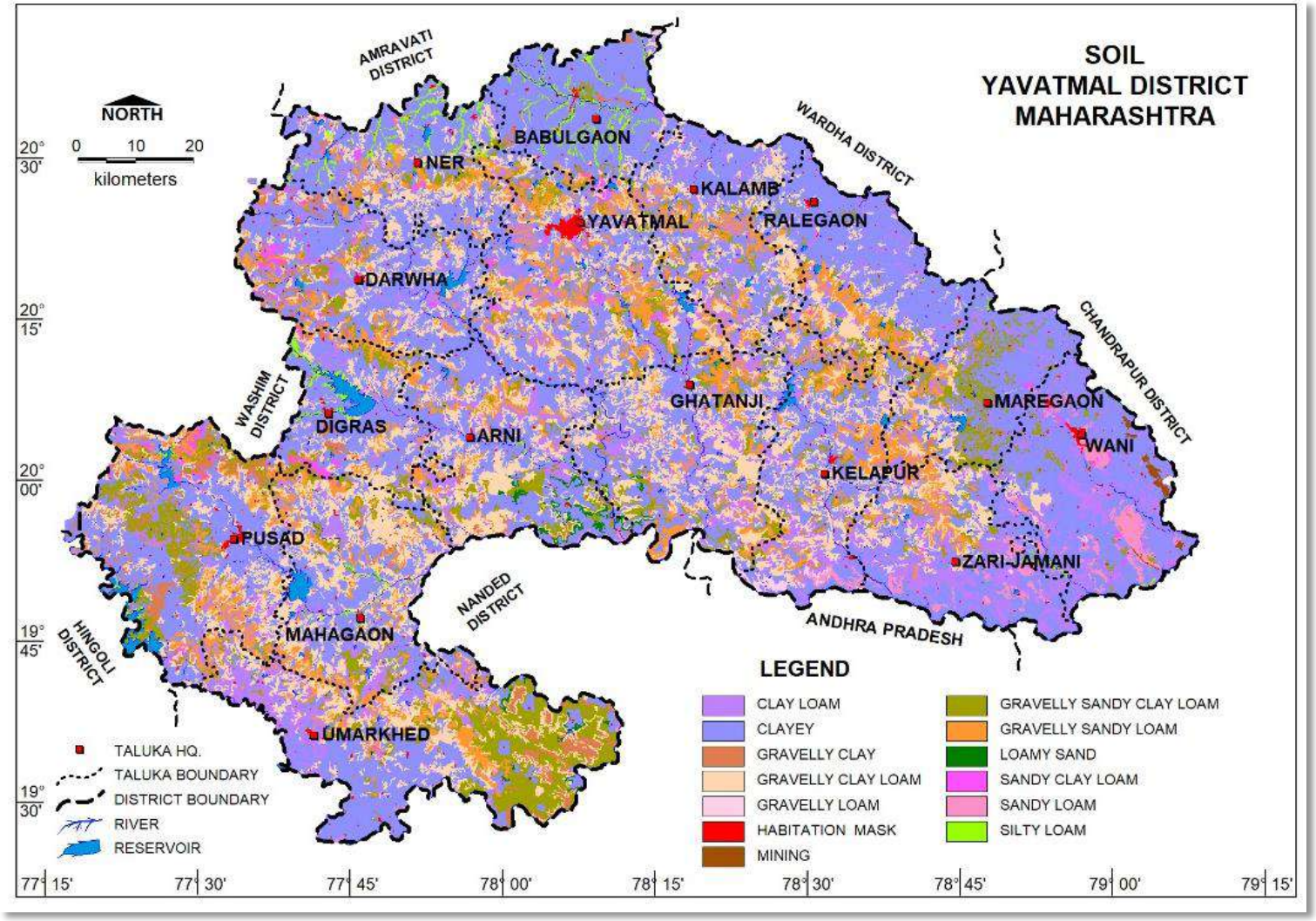


Figure 1.10 Soil map, Yavatmal District

1.13Soil Infiltration Test

To estimate the actual rate of infiltration in various soil types and their impact on recharge to ground water in Yavatmal district, 5 soil infiltration tests were conducted at Veni, Titwi,Umri,Mojari and Dahegaonon various soil types. The data has been analyzed and the salient features of the soil infiltration tests are presented in Table 1.1. The duration of the test ranged from 70 to 160 minutes and the infiltration rate in the area ranged from 1.8 to 7.2 cm/hr. Infiltration rates at different times were calculated and a graph of infiltration rate against time was plotted and shown in Annexure -VII

Based on soil infiltration test it is observed that:

- Soils with low Infiltration rate shall be responsible for high runoff and become saturated during rain events. There will be less recharge to ground water. This, in turn, decreases soil strength and increases erosion potential.
- Soils that have less Infiltration rates lead to an increase in the overall volume of runoff. The excess run off caused by low Infiltration rate of soils may also contribute to local and regional flooding of streams and rivers or may result in accelerated soil erosion of fields or stream banks.
- Soil infiltration rate varies from 1.8 (Dahegaon block) to 7.2 cm/hr (Babulgaon block).

Table 1.7 Salient Features of Infiltration Tests

S.No.	District	Block	Location	Latitude	Longitude	Rate of infiltration (cm/hr)
1	Yavatmal	Babulgaon	Veni	20.53306	78.25758	7.2
2	Yavatmal	Ghatanji	Titwi	20.0643	78.42596	4.8
3	Yavatmal	Kalamb	Umri	20.44352	78.45166	3.6
4	Yavatmal	Ner	Mojari	20.50954	77.79402	5.4
5	Yavatmal	Yavatmal	Dahegaon	20.20273	78.72065	1.8

1.14Geology

Basaltic lava flows of Deccan Trap of Upper Cretaceous to Lower Palaeocene age occupy the major part of the Yavatmal district (**Figure 1.11**). The other rock types include granite-gneiss of Peninsular Gneissic Complex, limestone, shale, dolomitic limestone of Penganga Group and Gondwana Super group of rocks, comprising Talchir, Barakar and Kamthi Formations and cherty limestone, grit and sandstone of Lameta Group. The regional geological succession in Yavatmal district is presented in **Table1.8.**

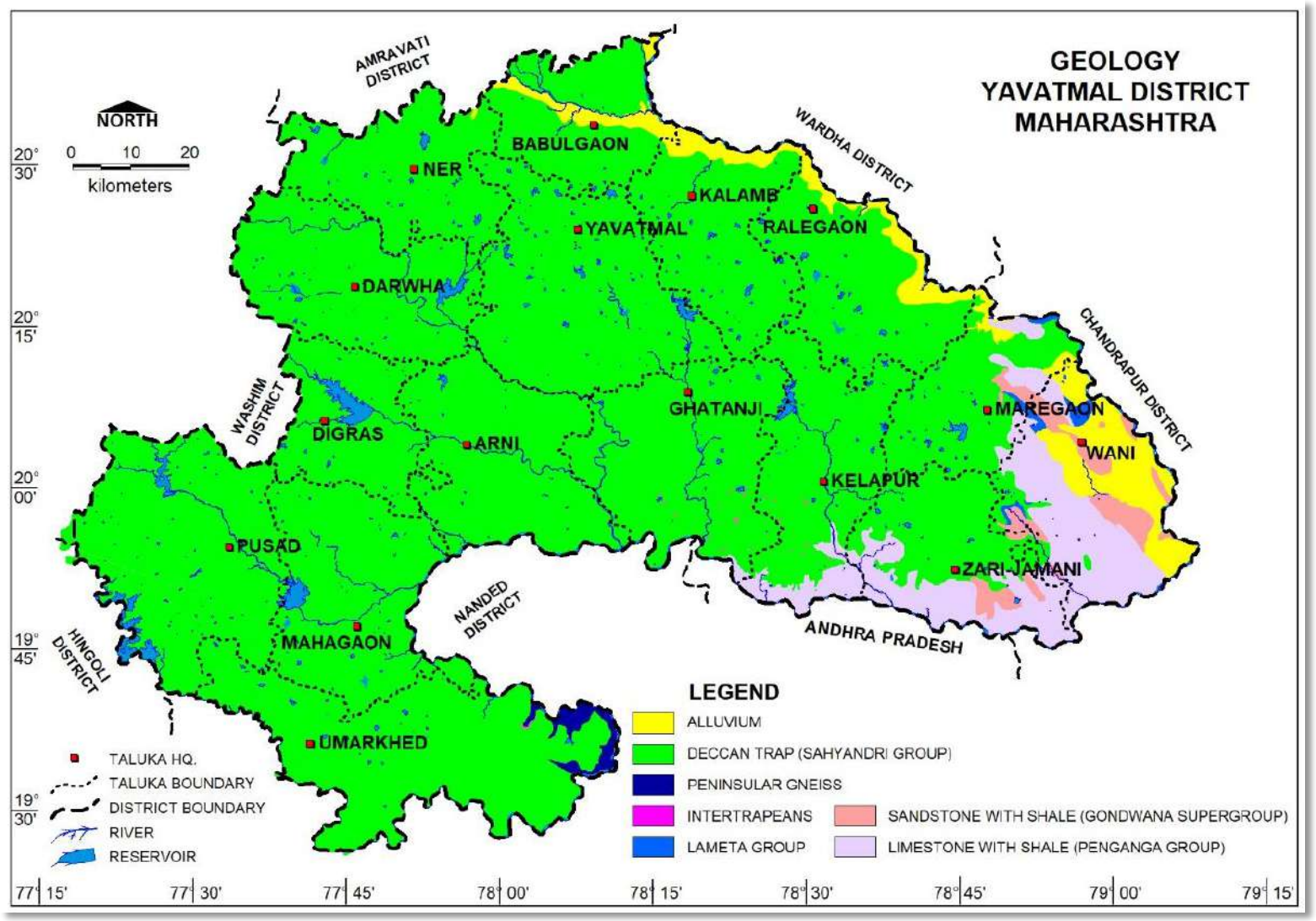


Figure 1.11 Geological Map of Yavatmal District

Table 1.8 Regional Geological Successions in Yavatmal District

Stratigraphic Status		Age	Lithology	Thickness	Nature and characteristic
		Quaternary	Alluvium	--	Alluvium comprises gravel bed, siltstone and clays
		Cainozoic	Laterite	--	Reddish to brown in colour, massive & ferruginous in nature
Sahyadri Group (Deccan Trap)	Karanja Formation	Cretaceous to Palaeocene (68-62 m.y)	2 to 5 "aa" basaltic lava flows.	160 m	Dark grey, fine grained massive, hard and compact and non-to sparsely porphyritic.
	Buldhana Formation		"aa" basaltic lava flows.	50 m	Dark grey, fine grained massive, hard and sparsely to moderately porphyritic.
	Chikhli Formation		11 "aa" & 1 compound basaltic lava flows.	90 m	Dark grey, fine to medium grained, massive, hard, compact and non- to moderately porphyritic
	Ajanta Formation		5 "aa" and 9 "pahoehoe" basaltic lava flows.	154 m	Dark grey, fine to medium grained, massive, hard and compact, sparsely to highly porphyritic
Intertrappean Beds (Mainly Limestone)			Limestone is white to grey in colour, hard, compact, cherty and fossiliferous.		
Lameta Group	Lameta Formation	Cretaceous	Sandstone with sandy clay bands and cherty Limestone	--	Sandstone is variegated, unconsolidated with clay bands and current bedded. Limestone is cherty.

Stratigraphic Status		Age	Lithology	Thickness	Nature and characteristic
Gondwana Supergroup	Kamthi Formation	Permian to Triassic	Sandstone and Shale	--	Yellowish brown to yellowish brick red in colur, medium to coarse grained with variegated shale
	Barakar Formation	Permian	Sandstone	--	Dirty white, white, grey, coarse grained.
	Talchir Formation	Carboniferous to Permian	Shale	--	Greenish to chocolate in colour, thinly bedded and soft rock.
Penganga Group	--	Neo-Proterozoic (Undefined)	Limestone/Shale & Sandstone/dolomite and Limestone	--	Limestone is pink to grey, fine grained &non-crystalline. Sandston hard, massive & compact. Shale is red, fine grained & shows fissility.

(Source DRM 2001)

Alluvium comprises gravel bed, siltstone and clays and is quaternary in age.

The Gondwana include Talchir boulder bed, sandstones and shales belonging to Kamthi and Barakar. Coal seams are also found to occur in Barakar and Kamthi sandstones.The Lametas are overlying un-conformably over the Gondwana and consists of green to brick red clay with intercalated zones of limestone's and sandstones. The limestone's are hard and compact in nature and are dirty black in colour while sandstones are fine to medium grained in texture, sometimes grading to coarse grained sand-stones which are greyish to greenish buff in colour.

Deccan Traps which are occupying major portion of the district comprises of different lava flows. In general each flow consists of vesicular basalt at the top and massive basalt at the bottom. The massive Basalt are fractured and jointed. It is observed that the flows occurring between altitudes of 98 m, and 350 m above mean sea level are the prevalent new types. Two flows are, in general, separated by inter-trappean beds and in some area by red bole beds.

1.15 HYDROGEOLOGY

Deccan Trap Basalt is the predominant water bearing formation, followed by Gondwana formation having Sandstone and Shale sequence. Penganga beds consisting of limestone and shale and Quaternary Alluvium aquifers are spread in limited areas.

Archaean aquifers are limited and have less significance in the area. A map depicting the hydrogeological features is shown in **Figure 1.12.**

- **Major Aquifer Systems**

There are two major aquifer systems in the district area namely Alluvium and Basalt. Water table contour map is shown in **Figure 1.13.**

Archaean

Achaeans, which comprise granites, granitic gneisses and schists, occur in Umarkhed taluka. These rocks as such have limited ground water potential. In these rocks only, weathered and jointed portions possess water-bearing capacity and ground water occurs under unconfined condition in the area.

Vindhyan

In Vindhyan, Limestone's are water bearing formation while Sandstone, due to their hard and compact nature, has poor ground water potential and occur in south-eastern peripheral parts of Wani taluka. The limestone as such are massive but wherever there are caverns the rock is capable of holding huge quantity of water. The ground water occurs under unconfined condition in the area.

Gondwana

The Gondwana consists of Kamthi and Barakar Sandstone and Shale and occupy north-south extending elongated stretch in parts of Maregaon and Wani talukas. Sandstone is usually friable and possesses primary porosity due to its granular nature. They are most productive water bearing formations in the district. The ground water occurs under semi confined to confined conditions in the area and water bearing zones have been encountered down to depth of 470 m.

Deccan Trap Basalt

Deccan Trap Basalt is widely spread and forms important water bearing formation, which occupies almost entire district except south eastern part. On the whole, Deccan Trap Basalt exhibits a multi aquifer system. Deccan basalts are hydro geologically in-homogeneous rocks. It comprises of two distinct units viz, upper vesicular unit and lower massive unit. Each individual lava flow consists of lower massive part becoming vesicular/amygdaloidal towards top, range in their individual thickness from a few centimetres to tens of meters. The massive basalt is hard, compact and does not have primary porosity and hence impermeable. Weathering, jointing and fracturing induces secondary porosity in massive unit of basalt. In vesicular basalt, vesicles are invariably found filled with secondary minerals like zeolites, calcite and quartz etc. thereby reducing primary porosity to almost nil. When weathered constitutes promising horizons for storage and movement of ground water. Ground water occurs under phreatic/ unconfined to semi-confined conditions in basalts. Based on the litholog of 51 exploratory wells and Piezometers, it is observed that weathered/jointed/ fractured parts of the Basalts mainly form the shallow aquifer down to the depth of 25 mbgl, however, fracture zones have also been encountered within 80 m range except at few places where it occurs down to 158 m also.

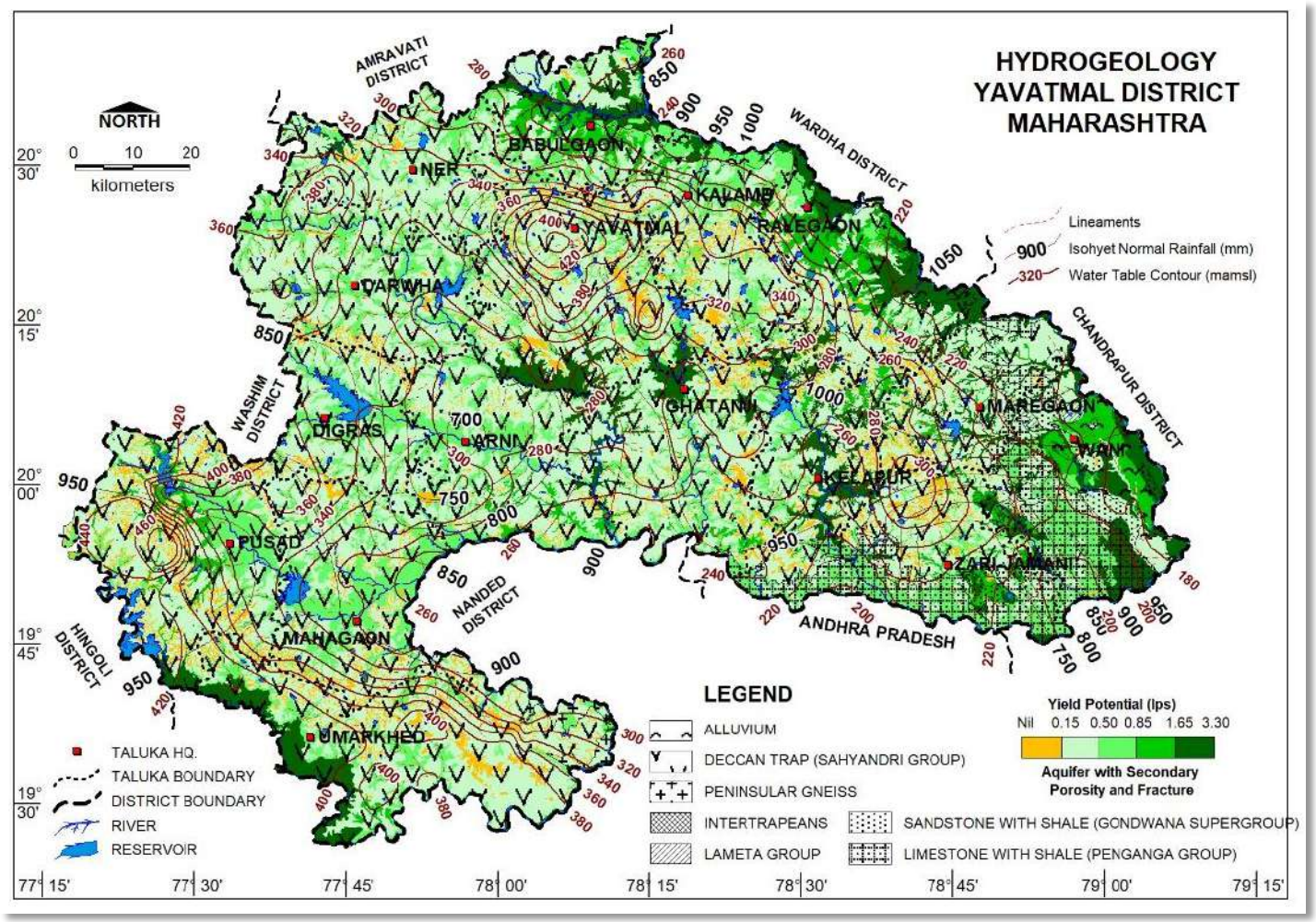


Figure 1.12 Hydrogeology

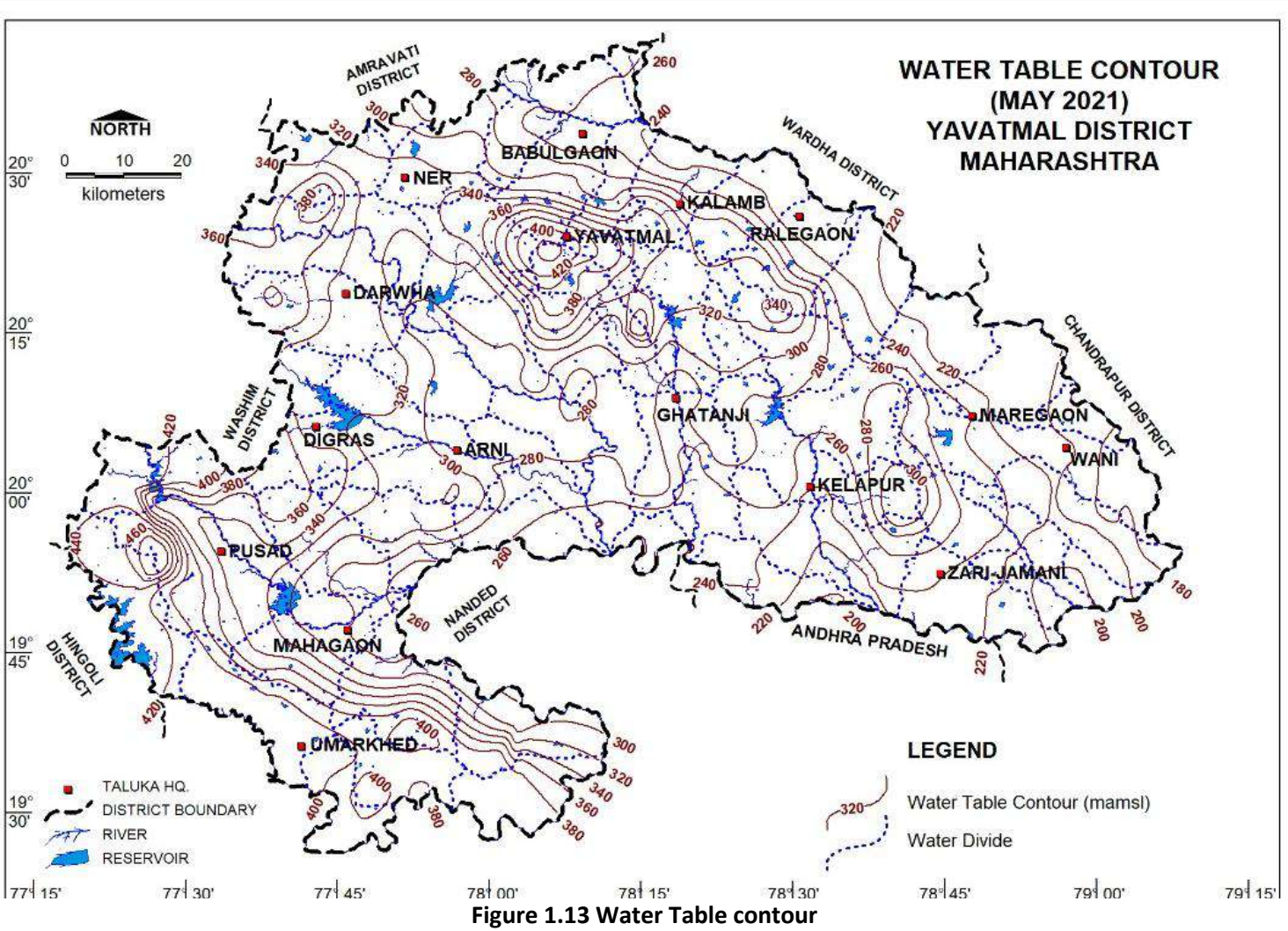


Figure 1.13 Water Table contour

Alluvium

Alluvium occurs in patches along the banks of Wardha and Penganga rivers and their major tributaries and consists of clay and silt with lenticular bodies of sand and gravel. In Ralegaon area, it is observed that sand zones are found in the depth range of 20-25 mbgl, while the top 15-16 m is full of clay and silt. Ground water in Alluvium occurs both under unconfined and semi-confined conditions.

The depth of occurrence and fractured/granular rock thickness map is shown in **Figure 1.14** and **Figure 1.15** respectively and the aquifer-I, aquifer-II yield potential map is shown **in Figure1.16 andFigure 1.17** respectively. Aquifer Characteristic of Yavatmal district is given in **table 1.9.**

Table 1.9 Aquifer Characteristic of Yavatmal district

Major Aquifers	**Basalt (Deccan Traps)**		**Sandstone**	
Type of Aquifer	**Aquifer-I**	**Aquifer-II**	**Aquifer-I**	**Aquifer-II**
Formation	Weathered/Fractured Basalt	Jointed / Fractured Basalt	Sandstone	Sandstone
Depth of Occurrence (mbgl)	8-30	30-182	8-45	30-480
SWL (mbgl)	0.3-27.5	1.55-86.00	2.5-19	3.60-19.00
Granular/Weathered /Fractured rocks thickness (m)	5-30	1-20	5-30	6-60
Fractures/granular zone encountered (mbgl)	Upto 35	Upto 182	Upto 45	Upto 480
Yield	1-100 m^3/day	Upto 3.30 lps	10-100m^3/day	Upto 18.00 lps
Sustainability	1 to 3 hrs	0.5 to 3 hrs	1 to 5 hrs	1 to 7 hrs
Transmissivity (m^2/day)	30 to 80 m^2/day	0.1 to 294.86 m^2/day	-	2.26 to 60.97 m^2/day
Specific Yield/ Storativity (Sy/S)	0.019 – 0.028	8.76 $x10^{-5}$ to 3.65 X 10^{-4}	0.030	1.07 $x10^{-5}$ to 4.40 X 10^{-4}
Suitability for drinking/ irrigation	Suitable for Drinking and Irrigation Except High EC & nitrate	Suitable for Drinking and Irrigation Except High EC & nitrate	Suitable for Drinking and Irrigation Except High EC & nitrate	Suitable for Drinking and Irrigation Except High EC & nitrate

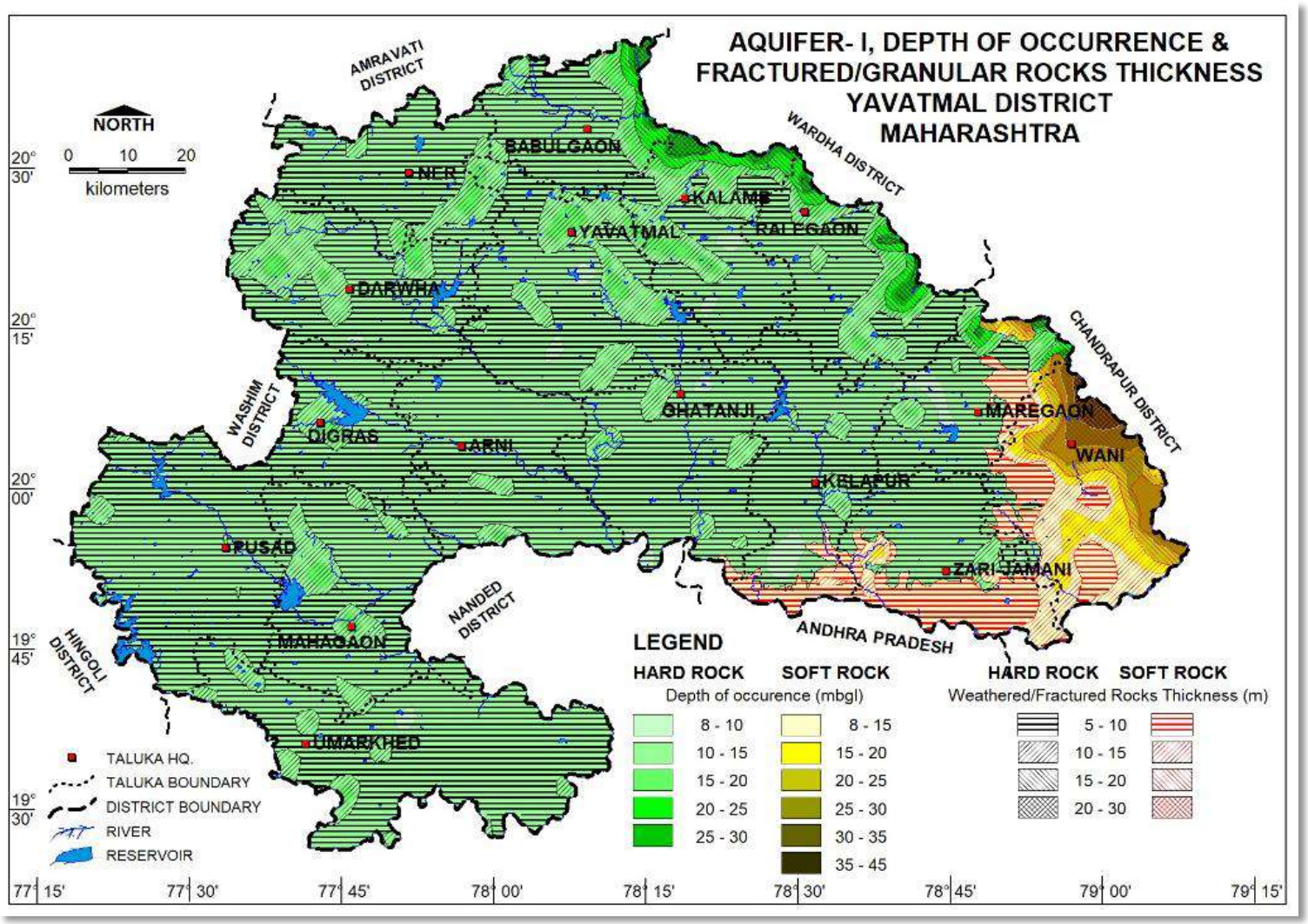


Figure 1.14 Depth of occurrence and fractured/granular rock thickness of Aquifer-I

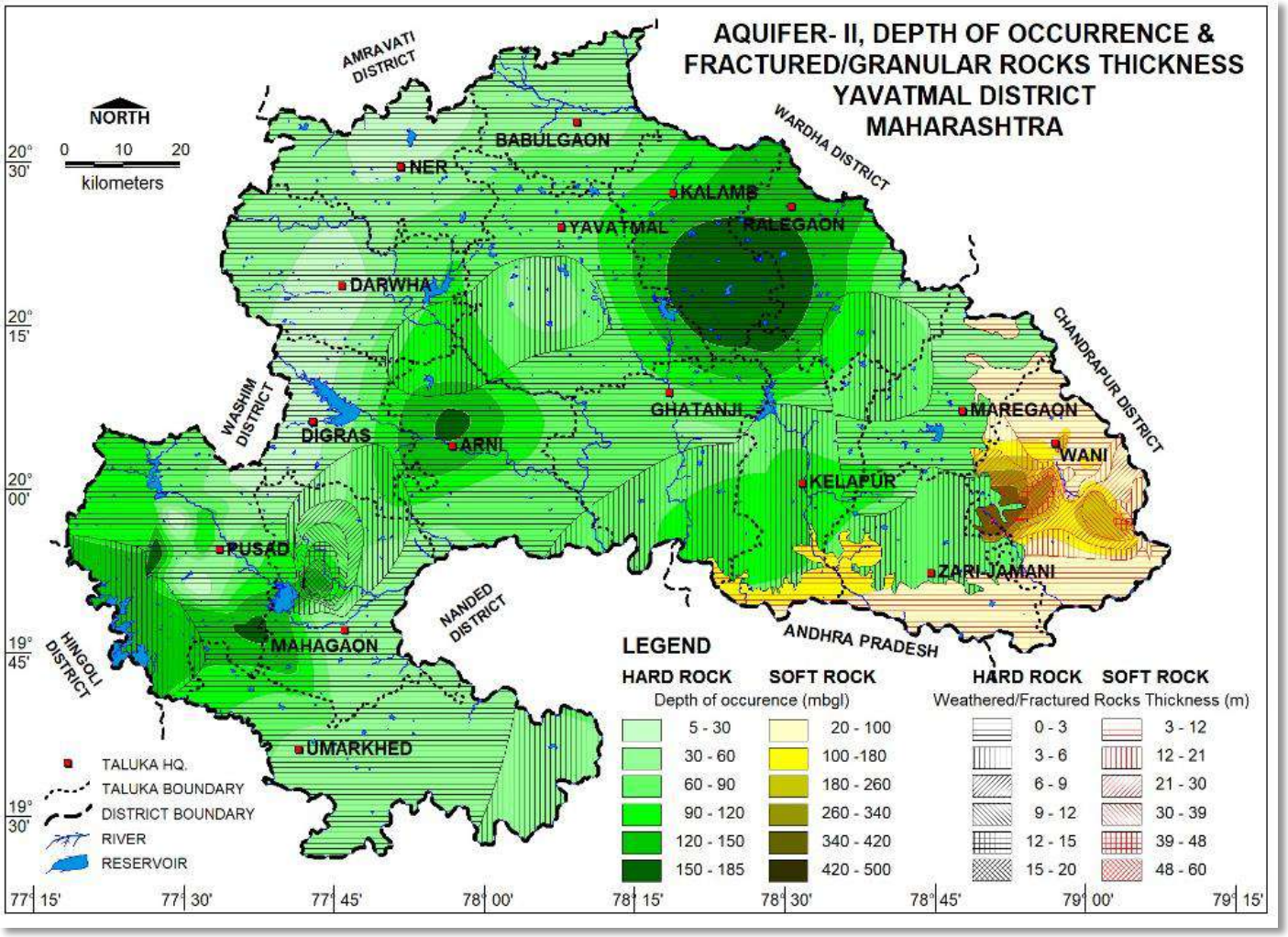


Figure 1.15 Depth of occurrence and fractured/granular rock thickness of Aquifer-II

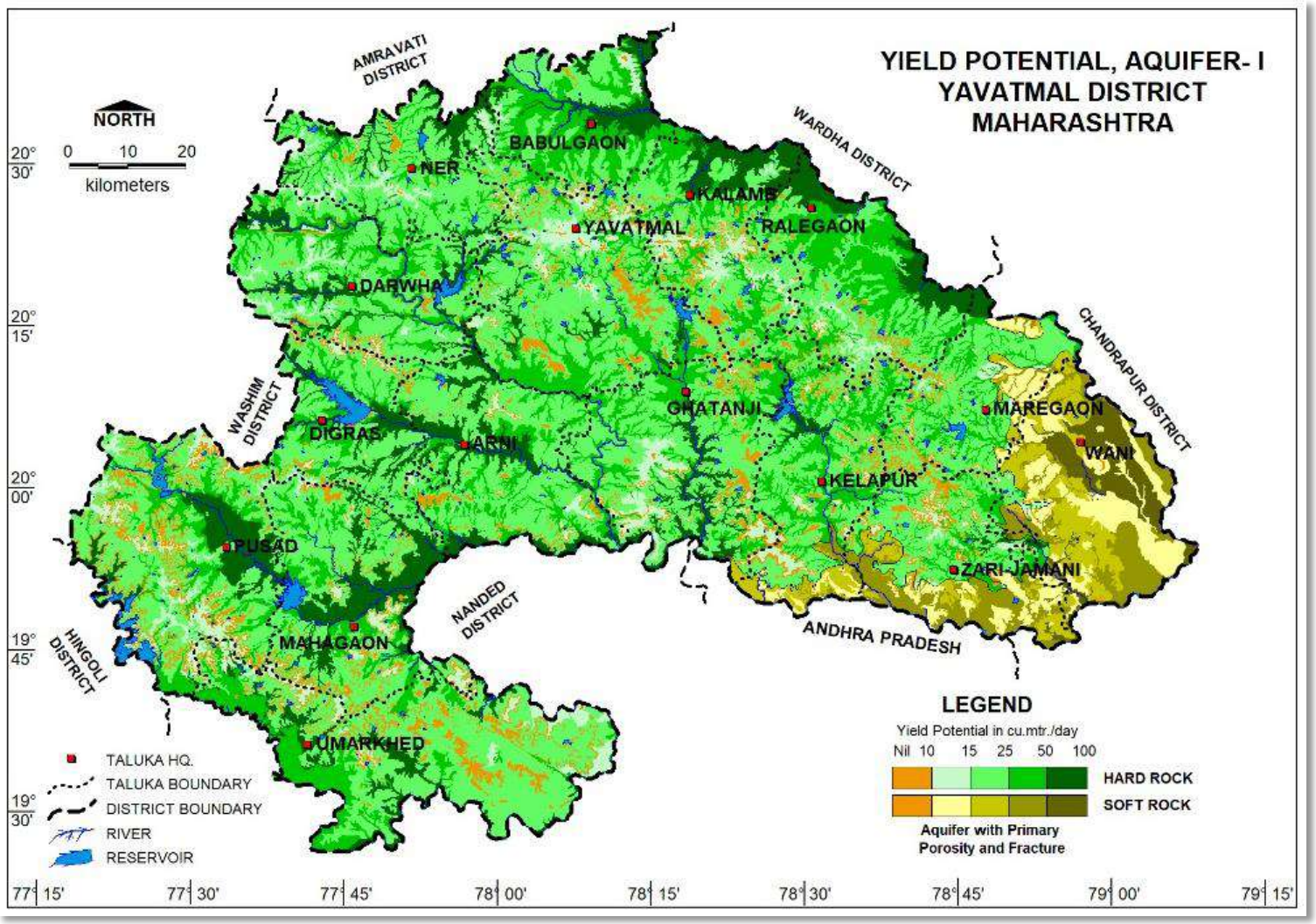


Figure 1.16 Aquifer-I Yield Potential

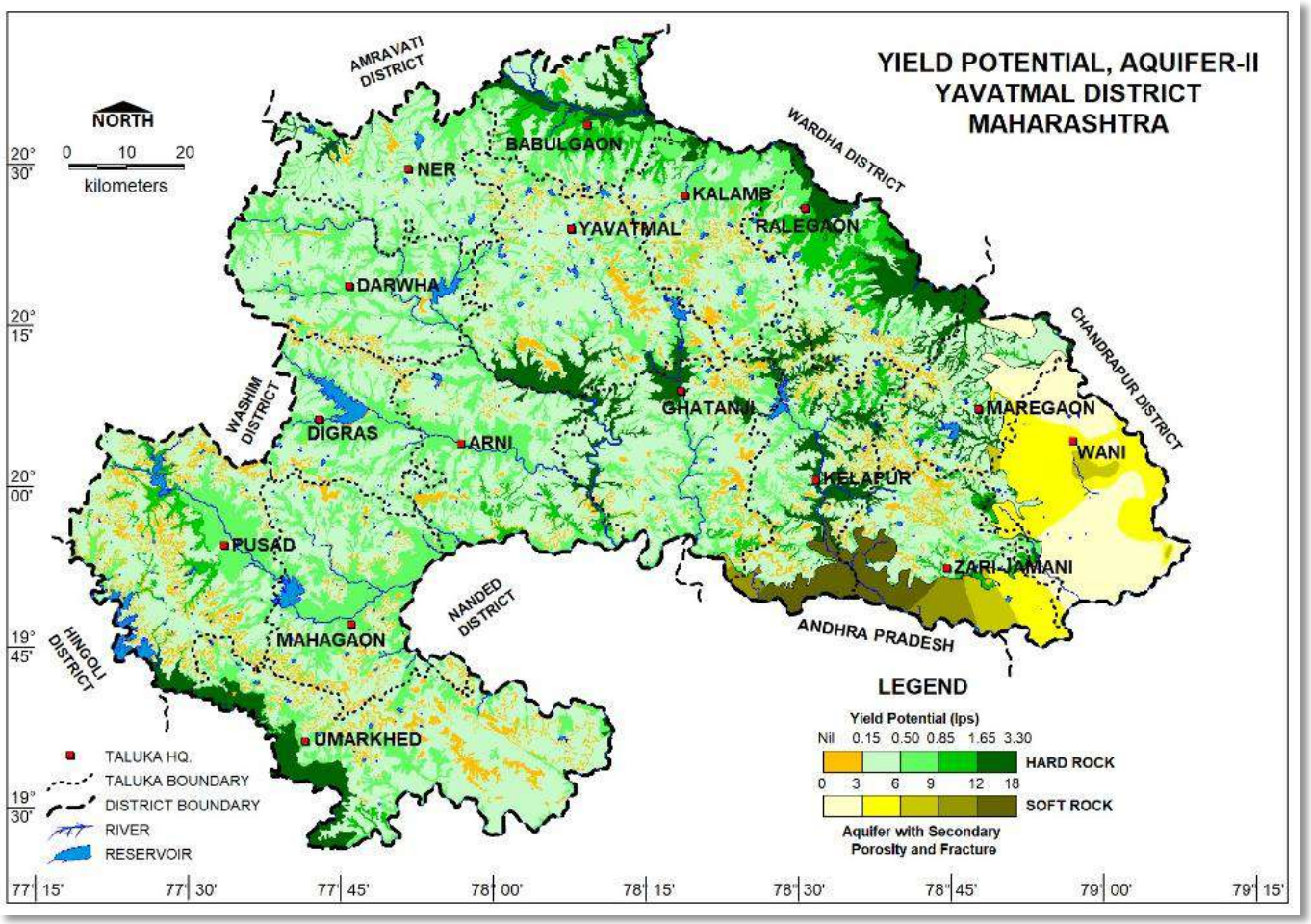


Figure 1.17 Aquifer-II Yield Potential

1.11 Aquifer Parameters

Aquifer parameters are available from ground water exploration carried out in the all over the area of the district. During the pumping tests conducted on the exploratory wells, the transmissivity was found to vary from 0.1 to 294.85 m^2/day in basalt and 2.26 to 60.97 m^2/day in Gondwana. The storage coefficient varied between 8.76x10-5 and 4.4x10-4.

3-D and 2-D Aquifer Disposition

Based on the existing data, 3D aquifer disposition, Fence diagram,bar diagram and Lithological sections along different directions have been prepared and shown in Figure 1.18, 1.19 and 1.20 to understand the subsurface disposition of aquifer system.

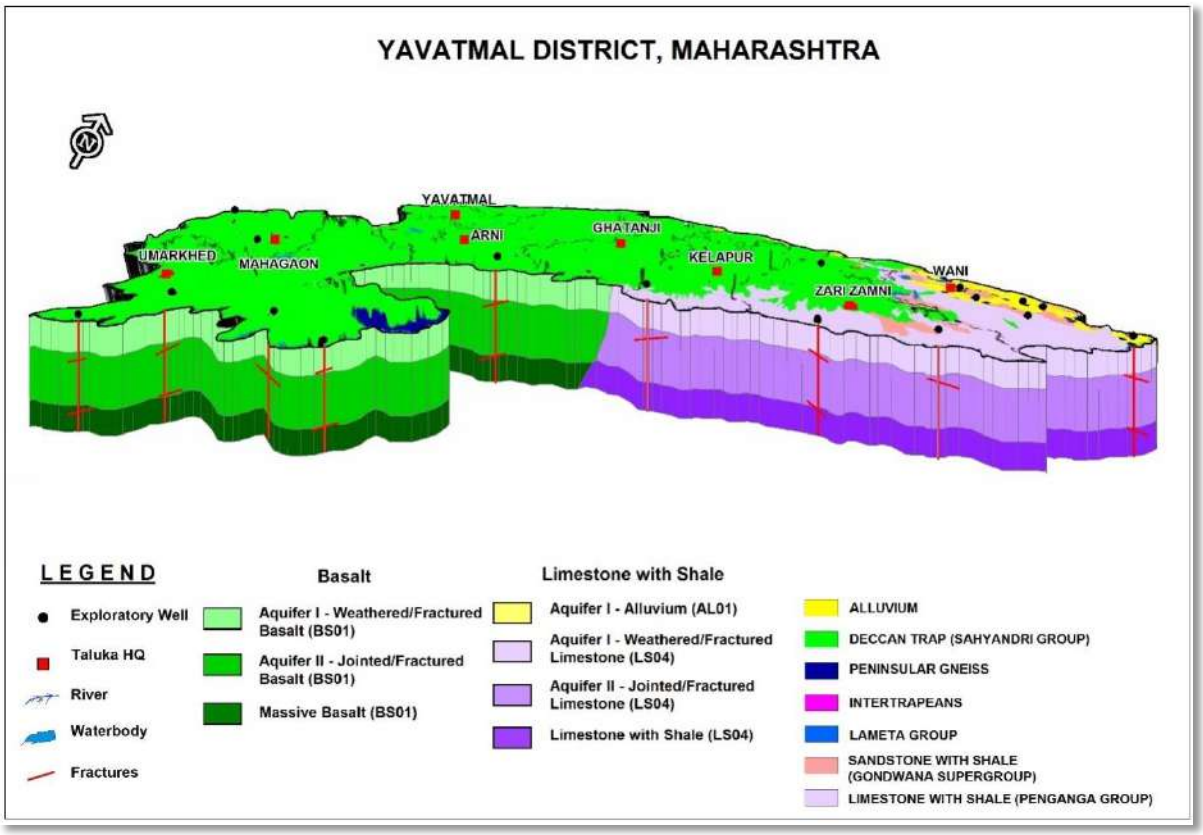


Figure 1.18 3D Aquifer Disposition

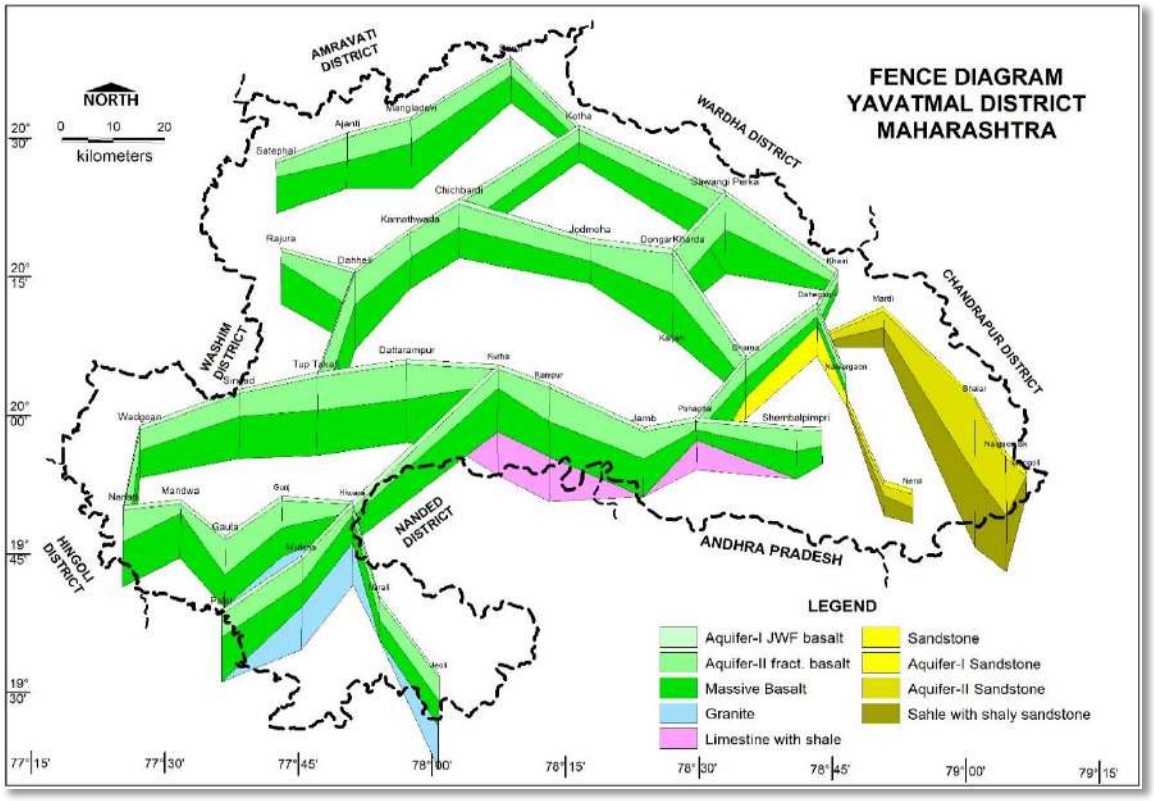


Figure 1.20 Fence Diagram

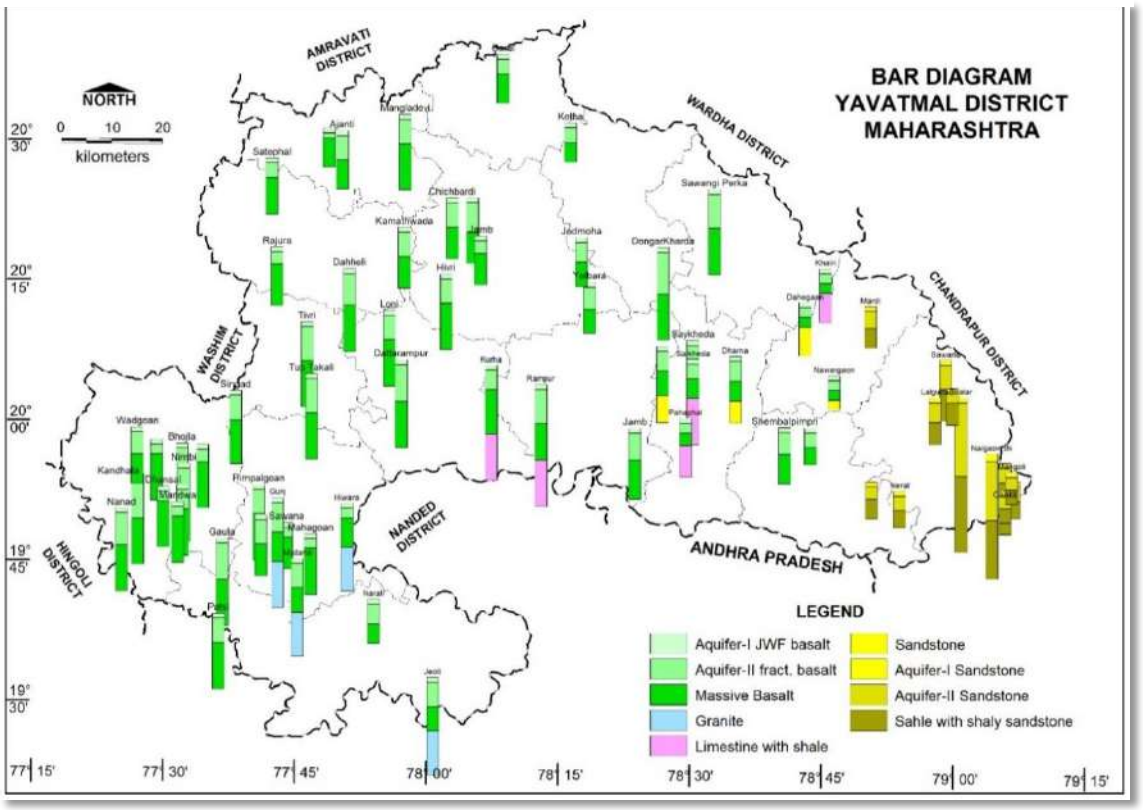


Figure 1.19 Bar Diagram

2. WATER LEVEL SCENARIO

2.1 Depth to Water level of (Aquifer-I/Shallow Aquifer)

Central Ground Water Board (CGWB) and Groundwater Survey and Development Agency (GSDA) periodically monitors 256 Ground Water monitoring wells in the Yavatmal district, four times a year i.e. in January, May (Premonsoon), August and November (Post monsoon) These data have been used for preparation of depth to water level maps of the district. Pre-monsoon and post monsoon water levels along with fluctuation during 2021 and long-term water level trends (2011-2021) are given in Annexure-IV.

Pre-monsoon DTW (May-2021)

The depth to water levels in Yavatmaldistrict during May 2021 rangesbetween 2.00 mbgl (Dharna,Kelapur block) and 19.9mbgl (Gaurala, Maregaon block). The depth to water levels between 2 mbgl and 5 mbgl are observed in isolated patches. The water levels less between 5 mbgl to 10 mbgl covers majority of district. The depth to Water levels between 10-20 mbgl covers part of Maregaon, Wani, Zari Jamani, Umarkhed, Mahagaon, Ralegaon, Ghatanji and Yavatmal.The Premonsoon depth to water level map is depicted in **Figure. 2.1.**

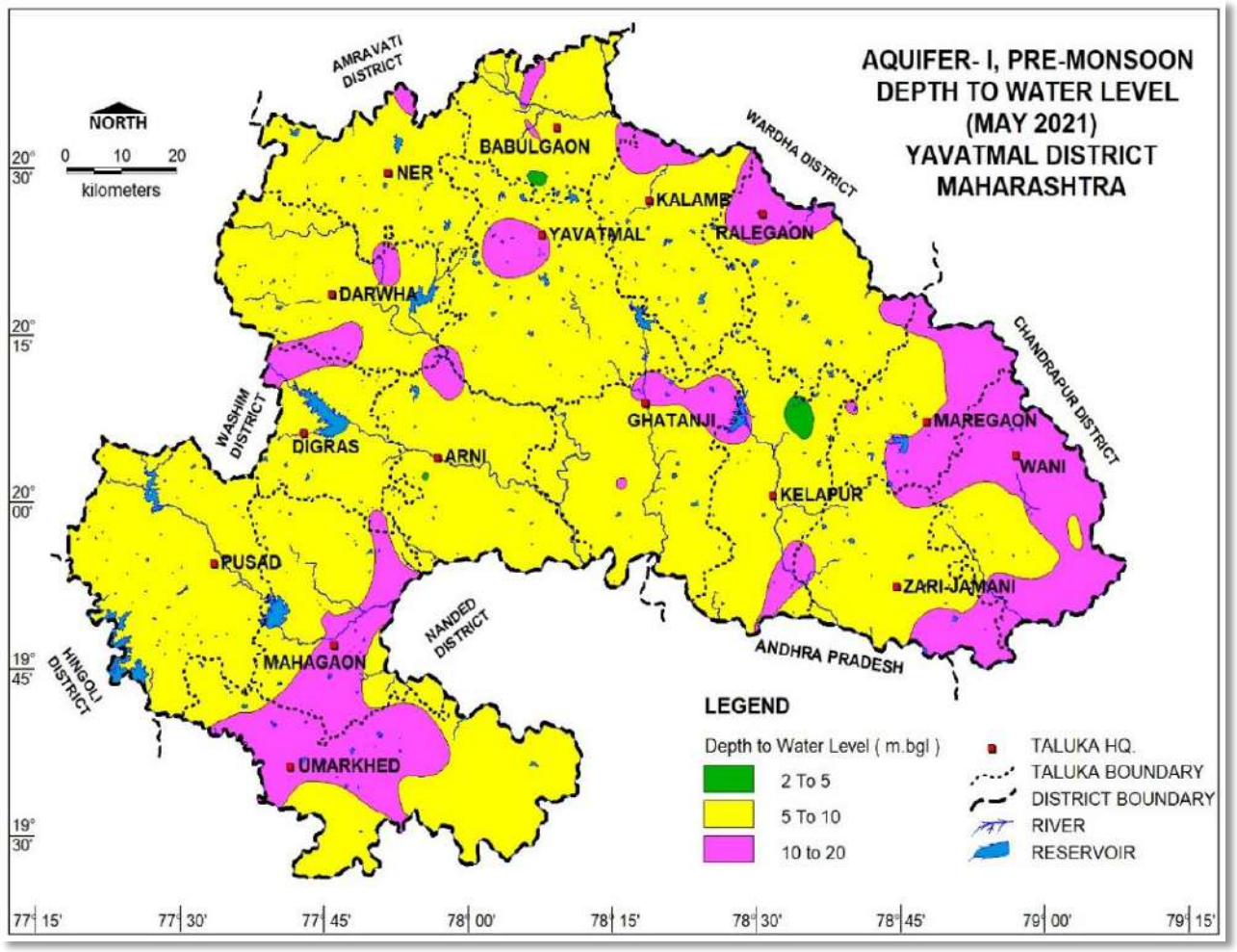


Figure 2.1 DTWL shallow aquifer (May 2021)

Post MonsoonDTW (Nov 2021)

The depth to water levels in Yavatmal district during Nov.2021 ranges between 0.3 (Metikheda, Kalamb block) and 27.05 mbgl (Shiroli_PZ, Ghatanji block). Shallow water levels within 5 m bgl are observed insmall patch at Kelapur and babhulgaon block. Water levels between 5 and 10 m bgl are observed in almost entire areaof Babulgaon, Ner, Darwah, Digras, Pusad, Arni, Ghatanji, Kelapur, Maregaon, Wani, Zhari Zamni, Mahagaon, Ralegaon, Ghatanji and YavatmalBlocks. The depth to water level between 10 to 20 mbgl has been observed in isolated patches of Maregaon, Wani, Zhari Zamni, Umarkhed block and small patches of Yavatmal, Darwah, Ralegaon, GhatanjiBlocks. Spatial variation in post monsoon depth to water levels is shown in **Fig. 2.2.**

2.2 Depth to water level of (Aquifer-II /Deeper Aquifer)

Pre-monsoon Depth to Water Level (May-2021)

The pre-monsoon depth to water levels in deeper aquifer in YavatmalLdistrict during May 2021 range from 2.1 (Ajanti, Ner block) to 40.00 mbgl (Titwi, Ghatanji block). The depth to water levels between 2 mbgl and 5 mbgl are observed in isolated patches at Darwha and Ner block. The water levels less between 5 mbgl to 10 mbgl covers parts of Darwha and Ner block and isolated patch at yavatmal and Zari jamani and Wani block of yavatmal district. The depth to Water levels between 10-20 mbgl covers part of Darwha, Digras, Pusad, Mahagaon, Maregaon, Ner, Wani and Zari Jamani. The depth to Water levels between 20-30 mbgl covers part of Maregaon, Kelapur, Digras, Umarkhed and Mahagaon. The pre-monsoon depth to water level map of Aquifer-II is given in **Figure 2.3.**

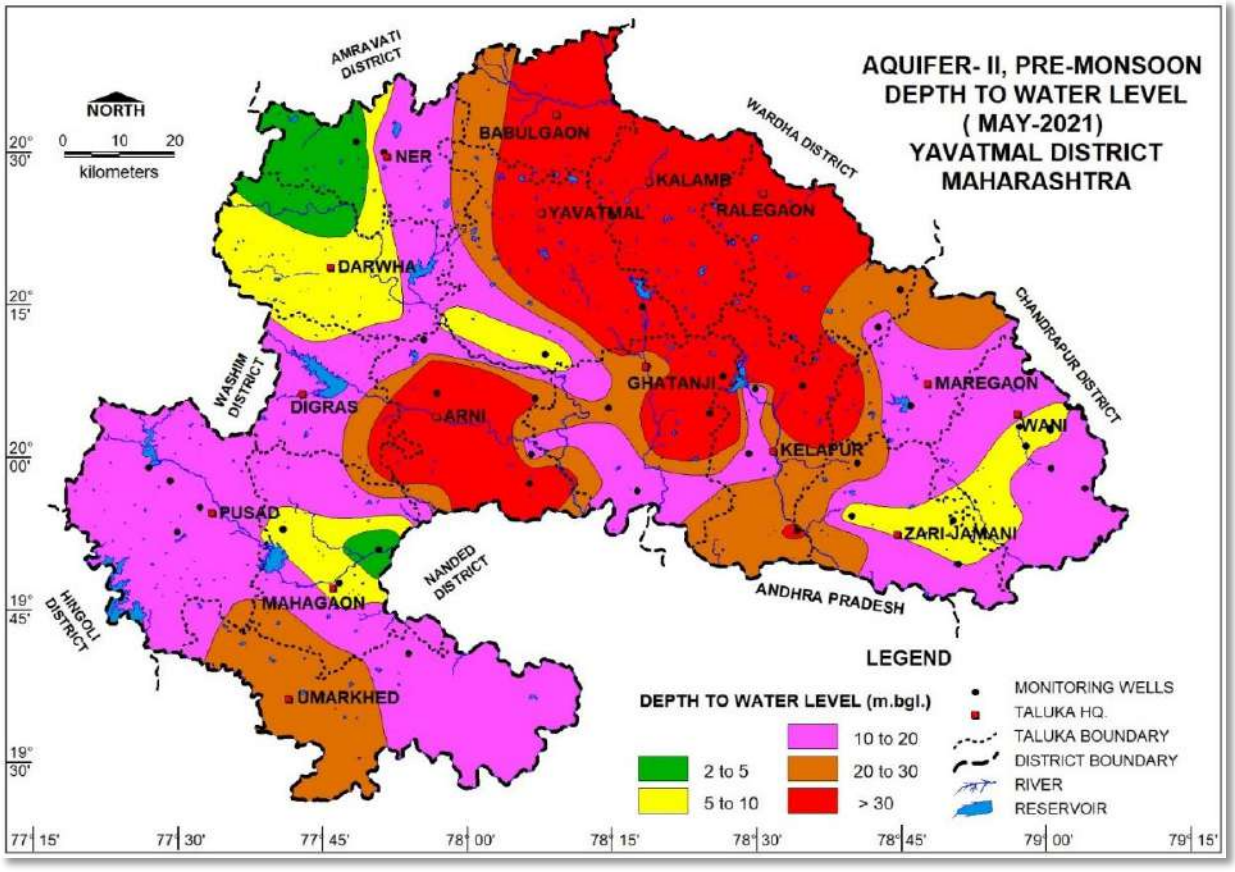


Figure 2.2 DTWL deeper aquifer (May 2021)

Post-monsoon Depth to Water Level (Nov-2021)

In Aquifer-II, the post-monsoon depth to water levels in Yavatmal District during Nov. 2021 range between 1.55 (Lohara, Yavatmal block) and 10.50 mbgl (Kolgaon, Wani block). Depth to water level less than 2 m bgl has been observed in small patch of Yavatmal block. Depth to water level 2-5 mbgl is observed in almost Babulgaon Ner Darwha Digras Pusad Mahagaon block and parts of Yavatmal, Margaon, and Umarkhed blocks. Depth to water level 5-10 mbgl is observed in almost Kalamb, Ralegaon Ghatanji Kelapur Zari jamani block and parts of Wani, Mahagaon, and Umarkhed blocks. Depth to water level 10-20 mbgl is observed in small patch of Wani taluka. The post-monsoon depth to water level map of Aquifer-II is given in **Figure 2.4.**

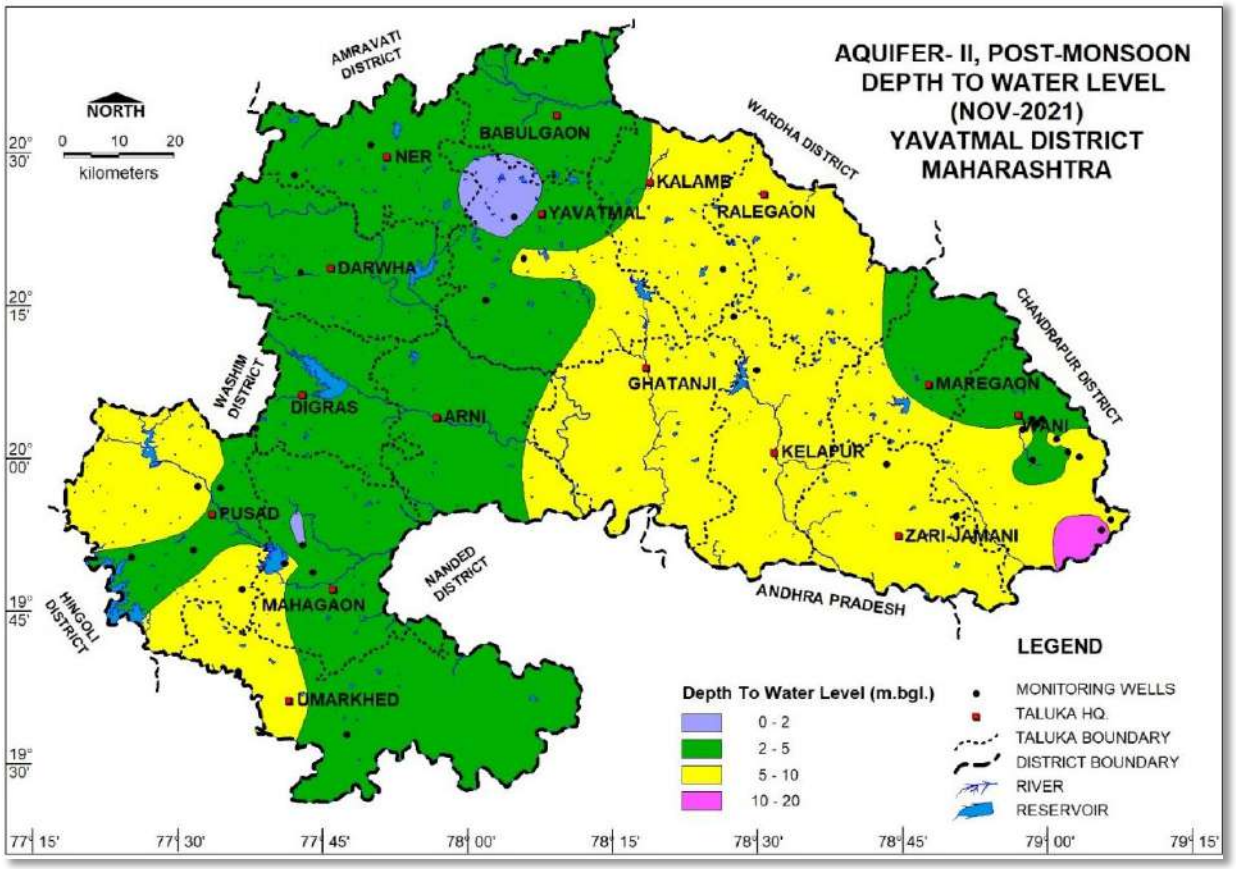


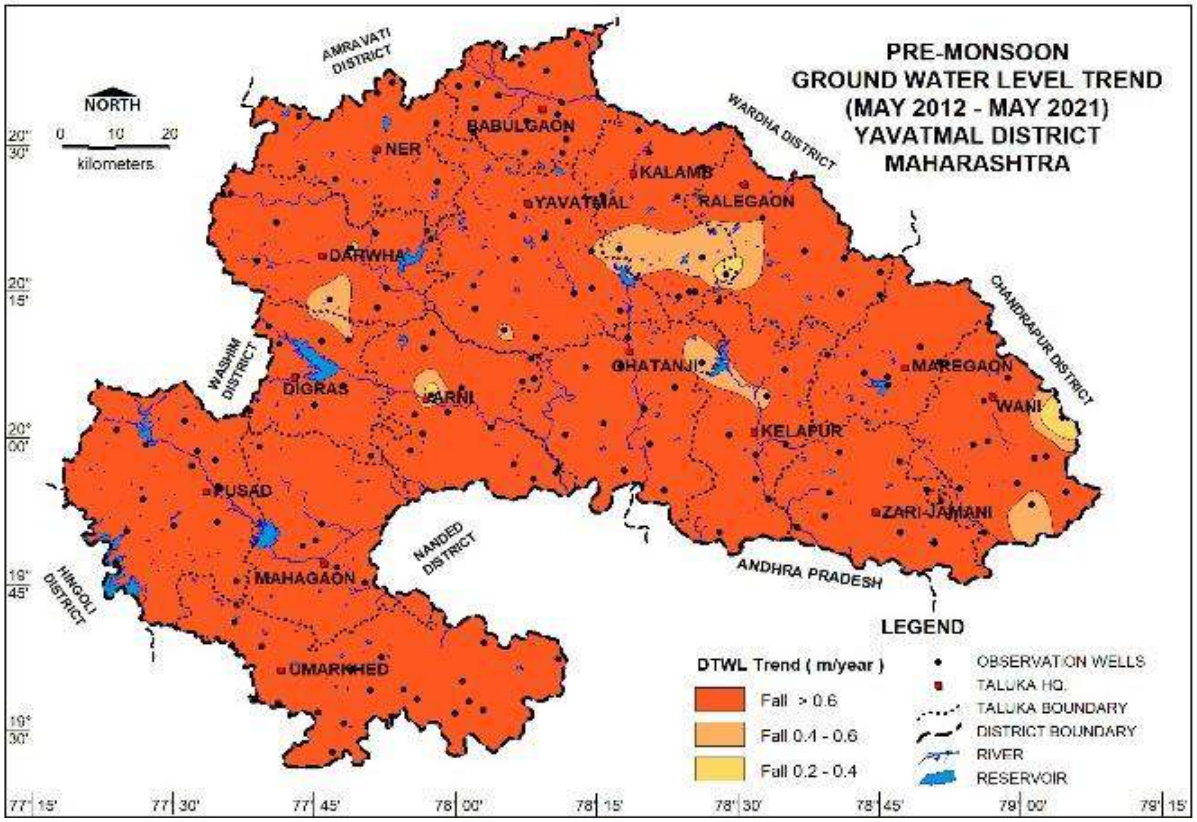
Figure 2.3 DTWL deeper aquifer (Nov 2021)

2.3 Water Level Trend (2012-2021)

During pre-monsoon, fall in water level trend has been recorded at all 180 stations and ranges from 0.255 (UkaniWani block) to 1.34 m/year (Bhandegaon, Darwha block). The water level trend of pre-monsoon of Aquifer-I is given in **Figure 2.5.**

During post monsoon, rise in water level trend has been recorded at 28 stations and it ranges between 0.0029 (Chaparda, Kalamb block) to 0.87 m/year (Bori Arab. Yavatmal block). While falling trend was observed in 47 stations varying from between 0.005 m/year (Umarda, Ner block) to 0.82 (Shiroli-PZ, Ghatanji block). Rising water level trend has been observed in parts of Darwha, Ner, Mahagaon, Maregaon, Kelapur and Yavatmal blocks. The water level trend of post-monsoon of Aquifer-I is given in **Figure 2.6.**

Figure 2.4 Pre-monsoon decadal trend (2012-21)



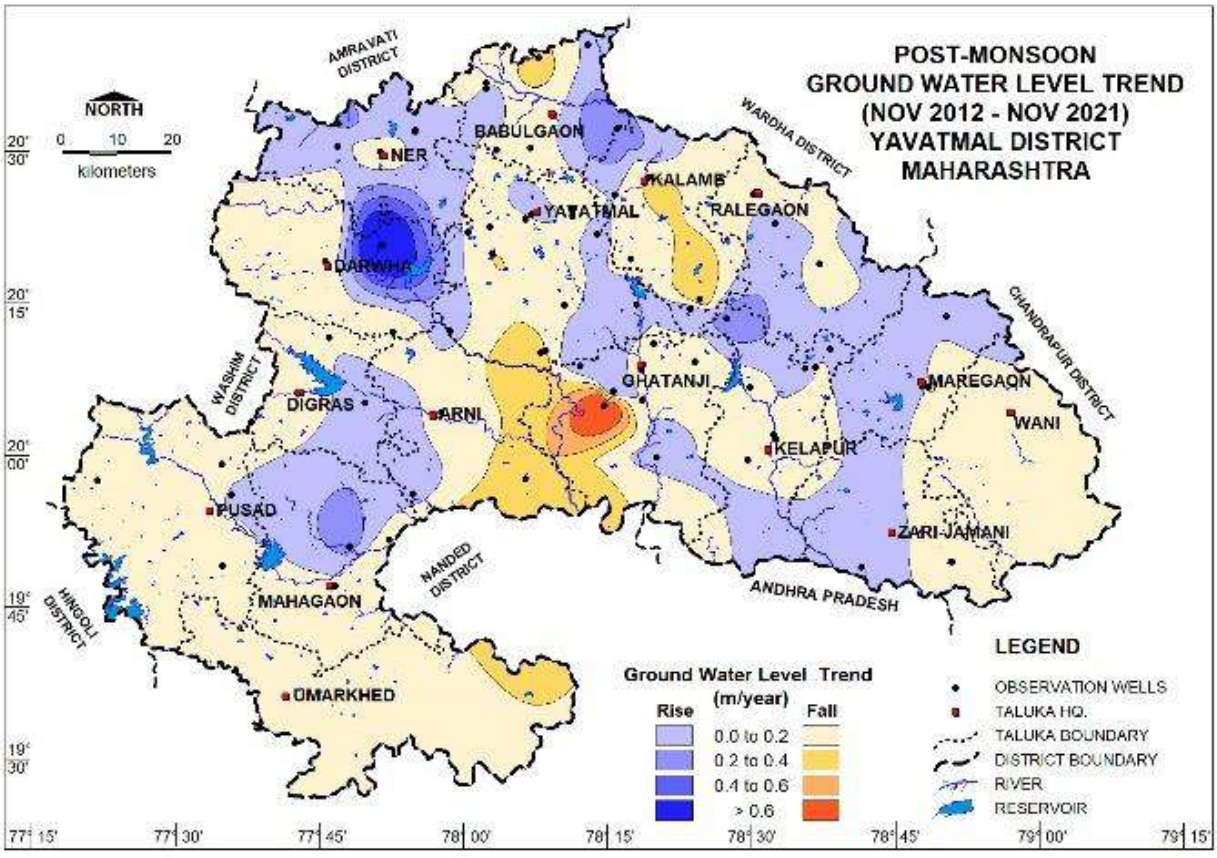
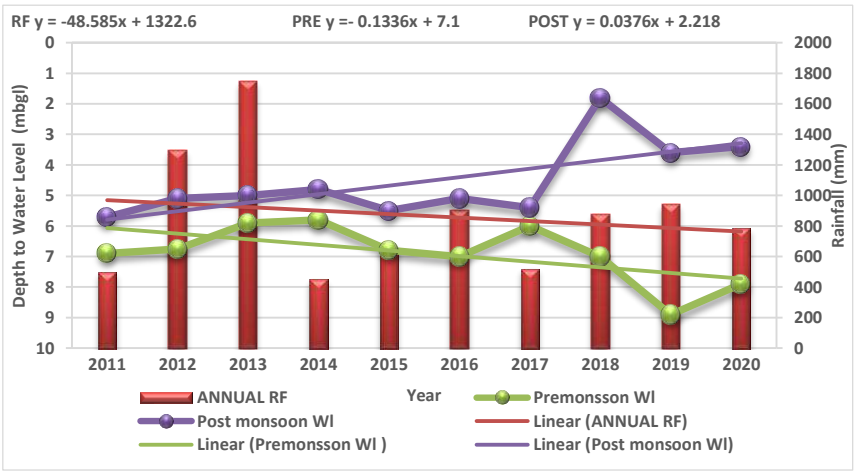


Figure 2.5 Post-monsoon decadal trend (2012-21)

2.4 Hydrograph Analysis

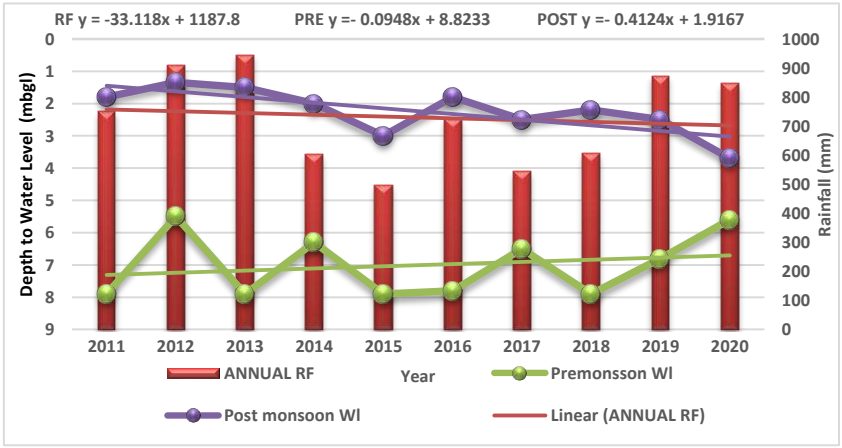
The variation in short term and long-term water level trends may be due to variation in natural recharge due to rainfall and withdrawal of groundwater for various agricultural activities, domestic requirements, and industrial needs. The analysis of hydrographs shows that the annual rising limbs in hydrographs indicate the natural recharge of groundwater regime due to monsoon rainfall, as the monsoon rainfall is the solesource of natural recharge to the ground water regime (**Figure. 2.7a to 2.7 p**).

Hydrograph (2010-2020), Village Ayata Arni Block, Yavatmal District



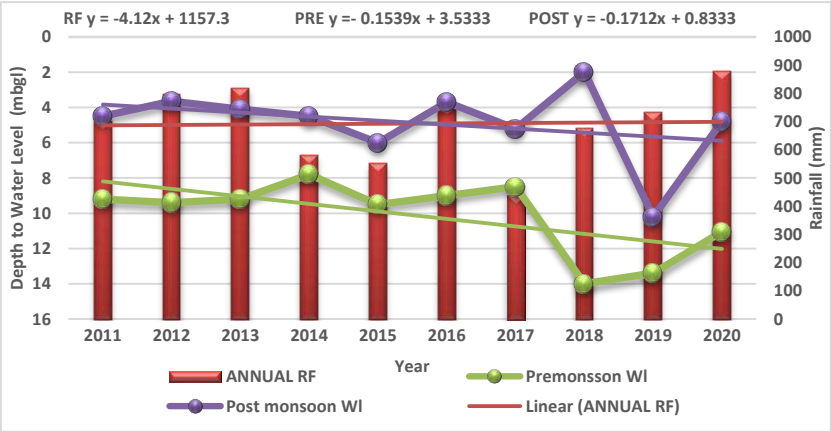
Premonsoon Water level trend showing falling trend @ 0.1336 m/year and postmonsoon Water level trend showing rising trend @0.0376 m/ year.
Falling Rainfall trend @48.58 mm/year

Hydrograph (2010-2020), village Maralpur, Babulgaon Block, Yavatmal District



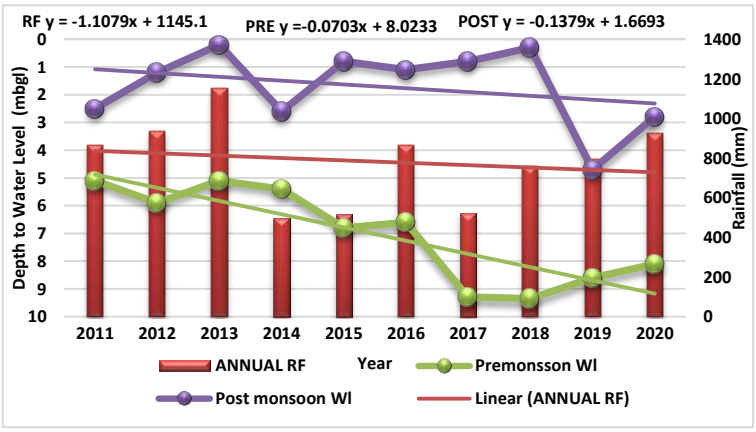
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.09485 m/year and0.4124 m/year respectively.
Falling Rainfall trend @33.12mm/year

Hydrograph (2011-2020), village Bori Arab, Darwha Block, Yavatmal District



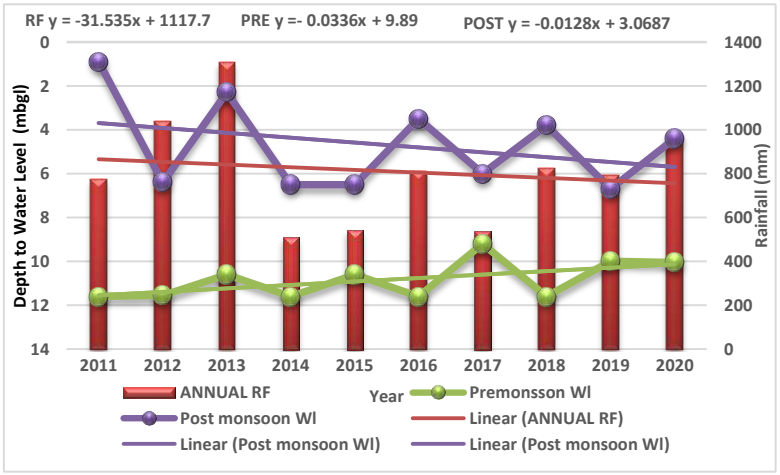
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.1539 m/year and 0.1712 m/year respectively.
Falling Rainfall trend @4.12mm/year

Hydrograph (2011-2020), village Arambhi, Digras Block, Yavatmal District



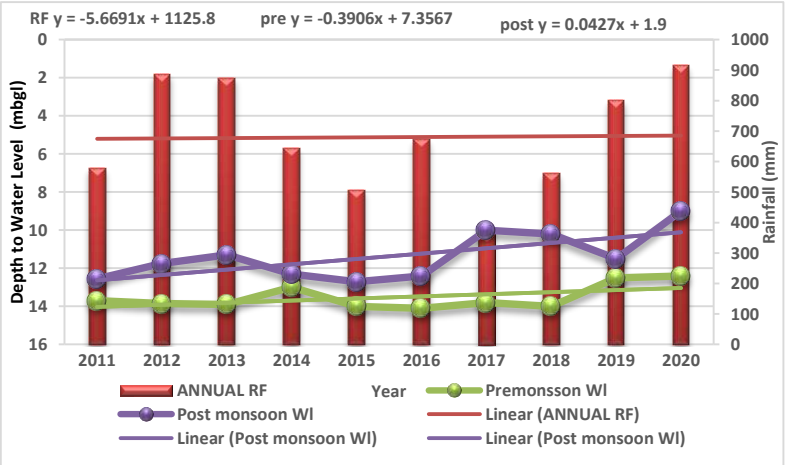
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.0703 m/year and 0.1379 m/year respectively.
Falling Rainfall trend @1.11mm/year

Hydrograph (2011-2020), village Sayatkharda, Ghatanji Block, Yavatmal District



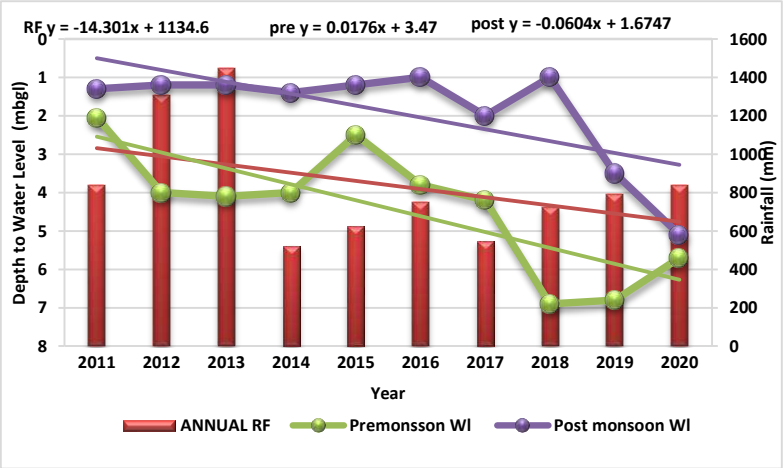
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.0336 m/year and 0.0128 m/year respectively.
Falling Rainfall trend @31.535 mm/year

Hydrograph (2011-2020), village Satefal, Kalamb Block, Yavatmal District



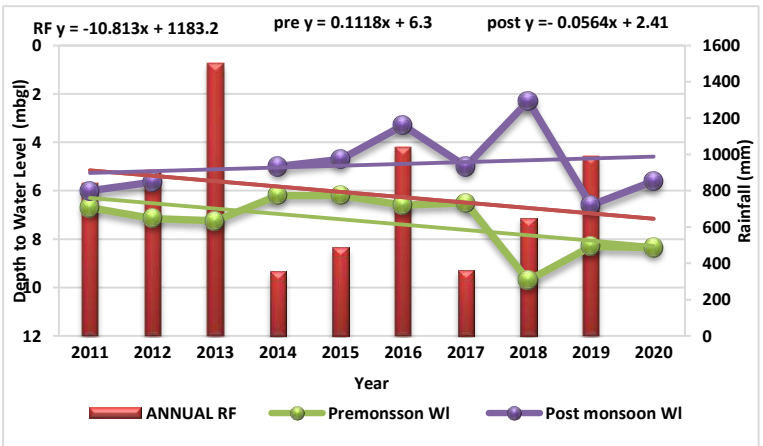
Pre-monsoon Water level trend showing falling trend @ 0.3906 m/year and Post-monsoon Water level trend showing rising 0.0427 m/year.
Falling Rainfall trend @5.6691 mm/year

Hydrograph (2011-2020), village Khairgaon, Kelapur Block, Yavatmal District



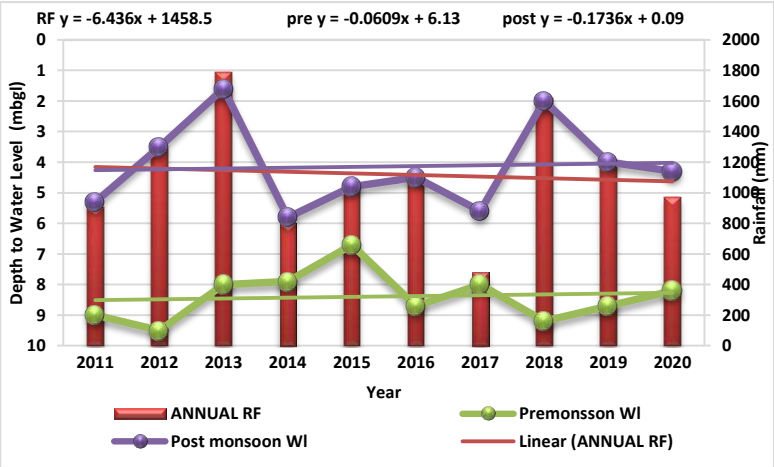
Pre-monsoon monsoon Water level trend showing rising trend @ 0.0176 m/year and Post-monsoon monsoon Water level trend showing falling trend @ 0.0604 m/year
Falling Rainfall trend @14.301 mm/year

Hydrograph (2011-2020), village Shirpur, Mahagaon Block, Yavatmal District



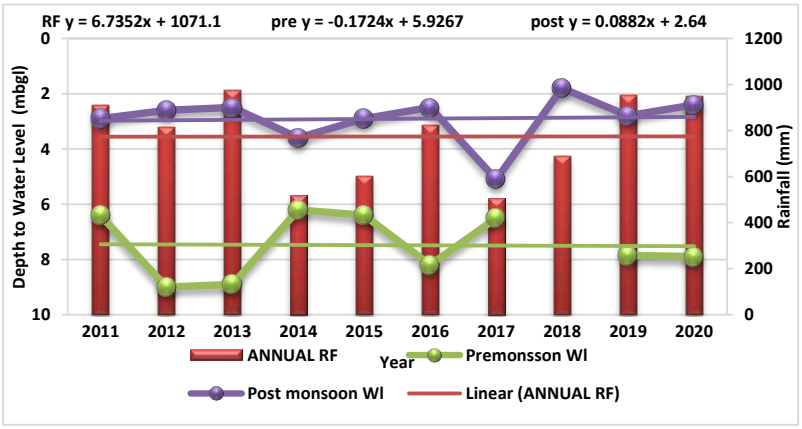
Pre-monsoon monsoon Water level trend showing rising trend @ 0.1118 m/year and Post-monsoon monsoon Water level trend showing falling trend @ 0.0564 m/year
Falling Rainfall trend @10.813 mm/year

Hydrograph (2011-2020), village Pathri, Maregaon Block, Yavatmal District



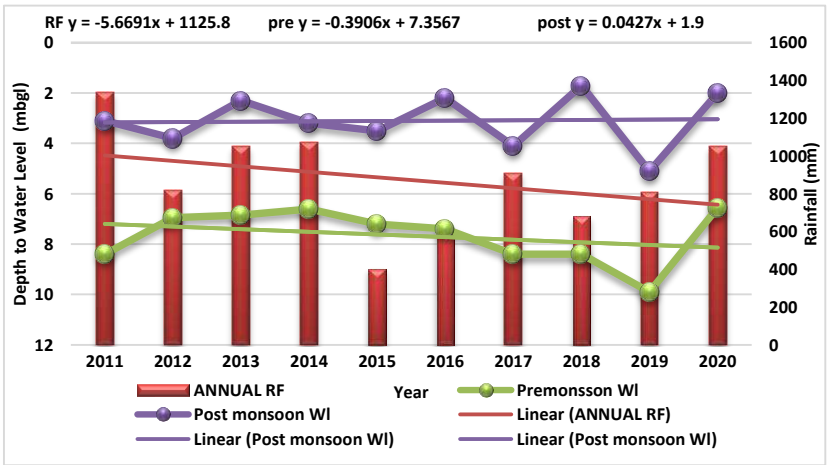
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.0609 m/year and 0.1736 m/year respectively.
Falling Rainfall trend @6.436 mm/year

Hydrograph (2011-2020), village Uttarwadhona, Ner Block, Yavatmal District



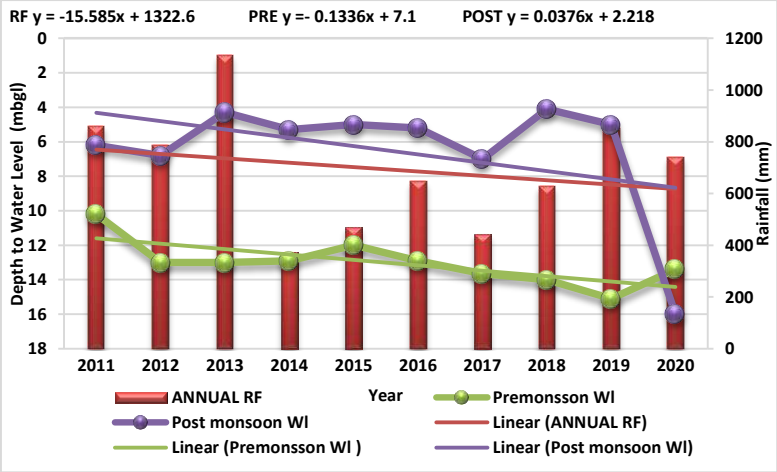
Pre-monsoon monsoon Water level trend showing falling trend @ 0.1724 m/year and Post-monsoon monsoon Water level trend showing rising trend @ 0.0882 m/year
Rising Rainfall trend @6.7352 mm/year

Hydrograph (2011-2020), village Udadi, Pusad Block, Yavatmal District



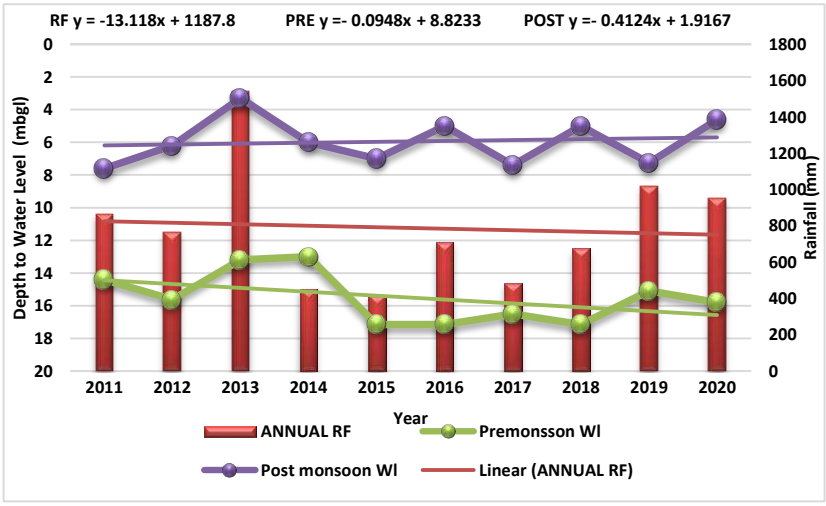
Pre-monsoon monsoon Water level trend showing falling trend @ 0.3906 m/year and Post-monsoon monsoon Water level trend showing rising trend @ 0.0427 m/year
Falling Rainfall trend @5.6691mm/year

Hydrograph (2011-2020), Village Ramtirth, Ralegaon Block, Yavatmal District



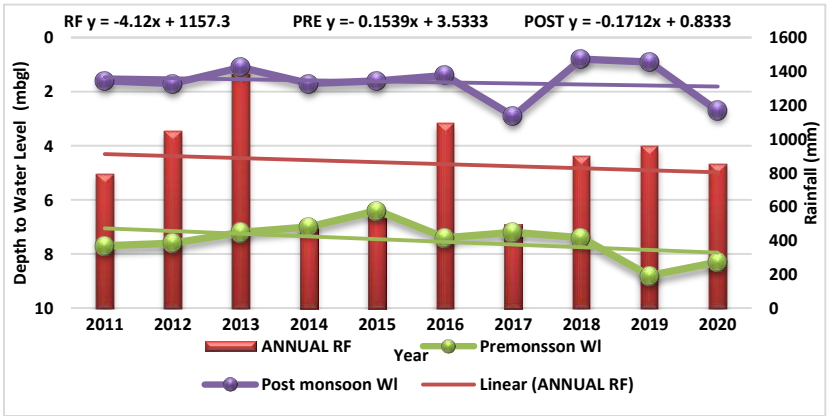
Pre-monsoon monsoon Water level trend showing falling trend @ 0.1336 m/year and Post-monsoon monsoon Water level trend showing rising trend @ 0.0376 m/year
Falling Rainfall trend @15.585mm/year

Hydrograph (2011-2020), village Tembhurdara, Umerkhed Block, Yavatmal District



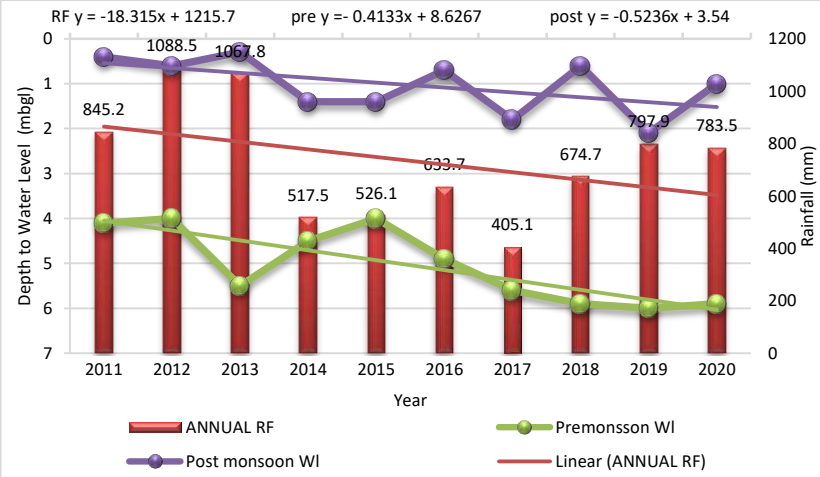
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.0948 m/year and 0.4124 m/year respectively.
Falling Rainfall trend @13.118 mm/year

Hydrograph (2011-2020), village Rasa, Wani Block, Yavatmal District



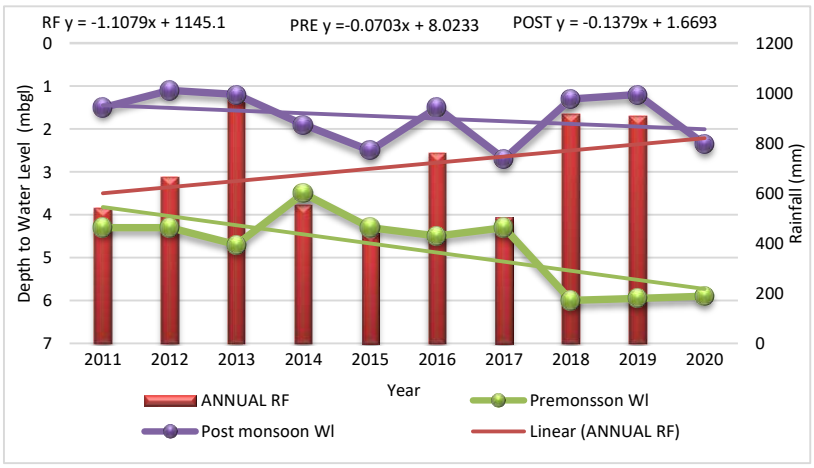
Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.1539 m/year and 0.1712 m/year respectively.
Falling Rainfall trend @4.12 mm/year

Hydrograph (2011-2020), village Bechkheda, Yavatmal Block, Yavatmal District



Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.4133 m/year and 0.5236 m/year respectively.
Falling Rainfall trend @18.315 mm/year

Hydrograph (2011-2020), village Sibla, Zari-Zamni Block, Yavatmal District



Pre-monsoon and Post-monsoon Water level trend showing falling trend @ 0.0703 m/year and 0.1379m/year respectively.
Falling Rainfall trend @1.1079 mm/year

Figure 2.6 Behaviour of Water level with respect to time

3. GROUND WATER QUALITY

The concentrations of various gases and ions dissolved in water from the atmosphere, soil strata and minerals and rocks with which it comes are the characteristics of water.This ultimately decides the quality of ground water. The concentration of CO32-, CO3-,OH- and H+ ions and dissolved CO2 gases in water decide the acidic or basic nature ofwater while the salts of ions like Ca2+ and Mg2+ in water makes it soft or hard. Waterwith high Na+ and Cl- concentration can make the water saline. Nitrate ions percolatedfrom anthropogenic sources can become predominant major anion in ground water.The excess fluoride concentration in ground water from fluoride bearing minerals maybe related to the concentration of Ca2+, Na2+ and HCO3- ions present in ground water.

Water sampling of Yavatmal district is being done every year from GWM wells during pre-monsoon period (May). A total of 38ground water monitoring wells of CGWB and GSDA have been utilised to decipher the quality scenario for shallow aquifer and 91 exploration wells of CGWB and GSDA have been utilised to decipher the quality scenario for deeper aquifer.A total of 129 samples were analysed involving use of different instruments such as pH meter, EC meter, Flame Photometer, UV/ Visible Spectrophotometer and Titrimetric methods, for generating the map and to study the spatial variation of ground water quality. The aquifer wise ranges of different chemical constituents present in ground water are given in **Table 3.1**. The details of chemical analysis are given in **Annexure V and VI**.

Table 3.1 Aquifer wise ranges of chemical constituents in Yavatmal district

Constituents	Shallow aquifer		Deeper aquifer	
	Min	Max	Min	Max
pH	7.3	8	7.3	9.1
EC	543	3366	12	4200
TDS	288	1783	200	2855
TH	255	1408	20	760
Calcium	43	286	7	152
Magnesium	12	176	0.1	720
Potassium	0.12	32.95	1	100
Sodium	6	112	6.3	902
Bi carbonate	274	910	31	537
Carbonate	-	-	0.9	120
Chloride	21	607	7	1106
Sulphate	0	95	2	800
Nitrate	4	38	1	180
Fluoride	0.34	2.99	0.05	5

***BDL- below detection limit**

3.1 Electrical Conductivity (EC)

Distribution of ElectricalConductivity in Shallow Aquifer

The concentration of EC in shallow aquifer varies between 543 (Sawli Sadoba, Arniblock) and 3366 (Umarda, Ner Block). Out of 38samples collected from dug wells, 11 samples are having EC in range of 250 to 750µS/cmand25 samples are having EC in range of 750 to 2250 µS/cmand 2 samples have shown EC > 7500µS/cm. Concentration of EC >3000 µS/cm has been observed in parts of Ner Blocks.Ground water is potable in southern and south-east part of district.The distribution of electrical conductivity in shallow aquifers is shown in **Figure 3.1** and analytical data is presented in **Table 3.2.**

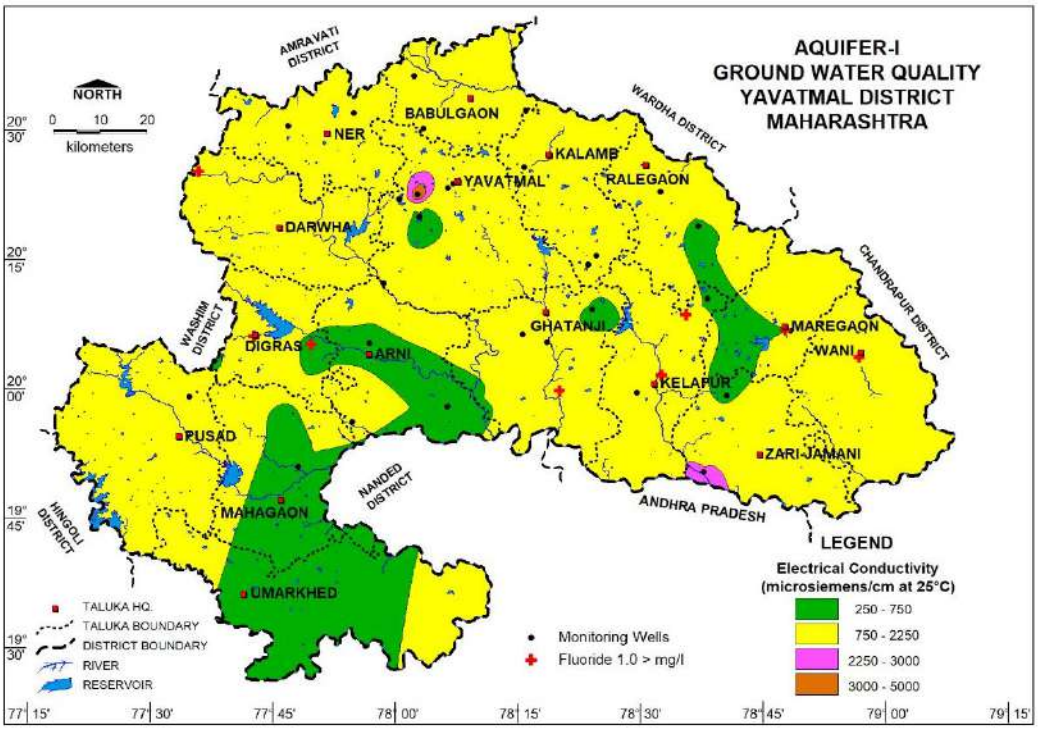


Figure 3.1 Ground water quality, Aquifer-I

Distribution of ElectricalConductivity in Deeper Aquifer

The concentration of EC in deeper aquifer varies between 120 (Chargaon, Wani block) and 4200 µS/cm (Dhoptala, Wani block). Out of 91 samples collected from bore wells, 25 samples are having EC in range of 250 to 750µS/cm and 58 samples are having EC in range of 750 to 2250 µS/cm and 5 samples have shown EC > 7500µS/cm. Concentration of EC >3000 µS/cm has been observed in parts of Wani Blocks.The distribution of electrical conductivity in deeper aquifers is shown in **Figure 3.2**and analytical data is presented in **Table 3.2.**

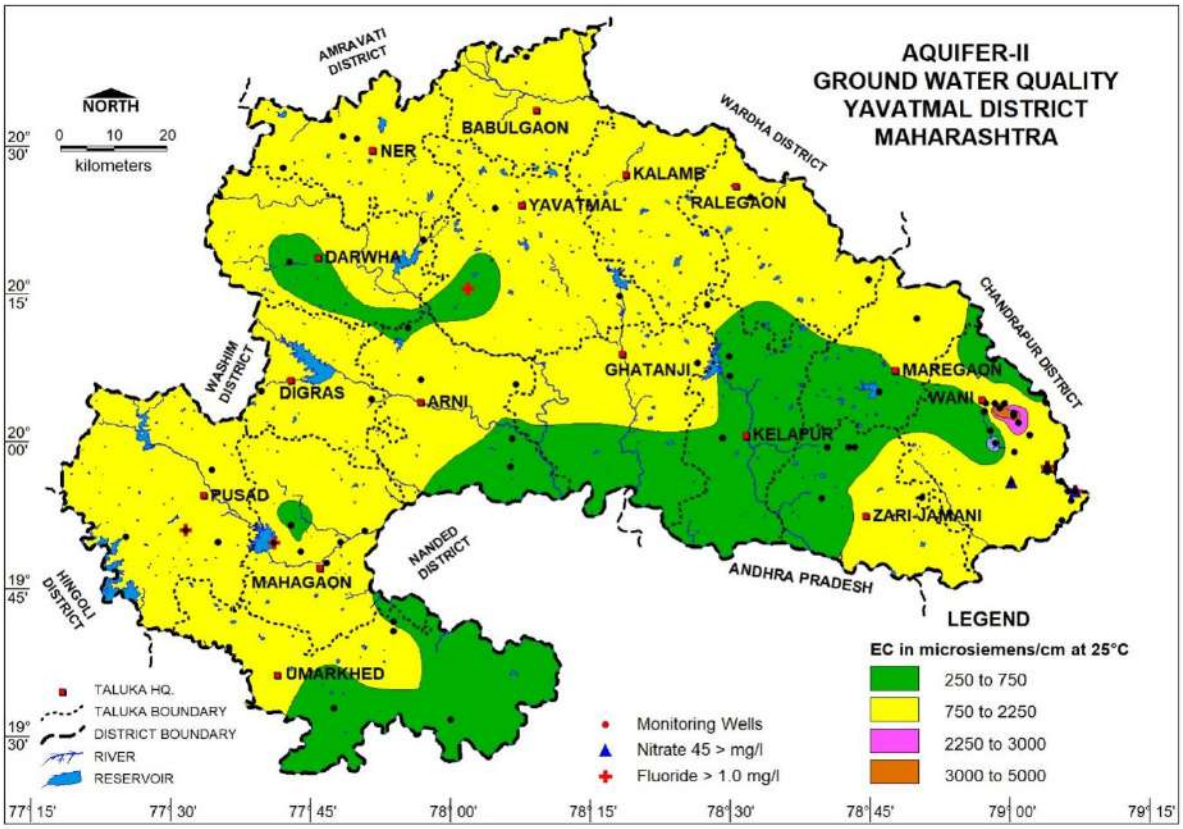


Figure 3.2 Ground water quality, Aquifer-II

Table 3.2 Aquifer wise Electrical conductivity analytical data

EC (µS/cm)	Shallow aquifer		Deeper Aquifer	
	No. of samples	% of samples	No. of samples	% of samples
< 250	0	0	3	3.30
>250-750	11	28.95	25	27.47
>750-2250	25	65.79	58	63.74
2250-3000	1	2.63	2	2.20
3000-7500	1	2.63	3	3.30
>7500	0	0	0	0
Total samples	**38**		**91**	

3.2 Suitability of Ground Water for Drinking Purpose

The suitability of ground water for drinking purpose is determined keeping in view theeffectsofvariouschemicalconstituentsinwateronthebiologicalsystemofhumanbeing.Thestandardsproposedby theBureauofIndianStandards(BIS)fordrinkingwater(IS-m10500-91,Revised2012)wereusedtodecidethesuitabilityofgroundwater for drinking purpose. The overall classification of ground water samples fallingbelow desirable limit (<DL) in the range of Desirable Limit and Maximum PermissibleLimit (DL-MPL) and above maximumpermissible limit (MPL)

fordrinkingpurpose ispresentedin**Table3.3.**Concentration of Chemical constituents in shallow Aquifer is given in **Table 3.4**. In shallow aquifer, 68.42 % of samples have TDS concentration above the Desirable limit (DL) but below the MPL. 31.58 % samples are having TDS below the Desirable limit (DL).

Table 3.3 Concentration of Chemical constituents in Shallow Aquifer

Parameter	Drinking water Standards (IS-10500-2012)		Total no of ground water samples	Shallow aquifer					
				Samples (<DL)		Samples (DL-MPL)		Samples (>MPL)	
	DL	MPL		No	%	No	%	No	%
pH	6.5	8.5	38	0	0.00	38	100.00	0	0.00
TDS(mg/L)	500	2000	38	12	31.58	26	68.42	0	0.00
TH(mg/L)	300	600	38	4	10.53	21	55.26	13	34.21
Ca (mg/L)	75	200	38	20	52.63	16	42.11	2	5.26
Mg (mg/L)	30	100	38	5	13.16	25	65.79	8	21.05
Cl (mg/L)	250	1000	38	37	97.37	1	2.63	0	0.00
SO_4 (mg/L)	200	400	38	38	100.00	0	0.00	0	0.00
NO_3 (mg/L)	45	No relaxation	38	38	100.00	0	0.00	0	0.00
F (mg/L)	1	1.5	38	37	97.37	1	2.63	0	0.00

DL- Desirable Limit, MPL- Maximum Permissible Limit)

In Deeper aquifer, 3.30 % samples are having TDS more than maximum permissible limit (MPL) and 30.77 % of samples have TDS concentration above the Desirable limit (DL) but below the MPL. The water from such area is not fit for drinking purpose if directly consumed without treatment. It is also seen that about 1.10 to 7.69 % samples are beyond the maximum permissible limit for the parameters like TH, Ca, Mg, Cl, SO_4 and NO_3 indicating that the water is not suitable for drinking purpose. Concentration of Chemical constituents in Deeper Aquifer is given in **Table 3.4**.

Table 3.4 Concentration of Chemical constituents in Deeper Aquifer

Parameter	Drinking water Standards (IS-10500-2012)		Total no of ground water samples	Deeper aquifer					
				Samples (<DL)		Samples (DL-MPL)		Samples (>MPL)	
	DL	MPL		No	%	No	%	No	%
pH	6.5	8.5	91	0	0.00	84	92.31	7	7.69
TDS(mg/L)	500	2000	91	28	30.77	44	48.35	3	3.30
TH(mg/L)	300	600	91	80	87.91	8	8.79	3	3.30
Ca (mg/L)	75	200	91	82	90.11	9	9.89	0	0.00
Mg (mg/L)	30	100	91	64	70.33	27	29.67	0	0.00
Cl (mg/L)	250	1000	91	74	81.32	16	17.58	1	1.10
SO_4 (mg/L)	200	400	91	75	82.42	12	13.19	4	4.40
NO_3 (mg/L)	45	No relaxation	91	88	96.70	3	3.30	0	0.00
F (mg/L)	1	1.5	91	86		2		3	

(Here, DL- Desirable Limit, MPL- Maximum Permissible Limit)

- **Total Dissolved Solids (TDS)**

Total Dissolved Solids (TDS) in water include all dissolved materials in solution, whether ionized or not. It is numerical sum of all mineral constituents dissolved in water and is expressed in mg/l. The TDS contents of ground water are controlled by the mineral dissolution rate, chemical character of ground water and ionic saturation status of solution. The concentration of total dissolved solids in the ground water has been found to vary generally between 288 mg/l at Sawali Sadoba, Arni Block to 1783 mg/l at Umarda, Ner Block and between 200 mg/l at Mandar, Wani Block to 2855 mg/l at Dhoptala, Wani Block in Shallow and Deeper aquifer respectively.

- **Nitrate**

Nitrogen in the form of dissolved nitrate nutrient for vegetation, and the element is essential to all life. The major contribution in ground water is from sewage, waste disposal, nitrate fertilizer and decaying of organic matter. In Yavatmal district nitrate concentration varies between 1 to 466 mg/l. As per BIS (2012) the desirable limit is 45 mg/l. In shallow aquifer, 38 samples were analysed, and all water samples show the nitrate concentrationsunder the desirable limit of 45 mg/l. In deeper aquifer, 91 wells were analysed, out of these only 3 water samplesshow nitrate concentration exceedingthe desirable limit of 45 mg/l. Aquifer wise nitrate concentration is given in **Table 3.5.**

- **Fluoride**

In shallow aquifer, concentration of fluoride ranges from BDL to 2.99 mg/l. out of 38 samples were analysed, 8 samples show fluoride concentration more than 1 mg/l which includes Sangwi Rly (2.99 mg/l highest concentration), Mahagaon, Digras, Parwa, Karanji1, Pandharkawada, Buranda-Hetis,Wani-1 villages. In Deeper Aquifer, concentration of fluoride ranges from BDL to 5 mg/l. Out of 91 samplesanalysed, 5samples show fluoride concentration more than 1mg/l found in Sakhra I,Hivri, Punwat,Mandwa (5 mg/l highest concentration) ,Weni Buzurg villages Aquifer wise fluoride concentration is given in **Table 3.5.**

Table 3.5 Aquifer wise Nitrate and Fluoride concentration

Aquifer	**No_3> 45 mg/l**		**Fluoride >1 mg/l**	
	Total Samples	No of samples	Total Samples	No of samples
Shallow Aquifer	38	0	38	8
Deeper Aquifer	91	3	91	5

3.3 Suitability of Ground Water for Irrigation

The quality of Irrigation water affects the productivity, yield and quality of the crops. The quality of irrigation water depends primarily on the presence of dissolved salts and their concentrations. The Electrical Conductivity (EC), Sodium Absorption Ratio (SAR), Sodium percentage(Na %) and Residual Sodium Carbonate (RSC) are the most important quality criteria, which asses the water quality and its suitability for irrigation.

- **Electrical Conductivity (EC)**

The amount of dissolved ions in the water is represented by the electrical conductivity. The classification of water for irrigation based on the EC values is given in Table 3.6and discussed as follows: -

Low Salinity Water (EC: 100-250 µS/cm): This water can be used for irrigation with most crops on most soils with little likelihood that salinity will develop.

Medium Salinity Water (EC: 250 – 750 µS/cm): This water can be used if moderate amount of leaching occurs. Plants with moderate salt tolerance can be grown in most cases without special practices for salinity control.

High Salinity Water (EC: 750 – 2250 µS/cm): This water cannot be used on soils with restricted drainage. Even with adequate drainage, special management for salinity control may be required and plants with good salt tolerance should be selected.

Very High Salinity Water (EC: >2250 µS/cm): This water is not suitable for irrigation under ordinary condition. The soils must be permeable, drainage must be adequate, irrigation water must be applied in excess to provide considerable leaching and very salt tolerant crops should be selected. Very high saline water is not suitable for irrigation under ordinary conditions but may beused occasionally under very special circumstances.The soil must be permeable,drainage must beadequate,irrigation water must be applied inexces sto provide considerable each ing and salt tolerance crops/plants should be selected.

Table 3.6 Classification of Ground water for Irrigation based on EC values

Water Quality Type	**EC in µS/cm**	**Shallow aquifer**		**Deeper Aquifer**	
		No. of Samples	% of samples	No. of samples	% of samples
Low Salinity Water	< 250	0	0.00	3	3.30
Medium Salinity Water	>250-750	11	28.95	25	27.47
High Salinity Water	>750-2250	25	65.79	58	63.74
Very High Salinity Water	> 2250	2	5.26	5	5.49
Total		**38**		**91**	

- **Sodium Absorption Ratio (SAR)**

Excess of sodium in water render it unsuitable for irrigation on soil containing exchangeable Calcium and Magnesium ions. Soil containing exchangeable Calcium and Magnesium takes up sodium of irrigation water in exchange for Calcium and Magnesium, the ratio reflects the Sodium hazard. The SAR indicates the relative activity of the Sodium ions in exchange reactions with the soil. The main problem with high sodium concentration is its effect on soil permeability, hardening of soil & water irrigation system. Sodium also contributes directly to the total salinity of the water and may be toxic to sensitive crops such as fruit trees. The higher value of SAR indicates soil structure damage.

In shallow aquifer, all the 38 samples are having SAR less than 10. In deeper aquifer, out of 91 samples 27 samples are having SAR value more than 10 inparts of Ghatanji, Wani, Umarkhed, and Digras blocks. The classification of ground water samples based on SAR and Na% values for its suitability for irrigation purpose is shown in **Table 3.7.and Table 3.8 respectively.**

Table 3.7 Classification of Ground water for Irrigation based on SAR values

Characteristics	Quality →	SAR value							
		< 10		10-18		18-26		> 26	
		Good		Good to Permissible		Doubtful		Bad (Unsuitable)	
	Total Number of GW samples analysed	No	%	No	%	No	%	No	%
Shallow Aquifer (Aquifer-I)	38	38	100	0	0	0	0	0	0
Deeper Aquifer (Aquifer-II)	91	79	86.81	10	10.98	2	2.20	0	0
Total	129	117		10		2		0	

- **Sodium Percent (Na %)**

The sodium in irrigation waters is usually denoted as percent of sodium. According to Wilcox (1955), in all natural waters Na% is a common parameter to assess its suitability for irrigational purposes. The sodium percent (Na %) values were obtained by using the following equation: Na%= [Na+ +K+] ×100/ [Ca2++Mg2++Na+ +K+] all ionic concentrations are expressed in meq/l. Low sodium (alkali) water can be used for irrigation on almost all soils with little danger of the development of harmful levels of exchangeable sodium. Medium sodium water will present an appreciable sodium hazard in fine textured soils having high cation exchange capacity especially under low leaching conditions. This water can be used on coarse textured or organic soils with good permeability.

In shallow aquifer, all the 38 samples are having Excellent and Good water class. In deeper aquifer, most of the samples are falls under Medium and bad water class (**Table 3.8).**

Table 3.8 Classification of Ground Water Samples based on Na%

Water Class	Na%		
	Range	**No. of samples Shallow Aquifer**	**No. of samples Deeper Aquifer**
Excellent	< 20	34	4
Good	20 - 40	4	14
Medium	40 - 60	0	19
Bad	60 - 80	0	28
Very Bad	> 80	0	12

- **Residual Sodium Carbonate (RSC)**

Residual Sodium Carbonate (RSC) has been used to determine the harmful effect of carbonate and bicarbonate on the quality of water for agricultural purpose and is estimated by the formula. RSC = (HCOí3 +CO-3) í (Ca2++Mg2+) where all ionic concentrations are expressed in meq/L. According to the RSC classification for irrigation purposes, the water samples with values greater than 2.5 meq/l are unsuitable for irrigation. Groundwater of the study area is classified on the basis of RSC and is presented in Table 3.9 below.

Table 3.9 Classification of groundwater quality based on suitability of water for irrigation purposes

Residual Sodium Carbonate (RSC) **(Eaton 1950; Wilcox et al. 1954)**	**Groundwater Class (Irrigation Uses)**	**Range**	**Shallow Aquifer (Total sample 38)**	**Deeper Aquifer (Total sample 91)**
	Safe	< 1.25	37	65
	Marginal	1.25 - 2.5	1	16
	Unsuitable	> 2.5	0	10

4. GROUND WATER RESOURCES

4.1Ground Water Resources – Aquifer-I

Central Ground Water Board and Ground Water Survey and Development Agency (GSDA) have jointly estimated the ground water resources of YAVATMAL district based on GEC-15 methodology. Block wise ground water resources for the year 2020 have been discussed here. During the monsoon season, the rainfall recharge is the main recharge parameter, which is estimated as the sum total of the change in storage and gross draft. The change in storage is computed by multiplying groundwater level fluctuation between pre and post-monsoon periods with the area of assessment and specific yield. Monsoon recharge can be expressed as:-

$$R = h \times Sy \times A + DG$$

Where h = rise in water level in the monsoon season, Sy = specific yield A = area for computation of recharge, DG = gross ground water draft

The monsoon ground water recharge has two components- rainfall recharge and recharge from other sources. The other sources of groundwater recharge during monsoon season include seepage from canals, surface water irrigation, tanks and ponds, ground water irrigation, and water conservation structures. During the non-monsoon season, rainfall recharge is computed by using Rainfall Infiltration Factor (RIF) method. Recharge from other sources is then added to get total non-monsoon recharge.

Ground Water Resources estimation carried out in the year 2020 are given in **Table 4.1** and shown in **Figure 4.2.** The resources were computed for 13578.14 sq. km. area out of which 11440.67 sq. km. is recharge worthy area. As per the estimation, the net annual extractable ground water resource is 1186.27 MCM. The gross draft for all uses is estimated at 431.13 MCM with irrigation sector being the major consumer having a draft of 356.79 MCM. The domestic and industrial water requirements are worked at 74.34 MCM. The net ground water availability for future irrigation is estimated at 755.93 MCM.

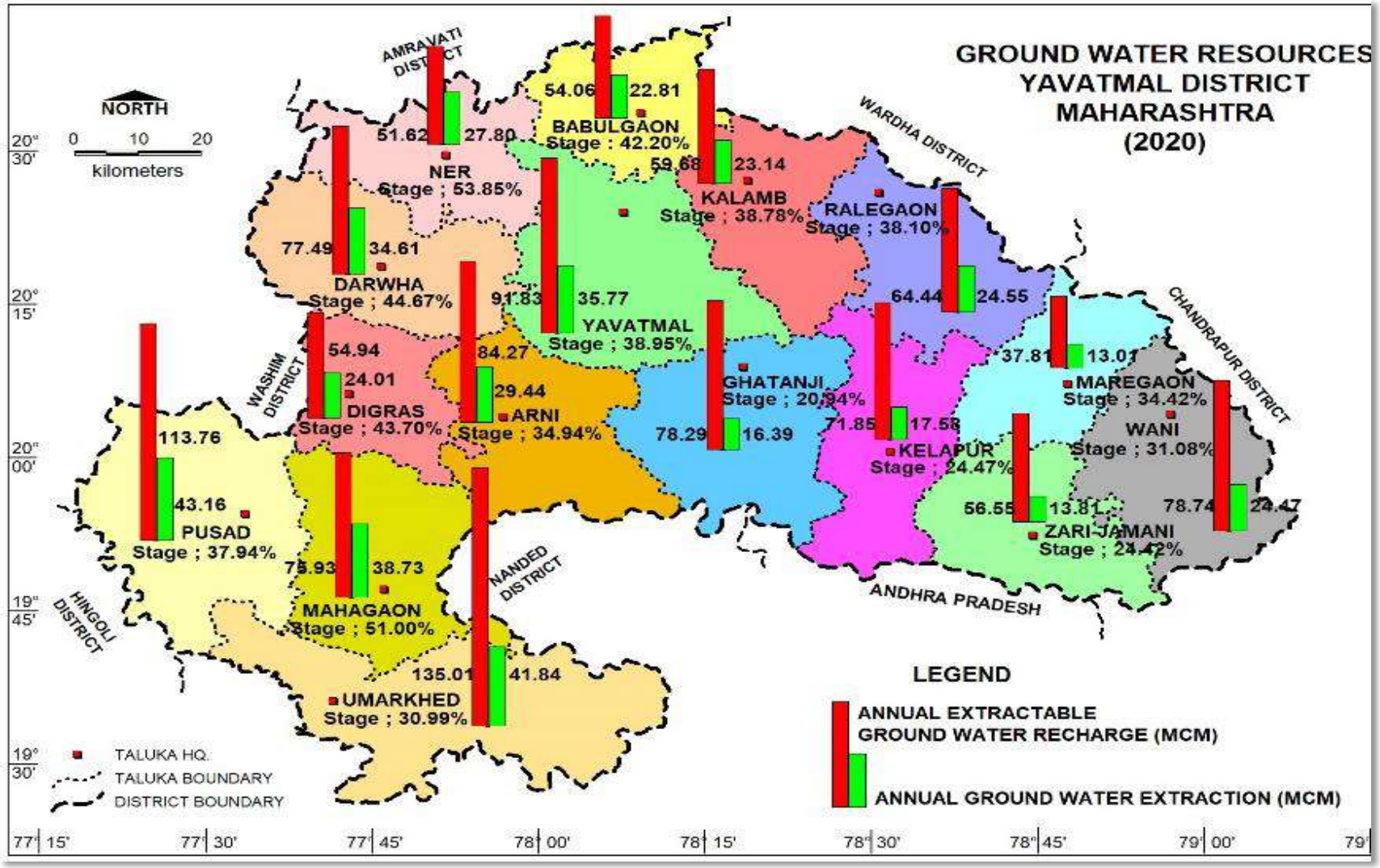


Figure 4.1Ground Water Resources (2020), Yavatmal district

Table 4.1 Ground Water Resource Estimation of Yavatmal District

Assessment Unit Name	Total Area of Assessment Unit (MCM)	Recharge Worthy Area (MCM)	Total Annual Ground Water (MCM) Recharge	Total Natural Discharge (MCM)	Annual Extractable Ground Water Resource (MCM)	Ground Water Extraction for Irrigation Use (MCM)	Ground Water Extraction for Industrial Use(MCM)	Ground Water Extraction for Domestic Use (MCM)	Total Extraction (MCM)	Annual GW Allocation for Domestic Use as on 2025 (MCM)	Net Ground Water Availability for future use (MCM)	Stage of Ground Water Extraction (%)	Categorization (Over-Exploited/Critical/Semi critical/Safe/Saline)
ARNI	854.54	657.67	88.70	4.44	84.27	25.04	0.00	4.40	29.44	4.40	54.83	34.94	safe
BABULGAON	545.86	531.29	56.91	2.85	54.06	17.24	0.00	5.57	22.81	5.57	31.25	42.20	safe
DARAVHA	846.18	768.72	81.57	4.08	77.49	28.64	0.00	5.97	34.61	5.97	42.88	44.67	safe
DIGRAS	553.39	463.71	57.83	2.89	54.94	20.65	0.00	3.36	24.01	3.36	30.93	43.70	safe
GHATANJI	947.80	757.90	82.41	4.12	78.29	12.37	0.00	4.02	16.39	4.02	61.90	20.94	safe
KALAMB	754.45	628.32	62.93	3.25	59.68	18.96	0.00	4.18	23.14	4.18	36.54	38.78	safe
MAHAGAON	889.48	721.94	79.92	4.00	75.93	34.26	0.00	4.46	38.73	4.46	37.20	51.00	safe
MAREGAON	607.92	575.87	39.79	1.99	37.81	10.99	0.00	2.02	13.01	2.02	25.25	34.42	safe
NER	681.09	633.72	54.34	2.72	51.62	22.45	0.00	5.34	27.80	5.34	23.82	53.85	safe
OMARKHED	1297.04	978.36	142.12	7.11	135.01	36.84	0.00	5.01	41.84	5.01	93.17	30.99	safe
PANDHARKAVADA	807.54	699.26	75.63	3.78	71.85	14.02	0.00	3.56	17.58	3.56	54.26	24.47	safe
PUSAD	1236.66	984.40	119.75	5.99	113.76	38.21	0.00	4.95	43.16	4.95	70.61	37.94	safe
RALEGAON	760.55	686.76	68.97	4.52	64.44	19.43	0.00	5.12	24.55	5.12	40.22	38.10	safe
WANI	883.04	805.97	82.88	4.14	78.74	20.45	0.00	4.03	24.47	4.03	54.26	31.08	safe
YEOTMAL	1157.22	932.84	96.67	4.83	91.84	28.05	0.00	7.73	35.77	7.73	56.08	38.95	safe
ZARA ZAMANI	755.36	613.94	59.54	2.98	56.56	9.21	0.00	4.60	13.81	4.60	42.75	24.42	safe
Total	**13578.14**	**11440.67**	**1249.96**	**63.68**	**1186.27**	**356.79**	**0.00**	**74.34**	**431.13**	**74.34**	**755.93**	**36.34**	**Safe**

5. GROUND WATER RELATED ISSUES

5.1 Declining Water Levels

During pre-monsoon, fall in water level trend has been recorded at all 180 stations and ranges from 0.255 (Ukani Wani block) to 1.34 m/year (Bhandegaon, Darwha block). The water level trend of pre-monsoon of Aquifer-I is given in **Figure 5.1.** During post monsoon, rise in water level trend has been recorded at 28 stations and it ranges between 0.0029 (Chaparda, Kalamb block) to 0.87 m/year (Bori Arab. Yavatmal block). While falling trend was observed in 47 stations varying from between 0.005 m/year (Umarda, Ner block) to 0.82 (Shiroli-PZ, Ghatanji block). Rising water level trend has been observed in parts of Darwha, Ner, Mahagaon, Maregaon, Kelapur and Yavatmal blocks. The decline may be because the area has experienced increased ground water draft and less annual rainfall received than the normal rainfall between the period from 2000-2020. The water level trend of post-monsoon of Aquifer-I is given in Figure.

5.2 Rainfall and Droughts

The long-term rainfall analysis of Yavatmal district for a period of 2000-2020 i.e., 21 years shows 81 % of negative departures of rainfall with to respect to normal (1051.6 mm) rainfall. As a result, a moderate drought is observed in the district in 19 % of the total years in almost all blocks. This has resulted in the decline in water level in all blocks of Yavatmal district.

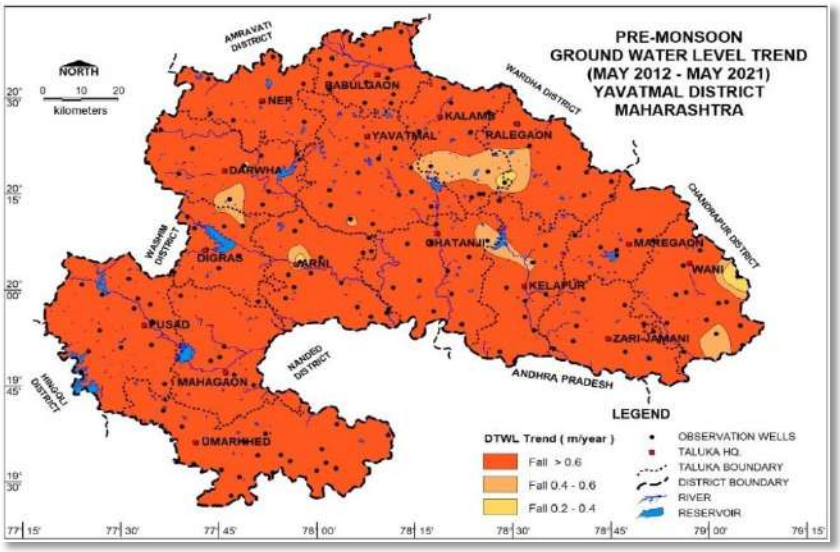
5.3 Groundwater Quality issues

Groundwater occurs under unconfined conditions in the weathered and fractured portions of rocks and semi-confined to confined conditions in fractured rocks. The groundwater of the area is of bicarbonate (HCO_3)-type and high fluoride (F^-) concentration is observed in deeper aquifers as well as shallow aquifers.In shallow aquifer, concentration of fluoride ranges from BDL to 2.99 mg/l. out of 38 samples analyzed, 8 samples show fluoride concentration more than 1 mg/l. In shallow aquifer, the highest concentration of fluoride is found in Savangi Railway (2.99 mg/l)Darwha Block.

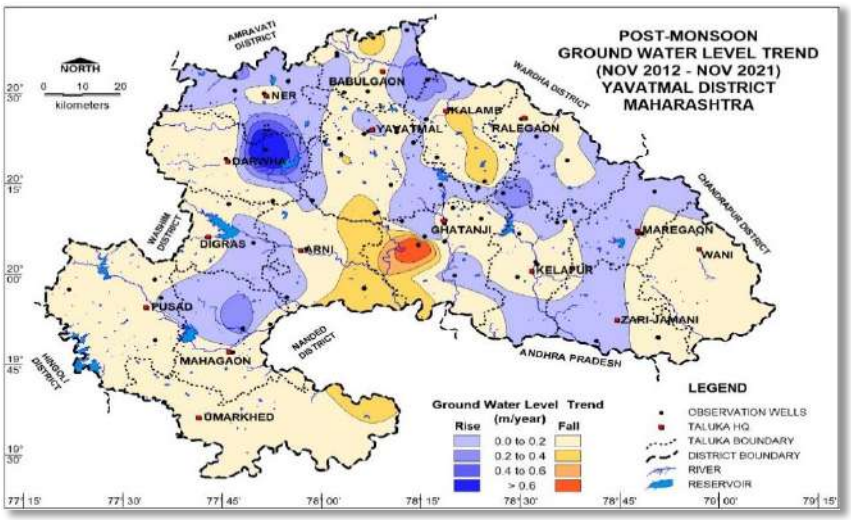
In Deeper Aquifer, concentration of fluoride ranges from 0.05 to 5 mg/l. Out of 91 samples analyzed,5 samples show fluoride concentration more than 1 mg/l. In Deeper aquifer, the highest concentration of fluoride is found in Mandwa (5 mg/L) inPusad block; it may be due to the geogenic reasons.

5.4 Sustainability

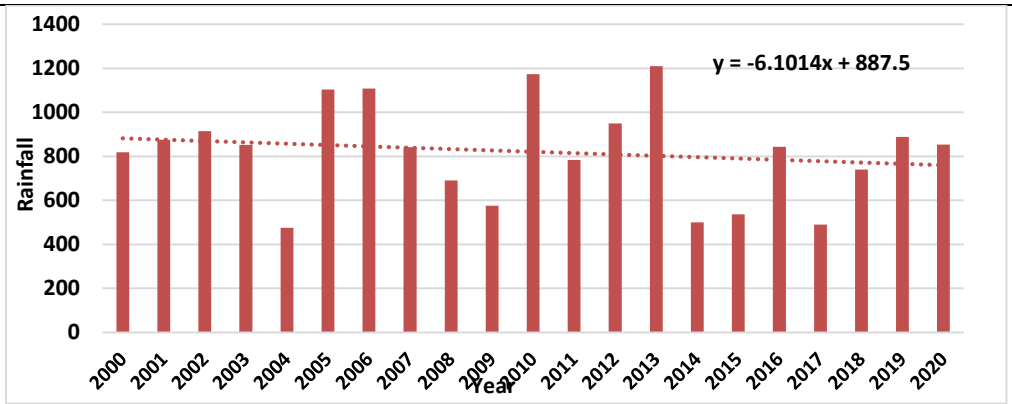
The major part of the district is occupied by basaltic rock formation that inherently consist of limited extent of porous and pervious zone; absence of primary porosity; predominance of secondary porosity that has evolved from prevailing erratic joint pattern, absence of primary porosity and also, low rainfall results in poor sustainability of the aquifers. However, the erratic nature of existing joints/fractures pattern results in highly varying yield capacities of the aquifers in the area. In the area depth of potential aquifers is generally restricted up to 35 m. The potential of the fracture zones reduces substantially below 100 m depth. About 50% of area of the district is having low yield potential (<1 Lps). However, moderate to high yield potential areas are found in North east part of district.



Premonsoon Fall @>0.2/year in 10526 Sq. km



Postmonsoon Fall@>0.2/year in 1870 Sq. km.



Annual Rain fall Yavatmal district 2000-2020

6. GROUND WATER MANAGEMENT PLAN

The management plan has been proposed to manage the ground water resources and to arrest further decline in water levels. The management plan comprises two components namely supply-side management and demand side management. The supply side management is proposed based on surplus surface water availability and the unsaturated thickness of aquifer whereas the demand side management is proposed by use of micro irrigation techniques and change in cropping pattern.

6.1 Supply Side Management

The supply side management of ground water resources can be done through the artificial recharge of surplus runoff available within river sub basins and micro watersheds. Also, it is necessary to understand the unsaturated aquifer volume available for recharge. The unsaturated volume of aquifer was computed based on the area feasible for recharge, unsaturated depth below 3-5mbgl and the specific yield of the aquifer. **Table 6.1**gives the block wise area feasible and volume available for the recharge.

Table 6.1 Area feasible and volume available for Artificial Recharge

Block	Geographical Area (sq. km.)	Area feasible for recharge (sq. km.)	Unsaturated Volume (MCM)
ARNI	854.54	0.00	0.00
BABULGAON	545.86	389.01	730.40
DARAVHA	846.18	579.50	495.82
DIGRAS	553.39	472.94	552.57
GHATANJI	947.80	0.00	0.00
KALAMB	754.45	0.00	0.00
MAHAGAON	889.48	482.08	2425.83
MAREGAON	607.92	512.83	1552.04
NER	681.09	184.10	61.37
UMARKHED	1297.04	764.81	764.81
PANDHARKAVADA	807.54	0.00	0.00
PUSAD	1236.66	424.07	629.74
RALEGAON	760.55	0.00	0.00
WANI	883.04	361.79	1089.28
YEOTMAL	1157.22	0.00	0.00
ZARA ZAMANI	755.36	632.91	632.91
Total	**13578.12**	**4804.03**	**8934.77**

The total unsaturated volume available for artificial recharge is 8934.77 MCM and it ranges from 61.37 MCM in Ner block to 2425.83 MCM in Mahagaon block. The available surplus runoff, which can be utilized for artificial recharge through construction of percolation tanks, Check dams and Recharge shaft is 78.84 MCM.

This surplus water can be utilized by constructing 756 check dams, 275 percolation tanks and 15 recharge shafts at suitable sites. The number of feasible artificial recharge

structures was calculated by considering 0.20 MCM per percolation tanks, 0.03 MCM per check dam and 0.06 MCM per recharge shaft. This intervention should lead to recharge @ 75% efficiency of about 249.02 MCM/year (**Table 6.2**). Tentative locations of these structures are given in **Figure. 6.1** and details are given in **Annexures VII** and **VIII**.

The rainwater harvesting in urban areas can be adopted in 25- 50% of the household with 50 sq.m roof area. A total of 1.93 MCM potential can be generated by taking 75% runoff coefficient with a cost estimate of 217.33 corers. However, it is not economically viable and not recommended.

Table 6.2 Proposed Artificial Recharge Structures

Block	Volume of unsaturated granular zone (MCM)	Recharge Potential (MCM)	Surface water requirement @ 75% efficiency (MCM)	Availability of Surplus surface runoff (MCM)	No. of PT	N0. of CD	N0. of RS	Volume of Water expected to be conserved/ recharged @ 75% efficiency (MCM)
ARNI	0.00	0.00	0.00	0.00	0	0	0	0.00
BABULGAON	730.40	14.61	19.48	8.71	23	65	0	4.90
DARAVHA	495.82	9.92	13.22	12.98	34	97	0	7.30
DIGRAS	552.57	11.05	14.74	10.59	28	79	0	5.96
GHATANJI	0.00	0.00	0.00	0.00	0	0	0	0.00
KALAMB	0.00	0.00	0.00	0.00	0	0	0	0.00
MAHAGAON	2425.83	48.52	64.69	10.80	28	81	0	6.07
MAREGAON	1552.04	32.53	43.37	11.49	30	81	3	6.46
NER	61.37	1.23	1.64	4.12	4	12	0	0.92
UMARKHED	764.81	15.30	20.39	17.13	45	128	0	9.64
PANDHARKAVADA	0.00	0.00	0.00	0.00	0	0	0	0.00
PUSAD	629.74	12.59	16.79	9.50	25	71	0	5.34
RALEGAON	0.00	0.00	0.00	0.00	0	0	0	0.00
WANI	1089.28	28.37	37.82	8.11	21	36	12	4.56
YEOTMAL	0.00	0.00	0.00	0.00	0	0	0	0.00
ZARA ZAMANI	632.91	12.66	16.88	14.18	37	106	0	7.97
TOTAL	**8934.77**	**186.76**	**249.02**	**107.61**	**275**	**756**	**15**	**59.13**

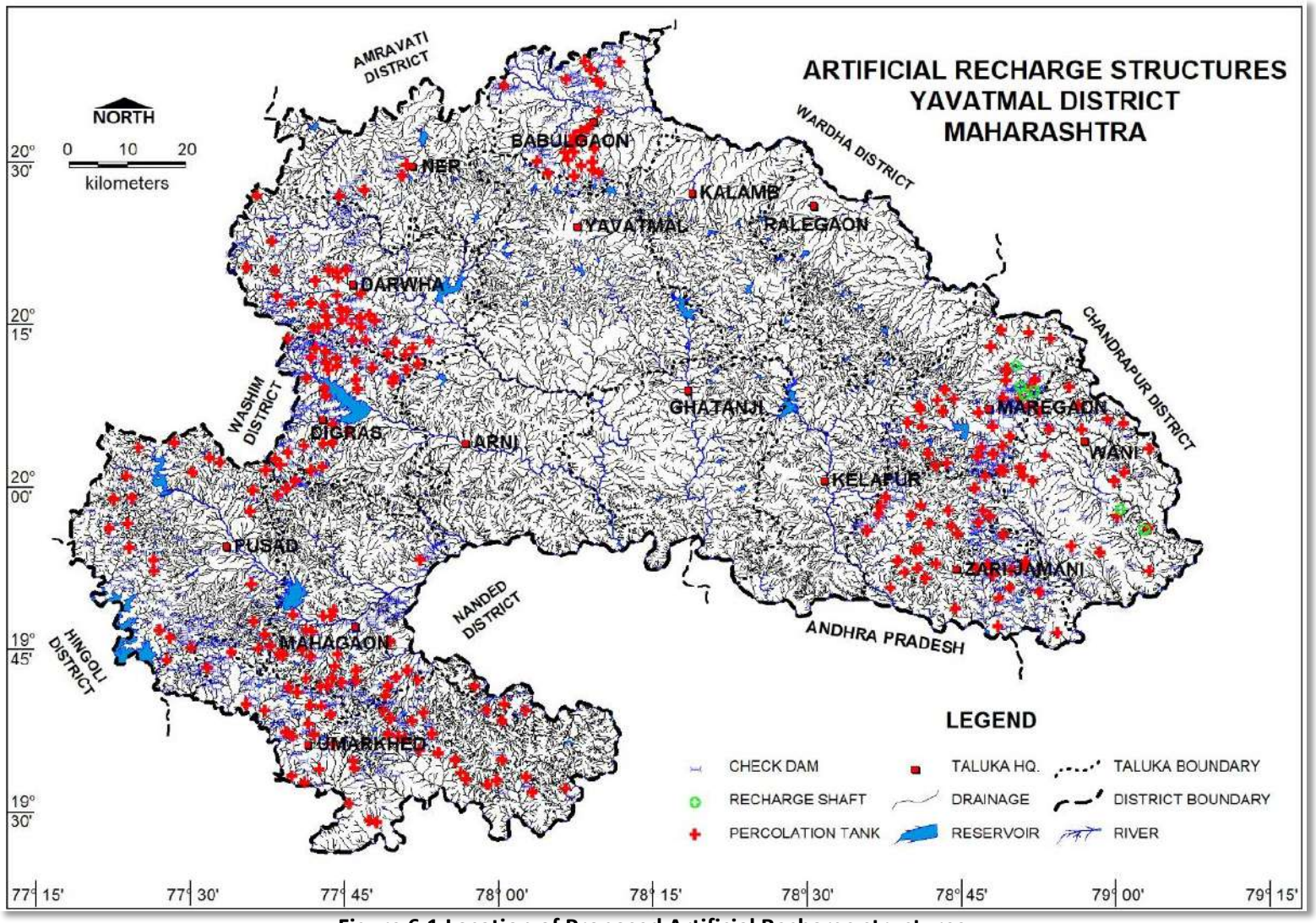


Figure 6.1 Location of Proposed Artificial Recharge structures

6.2 Demand Side Management

The Demand Side Management is proposed in areas where the Stage of Ground Water Development is relatively high and adopting micro-irrigation techniques for water intensive crops Sugarcane and cotton or change in cropping pattern or both are required to save water.

It is proposed to adopt drip irrigation under sugarcane crop in 36.64 sq. km area in 10 talukas of the district. This demand side intervention would lead to saving of 20.88 MCM of water (**Table 6.3**). **Figure6.2** depicts the demand side interventions proposed.

Table 6.3 Demand side interventions proposed.

Taluka	Sugarcane Area proposed to be covered under drip (sq.km)	Sugarcane Volume of Water expected to be saved with drip irrigation (MCM)	Total Volume of water saved after Demand side intervention (MCM)
ARNI	1.62	0.92	0.92
BABULGAON	0.56	0.32	0.32
DARAVHA	1.04	0.59	0.59
DIGRAS	0.78	0.44	0.44
GHATANJI	0.00	0.00	0.00
KALAMB	0.00	0.00	0.00
MAHAGAON	11.00	6.27	6.27
MAREGAON	0.00	0.00	0.00
NER	0.11	0.06	0.06
OMARKHED	20.20	11.51	11.51
PANDHARKAVADA	0.22	0.13	0.13
PUSAD	0.00	0.00	0.00
RALEGAON	0.01	0.01	0.01
WANI	0.00	0.00	0.00
YEOTMAL	1.10	0.63	0.63
ZARA ZAMANI	0.00	0.00	0.00
Total	**36.64**	**20.88**	**20.88**

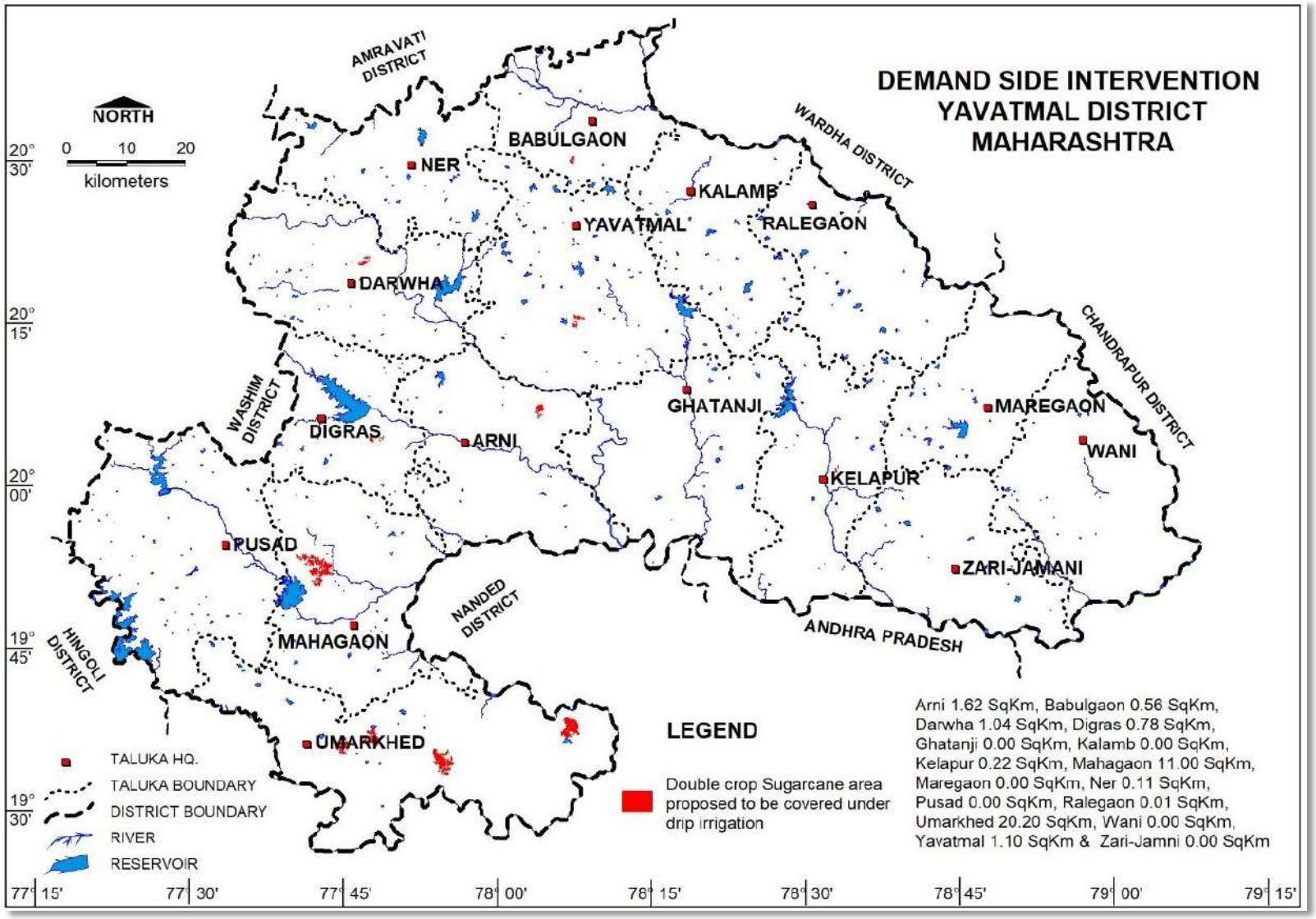


Figure 6.2 Demand Side Intervention

6.3 Expected Benefits

The impact of groundwater management plans on the groundwater system in the district after its implementation is evaluated and the outcome shows significant improvement in groundwater scenario in all Blocks as given in the **Table 6.4.**

It can be seen that after proposed supply side and demand side interventions, there would be 461.52 MCM ground water available for development. With this about 710.04 sq.km additional area can be irrigated.

Table 6.4 Expected benefits after management options

Taluka	Balance Ground water Available/ required to bring stage of GWD to 70% (MCM)	Volume of water expected to be saved due to Demand Side Interventions MCM	Total GW Extraction after Demand side intervention (MCM)	Stage of development after Demand side interventions	Balance Ground water Available/ required to bring stage of GWD to 70% (MCM)	Additional Area (sq.km.) proposed to be brought under assured GW irrigation with av. CWR of 0.65 m till 70% stage of GWD is achieved
ARNI	29.55	0.92	28.52	33.84	30.47	46.88
BABULGAON	18.46	0.32	22.49	38.15	18.78	28.89
DARAVHA	24.74	0.59	34.02	40.12	25.33	38.97
DIGRAS	18.62	0.44	23.56	38.69	19.06	29.32
GHATANJI	38.41	0.00	16.39	20.94	38.41	59.09
KALAMB	18.63	0.00	23.14	38.78	18.63	28.66
MAHAGAON	18.68	6.27	32.46	39.58	24.95	38.38
MAREGAON	17.97	0.00	13.01	29.40	17.97	27.65
NER	8.98	0.06	27.74	52.79	9.04	13.91
UMARKHED	59.41	11.51	30.33	20.97	70.93	109.12
PANDHARKAVADA	32.71	0.13	17.46	24.30	32.83	50.51
PUSAD	40.22	0.00	43.16	36.24	40.22	61.88
RALEGAON	20.56	0.01	24.55	38.09	20.57	31.65
WANI	33.83	0.00	24.47	29.38	33.83	52.05
YEOTMAL	28.51	0.63	35.14	38.27	29.14	44.83
ZARA ZAMANI	31.36	0.00	13.81	21.40	31.36	48.25
Total	**440.65**	**20.88**	**410.25**	**33.81**	**461.52**	**710.04**

6.4 Development Plan

The ground water development plan has been proposed in the view of developing the additional ground water resources available after supply side and demand side interventions to bring the stage of ground water development up to 70%. About 461.52 MCM of ground water would be available. This ground water can be used to irrigate additional 710.04 sq.km area (**Figure 7.3**). For this purpose, it is proposed to construct 27692 dugwells and 4615 borewells. The block wise details are given in **Table 7.5**.

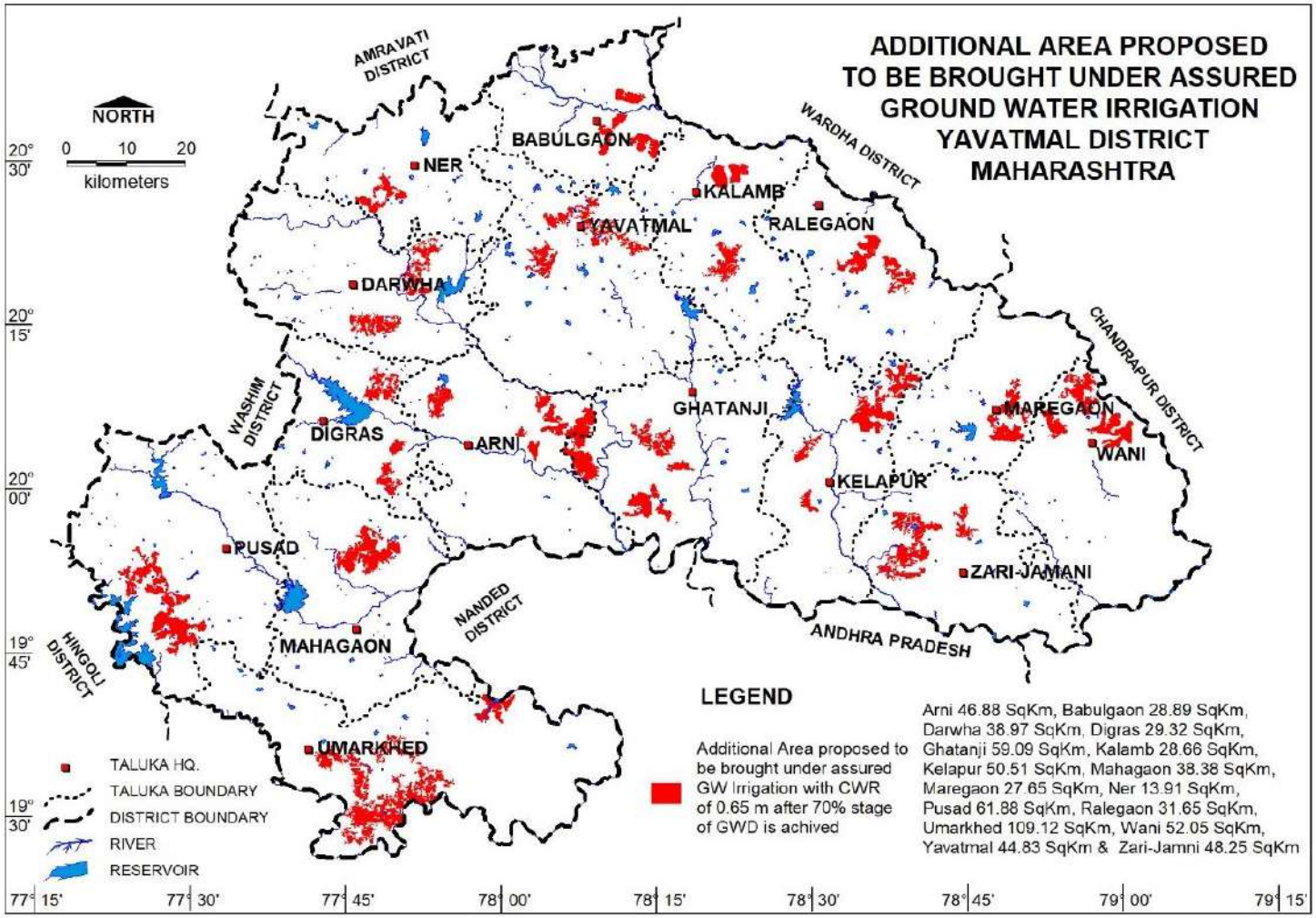


Figure 6.3 Additional area proposed to be brought under Assured Ground Water Irrigation

Table 6.5 Block wise additional area under assured GW Irrigation.

TALUKA	Additional Area (sq.km.) proposed to be brought under assured GW irrigation with av. CWR of 0.65 m till 70% stage of GWD is achieved	Proposed no. of DW (@ 1.5 ham for 90% of GWR Available)	Proposed no. of BW (@ 1 ham for 10% of GWR Available)
ARNI	46.88	1828	305
BABULGAON	28.89	1127	188
DARAVHA	38.97	1520	253
DIGRAS	29.32	1144	191
GHATANJI	59.09	2305	384
KALAMB	28.66	1118	186
MAHAGAON	38.38	1497	250
MAREGAON	27.65	1078	180
NER	13.91	542	90
UMARKHED	109.12	4256	709
PANDHARKAVADA	50.51	1970	328
PUSAD	61.88	2413	402
RALEGAON	31.65	1234	206
WANI	52.05	2030	338
YEOTMAL	44.83	1748	291
ZARA ZAMANI	48.25	1882	314
TOTAL	**710.04**	**27692**	**4615**

7. SUM UP

The highly diversified occurrence and considerable variations in the availability and utilization of groundwater makes its management a challenging task. Scientific development and management strategy for groundwater has become imperative to avert the looming water crisis. In this context, various issues such as, prioritization of areas for development of groundwater resources vis-a-vis its availability, augmentation of groundwater through rainwater harvesting and artificial recharge, pricing and sectoral allocation of resources and participation of the stakeholders must be considered. In view of the above, the present study area a systematic, economically sound and politically feasible framework for groundwater management is required.

A thorough study was carried out based on data gap analysis, data generated in-house; data acquired from State Govt. departments and GIS maps prepared for various themes. All the available data was brought on GIS platform and an integrated approach was adopted for preparation of block wise aquifer maps and aquifer management plans of Yavatmal district.

Geographically, Yavatmal district covers an area of 13578.13 sq. km, out of this 2537.69 sq. km area is occupied by forest. Geologically, the area is occupied by Basalt and Alluvium formations. As per Ground water assessment year 2020 the average stage of ground water development is 36.90 %. As per Ground water assessment 2020 the stage of ground water development are categorised as safe. The area has witnessed droughts, declining water level and low yield potential of aquifers are the major issues in the district.

During pre-monsoon, fall in water level trend has been recorded at all 180 stations and ranges from 0.255 (Ukani Wani block) to 1.34 m/year (Bhandegaon, Darwha block). During post monsoon, rise in water level trend has been recorded at 28 stations and it ranges between 0.0029 (Chaparda, Kalamb block) to 0.87 m/year (Bori Arab. Yavatmal block). While falling trend was observed in 47 stations varying from between 0.005 m/year (Umarda, Ner block) to 0.82 (Shiroli-PZ, Ghatanji block). Rising water level trend has been observed in parts of Darwha, Ner, Mahagaon, Maregaon, Kelapur and Yavatmal blocks.

The management plan has been proposed to manage the ground water resources and to arrest further decline in water levels. The management plan comprises two components namely supply-side management and demand side management.

As a part of Supply side Management, a total 275 Percolation tanks 756 Check dams and 15 Recharge shaft are proposed, which will augment ground water resources to the tune of 59.13 MCM.

As a part of Demand side Management, micro-irrigation techniques are proposed to be adopted in 36.64 Sq. Km of Sugarcane area thereby saving a total of 20.88 MCM of ground water.

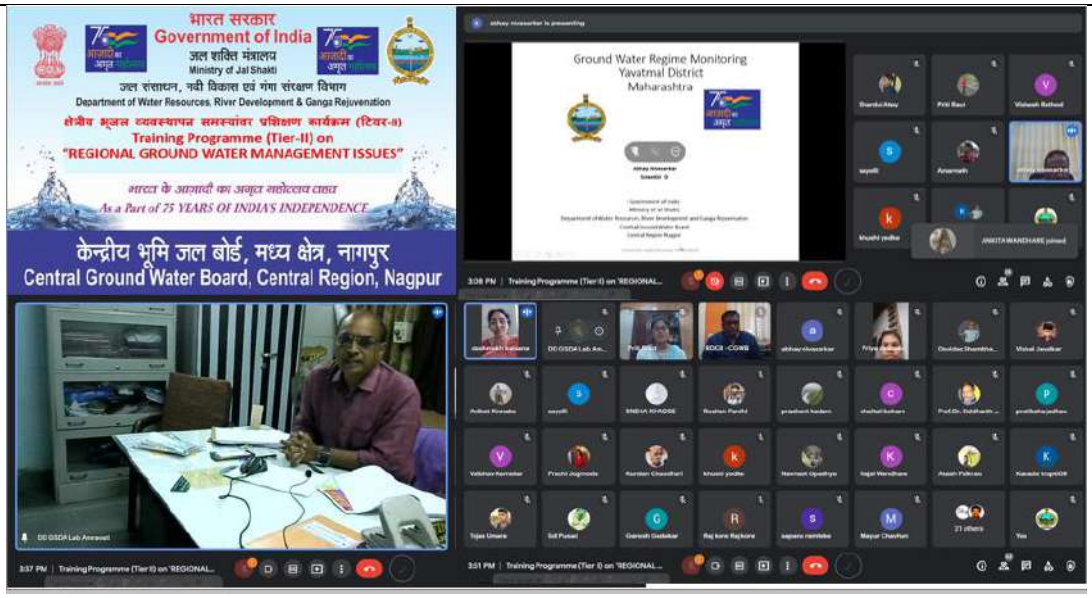
The ground water development plan has been proposed in view of the developing additional groundwater resources available after supply side interventions to bring the stage of ground water development up to 60-70%. Additional volume of ground water to the tune of 461.52 can bring 710.04 sq. km additional area under assured ground water irrigation through 27692 dugwells and 4615 borewells.

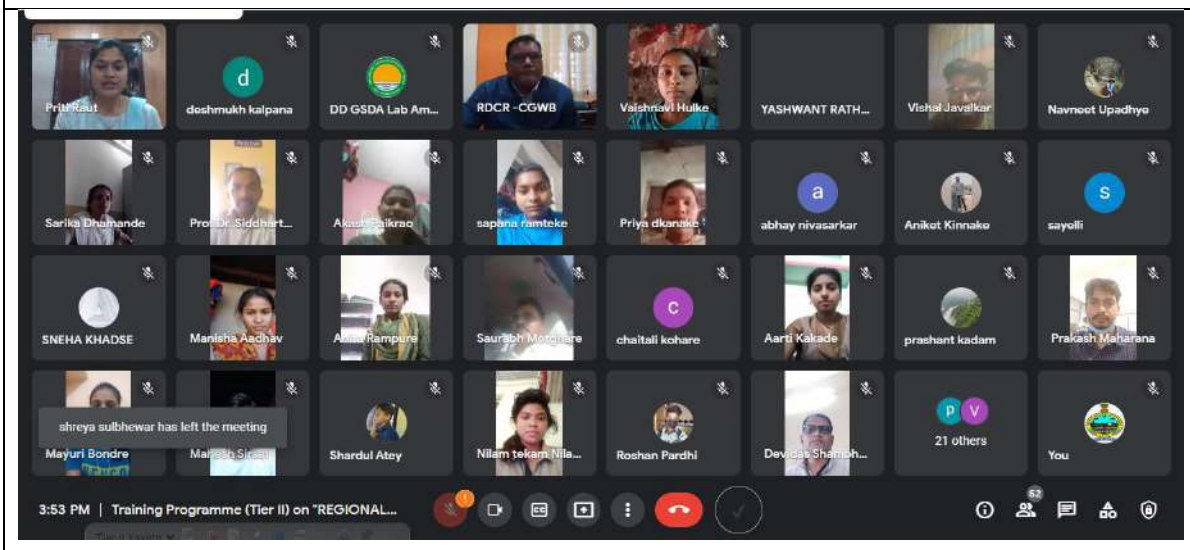
Thus, the focus of the proposed management plan was to groundwater very effectively with supply and demand-side interventions. The perusal of above groundwater management plan lays stress on adopting micro-irrigation techniques and artificial recharge measures. However, this is the right time to further enhance the micro-irrigation practices in the selected areas to manage the resources perceiving the future demand of resources.

Recommendations

- The interventions discussed above needs to be implemented to bring down the Stage of Ground Water extraction down and put a halt to further decline of ground water levels and improve the sustainability of groundwater resources.
- Land based interventions like construction of lined farm ponds, rehabilitation of existing farm ponds along with horticulture plantation as may be feasible to take on to increase the availability of irrigation water during both kharif (July to October) as well as rabi (October to March) season.
- Sustainable management of the area is required to be taken off to improve the quality and quantity of the groundwater and regular monitoring is therefore recommended.
- The interventions above need to be supported by regulation on extraction from deeper aquifer. So, the deeper ground water resources are protected for future generation and also serve as ground water sanctuary in times of distress/drought.
- In terms of the critical issues for the drinking water such as source sustainability, water quality management and better operation and maintenance, it is important that strong grassroots awareness is generated. Thus, IEC activities and capacity building activities needs to be aggressively propagated to establish the institutional framework for participatory ground water management. Awareness among stakeholders & their participation for ground water recharge and conjunctive use of available resource. Farmers should be trained for adopting more efficient irrigation techniques and water conservation practices and boosting recharge.
- As it is peek time to move to multi-disciplinary approach to save more water viz. Diversification in agriculture (horticulture, vegetables, green houses, agro-forestry, and fodder crops, Diversification of Livelihoods (Agriculture, Animal Husbandry, and Self-Employment).

INFORMATION, EDUCATION AND COMUNICATON (IEC) ATIVITIES





Online Tier II Yavatmal training programme of CGWB conducted on 23.02.2022 to 25.02.2022

ANNEXURES

Annexure 1. Salient Features of Ground Water Exploration

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
1	Arni	Sawali	56I/01	78.112500	19.952500	1993-94	EW	201.3	-	4.75	Sandstone	5 & 138 -	138.00	-	3.17	-			400	2.2	0.4
2	Arni	Sawali	56I/01	78.112500	19.952500	1993-94	OW	201.3	-	4	Sandstone	6 & 138 -	138.00	-	7.37	-			680	9	0
3	Arni	Dattarampur	55H/16	77.953333	20.101667	1994-95	EW	200	-	6.5	Basalt	109.3 -112.8 ,155.6 - 158.80	155.60	68	0.36	-			1730	25	0
4	Arni	Kurha	55L/04	78.124167	20.091667	1994-95	EW	201.3	201.3	7.5	Basalt	46 - ,87 -	87.00	30.07	0.6	-			1370	9	
5	Arni	Loni	55H/16	77.931111	20.189167	1994-95	EW	201.3	201.3	7.5	Vesicular basalt	11,13,22,27, 106-108,114-119 (Gepphysical logging)	109.00	10.16	1.37	-			690	8	0
6	Arni	Savali	56I/01	78.112500	19.952500	1995-96	PZ	50.05	-	7.5	F Basalt			46.5	-	-					
7	Babulgaon	Antargaon	55L/02	78.140278	20.536111	1992-93	OW	61	-	6.5				7.5	-	-					
8	Babulgaon	Antargaon	55L/02	78.140278	20.536111	1992-93	EW	88.4	-	-				-	-	-					
9	Babulgaon	Sarul	55L/02	78.147222	20.645833	1992-93	EW	128.1	-	11	F Basalt	12 -15.2 ,61 - 64	61.00	3.95	7.16	8.74	110	0.001	890	0	0
10	Babulgaon	Sarul	55L/02	78.147222	20.645833	1992-93	OW	94.5	-	11.15	F Basalt	12 -15	15.00	7.65	-	2.01			780	0	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
11	Babulgaon	Sindhi		78.227500	20.668889	2011-12	Pz	40.00	5.40					4.80	0.14						
12	Babulgaon	Antargaon	55L/02	78.582778	20.438333	2021-22	EW	200	200	13	F Basalt										
13	Bhadrawati	Aheri	55P/04	79.050000	20.066667	1984-85	EW	71	51	51	Sandstone	31 -35.5 ,38 -42	38.00	9.5	3.2	-			700	0	0
14	Bhadrawati	Bhola	55L/16	78.983333	20.125000	1984-85	EW	78.45	38	38	Sandstone	19.5 -23 ,24 -25	24.00	17	1.3	-			305	0	0
15	Bhadrawati	Junoda	56M/01	79.075000	20.050000		EW	96.4	94	94	Sandstone	34 -40 ,53 -71	71.00	18.5	6	-			850	0	0
16	Bhadrawati	Junoda	56M/01	79.075000	20.050000		OW	-	-	-				-	-	-					
17	Chamorshi	Niljai	56M/02	79.850000	19.983333	1986-87	EW	138.5	123	123	Sandstone	63 -69 ,71 -74 ,112 -120 ,81 -102	120.00	10	3.5	-			425	0	0
18	Chamorshi	Niljai	56M/02	79.850000	19.983333	1986-87	OW	125.75	123	123	Sandstone	63 -69 ,71.5 -74 ,112 -120 ,81 -102	112.00	10.8	3	-					
19	Chandrapur	Jugad	56M/01	79.141667	19.900000	1984-85	EW	56.5	-	-				-	-	-					
20	Chandrapur	Shivni	56M/04	79.100000	19.916667	1984-85	EW	70	64	64	Sandstone	22.00-25.00 27.00-38.00 42.00-51.00 55.0.-62.00	61.00	8.7	6	-			1140	0	0
21	Darwha	Kamathwada	55H/15	77.959722	20.337500	1992-93	EW	138.2	-	13.8	F Basalt	10 - ,14.5 - ,107.7 -108.7 ,73 -80	108.00	-	17.9	-			1540	3	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
22	Darwha	Kamathwada	55H/15	77.959722	20.337500	1992-93	OW	140.3	-	14.5	F Basalt	72 -73	73.00	-	0.78	-					
23	Darwha	Rajura	55H/11	77.718056	20.302778	1992-93	EW	183	-	-	F Basalt	5.5 -6.5	5.00	3.45	0.14	-			670	0	0
24	Darwha	Dahheli	55H/15	77.855556	20.263889	1993-94	EW	201.3	-	-	F Basalt			-	-	-					
25	Darwha	Darwha		77.770556	20.311389	2011-12	Pz	40.00	6.00					5.9	1.37						
26	Darwha	Sangvi		77.605556	20.417222	2011-12	Pz	40.00	3.10					6.1	0.38						
27	Digras	Tivri	55H/16	77.775000	20.169444	1992-93	EW	201.3	-	-	F Basalt			-	-	-					
28	Digras	Singad	55H/12	77.638889	20.047222	1994-95	EW	189.1	-	13.5	F Basalt	12 -13	13.00	2.7	0.05	-					
29	Digras	Tup Takali	55H/16	77.783333	20.076667	1994-95	EW	200	-	-	F Basalt		,.00	-	-	-					
30	Ghatanji	Rampur	55L/11	78.219167	20.057500	1993-94	EW	201.3	-	5	F Basalt		,.00	-	-	-					
31	Ghatanji	Ghatanji		78.319444	20.142778	2011-12	Pz	40.00	5.40					7.00	Traces						
32	Ghatanji	Kurli		78.299722	19.938056	2011-12	Pz	40.00	5.40					14.3	Traces						
33	Ghatanji	Patan		78.319444	20.142778	2011-12	Pz	40.00	4.40					38.00	Traces						

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
34	Ghatanji	Shiroli		78.250000	20.075000	2011-12	Pz	40.00	4.40					20.4	0.14						
35	Ghatanji	Titwi		78.425957	20.064302	2021-22	EW	200	200	200	F basalt	35.10-38.20 47.30-50.40	50.4	40	0.38						
36	Kalamb	Kotha	55L/16	78.275000	20.523611	1992-93	EW	85.4	85.4	6.5				-	-	-					
37	Kalamb	DongarKharda		78.450539	20.301083	2021-22	EW	200	200	12	F basalt	178.5-181.50	181.5	5.7	0.025				1559	6.8	2.1
38	Kalamb	Tirzada	55L/07	78.404674	20.438256	2021-22	EW	200	200	6	F Basalt										
39	Kelapar	Karjani	55G/12	78.450000	20.125000	1994-95	EW	115.8	-	2.5	F Basalt	48 -49 ,72 - 74, 102-103	103.00	40	5.94	-			950	1	0
40	Kelapar	Karjani	55G/12	78.450000	20.125000	1994-95	OW	112.8	-	13.5	F Basalt	26 - 27,107 - 108	108.00	39	3.77	-			1600	2.6	0
41	Kelapur	Mohada	55L/08	78.468333	20.223333	1993-94	EW	67.1	-	9.5	F Basalt	29 - ,46 -		5.7		-			920	11	0
42	Kelapur	Mohada	55L/08	78.468333	20.223333	1993-94	OW	91.5	-	12.5	F Basalt			-	-	-					
43	Kelapur	Saykheda	55L/12	78.5075	20.1352778	1993-94	EW	201.3			Basalt	8.00 & 80.00	0.00	8	1.37				500	9	
44	Kelapur	Saikheda	55L/12	78.507500	20.101944	1994-95	EW	201.3	-	8.05	Limestone	9 -10, 80.00-81.00	80.00	-	1.37	-			500	9	0
45	Kelapur	Bori (Patan)		78.505556	20.103056	2011-12	Pz	18.40	4.40					14.20	Traces						

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
46	Kelapur	Saykheda	55L/12	78.505556	20.103056	2011-12	Pz	40.00	5.40					6.50	1.37						
47	Kelapur	Wadki		78.576389	19.870278	2011-12	Pz	40.00	7.00					30.20	Traces						
48	Kelapur	Dharna		78.587783	20.107356	2021-22	EW	93.1	93.1	6	F basalt	3.00-4.00 55.00-56.50 79.50-80.50	80.9	40	0.78	1.23	16.2		1296	40	3
49	Kelapur	Dhoki		78.533963	19.934166	2021-22		14													
50	Mahagaon	Gunj	56E/09	77.718333	19.855556	1995-96	EW	200	200	13.5	F Basalt	10 -12.5 ,48 - 51 ,65.25 - 68.25 ,59 - 62.5 ,129 - 138.45	138.45	1.9	1.73	-			710	3.5	0
51	Mahagaon	Hiwara	56E/13	77.850833	19.845833	1995-96	EW	123.25	-	9.5	W Basalt	10 - ,41 -	41.00	2.49	3.413	6.5	295	9E-05	910	6.5	0
52	Mahagaon	Hiwara	56E/13	77.850833	19.845833	1995-96	OW	190.35	-	10	Basalt/ Quartzite			2.48		-			840		
53	Mahagaon	Mudana	56E/09	77.748056	19.005000	1995-96	EW	192.1	-	15.5	F Basalt	16.5 - ,102 -		-	1.05	-			560	0	0
54	Mahagaon	Mahagoan	56E/13/3A	77.781111	19.791111	2012-13	EW	200		6.1	WB, FG	14-15 and 36-37	37.99	8.34	1.37	37.9	0.01		1210	41.2	0.78
55	Mahagaon	Pimpalgoan	56E/9/2C	77.685556	19.879444	2012-13	EW-I	105		4.5	Nil	Nil		8.5	Negligible						
56	Mahagaon	Pimpalgoan	56E/9/2C	77.683333	19.879444	2012-13	EW-II	200		6.1	FB	108	108.00	10	0.14						

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
57	Mahagaon	Sawana	56E/9/3C	77.735278	19.811667	2012-13	OW	86.7		6.1	WFB	7,29,36	36.00	4	14.88						
58	Mahagaon	Sawana	56E/9/3C	77.735278	19.811667	2012-13	EW	141.6		7	WFB	10.40 to 13.50 & 34.80 to 37.90	37.90	3.94		20.7	181		770	39.4	0.73
59	Mahagaon	Waghnath	56E/13/3A	77.806944	19.826667	2012-13	EW	200		12.1		88	88.00	~10	0.14				1070		
60	Mahagaon	Weni Buzurg	56E/9/3C	77.686944	19.825556	2012-13	EW	140		5.7	FB	16.50 -19.60, 135.50 to 138.50 & 139.00 to 140.00	140.00	6.15					1490	10.6	1.68
61	Mahagaon	Weni Buzurg	56E/9/3C	77.686944	19.825556	2012-13	OW	132.4		6.1	FB	5.70 to 7.40m & 129.40 m to 132.40	132.40	3.77	12.18	34.7	4.72		1260	40.2	0.47
62	Mahagaon	Pohandul	56E/13	77.87385	19.893277	2021-22	EW	200	200	12	F Basalt										
63	Maregaon	Mardi	55L/16	78.845000	20.195833	1995-96	EW	86.25	-	7	Sandstone	8 - ,19.55 -		-	1.37	-			1260	0	0
64	Maregaon	Narali	56E/14	77.900833	19.675000	1995-96	EW	104.95	-	8		83 -89.55	89.55	15.94	8.5	11.9	23.5	1.07*10-5	1140	8	0
65	Maregaon	Narali	55E/14	77.900833	19.691667	1995-96	OW	135.45	-	7.5		83 -93	93.00	-	4.43	-			600	0	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
66	Maregaon	Nawargaon	55L/16	78.775833	20.072778	1995-96	EW	46.95	-	3.5	Basalt	42.75 -46.95	95.00	15.94	8.5	11.9	23.5	1.07*10-5	670	1.45	0
67	Maregaon	Nawargaon	55L/16	78.775833	20.072778	1995-96	OW	48	-	3.5		42 -48	48.00	14.8	5.94	-			550	0	0
68	Maregaon	Shimbala	56I/09	78.730556	19.979167	1995-96	EW	77	-	3	F Basalt	12 -20 ,45 -47 ,74.35 -77 ,64.5 -66	66.00	6.43	12.18	-	202	1.34*10-4	570	8.5	0
69	Maregaon	Shimbala	56I/09	78.730556	19.979167	1995-96	OW	19.55	-	-	F Basalt			-	-	-					
70	Maregaon	Shimbala	56I/09	78.719444	19.979167	1995-96	OW	101.85	-	18.5	F Basalt	18 - ,40 -42	42.00	6.5	14.88	-			530	9	0
71	Maregaon	Matharjuna	56I/09	78.670000	19.893333	1995-96	EW	34.3	-	11	Basalt/ Sandstone	24 -		7.39	14.88	-			650	20	0
72	Maregaon	Matharjuna	56I/09	78.670000	19.893333	1995-96	OW	43.95	-	-	Basalt/ Sandstone			6.85	-	-					
73	Ner	Satephal	55H/11	77.708333	20.461111	1990-91	EW	79.3	-	-	W Basalt			2.16	5.04	36.2	34.7	0.001	1250	0	0
74	Ner	Ajanti	55H/04	77.841667	20.509722	1992-93	EW	122	-	3.5	F Basalt	23 -		2.5	-	-			1450	0	0
75	Ner	Ajanti	55H/14	77.816667	20.5147222	1992-93	EW	122	122	3	Vesicular Basalt	23	23	2.1	0.14				1450		
76	Ner	Mangladevi	55H/04	77.961111	20.538889	1992-93	EW	201.3	-	3.5				-	-	-					

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
77	Ner	Satephal	55H/11	77.708333	20.461111	1992-93	OW	158.6	-	3.5	W Basalt	4.5 - ,19 - ,59 - ,51 -	59.00	2.2	5.94	32.3			1000	0	0
78	Ner	Satephal	55H/11	77.708333	20.461111	1992-93	EW2	158.6	-	3.55	W Basalt	5.5 - ,23 - ,59 - ,55 -	59.00	2.45	8.77	36.2					
79	Ner	Mojhar	55H/14	77.790833	20.542500	1995-96	PZ	19.45	-	3.3		13 -16.45	16.45	3.38	-	-			800	43	0
80	Ner	Manikwada (Dhanaj)		77.925833	20.530833	2011-12	Pz	40.00	5.90					4.2	Traces						
81	Ner	Ner		77.863889	20.496944	2011-12	Pz	40.00	3.10					14	Traces						
82	Pandharkawda	Pahaphal	56I/05	78.493333	19.996667	1993-94	EW	133.2	-	13.5	J MB	27 - ,61 - ,91 - ,75 - ,120 -	75.99	17.34	8	13.1	68.8	3.65*10-4	780	10	0
83	Pandharkawda	Pahaphal	56I/05	78.493333	19.996667	1993-94	OW	152.5	-	12.5	J MB	27 - ,61 - ,130 - ,120 -	120.99	7	12.18	-			650	6	0
84	Pandharkawda	Jamb	56I/05	78.397222	19.979167	1994-95	EW	173.8	-	-	F Basalt			-	3.77	-					
85	Pusad	Mandwa	56E/09	77.529167	19.848611	1994-95	EW	201.3	-	5.5	F Basalt	11 -14	14.00	4.1	1.25	-			1430	22	5
86	Pusad	Nanad	56E/05	77.422222	19.837500	1994-95	EW	201.3	-	3.2	F Basalt	7.20-20.00, 22.4-59, 62.	140.00	4.68	1.73	-	2.5	1.269*10-4	1200	5	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
87	Pusad	Warud	56E/09	77.576667	19.950833	1994-95	EW	201.3	-	7.5	F Basalt	52 -54	54.00	3	3	-			1000	11	0
88	Pusad	Shembalpimpri	56E/06	78.681667	19.980000	1995-96	EW	201.3	-	3	F Basalt	6.1 -15.2 ,88 -94	94.00	23.8	0.38	-			480	3	0
89	Pusad	Bhojla	56E/9/1A	77.537500	19.953333	2012-13	OW	80		6.1	WB	10.40-13.50	50.99	7.4	0.14	38.9	0.07				
90	Pusad	Bhojla	56E/9/1A	77.537500	19.953333	2012-13	EW	200		6.1	FB	14.10-15.14 and 172.10-175.10	175.10	7.25	3.17						
91	Pusad	Dhansal	56E/9/2A	77.501389	19.876667	2012-13	EW	200		6.1	FB	38	38.00	12.5	Negligible						
92	Pusad	Gaula	56E/5/3B	77.613333	19.783611	2012-13	EW	200	200	4.5	FB	154	154.00	8	Dry						
93	Pusad	Jamb bazar	56E/5/1C	77.488889	19.960000	2012-13	EW	200		6.1	WVB	7.5	7.50	10	Negligible						
94	Pusad	Kandhala	56E/5/2C	77.452778	19.898611	2012-13	EW	200		6.1	VB	170-172	172.00	>50	0.78						
95	Pusad	Moha	56E/9/1B	77.596667	19.959444	2012-13	EW	200		6.1	Nil	Nil		>30.00	Negligible						
96	Pusad	Nimbi	56E/9/1A	77.540833	19.916944	2012-13	EW	200		19.2	FVB	120	120.00	20	1.37	37.9					
97	Pusad	Weni Khurd	56E/9/3B	77.587222	19.828056	2012-13	EW	200		7	Nil	Nil		>30	Negligible						
98	Pusad	Pusad/Kakad Dati		77.538056	19.879444	2013-14	EW	200		6.1	FB	31-32	32.00	>30	Traces	NA			NA		

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
99	Pusad	Wadgoan		77.452500	19.981944	2013-14	EW	123.3		6.1	FB	86.7-92.90	90.99	19.1	5.94						
100	Pusad	Wadgoan		77.452500	19.981944	2013-14	OW	200		6.1	NA	NA	NA	20	Traces	NA			NA		
101	Ralegaon	Khairi	55L/15	78.759167	20.263333	1993-94	EW	131.1	-	2.5	F Basalt	36 - ,40 -43	43.00	27.4	4.5	21	16.1		1000	5	0
102	Ralegaon	Khairi	55L/15	78.759167	20.263333	1993-94	OW	158.6	-	4	F Basalt	15 - ,67 -		10.78	3.17	0.13			940	3	0
103	Ralegaon	Sawangi Perka	55L/11	78.548333	20.405000	1994-95	EW	201.3	-	17.5	W Limestone	25 - ,146 -	146.00	-	1.05	-			820	9.1	0
104	Ralegaon	Ralegaon		78.514722	20.421111	2011-12	Pz	22.35	4.40					4.45	Traces						
105	Saoli	Wadgaon Tip	55L/16	79.971667	20.112500		EW	75	38	33	Sandstone	33 -35	35.00	8	0.8	-					
106	Umarkhed	Dhanora (S)	56E/14	77.792778	19.545000	1994-95	EW	79	-	14	F Basalt	75 -79	79.00	4.37	17.72	-			620	Nil	0.05
107	Umarkhed	Dhanora (S)	56E/14	77.792778	19.545000	1994-95	OW	79.2	-	14.25	F Basalt	78.25 -79.2	2.99	-	17.72	-					
108	Umarkhed	Palsi	56E/10	77.605833	19.650000	1994-95	EW	201.3	-	11.31	F Basalt	61 - ,138 -		6.65	1.73	-			1200	9	0
109	Umarkhed	Jeoli	56I/02	78.002222	19.008333	1995-96	EW	191.85	-	5.5		4 -7.35 ,28.5 -31.75	31.75	-	8.117	-	19.2	1E-04	530	14	0
110	Umarkhed	Jeoli	56I/02	78.002222	19.008333	1995-96	OW	152	-	7		5 -7.35 ,20 - 22.55	22.55	-	5.15	-		1.4*10-4	650	4	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
111	Umarkhed	Umarkhed		77.691389	19.601111	2011-12	Pz	40.00	4.40					31	Traces						
112	Wani	Besa	55P/04	79.016667	20.029167	1983-84	EW	100.3	62	51.00 Housing	Sandstone	51 -53 , 56 - 59.	59.00	4.9	0.8	-			2320		
113	Wani	Bhalar	55P/04	79.016667	20.033333	1983-84	EW	326.91	325	325	Sandstone	292-297, 304-306, 318.5-318.8	318.80	5.4	1	30.9	2.26		4100	0	0
114	Wani	Kolgaon	55M/01	79.100000	19.866667	1983-84	EW	68	51.7	35.21 Housing	Kamthi Sandstone	35.21-37.94 40.94-49.25	49.25	10.5	0.96	-					
115	Wani	Lalguda	55L/16	78.966667	20.033333	1983-84	EW	93	90	32 m Housing	Kamthi Sandstone	32.00-35.00 48.00-50.00 85.00-87.00	87.00	6.9	12	-					
116	Wani	Mandar	55L/16	78.975000	20.004167	1983-84	EW	70	68.48	25.12 housing	Sandstone	25.12-32.2938.33-44.6450.68-66.48	66.48	8	8.3	-			360	0	0
117	Wani	Mangoli	56 M/1	79.1125	19.9	1983-84	Deposite well	69	56		sand	25.00-37.00 42.00-47.00 51.00-53.00	53	5.8	1.36						
118	Wani	Manki	55I/13	78.933333	20.016667	1983-84	EW	107	-	-				-	-	-					
119	Wani	Mugoli	56M/01	79.112500	19.900000	1983-84	EW	69	56	25.00 Housing	Kamthi Sandstone	25 -37 ,42 - 47, 51-53	53.00	5.8	1.36	-			1390	0	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
120	Wani	Neral	56I/13	78.900000	19.866667	1983-84	EW	69.5	65	23.00 Housing	Kamthi Sandstone	23.00-31.00 44.00-47.00 49.00-62.00	62.00	7.55	2.6	-			2100	0	0
121	Wani	Nilapur	55L/16	79	20.05	1983-84	(Deposit well)	96.87	22	15.00 (Housing)	Kamthis	15-20	20.00	4	3.15	-			1990		
122	Wani	Pilki Waduna		78.845833	19.8833333	1983-84	Deposite well	100.25	87		sand	46.50-48.50 55.00-56.50 76.00-77.50 81.00-84.00	84	9.2	0.8						
123	Wani	Sawarla	55L/16	78.987500	20.100000	1983-84	EW	139	-	-	Kamthis			-	-	-					
124	Wani	Wadona Pilki	56I/13	78.850000	19.891667	1983-84	EW	100.25	87	46.40 Housing	Kamthi Sandstone	46.5 -48.5, 55 -56.5 ,81 -84 ,76 -77.5, 81 -84.	84.00	9.2	3.2	-			1425	0	0
125	Wani	Wani		78.983333	20.050000	1983-84	EW	96.87	22	22	Sandstone	15 -20	20.00	4	3.1	-			1990	0	0
126	Wani	Zohla	55L/16	78.11667	20	1983-84	(Deposit well)	78.45	38	19.50 (Housing)	Kamthis	19.50-23, 24-25, & 34-35	38	17	1.36	-			540		
127	Wani	Borgaon	55P/04	79.066667	20.066667	1984-85	EW	71	70.94	70	Sandstone	25 -32 ,55 -58	58.00	13	5	-			660	0	0
128	Wani	Chargaon	56I/13	78.983333	19.983333	1984-85	EW	94.64	23	23	Sandstone	16.5 -20	20.00	3.6	3.1	-			120	0	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
129	Wani	Chikkli	56M/02	79.100000	19.850000	1984-85	EW	62.75	62	62	Kamthi Sandstone	34.00-40.00 50.00-60.00	60.00	18	0.8	-			810	0	0
130	Wani	Nimbala	55L/16	78.900000	20.098611	1984-85	EW	118	-	-				-	-	-					
131	Wani	Pimpalgaon		79.066667	20.033333	1984-85	EW	70	-	-				-	-	-					
132	Wani	Sakhra	56I/13	79.116667	19.883333	1984-85	EW	69	64	68	Sandstone	26 -28 ,31 - 34 ,55 -61 ,36 -38.5	61.00	9.7	11.6	-			1590	0	0
133	Wani	Wani R.S.	55L/16	78.966667	20.050000	1984-85	EW	450.5	315	315	Sandstone	44 -51 ,207 - 210 ,311 - 314 ,302 - 309	314.00	-	-	-			1300	0	0
134	Wani	Shirpur	56M/01	79.016667	19.966667	1985-86	EW	470	467	464	Sandstone	10 -23 ,322 - 326 ,422 - 432 ,378 - 398.41 ,446 - 470	470.00	19	2.16	-			1650	0	0
135	Wani	Shirpur	56M/01	79.016667	19.966667	1985-86	OW	31.8	21	21	Sandstone	4 -15	15.00	-	-	-					
136	Wani	Naigaon Bk	56M/01	79.075000	19.933333	1986-87	EW	253.01	251	251	Sandstone	134 -135 ,153 -156, 176 -186 ,160 -166 ,189 -193 ,210 -220 ,227 -230 ,243 -252	252.00	10.5	5.85	-	61	$4.4*10^{-4}$	3100	0	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
137	Wani	Naigaon Bk	56M/01	79.075000	19.933333	1986-87	OW	103.93	104	104	Sandstone	60 -77 ,85 -102	102.99	17	-	-			170	0	0
138	Wani	Naigaon Bk	56M/01	79.075000	19.933333	1986-87	OW	250.01	249	249	Sandstone	134 -142 ,154 -158 ,197 -203 ,176 -192 ,212 -214 ,243 -246	246.00	12	4.5	-					
139	Wani	Sakhra Tara	56M/13	78.850000	19.933333	1986-87	OW	-	-	-	Sandstone			-	-	-					
140	Wani	Sakhra Tara	56I/13	78.850000	19.933333	1996-97	EW	453	423	423	Sandstone	385 -405 ,410 -420	420.99	-	-	-					
141	Wani	New Waghdara		78.95	20.0417	1998-99	PZ	230	-	103	Kamthis	96 -101	101.00	-	4.25	-					
142	Wani	Punwat		79.075	19.9417	1998-99	PZ	103.51	-	99	Barakars	96 -101	101.00	-		-			1000	132	2
143	Wani	Sakhra I		79.125	19.9	1998-99	PZ	148.2	-	126	Barakars	121 -124	124.00	11.1	0.21	-			540	21	1.25
144	Wani	Sakhra II		79.125	19.9	1998-99	PZ	31.45	-	27	Kamthis	19 -25	25.00	7.03	1.37	-			950	68.4	0.8
145	Wani	Waghdara	55L/12	78.962778	20.0355556	1998-99	PZ	230			Sandstone			9.53	5.43				380	12	0.34
146	Wani	Dhoptala	55L/16	78.991667	20.041667		EW	68.9	56.5	30	Sandstone	30 -31 ,41.8 -45.3	45.30	3.7	4.4	-			4200	0	0
147	Wani	Lathi	55P/04	79.025000	20.016667		EW	62.75	61	61	Sandstone	28 -31 ,34.75 -41	75.00	5.55	7.7	-			2900	0	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
148	Wani	Niwali	55P/04	79.044444	19.995833		EW	75.1	74.1	72.1	Sandstone	22.1 -28.35 ,53.35 -59.6 ,65.85 -72.1 ,62.6 -65.85	65.85	4.27	1.4	-			1960	0	0
149	Wani	Petur	56I/13	78.941667	19.991667		EW	321	319	319	Sandstone	148 -154 ,164 -168 ,223 -232 ,174 -189 ,248 -252 ,258 -263 ,269 -278 ,280 -286 ,289 -298 ,308 -316	316.00	-	-	-					
150	Wani	Taroda	55M/01	79.063889	19.987500		EW	74	65	24	Sandstone	23.77 -26.21 ,34.75 -52.42 ,60.35 -64 ,54.25 -58.52	75.00	6.25	2.1	-					
151	Yavatmal	Chichbardi	55L/03	78.050833	20.389722	1993-94	EW	133	-	7.35	F Basalt			-	-	-					
152	Yavatmal	Hivri	55L/03	78.038889	20.254167	1993-94	EW	201.3	-	9.6	F Basalt	10.5 -		3.3	0.38	-			610	5	1.2
153	Yavatmal	Jodmoha	55L/07	78.295833	20.319167	1993-94	EW	103.7	-	-	Basalt			-	-	-					
154	Yavatmal	Lohara	55L/03	78.088889	20.390278	1993-94	EW	139.3	-	5.5	F Basalt	15.2 -18.3 ,130 -131	131.00	3.2	10.98	-			890	15	0
155	Yavatmal	Lohara	55L/03	78.088889	20.390278	1993-94	OW	103.7	-	-	F Basalt	30 -33.5	33.50	3.5	3.17	-			990	16	0

Sr.No.	Block/ Taluka	Village	Toposheet	Long	Lat	Year	Type	Depth Drilled (m bgl)	Depth of well constructed(mbgl)	Casing depth (m bgl)	Aquifer	Aquifer Zones encountered (mbgl)	Depth of Occurance	S.W.L (m.bgl)	Discharge (lps)	Drawdown (m)	T (m^2/day)	S	EC	NO_3 (mg/l)	F (mg/l)
156	Yavatmal	Yelbara	55L/08	78.310833	20.240000	1993-94	EW	109.8	-	69.6	F Basalt	12 & 73-		64	0.38	-			1660	2.4	0
157	Yavatmal	Akola Bazar		78.142222	20.164167	2011-12	Pz	40.00	5.40					6.55	3.17						
158	Yavatmal	Bhari		78.198611	20.387222	2011-12	Pz	40.00	5.40					4.9	0.38						
159	Yavatmal	Yelabara	55L/08	78.308889	20.240833	2011-12	Pz	40.00	5.40					4.7	0.38						
160	Yavatmal	Dahegaon		78.720735	20.202763	2021-22	EW	130	130	12	Sand	71.70-74.00 81.00-83.90	87	16.28	3.28	20.6			1038	2.7	2
161	Yavatmal	Dahegaon		78.720735	20.202763	2021-22	OW	151	151	12	Sand	65.60-68.70 74.80-77.80	87	16.28	3.28	20.6			1224	2.9	3.5
162	Yavatmal	Jamb		78.10472	20.32194	2021-22	EW	135.8	135.8	12	F basalt	3.00-4.00 19.90-22.90 44.30-50.40	50.4	5.7	3.6	40.5	2.37	5E-04	649	114	0.1
163	Yavatmal	Jamb		78.10472	20.32194	2021-22	OW	123.6	123.6	12	F basalt	29.00-32.10 41.20-44.30	44.3	5.7	3.6	40.5					
164	Zari Zamni	Karanji		78.696667	19.804722	2011-12	Pz	40.00	5.40					-	Traces						
165	Zari Zamni	Mukutban		78.854167	19.811667	2011-12	Pz	23.00	5.40					10.60	Traces						
166	Zari Zamni	Pandhar Kawada		78.854167	19.811667	2011-12	Pz	40.00	9.40					9.50	Traces						
167	Maregaon	Narsala		78.771274	20.117048	2021-22	EW	62.6						dry							

Annexure 2. Water Level of GW monitoring wells Pre-monsoon in Yavatmal district (GSDA)

S.No.	District	Tehsil	Village	Lat	Long	Pre-monsoon 2021 WL bgl (m)
1	Yavatmal	Arni	Antargaon	20.04027778	77.99027778	8.2
2	Yavatmal	Arni	Arni	20.06944444	77.9625	8
3	Yavatmal	Arni	Ayata	19.93472222	78.18333333	7.5
4	Yavatmal	Arni	Belura Van	20.01333333	78.06805556	8.3
5	Yavatmal	Arni	Borgaon	20.13055556	78.14027778	9
6	Yavatmal	Arni	Dabhadi	20.08055556	78.01666667	5.6
7	Yavatmal	Arni	Deurwadi	20.03638889	77.93277778	4.95
8	Yavatmal	Arni	Jawala	20.15	77.95	9.05
9	Yavatmal	Arni	Kurha	20.09166667	78.125	6.35
10	Yavatmal	Arni	Lonbehel	19.975	77.925	7.15
11	Yavatmal	Arni	Sawli	19.95	78.10833333	6.9
12	Yavatmal	Arni	Sukhali	20.00277778	77.94722222	6.3
13	Yavatmal	Arni	Talni	20.09555556	78.14555556	6.2
14	Yavatmal	Arni	Taroda	20.175	77.96555556	11.75
15	Yavatmal	Arni	Umri	19.925	78.14305556	9.5
16	Yavatmal	Babulgaon	Antargaon	20.53611111	78.13611111	10
17	Yavatmal	Babulgaon	Dabha	20.59583333	78.01666667	5.25
18	Yavatmal	Babulgaon	Dehani	20.55833333	78.04444444	7
19	Yavatmal	Babulgaon	Falegaon	20.63333333	78.12777778	10.5
20	Yavatmal	Babulgaon	Hatola	20.51666667	78.04194444	6
21	Yavatmal	Babulgaon	Karalgaon	20.48166667	78.13333333	4.7
22	Yavatmal	Babulgaon	Kharda	20.62083333	78.17222222	5.6
23	Yavatmal	Babulgaon	Madhani	20.48055556	78.2	7.5
24	Yavatmal	Babulgaon	Maralpur	20.50416667	78.20694444	5.9
25	Yavatmal	Babulgaon	Mitnapur	20.54722222	78.19166667	7.9
26	Yavatmal	Babulgaon	Nandura bk.	20.57916667	78.08611111	9.8
27	Yavatmal	Babulgaon	Pahur	20.6	78.05	6.55
28	Yavatmal	Babulgaon	Shindi	20.66666667	78.22777778	5.25
29	Yavatmal	Babulgaon	Virkhed	20.56666667	78.2	6.3
30	Yavatmal	Darwha	Bhandegaon	20.36666667	77.68944444	7.5

S.No.	District	Tehsil	Village	Lat	Long	Pre-monsoon 2021 WL bgl (m)
31	Yavatmal	Darwha	Bori Arab	20.34722222	77.86527778	10.55
32	Yavatmal	Darwha	Darwha	20.30833333	77.77083333	6
33	Yavatmal	Darwha	Kamathwada	20.33611111	77.96388889	8.5
34	Yavatmal	Darwha	Lakhkhind	20.23333333	77.78333333	11.15
35	Yavatmal	Darwha	Mahatuli	20.21916667	77.8675	7.55
36	Yavatmal	Darwha	Mangkinhi	20.30083333	77.655	7.9
37	Yavatmal	Darwha	Mozar	20.35	77.95694444	5.2
38	Yavatmal	Darwha	Sangwi (rly)	20.41666667	77.60833333	6.5
39	Yavatmal	Darwha	Shelodi	20.32083333	77.82083333	9
40	Yavatmal	Darwha	Uchegaon	20.25333333	77.88388889	8
41	Yavatmal	Digras	Arambhi	20.16444444	77.81722222	8
42	Yavatmal	Digras	Digras	20.10333333	77.72333333	9.9
43	Yavatmal	Digras	Harsul	20.18888889	77.675	11
44	Yavatmal	Digras	Lakh(r)	20.08611111	77.80555556	9
45	Yavatmal	Digras	Malhiwara	19.96666667	77.85416667	10.1
46	Yavatmal	Digras	Mandwa	20.15833333	77.69305556	7
47	Yavatmal	Digras	Singad	20.04444444	77.64027778	8
48	Yavatmal	Digras	Tiwari	20.16361111	77.76805556	7.45
49	Yavatmal	Digras	Vitholi	20.05416667	77.75416667	8.1
50	Yavatmal	Ghatanji	Belura	20.16388889	78.3125	11.1
51	Yavatmal	Ghatanji	Jarur	20.12083333	78.44305556	12
52	Yavatmal	Ghatanji	Kurali	19.93833333	78.30333333	7.6
53	Yavatmal	Ghatanji	Mandwa	20.07916667	78.39583333	7.1
54	Yavatmal	Ghatanji	Mangi	19.90277778	78.375	7.05
55	Yavatmal	Ghatanji	Manjari	20	78.2	5
56	Yavatmal	Ghatanji	Manoli	20.11666667	78.3	7.3
57	Yavatmal	Ghatanji	Parwa	19.98333333	78.35	6.1
58	Yavatmal	Ghatanji	Sasani	20.11388889	78.2375	8.15
59	Yavatmal	Ghatanji	Sayatkharda	20.01944444	78.26805556	10.05
60	Yavatmal	Ghatanji	Vilayata	19.94444444	78.1875	9.25
61	Yavatmal	Ghatanji	Yerandgaon	20.04166667	78.34027778	9
62	Yavatmal	Kalamb	Chaparda	20.40694444	78.27083333	5.5

S.No.	District	Tehsil	Village	Lat	Long	Pre-monsoon 2021 WL bgl (m)
63	Yavatmal	Kalamb	Chincholi	20.52083333	78.47916667	9.5
64	Yavatmal	Kalamb	Dongarkharda	20.30027778	78.44638889	6
65	Yavatmal	Kalamb	Jodmoha	20.31666667	78.3	7.65
66	Yavatmal	Kalamb	Kamathwada	20.48	78.35444444	8
67	Yavatmal	Kalamb	Kinwat	20.27083333	78.48888889	10
68	Yavatmal	Kalamb	Metikheda	20.24166667	78.43333333	8.35
69	Yavatmal	Kalamb	Pahur (ijara)	20.23333333	78.40472222	7
70	Yavatmal	Kalamb	Pilkhana	20.24166667	78.42361111	6.8
71	Yavatmal	Kalamb	Rajur	20.40416667	78.40416667	8.85
72	Yavatmal	Kalamb	Satefal	20.51805556	78.33611111	12.45
73	Yavatmal	Kalamb	Umri	20.45416667	78.45	9
74	Yavatmal	Kelapur	Borgaon Kadu	19.97916667	78.59166667	8
75	Yavatmal	Kelapur	Chanakha	19.80555556	78.50972222	10.5
76	Yavatmal	Kelapur	Dharna	20.10694444	78.59166667	4.35
77	Yavatmal	Kelapur	Ghubadi	19.83111111	78.47194444	5
78	Yavatmal	Kelapur	Khairgaon	20.0625	78.55833333	7
79	Yavatmal	Kelapur	Marathwakdi	19.9625	78.5375	6.95
80	Yavatmal	Kelapur	Mohda	20.225	78.475	8.1
81	Yavatmal	Kelapur	Pahapal	19.99722222	78.49166667	5.5
82	Yavatmal	Kelapur	Sunna	19.92083333	78.5375	7.8
83	Yavatmal	Kelapur	Warha	19.88611111	78.55972222	13
84	Yavatmal	Mahagaon	Amni	19.77666667	77.79166667	15.2
85	Yavatmal	Mahagaon	Dhanoda	19.86111111	77.88361111	10.85
86	Yavatmal	Mahagaon	Kaurwadi	19.82222222	77.75555556	12
87	Yavatmal	Mahagaon	Sawna	19.81305556	77.73194444	6.6
88	Yavatmal	Mahagaon	Shirpur	19.85	77.76666667	8
89	Yavatmal	Mahagaon	Tembhi	19.75	77.84166667	7.2
90	Yavatmal	Mahagaon	Wadad	19.98333333	77.65694444	8.15
91	Yavatmal	Maregaon	Buranda	20.1	78.73333333	9.5
92	Yavatmal	Maregaon	Gaurala	20.11666667	78.86666667	19.9
93	Yavatmal	Maregaon	Jalka	20.13194444	78.66805556	10.1
94	Yavatmal	Maregaon	Karanwadi	20.09166667	78.775	7.5

S.No.	District	Tehsil	Village	Lat	Long	Pre-monsoon 2021 WL bgl (m)
95	Yavatmal	Maregaon	Navargaon	20.07916667	78.775	13.1
96	Yavatmal	Maregaon	Pathri	20.14305556	78.83333333	8.15
97	Yavatmal	Maregaon	Pisgaon	20.14305556	78.83333333	9.4
98	Yavatmal	Ner	Bangaon	20.43888889	77.79444444	8
99	Yavatmal	Ner	Brahmanwada	20.54722222	77.73055556	5.55
100	Yavatmal	Ner	Dhanaj	20.53333333	77.975	6.1
101	Yavatmal	Ner	Gharefal	20.45833333	77.73611111	6
102	Yavatmal	Ner	Khandala	20.58611111	77.87083333	7.5
103	Yavatmal	Ner	Ner	20.48611111	77.86666667	6
104	Yavatmal	Ner	Pimprikalga	20.60416667	77.89861111	11.95
105	Yavatmal	Ner	Uttarwadhona	20.43333333	77.97638889	8
106	Yavatmal	Ner	Watfali	20.48611111	77.86666667	8.2
107	Yavatmal	Pusad	Bhojla	19.95138889	77.53611111	7
108	Yavatmal	Pusad	Chikhali	19.9875	77.45416667	8.6
109	Yavatmal	Pusad	Chondhi	20.02888889	77.52333333	7.1
110	Yavatmal	Pusad	Jamb(n)	19.78611111	77.4	8.5
111	Yavatmal	Pusad	Khandala	19.89444444	77.44861111	8
112	Yavatmal	Pusad	Manikdoh	19.85	77.50333333	6.5
113	Yavatmal	Pusad	Nanad	19.84027778	77.41944444	8.3
114	Yavatmal	Pusad	Pimpalkhuta	19.97638889	77.54666667	
115	Yavatmal	Pusad	Pusad	19.91666667	77.58333333	7.15
116	Yavatmal	Pusad	Shelu (bk)	19.85555556	77.58111111	6.45
117	Yavatmal	Pusad	Shilona	19.75416667	77.61416667	6.1
118	Yavatmal	Pusad	Udadi	20.01388889	77.40361111	6.55
119	Yavatmal	Pusad	Warud	19.96111111	77.57777778	6
120	Yavatmal	Ralegaon	Ashtona	20.23333333	78.7625	7.1
121	Yavatmal	Ralegaon	Khadki	20.29583333	78.7	8.6
122	Yavatmal	Ralegaon	Khairi	20.27083333	78.7625	12
123	Yavatmal	Ralegaon	Kinhi jawade	20.23611111	78.69222222	7.65
124	Yavatmal	Ralegaon	Ralegaon	20.425	78.525	10.95
125	Yavatmal	Ralegaon	Ramtirth	20.425	78.525	16
126	Yavatmal	Ralegaon	Wadhona bz	20.30833333	78.62833333	7

S.No.	District	Tehsil	Village	Lat	Long	Pre-monsoon 2021 WL bgl (m)
127	Yavatmal	Ralegaon	Zadgaon	20.36666667	78.55444444	8.15
128	Yavatmal	Umarkhed	Akoli	19.56666667	77.90888889	7.65
129	Yavatmal	Umarkhed	Bitargaon	19.55	77.93333333	8.6
130	Yavatmal	Umarkhed	Brahmangaon	19.50972222	77.80333333	8
131	Yavatmal	Umarkhed	Chatari	19.46111111	77.78194444	7
132	Yavatmal	Umarkhed	Dhanki	19.56666667	77.85	12
133	Yavatmal	Umarkhed	Ekamba	19.54583333	78.025	7.5
134	Yavatmal	Umarkhed	Jewali	19.525	78	6.1
135	Yavatmal	Umarkhed	Kharbi	19.61666667	78.18333333	
136	Yavatmal	Umarkhed	Korta	19.64583333	78.05277778	8.15
137	Yavatmal	Umarkhed	Krishnapur	19.60138889	77.81805556	11.65
138	Yavatmal	Umarkhed	Marlegaon	19.54472222	77.68611111	
139	Yavatmal	Umarkhed	Marsul	19.64166667	77.65833333	12.85
140	Yavatmal	Umarkhed	Morchandi	19.58055556	78.01388889	8
141	Yavatmal	Umarkhed	Pofali	19.68333333	77.61	10
142	Yavatmal	Umarkhed	Sawaleshwar	19.52222222	77.88833333	10.1
143	Yavatmal	Umarkhed	Sondabhi	19.53055556	78.05	8.95
144	Yavatmal	Umarkhed	Tembhurdara	19.62222222	77.87083333	15.25
145	Yavatmal	Umarkhed	Umarkhed	19.6	77.69166667	10.85
146	Yavatmal	Umarkhed	Vidul	19.52916667	77.75694444	7.5
147	Yavatmal	Wani	Dhunki	19.825	78.94305556	13.45
148	Yavatmal	Wani	Ganeshpur	20.05	78.94444444	
149	Yavatmal	Wani	Kayar	19.9	78.9	9.1
150	Yavatmal	Wani	Kurli	19.89222222	79.0875	10.6
151	Yavatmal	Wani	Naigaon	20.08888889	78.9875	13.5
152	Yavatmal	Wani	Punwat	19.95333333	79.05333333	8
153	Yavatmal	Wani	Rasa	19.98055556	78.95	8.8
154	Yavatmal	Wani	Shirpur	19.87083333	79.02638889	11
155	Yavatmal	Wani	Sindola	19.95	79.03333333	15.2
156	Yavatmal	Wani	Ukani	20.01944444	79.08333333	19
157	Yavatmal	Wani	Umri	19.975	78.925	7.5
158	Yavatmal	Wani	Velabai	19.90694444	79.00194444	6.5

S.No.	District	Tehsil	Village	Lat	Long	Pre-monsoon 2021 WL bgl (m)
159	Yavatmal	Wani	Wani	20.05555556	78.95833333	15
160	Yavatmal	Yavatmal	Akola (bz)	20.16666667	78.15	9.55
161	Yavatmal	Yavatmal	Bechkheda	20.21666667	78.04166667	6
162	Yavatmal	Yavatmal	Bori Singh	20.17916667	78.09222222	8.3
163	Yavatmal	Yavatmal	Chinchghat	20.3125	78.25	9
164	Yavatmal	Yavatmal	Daheli	20.21111111	78.3	7.95
165	Yavatmal	Yavatmal	Hiwri	20.25555556	78.04027778	8.05
166	Yavatmal	Yavatmal	Khorad	20.3	78.11388889	8.15
167	Yavatmal	Yavatmal	Kolambi	20.25	78.25	8.7
168	Yavatmal	Yavatmal	Sawargad	20.33611111	78.16666667	8.15
169	Yavatmal	Yavatmal	Talegaon	20.36388889	78.20833333	7.25
170	Yavatmal	Yavatmal	Wadgaon	20.37361111	78.11111111	11.6
171	Yavatmal	Yavatmal	Yawali	20.24166667	78.21805556	8.05
172	Yavatmal	Zari-Zamni	Ardhavan	19.82694444	78.79305556	
173	Yavatmal	Zari-Zamni	Bopapur	19.89888889	78.84083333	6.65
174	Yavatmal	Zari-Zamni	Isapur	19.94861111	78.79305556	8.05
175	Yavatmal	Zari-Zamni	Matharjun	19.89583333	78.66805556	6.95
176	Yavatmal	Zari-Zamni	Mudhati	19.85611111	78.65972222	7.5
177	Yavatmal	Zari-Zamni	Mukutban	19.80833333	78.85416667	10.5
178	Yavatmal	Zari-Zamni	Sibla	19.96527778	78.68611111	5.7
179	Yavatmal	Zari-Zamni	Sindhi Wadhona	19.87916667	78.86527778	5
180	Yavatmal	Zari-Zamni	Zari Zamani	19.8375	78.60972222	6

Annexure 3. Water Level of GW monitoring wells Post-monsoon in Yavatmal district

S.No.	District	Tehsil	Village	Lat	Long	Post-monsoon 2021 bgl(m)
1	Yavatmal	Arni	Arni_Pz	20.06666667	77.96666667	2.56
2	Yavatmal	Arni	Khadka	19.84694444	77.80611111	2.16
3	Yavatmal	Babhulgaon	Mangrule	20.2	77.98333333	3.42
4	Yavatmal	Babulgaon	Pahur	20.6	78.05	2
5	Yavatmal	Babulgaon	Pahur_Pz	20.60833333	78.05	2.4
6	Yavatmal	Babulgaon	Sarul	20.64833333	78.14166667	7.42
7	Yavatmal	Babulgaon	Savar	20.49777778	78.06666667	2.3
8	Yavatmal	Babulgaon	Dighi-Punarvasan-1	20.50083333	78.12638889	4.25
9	Yavatmal	Darwha	Mohgaon Kasba	20.2	77.88333333	3.3
10	Yavatmal	Darwha	Selodi	20.31666667	77.76666667	3.1
11	Yavatmal	Darwha	Talegaon	20.35833333	78.24166667	0.5
12	Yavatmal	Darwha	Sawali_Pz	19.95583333	78.1125	7.35
13	Yavatmal	Darwha	Sindhi_Pz	20.66888889	78.2275	1.85
14	Yavatmal	Digras	Digras	20.1	77.71666667	3.2
15	Yavatmal	Digras	Lonbhel	19.93333333	77.91666667	3.42
16	Yavatmal	Digras	Mahagaon	20.08333333	77.83333333	3.85
17	Yavatmal	Digras	Singad	20.0525	77.63555556	4.66
18	Yavatmal	Ghatanji	Dahegaon	20.09888889	78.26722222	3.7
19	Yavatmal	Ghatanji	Ghatanji	20.13333333	78.31666667	3.8
20	Yavatmal	Ghatanji	Ghatanji_Pz	20.14277778	78.31944444	4.85
21	Yavatmal	Ghatanji	Injhala	20.08333333	78.31666667	9.51
22	Yavatmal	Ghatanji	Parwa	19.98888889	78.34166667	1.85
23	Yavatmal	Ghatanji	Shiroli_Pz	20.075	78.25	27.05
24	Yavatmal	Ghatanji	Kurli_Pz	19.60111111	77.69138889	3.55
25	Yavatmal	Ghatanji	Mowada	20.14611111	78.40944444	3.5
26	Yavatmal	Kalamb	Aamla	20.23222222	78.40277778	1.7
27	Yavatmal	Kalamb	Chaparda	20.42222222	78.27361111	3.27
28	Yavatmal	Kalamb	Jodmoha	20.31666667	78.3	3.3
29	Yavatmal	Kalamb	Kalamb	20.45	78.33333333	7.96
30	Yavatmal	Kalamb	Kotha	20.53055556	78.27777778	1.25
31	Yavatmal	Kalamb	Metikheda	20.24888889	78.41972222	0.3

S.No.	District	Tehsil	Village	Lat	Long	Post-monsoon 2021 bgl(m)
32	Yavatmal	Kelapur	Khatara	20.16361111	78.64638889	3.8
33	Yavatmal	Kelapur	Mohada	20.21666667	78.46666667	3.05
34	Yavatmal	Kelapur	Pahapal	19.98333333	78.5	3.3
35	Yavatmal	Kelapur	Pandharkawada	20.01666667	78.55	2.88
36	Yavatmal	Kelapur	Pandharkawada_Pz	20.02416667	78.54638889	4.05
37	Yavatmal	Kelapur	Saykheda_Pz	20.10305556	78.50555556	5.15
38	Yavatmal	Mahagaon	Dhanoda	19.85833333	77.875	7.85
39	Yavatmal	Mahagaon	Mahagaon taluka	19.78194444	77.78	8.2
40	Yavatmal	Maregaon	Buranda-Hetis	20.10138889	78.80527778	1
41	Yavatmal	Maregaon	Mardi	20.21666667	78.85	2
42	Yavatmal	Maregaon	Maregaon	20.1	78.81666667	7.92
43	Yavatmal	Ner	Dhanaj (Manekwada)	20.52916667	77.925	2.55
44	Yavatmal	Ner	Dhanaj (Manekwada)_Pz	20.53083333	77.92583333	2.5
45	Yavatmal	Ner	Ner-Pz	20.49694444	77.86388889	1.32
46	Yavatmal	Ner	Umarda (Nursary)	20.37083333	78.05416667	3.88
47	Yavatmal	Ner	Mojhar	20.50555556	77.79027778	1.41
48	Yavatmal	Ner	Mojhar_Pz	20.5425	77.79083333	4
49	Yavatmal	Pusad	Ghatodi	19.98333333	77.58333333	3.94
50	Yavatmal	Pusad	Harsi	19.81666667	77.58333333	2.88
51	Yavatmal	Pusad	Marwadi Khurd	19.95833333	77.36666667	3
52	Yavatmal	Pusad	Pandhurna (BK)	20.14194444	78.20916667	2.35
53	Yavatmal	Pusad	Pusad	19.93333333	77.6	1.87
54	Yavatmal	Pusad	Rampur	20.17666667	78.33944444	3.15
55	Yavatmal	Ralegaon	Karanji_Pz	20.13555556	78.62111111	5.72
56	Yavatmal	Ralegaon	Karanji1	20.13333333	78.6025	2.3
57	Yavatmal	Ralegaon	Ralegaon_Pz	20.42111111	78.51472222	5.7
58	Yavatmal	Ralegaon	Wadhona	20.305	78.62916667	3.27
59	Yavatmal	Ralegaon	Wadki_Pz	20.24083333	78.30888889	9.05
60	Yavatmal	Ralegaon	Zadgaon	20.37194444	78.55277778	3.3
61	Yavatmal	Yavatmal	Akolabazar	20.16666667	78.15	3.16
62	Yavatmal	Yavatmal	Akolabazar_Pz	20.16416667	78.14222222	2

S.No.	District	Tehsil	Village	Lat	Long	Post-monsoon 2021 bgl(m)
63	Yavatmal	Yavatmal	Bhari_Pz	20.38722222	78.19861111	2.58
64	Yavatmal	Yavatmal	Bori (Arab)_Pz	20.34166667	77.86666667	4.82
65	Yavatmal	Yavatmal	Darwha_Pz	20.31138889	77.77055556	1.85
66	Yavatmal	Yavatmal	Jamwadi	20.3625	78.01666667	3.1
67	Yavatmal	Yavatmal	Madkona	20.4	78.2	7.16
68	Yavatmal	Yavatmal	Vai (Lingi)	20.19166667	77.77166667	3
69	Yavatmal	Yavatmal	Wadgaon	20.38333333	78.11666667	2.65
70	Yavatmal	Yavatmal	Yavatmal	20.39111111	78.12777778	0.64
71	Yavatmal	Yavatmal	Yelbara_Pz	20.24083333	78.30888889	3.4
72	Yavatmal	Yavatmal	Kolambi	20.24166667	78.18333333	3.76
73	Yavatmal	Zari Jamani	Mukutban_Pz	19.81166667	78.85416667	4.72
74	Yavatmal	Zari Jamani	Patan_Pz	19.80472222	78.69666667	3.2
75	Yavatmal	Yavatmal	Mandeo	20.32777778	78.05833333	1.55

Annexure 4. Long term ground water level trend of monitoring wells in Yavatmal District (2012-2021)

S.No.	Block	Village	AGENCY	Pre monsoon		Post monsoon	
				trend (m/year)		trend (m/year)	
				Rise	Fall	Rise	Fall
1	Arni	Antargaon	GSDA	-	-1	-	-
2	Arni	Arni	GSDA	-	-0.3	-	-
3	Arni	Arni_Pz	CGWB	-	-	-	-0.046
4	Arni	Ayata	GSDA	-	-0.83	-	-
5	Arni	Belura Van	GSDA	-	-0.95	-	-
6	Arni	Borgaon	GSDA	-	-0.65	-	-
7	Arni	Dabhadi	GSDA	-	-0.75	-	-
8	Arni	Deurwadi	GSDA	-	-0.77	-	-
9	Arni	Jawala	GSDA	-	-0.73	-	-
10	Arni	Khadka	CGWB	-	-	-	0.239
11	Arni	Kurha	GSDA	-	-0.85	-	-
12	Arni	Lonbehel	GSDA	-	-0.96	-	-
13	Arni	Sawli	GSDA	-	-1.01	-	-
14	Arni	Sukhali	GSDA	-	-0.87	-	-
15	Arni	Talni	GSDA	-	-0.74	-	-
16	Arni	Taroda	GSDA	-	-0.8	-	-
17	Arni	Umri	GSDA	-	-0.85	-	-
18	Babhulgaon	Mangrule	CGWB	-	-	-	0.052
19	Babulgaon	Antargaon	GSDA	-	-0.82	-	-
20	Babulgaon	Dabha	GSDA	-	-1.02	-	-
21	Babulgaon	Dehani	GSDA	-	-0.88	-	-
22	Babulgaon	Dighi-Punarvasan-1	CGWB	-	-	-	-0.077
23	Babulgaon	Falegaon	GSDA	-	-0.82	-	-
24	Babulgaon	Hatola	GSDA	-	-0.81	-	-
25	Babulgaon	Karalgaon	GSDA	-	-0.86	-	-
26	Babulgaon	Kharda	GSDA	-	-0.84	-	-
27	Babulgaon	Madhani	GSDA	-	-0.87	-	-
28	Babulgaon	Maralpur	GSDA	-	-1.1	-	-
29	Babulgaon	Mitnapur	GSDA	-	-1.25	-	-
30	Babulgaon	Nandura bk.	GSDA	-	-0.91	-	-
31	Babulgaon	Pahur	GSDA	-	-0.58	-	0.053
32	Babulgaon	Pahur_Pz	CGWB	-	-	-	-0.063
33	Babulgaon	Sarul	CGWB	-	-	-	-0.258
34	Babulgaon	Savar	CGWB	-	-	-	-0.011
35	Babulgaon	Shindi	GSDA	-	-0.87	-	-
36	Babulgaon	Virkhed	GSDA	-	-0.79	-	-
37	Darwha	Bhandegaon	GSDA	-	-1.34	-	-
38	Darwha	Bori Arab	GSDA	-	-0.66	-	-
39	Darwha	Darwha	GSDA	-	-0.96	-	-

S.No.	Block	Village	AGENCY	Pre monsoon		Post monsoon	
				trend (m/year)		trend (m/year)	
				Rise	Fall	Rise	Fall
40	Darwha	Kamathwada	GSDA	-	-0.9	-	-
41	Darwha	Lakhkhind	GSDA	-	-0.49	-	-
42	Darwha	Mahatuli	GSDA	-	-0.86	-	-
43	Darwha	Mangkinhi	GSDA	-	-0.87	-	-
44	Darwha	Mohgaon Kasba	CGWB	-	-	-	-0.163
45	Darwha	Mozar	GSDA	-	-0.74	-	-
46	Darwha	Sangwi (rly)	GSDA	-	-0.89	-	-
47	Darwha	Sawali_Pz	CGWB	-	-	-	-0.323
48	Darwha	Shelodi	GSDA	-	-0.59	-	-0.174
49	Darwha	Sindhi_Pz	CGWB	-	-	-	0.022
50	Darwha	Talegaon	GSDA	-	-	-	0.029
51	Darwha	Uchegaon	GSDA	-	-0.96	-	-
52	Digras	Arambhi	GSDA	-	-0.6	-	-
53	Digras	Digras	GSDA	-	-0.83	-	-0.199
54	Digras	Harsul	GSDA	-	-0.85	-	-
55	Digras	Lakh(r)	GSDA	-	-0.84	-	-
56	Digras	Lonbhel	CGWB	-	-	-	0.051
57	Digras	Mahagaon	CGWB	-	-	-	0.176
58	Digras	Malhiwara	GSDA	-	-0.92	-	-
59	Digras	Mandwa	GSDA	-	-0.65	-	-
60	Digras	Singad	GSDA	-	-0.84	-	-0.043
61	Digras	Tiwari	GSDA	-	-0.75	-	-
62	Digras	Vitholi	GSDA	-	-0.69	-	-
63	Ghatanji	Belura	GSDA	-	-0.81	-	-
64	Ghatanji	Dahegaon	CGWB	-	-	-	0.166
65	Ghatanji	Ghatanji	CGWB	-	-	-	-0.072
66	Ghatanji	Ghatanji_Pz	CGWB	-	-	-	-0.058
67	Ghatanji	Injhala	CGWB	-	-	-	-0.01
68	Ghatanji	Jarur	GSDA	-	-0.54	-	-
69	Ghatanji	Kurali	GSDA	-	-0.7	-	-
70	Ghatanji	Kurli_Pz	CGWB	-	-	-	-0.015
71	Ghatanji	Mandwa	GSDA	-	-0.82	-	-
72	Ghatanji	Mangi	GSDA	-	-1.04	-	-
73	Ghatanji	Manjari	GSDA	-	-0.61	-	-
74	Ghatanji	Manoli	GSDA	-	-0.81	-	-
75	Ghatanji	Mowada	CGWB	-	-	-	-0.175
76	Ghatanji	Parwa	GSDA	-	-0.75	-	0.068
77	Ghatanji	Sasani	GSDA	-	-1.03	-	-
78	Ghatanji	Sayatkharda	GSDA	-	-1.15	-	-
79	Ghatanji	Shiroli_Pz	CGWB	-	-	-	-0.823
80	Ghatanji	Vilayata	GSDA	-	-0.95	-	-

S.No.	Block	Village	AGENCY	Pre monsoon		Post monsoon	
				trend (m/year)		trend (m/year)	
				Rise	Fall	Rise	Fall
81	Ghatanji	Yerandgaon	GSDA	-	-0.87	-	-
82	Kalamb	Aamla	CGWB	-	-	-	0.099
83	Kalamb	Chaparda	GSDA	-	-1.01	-	0.003
84	Kalamb	Chincholi	GSDA	-	-0.67	-	-
85	Kalamb	Dongarkharda	GSDA	-	-0.48	-	-
86	Kalamb	Jodmoha	GSDA	-	-0.47	-	-0.046
87	Kalamb	Kalamb	CGWB	-	-	-	-0.209
88	Kalamb	Kamathwada	GSDA	-	-0.81	-	-
89	Kalamb	Kinwat	GSDA	-	-0.34	-	-
90	Kalamb	Kotha	CGWB	-	-	0.355	-
91	Kalamb	Metikheda	GSDA	-	-0.69	-	-
92	Kalamb	Metikheda	GSDA	-	-	-	-0.31
93	Kalamb	Pahur (ijara)	GSDA	-	-0.75	-	-
94	Kalamb	Pilkhana	GSDA	-	-0.83	-	-
95	Kalamb	Rajur	GSDA	-	-0.76	-	-
96	Kalamb	Satefal	GSDA	-	-1.15	-	-
97	Kalamb	Umri	GSDA	-	-0.79	-	-
98	Kelapur	Borgaon Kadu	GSDA	-	-0.98	-	-
99	Kelapur	Chanakha	GSDA	-	-0.85	-	-
100	Kelapur	Dharna	GSDA	-	-0.9	-	-
101	Kelapur	Ghubadi	GSDA	-	-0.76	-	-
102	Kelapur	Khairgaon	GSDA	-	-0.57	-	-
103	Kelapur	Khatara	CGWB	-	-	0.023	-
104	Kelapur	Marathwakdi	GSDA	-	-0.69	-	-
105	Kelapur	Mohda	GSDA	-	-0.83	-	0.267
106	Kelapur	Pahapal	GSDA	-	-0.82	-	-0.108
107	Kelapur	Pandharkawada	CGWB	-	-	-	-0.143
108	Kelapur	Pandharkawada_Pz	CGWB	-	-	-	-0.108
109	Kelapur	Saykheda_Pz	CGWB	-	-	-	-0.083
110	Kelapur	Sunna	GSDA	-	-0.83	-	-
111	Kelapur	Warha	GSDA	-	-0.96	-	-
112	Mahagaon	Amni	GSDA	-	-0.98	-	-
113	Mahagaon	Dhanoda	GSDA	-	-0.77	-	-0.182
114	Mahagaon	Kaurwadi	GSDA	-	-0.86	-	-
115	Mahagaon	Mahagaon taluka	CGWB	-	-	-	-0.039
116	Mahagaon	Sawna	GSDA	-	-0.78	-	-
117	Mahagaon	Shirpur	GSDA	-	-0.8	-	-
118	Mahagaon	Tembhi	GSDA	-	-0.88	-	-
119	Mahagaon	Wadad	GSDA	-	-1	-	-
120	Maregaon	Buranda	GSDA	-	-0.98	-	-
121	Maregaon	Buranda-Hetis	CGWB	-	-	0.171	-

S.No.	Block	Village	AGENCY	Pre monsoon		Post monsoon	
				trend (m/year)		trend (m/year)	
				Rise	Fall	Rise	Fall
122	Maregaon	Gaurala	GSDA	-	-0.98	-	-
123	Maregaon	Jalka	GSDA	-	-0.86	-	-
124	Maregaon	Karanwadi	GSDA	-	-0.95	-	-
125	Maregaon	Mardi	CGWB	-	-	0.07	-
126	Maregaon	Maregaon	CGWB	-	-	-	-0.211
127	Maregaon	Navargaon	GSDA	-	-0.99	-	-
128	Maregaon	Pathri	GSDA	-	-1.03	-	-
129	Maregaon	Pisgaon	GSDA	-	-0.53	-	-
130	Ner	Bangaon	GSDA	-	-1.13	-	-
131	Ner	Brahmanwada	GSDA	-	-0.94	-	-
132	Ner	Dhanaj	GSDA	-	-0.91	-	-
133	Ner	Dhanaj_Manekwada	CGWB	-	-	0.072	-
134	Ner	Dhanaj_Manekwada_Pz	CGWB	-	-	0.044	-
135	Ner	Gharefal	GSDA	-	-0.89	-	-
136	Ner	Khandala	GSDA	-	-0.87	-	-
137	Ner	Mojhar	CGWB	-	-	0.037	-
138	Ner	Mojhar_Pz	CGWB	-	-	0.211	-
139	Ner	Ner	GSDA	-	-0.81	-	-
140	Ner	Ner-Pz	CGWB	-	-	-	-0.116
141	Ner	Pimprikalga	GSDA	-	-0.98	-	-
142	Ner	Umarda_Nursary	CGWB	-	-	-	-0.005
143	Ner	Uttarwadhona	GSDA	-	-0.97	-	-
144	Ner	Watfali	GSDA	-	-0.5	-	-
145	Pusad	Bhojla	GSDA	-	-0.82	-	-
146	Pusad	Chikhali	GSDA	-	-0.99	-	-
147	Pusad	Chondhi	GSDA	-	-0.77	-	-
148	Pusad	Ghatodi	CGWB	-	-	-	-0.18
149	Pusad	Harsi	CGWB	-	-	-	-0.082
150	Pusad	Jamb(n)	GSDA	-	-0.91	-	-
151	Pusad	Khandala	GSDA	-	-1.17	-	-
152	Pusad	Manikdoh	GSDA	-	-0.73	-	-
153	Pusad	Marwadi Khurd	CGWB	-	-	-	-0.079
154	Pusad	Nanad	GSDA	-	-0.99	-	-
155	Pusad	Pandhurna_BK	CGWB	-	-	0.134	-
156	Pusad	Pimpalkhuta	GSDA	-	-1.3	-	-
157	Pusad	Pusad	GSDA	-	-0.92	0.013	-
158	Pusad	Rampur	CGWB	-	-	-	-0.059
159	Pusad	Shelu (bk)	GSDA	-	-0.67	-	-
160	Pusad	Shilona	GSDA	-	-0.7	-	-
161	Pusad	Udadi	GSDA	-	-0.97	-	-
162	Pusad	Warud	GSDA	-	-0.83	-	-

S.No.	Block	Village	AGENCY	Pre monsoon		Post monsoon	
				trend (m/year)		trend (m/year)	
				Rise	Fall	Rise	Fall
163	Ralegaon	Ashtona	GSDA	-	-0.9	-	-
164	Ralegaon	Karanji_1	CGWB	-	-	-	0.12
165	Ralegaon	Karanji_Pz	CGWB	-	-	-	-0.006
166	Ralegaon	Khadki	GSDA	-	-0.62	-	-
167	Ralegaon	Khairi	GSDA	-	-0.64	-	-
168	Ralegaon	Kinhi jawade	GSDA	-	-1	-	-
169	Ralegaon	Ralegaon	GSDA	-	-1.02	-	-
170	Ralegaon	Ralegaon_Pz	CGWB	-	-	-	-0.046
171	Ralegaon	Ramtirth	GSDA	-	-0.63	-	-
172	Ralegaon	Wadhona	CGWB	-	-	-	-0.028
173	Ralegaon	Wadhona bz	GSDA	-	-0.86	-	-
174	Ralegaon	Wadki_Pz	CGWB	-	-	0.295	-
175	Ralegaon	Zadgaon	GSDA	-	-0.6	0.128	-
176	Umarkhed	Akoli	GSDA	-	-1.16	-	-
177	Umarkhed	Bitargaon	GSDA	-	-0.86	-	-
178	Umarkhed	Brahmangaon	GSDA	-	-1.22	-	-
179	Umarkhed	Chatari	GSDA	-	-1.08	-	-
180	Umarkhed	Dhanki	GSDA	-	-0.95	-	-
181	Umarkhed	Ekamba	GSDA	-	-0.95	-	-
182	Umarkhed	Jewali	GSDA	-	-0.98	-	-
183	Umarkhed	Kharbi	GSDA	-	-0.91	-	-
184	Umarkhed	Korta	GSDA	-	-0.88	-	-
185	Umarkhed	Krishnapur	GSDA	-	-1.06	-	-
186	Umarkhed	Marlegaon	GSDA	-	-0.69	-	-
187	Umarkhed	Marsul	GSDA	-	-0.62	-	-
188	Umarkhed	Morchandi	GSDA	-	-0.95	-	-
189	Umarkhed	Pofali	GSDA	-	-0.83	-	-
190	Umarkhed	Sawaleshwar	GSDA	-	-0.68	-	-
191	Umarkhed	Sondabhi	GSDA	-	-0.73	-	-
192	Umarkhed	Tembhurdara	GSDA	-	-0.83	-	-
193	Umarkhed	Umarkhed	GSDA	-	-0.95	-	-
194	Umarkhed	Vidul	GSDA	-	-0.85	-	-
195	Wani	Dhunki	GSDA	-	-0.74	-	-
196	Wani	Ganeshpur	GSDA	-	-0.85	-	-
197	Wani	Kayar	GSDA	-	-0.7	-	-
198	Wani	Kurli	GSDA	-	-0.94	-	-
199	Wani	Naigaon	GSDA	-	-0.94	-	-
200	Wani	Punwat	GSDA	-	-0.93	-	-
201	Wani	Rasa	GSDA	-	-0.87	-	-
202	Wani	Shirpur	GSDA	-	-0.4	-	-
203	Wani	Sindola	GSDA	-	-1	-	-

S.No.	Block	Village	AGENCY	Pre monsoon		Post monsoon	
				trend (m/year)		trend (m/year)	
				Rise	Fall	Rise	Fall
204	Wani	Ukani	GSDA	-	-0.26	-	-
205	Wani	Umri	GSDA	-	-0.6	-	-
206	Wani	Velabai	GSDA	-	-0.86	-	-
207	Wani	Wani	GSDA	-	-1.24	-	-
208	Yavatmal	Akola (bz)	GSDA	-	-0.69	-	-0.112
209	Yavatmal	Akolabazar_Pz	CGWB	-	-	-	-0.25
210	Yavatmal	Bechkheda	GSDA	-	-0.8	-	-
211	Yavatmal	Bhari_Pz	CGWB	-	-	-	-0.038
212	Yavatmal	Bori Singh	GSDA	-	-0.59	-	-
213	Yavatmal	Bori_Arab_Pz	CGWB	-	-	-	0.878
214	Yavatmal	Chinchghat	GSDA	-	-0.6	-	-
215	Yavatmal	Daheli	GSDA	-	-0.83	-	-
216	Yavatmal	Darwha_Pz	CGWB	-	-	-	-0.064
217	Yavatmal	Hiwri	GSDA	-	-0.83	-	-
218	Yavatmal	Jamwadi	CGWB	-	-	-	-0.008
219	Yavatmal	Khorad	GSDA	-	-0.91	-	-
220	Yavatmal	Kolambi	GSDA	-	-0.87	-	-0.02
221	Yavatmal	Madkona	CGWB	-	-	-	-0.103
222	Yavatmal	Mandeo	CGWB	-	-	-	-0.198
223	Yavatmal	Sawargad	GSDA	-	-0.87	-	-
224	Yavatmal	Talegaon	GSDA	-	-0.95	-	-
225	Yavatmal	Vai_Lingi	CGWB	-	-	-	-0.015
226	Yavatmal	Wadgaon	GSDA	-	-0.89	-	-0.07
227	Yavatmal	Yavatmal	CGWB	-	-	-	0.103
228	Yavatmal	Yawali	GSDA	-	-0.88	-	-
229	Yavatmal	Yelbara_Pz	CGWB	-	-	-	-0.153
230	Zari Jamani	Mukutban_Pz	CGWB	-	-	-	-0.108
231	Zari Jamani	Patan_Pz	CGWB	-	-	0.118	-
232	Zari-Zamni	Ardhavan	GSDA	-	-1	-	-
233	Zari-Zamni	Bopapur	GSDA	-	-0.91	-	-
234	Zari-Zamni	Isapur	GSDA	-	-1.01	-	-
235	Zari-Zamni	Matharjun	GSDA	-	-0.9	-	-
236	Zari-Zamni	Mudhati	GSDA	-	-0.79	-	-
237	Zari-Zamni	Mukutban	GSDA	-	-0.98	-	-
238	Zari-Zamni	Sibla	GSDA	-	-0.8	-	-
239	Zari-Zamni	Sindhi Wadhona	GSDA	-	-0.77	-	-
240	Zari-Zamni	Zari Zamani	GSDA	-	-0.99	-	-

Annexure 5.Chemical analysis of ground water samples, Shallow aquifers

S.no	District	Tehsil	Village	Lat	Long	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
1	Yavatmal	Arni	Arni-1	20.08444	77.9525	7.9	598	316	316	51	45	8	0.45	0	315	38	8	20	0.71
2	Yavatmal	Arni	Sawli Sadoba	19.96	78.11139	7.6	543	288	260	84	12	9	0.38	0	291	24	25	13	0.61
3	Yavatmal	Babulgaon	Pahur	20.6	78.05	7.5	2104	1114	893	245	67	77	4.17	0	910	133	95	25	0.57
4	Yavatmal	Babulgaon	Savar	20.49778	78.06667	7.7	1274	674	377	108	26	77	1.18	0	494	86	27	38	0.62
5	Yavatmal	Darwha	Sangwi Rly	20.41917	77.60528	7.7	1673	887	638	59	117	85	0.91	0	898	76	35	5	2.99
6	Yavatmal	Digras	Lonbhel	19.93333	77.91667	7.4	1283	683	505	127	45	56	1.16	0	529	36	65	37	0.53
7	Yavatmal	Digras	Mahagaon	20.08333	77.83333	7.7	622	329	265	72	21	17	0.38	0	297	31	14	28	1.08
8	Yavatmal	Digras	Digras	20.1	77.71667	7.7	1683	885	638	61	115	79	1.13	0	666	148	49	37	1.31
9	Yavatmal	Digras	Singad	20.0525	77.63556	7.8	673	357	332	67	39	13	0.85	0	315	21	8	37	0.78
10	Yavatmal	Ghatanji	Injhala	20.08333	78.31667	7.9	1089	577	474	61	77	16	0.95	0	488	68	14	37	0.83
11	Yavatmal	Ghatanji	Dahegaon	20.09889	78.26722	7.8	1150	604	566	125	61	10	1.19	0	583	73	12	38	0.61
12	Yavatmal	Ghatanji	Parwa	19.98889	78.34167	7.7	1603	853	724	123	100	39	0.61	0	583	195	45	37	1.01
13	Yavatmal	Ghatanji	Mowada	20.14611	78.40944	8	688	364	362	55	53	12	0.21	0	345	24	10	37	0.78
14	Yavatmal	Kalamb	Kotha	20.53056	78.27778	7.6	1586	841	719	102	111	29	2.03	0	648	130	24	37	0.58
15	Yavatmal	Kalamb	Chaparda	20.42222	78.27361	7.7	829	440	428	72	60	17	0.62	0	464	34	15	38	0.66
16	Yavatmal	Kalamb	Aamli	20.23222	78.40278	7.7	2155	1139	882	123	137	30	32.95	0	898	205	31	38	0.36
17	Yavatmal	Kalamb	Metikheda	20.24889	78.41972	7.7	979	518	428	63	64	16	0.46	0	369	63	32	37	0.79
18	Yavatmal	Kelapur	Karanji1	20.13333	78.6025	7.8	973	516	434	78	57	26	0.92	0	285	123	34	34	1.44

S.no	District	Tehsil	Village	Lat	Long	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
19	Yavatmal	Kelapur	Pahapal	19.98333	78.5	7.4	1470	779	673	125	86	19	1.82	0	648	113	17	38	0.71
20	Yavatmal	Kelapur	Pandharkawada	20.01667	78.55	7.8	1119	593	515	82	74	39	0.68	0	494	83	23	16	1.22
21	Yavatmal	Kelapur	Khatara	20.16361	78.64639	8	709	375	332	55	46	10	0.4	0	297	21	21	36	0.34
22	Yavatmal	Mahagaon	Khadka	19.84694	77.80611	7.8	631	335	306	59	38	6	0.18	0	339	21	14	22	0.81
23	Yavatmal	Maregaon	Maregaon	20.1	78.81667	7.6	1514	802	704	141	84	20	0.95	0	601	145	13	37	0.78
24	Yavatmal	Maregaon	Buranda-Hetis	20.10139	78.80528	7.8	660	351	275	65	27	18	0.35	0	274	31	11	37	1.18
25	Yavatmal	Ner	Jamwadi	20.3625	78.01667	7.6	1676	889	709	133	90	34	0.46	0	541	242	42	23	0.54
26	Yavatmal	Ner	Mojhar	20.50556	77.79028	7.8	979	518	459	63	72	14	0.62	0	416	63	4	37	0.67
27	Yavatmal	Ner	Umarda (Nursary)	20.37083	78.05417	7.3	3366	1783	1408	286	165	58	0.53	0	910	607	74	4	0.56
28	Yavatmal	Ner	Dhanaj (Manekwada)	20.52917	77.925	7.7	1942	1030	699	47	139	112	1.11	0	785	192	16	38	0.53
29	Yavatmal	Pusad	Ghatodi	19.98333	77.58333	7.6	1295	684	571	127	61	39	0.95	0	565	91	48	38	0.36
30	Yavatmal	Ralegaon	Wadhona	20.305	78.62917	7.6	727	387	326	72	35	11	0.14	0	309	34	25	36	0.99
31	Yavatmal	Ralegaon	Zadgaon	20.37194	78.55278	7.9	1197	633	520	61	87	26	0.21	0	494	86	25	37	0.97
32	Yavatmal	Wani	Wani-1	20.04778	78.95528	7.9	1728	915	673	65	122	47	23.18	0	607	150	63	36	1.07
33	Yavatmal	Yavatmal	Mangrule	20.2	77.98333	7.6	1116	591	515	72	80	31	1.15	0	375	123	39	37	0.92
34	Yavatmal	Yavatmal	Wadgaon	20.38333	78.11667	7.6	1380	734	597	96	85	34	1.8	0	648	128	9	29	0.73
35	Yavatmal	Yavatmal	Mandeo	20.32778	78.05833	7.8	555	294	255	43	35	12	0.12	0	285	26	0	5	0.58
36	Yavatmal	Yavatmal	Yavatmal	20.39111	78.12778	7.7	1186	628	485	47	87	13	0.93	0	416	113	18	35	0.64

S.no	District	Tehsil	Village	Lat	Long	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
37	Yavatmal	Zari Zamni	Satpali	19.82944	78.63417	7.7	2262	1199	959	88	176	60	5.13	0	732	239	47	23	0.62
38	Yavatmal	Zari Zamni	Shibla	19.97611	78.68389	7.7	694	367	306	86	22	18	0.63	0	339	34	27	34	0.6

Annexure 6. Chemical analysis of ground water samples, deeper aquifers

S.No.	District	Taluka	Village	Well_Type	Long	Lat	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
1	Yavatmal	Wani	Chargaon	EW	79.07	20.07	8.01	12	665	215	38	29	171	7		415	110	100		
2	Yavatmal	Wani	Chargaon	EW	78.98	19.98	8.8	120	360	165	16	30	94	2	18	372	25	5		
3	Yavatmal	Wani	Naigaon Bk	OW	79.08	19.93	7.95	170	705	115	20	14	248	9.8		421	124	180		
4	Yavatmal	Wani	Bhola	EW	78.98	20.13	7.4	305												
5	Yavatmal	Wani	Mandar	EW	78.98	20.00	7.7	360	200	165	46	12	15	9		226	14			
6	Yavatmal	Wani	Waghdara	Pz	78.96	20.04	7.67	380	205	155	52	6	16	4		195	11	4	12.00	0.34
7	Yavatmal	Arni	Sawali	EW	78.11	19.95	7.53	400	255	55	18	2.4	6.3	5.1		177	38		2.20	0.40
8	Yavatmal	Zari-Jamani	Shembalpimpri	EW	78.68	19.98	7.8	480	250	75	16	9	76	2		98	64	70	3.00	
9	Yavatmal	Kelapur	Saikheda	EW	78.51	20.10	7.92	500	375	185	56	11	27	2		268	19	2	9.00	
10	Yavatmal	Kelapur	Saykheda	EW	78.51	20.14	7.92	500	375	185	56	11	27	2		268	14	2	9.00	
11	Yavatmal	Zari-Jamani	Shimbala	OW	78.72	19.98	8.4	530	295	120	20	17	68	23	0.9	244	25	10	9.00	
12	Yavatmal	Umarkhed	Jeoli	EW	78.00	19.52	8.4	530	280	150	26	21	52	3	18	207	28	15	14.00	
13	Yavatmal	Wani	Sakhra I	Pz	79.13	19.90	7.8	540	270	65	26	6.08	85	7.8		140	64	8	21.00	1.25
14	Yavatmal	Arni	Zohla	DW	78.12	20.00	7.45	540	305	173	23	28	62	3.5		293	21	10		

S.No.	District	Taluka	Village	Well_Type	Long	Lat	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
15	Yavatmal	Maregaon	Nawargaon	OW	78.78	20.07	8.3	550	290	105	34	5	74	8		323	7			
16	Yavatmal	Zari-Jamani	Shimbala	EW	78.73	19.98	8.3	570	320	110	32	19	81	2		287	21	12	8.50	
17	Yavatmal	Umarkhed	Narali	OW	77.90	19.69	8.3	600		95	30									
18	Yavatmal	Yavatmal	Hivri	EW	78.04	20.25	7.9	610	275	225	40	30	34	1		287	11	10	5.00	1.20
19	Yavatmal	Umarkhed	Dhanora (S)	EW	77.79	19.55	8.41	620	335	20	8	1	132	1	24	268	32	8		0.05
20	Yavatmal	Zari-Jamani	Matharjuna	EW	78.67	19.89	8.35	650	435	275	48	38	23	12	6	262	43	25	20.00	
21	Yavatmal	Kelapur	Pahaphal	OW	78.49	20.00	8.1	650	350	205	20	38	56			213	46	75	6.00	
22	Yavatmal	Umarkhed	Jeoli	OW	78.00	19.52	8.6	650	325	150	28	19	81	3	21	250	35	10	4.00	
23	Yavatmal	Wani	Borgaon	EW	79.07	20.07		660									28			
24	Yavatmal	Darwha	Rajura	EW	77.72	20.30	8.05	670	355	260	56	29	32	2		250	43	50		
25	Yavatmal	Maregaon	Nawargaon	EW	78.78	20.07	8.4	670	322	130	18	21	87	10	9	256	28	20	1.45	
26	Yavatmal	Arni	Sawali	OW	78.11	19.95	7.4	680	350	140	38	11	92	3		293	43	30	9.00	
27	Yavatmal	Arni	Loni	EW	77.93	20.19	7.8	690	335	280	48	39	28	1		354	28	5	8.00	
28	Yavatmal	Mahagaon	Gunj	EW	77.72	19.86	8.1	710	415	100	24	10	116	2		73	156	70	3.50	
29	Yavatmal	Mahagaon	Sawana	EW	77.74	19.81		770											39.40	0.73

S.No.	District	Taluka	Village	Well_Type	Long	Lat	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
30	Yavatmal	Mahagaon	Sawana EW	EW	77.74	19.81		770												
31	Yavatmal	Mahagaon	Sawana OW	OW	77.74	19.81		770												
32	Yavatmal	Babulgaon	Sarul	OW	78.15	20.65	9	780	415	125	16	21	120	2	42	305	18	40		
33	Yavatmal	Kelapur	Pahaphal	EW	78.49	20.00	8	780	420	235	28	40	67	8		287	46	75	10.00	
34	Yavatmal	Ner	Mojhar	Pz	77.79	20.54	8.35	800	465	300	48	44	37	16	6	122	110	100	43.00	
35	Yavatmal	Wani	Chikkli	EW	79.10	19.85	8.5	810	442	305	54	41	55	8	9	433	28.4	35		
36	Yavatmal	Ralegaon	Sawangi Perka	EW	78.55	20.41	8.1	820	560	150	24	32	100	3		390	60	5	9.10	
37	Yavatmal	Mahagaon	Hiwara	OW	77.85	19.85	7.59	840	505	129	30	11	136	0.1		140	124	124		
38	Yavatmal	Wani	Junoda	EW	79.08	20.05	7.45	850	500	232	20	44	115	4.3		464	30	25		
39	Yavatmal	Babulgaon	Sarul	EW	78.15	20.65	9.1	890	484	100	18	13	152	11	42	342	35	40		
40	Yavatmal	Yavatmal	Lohara	EW	78.09	20.39	8.14	890	500	210	56	17	83	39		256	135	25	15.00	
41	Yavatmal	Mahagaon	Hiwara	EW	77.85	19.85	8.6	910	520	200	32	29	116	0.5	24	146	117	120	6.50	
42	Yavatmal	Kelapur	Mohada	EW	78.47	20.22	8.18	920	636	165	40	16	132	3.9		171	174	65	11.00	
43	Yavatmal	Ralegaon	Khairi	OW	78.76	20.26	7.92	940	710	210	32	32	129	10		354	82	100	3.00	
44	Yavatmal	Ghatanji	Karjani	EW	78.45	20.13	7.5	950	590	45	10	4.9	196	3.1		128	216	65	1.00	
45	Yavatmal	Wani	Sakhra II	Pz	79.13	19.90	8.38	950	540	260	60	26.8	106	2.3	18	219.6	110	60	68.40	0.80
46	Yavatmal	Digras	Masela Pen	OW	77.86	20.07	8.35	970	580	125	18	7	163	8	6	226	128	90	37.00	

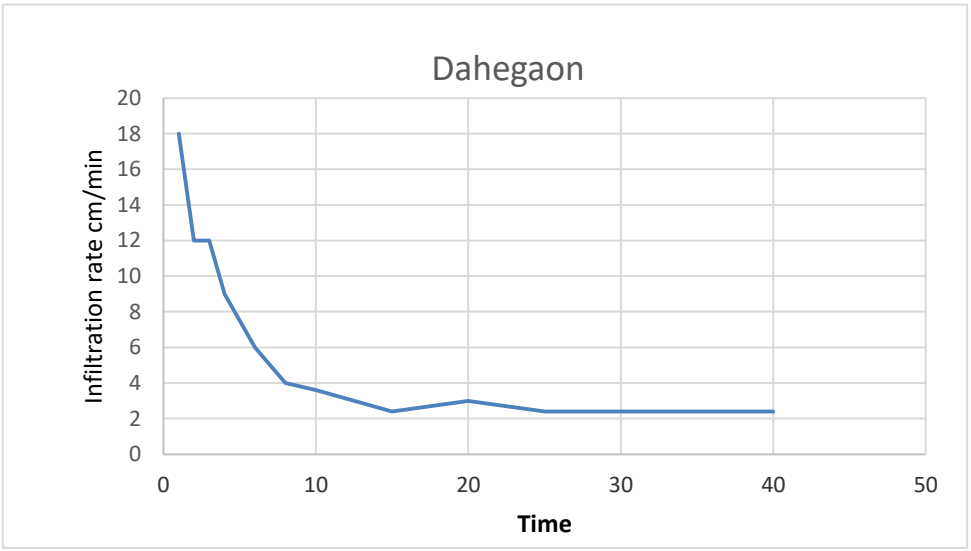
S.No.	District	Taluka	Village	Well_Type	Long	Lat	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
47	Yavatmal	Yavatmal	Lohara	OW	78.09	20.39	7.66	990	585	205	60	13	124	11		116	177	125	16.00	
48	Yavatmal	Ner	Satephal	OW	77.71	20.46	8.1	1000	585	180	36	22	132	23		177	145	125		
49	Yavatmal	Pusad	Warud	EW	77.58	19.95	7.65	1000	570	340	66	42	72	3		104	163	160	11.00	
50	Yavatmal	Ralegaon	Khairi	EW	78.76	20.26	8.13	1000	700	205	34	29	129	10		354	82	90	5.00	
51	Yavatmal	Wani	Punwat	Pz	79.08	19.94	7.77	1000	1090	155	32	10	334	14		146	440	44	132.00	2.00
52	Yavatmal	Mahagaon	Waghnath	EW	77.81	19.83		1070												
53	Yavatmal	Mahagaon	Waghnath	EW	77.81	19.83		1070												
54	Yavatmal	Wani	Shivni	EW	79.10	19.92	8.1	1140	720	290	66	30	160	2		488	71	150		
55	Yavatmal	Umarkhed	Narali	EW	77.90	19.68	8.2	1140	700	65	20	4	232	3		116	184	200	8.00	
56	Yavatmal	Pusad	Nanad	EW	77.42	19.84	8.1	1200	620	265	50	34	154	105		73	163	300	5.00	
57	Yavatmal	Umarkhed	Palsi	EW	77.61	19.65	9	1200	680	255	22	49	158	1	36	244	106	175	9.00	
58	Yavatmal	Mahagaon	Mahagoan	EW	77.78	19.79		1210											41.20	0.78
59	Yavatmal	Mahagaon	Mahagoan	EW	77.78	19.79		1210												
60	Yavatmal	Ner	Satephal	EW	77.71	20.46	7.74	1250	740	205	68	8	180	17		226	191	150		
61	Yavatmal	Mahagaon	Weni Buzurg	OW	77.69	19.83		1260											40.20	0.47
62	Yavatmal	Maregaon	Mardi	EW	78.85	20.20	8.1	1260	781	265	7	22	142	47		232	163	150		

S.No.	District	Taluka	Village	Well_Type	Long	Lat	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
63	Yavatmal	Wani	Wani R.S.	EW	78.97	20.05	7.3	1300	725	65	16	6.8	138	11		122	348			
64	Yavatmal	Mahagaon	Weni Buzurg EW	EW	77.69	19.83		1353												
65	Yavatmal	Arni	Kurha	EW	78.12	20.09	8.25	1370	825	160	32	19	239	4		92	301	175	9.00	
66	Yavatmal	Wani	Mugoli	EW	79.11	19.90	7.82	1390	910	295	52	44	213	33		500	64	300		
67	Yavatmal	Wani	Wadona Pilki	EW	78.85	19.89	7.9	1425	825	455	100	50	150	702		299	284	100		
68	Yavatmal	Pusad	Mandwa	EW	77.53	19.85	8.1	1430	860	270	68	12	198	7		122	241	250	22.00	5.00
69	Yavatmal	Digras	Saur	EW	77.67	20.08	9	1450			20	24			120	510	40			
70	Yavatmal	Digras	Masela Pen	EW	77.86	20.07	8.4	1450	720	80	26	5	294	2	9	31	387	110	36.00	
71	Yavatmal	Ner	Ajanti	EW	77.82	20.51	8	1450	865	390	114	25	146	7		104	298	150		
72	Yavatmal	Ner	Ajanti	EW	77.84	20.51	8	1450	865	390	114	25	140	7		104	296	150		
73	Yavatmal	Mahagaon	Weni Buzurg	EW	77.69	19.83		1490											10.60	1.68
74	Yavatmal	Pusad	Weni Khurd	EW	77.59	19.83		1490												
75	Yavatmal	Darwha	Kamathwada	EW	77.96	20.34	7.95	1540	925	260	32	44	230	4		268	124	350	3.00	
76	Yavatmal	Wani	Sakhra	EW	79.12	19.88	7.7	1590	1040	555	102	72	135	5		537	165	400		
77	Yavatmal	Ghatanji	Karjani	OW	78.45	20.13	7.84	1600	1026	55	14	4.9	343	5		122	319	240	2.60	

S.No.	District	Taluka	Village	Well_Type	Long	Lat	pH	EC	TDS	TH	Ca	Mg	Na	K	CO3	HCO3	Cl	SO4	NO3	F
78	Yavatmal	Wani	Shirpur	EW	79.02	19.97	8.1	1650	912	115	16	18	315	3.1		201	369	90		
79	Yavatmal	Yavatmal	Yelbara	EW	78.31	20.24	7.72	1660	1075	130	38	9	320	5		49	500	90	2.40	
80	Yavatmal	Arni	Dattarampur	EW	77.95	20.10	8.5	1730	1085	265	66	24	276	1	12	73	245	100	25.00	
81	Yavatmal	Arni	Dattarampur	EW	77.95	20.10	8.5	1730	1085	265	66	24	276	1	12	73	245	400	25.00	
82	Yavatmal	Wani	Niwali	EW	79.04	20.00	8.4	1960	1370	250	32	41	336	12	6	177	227	500		
83	Yavatmal	Wani	Nilapur	DW	79.00	20.05	8	1990	1300	280	44	41	361	8		537	163	400		
84	Yavatmal	Wani	Wani	EW	78.98	20.05	8	1990	1300	280	44	41	361	8		537	163	400		
85	Yavatmal	Wani	Dewada	EW	79.01	19.92	7.92	2040	1155	715	122	100	143	3		275	443	25	180.00	
86	Yavatmal	Wani	Neral	EW	78.90	19.87		2100									592			
87	Yavatmal	Wani	Besa	EW	79.02	20.03	7.79	2320	1500	285	52	33	426	11		384	418	300		
88	Yavatmal	Wani	Lathi	EW	79.03	20.02	8.1	2900	2025	555	84	84	391	9		153	376	800		
89	Yavatmal	Wani	Naigaon Bk	EW	79.08	19.93	8.3	3100	1940	650	152	66	453	20		280	780	330		
90	Yavatmal	Wani	Bhalar	EW	79.02	20.03	7.8	4100	2660	305	100	13	902	11		268	1106	430		
91	Yavatmal	Wani	Dhoptala	EW	78.99	20.04	7.6	4200	2855	760	136	90	725	15		98	876	750		

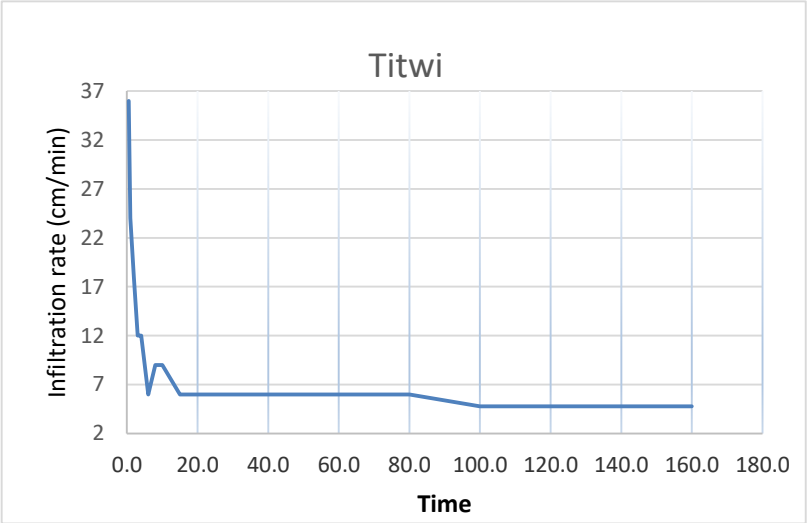
Annexure 7. Soil Infiltration Test results

Date	**1/5/2022**
Village	**Dahegaon**
Taluka	**Yavatmal**
District	**Yavatmal**
Coordinates	**20.202733, 78.720650**
Elevation/RL (mamsl)	244
Initial water level	18
Geology	Deccan trap
Soil Type	Gravely clay loam
Final Infiltration Rate (cm/hr)	1.8
Total Precipitation	5.5 cm



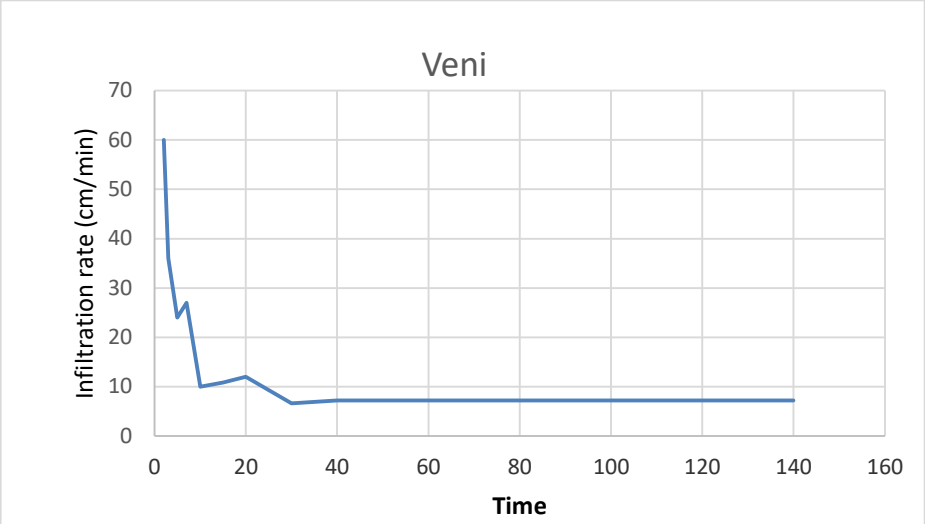
S.no	**Duration (min)**	**Cum Time (min)**	**Water level Depth (cm)**	**Infiltrated water depth (cm)**	**Infiltration rate (cm/hr)**	**Time (Min)**	**Infiltration rate (cm/min)**
1	**1.00**	**1**	**17.70**	**0.30**	18	**1**	18
2	**1.00**	**2**	**17.80**	**0.20**	12	**2**	12
3	**1.00**	**3**	**17.80**	**0.20**	12	**3**	12
4	**2.00**	**4**	**17.70**	**0.30**	9	**4**	9
5	**2.00**	**6**	**17.80**	**0.20**	6	**6**	6
6	**3.00**	**8**	**17.80**	**0.20**	4	**8**	4
7	**5.00**	**10**	**17.70**	**0.30**	3.6	**10**	3.6
8	**5.00**	**15**	**17.80**	**0.20**	2.4	**15**	2.4
9	**10.00**	**20**	**17.50**	**0.50**	3	**20**	3
10	**10.00**	**25**	**17.60**	**0.40**	2.4	**25**	2.4
11	**10.00**	**30**	**17.60**	**0.40**	2.4	**30**	2.4
12	**10.00**	**40**	**17.60**	**0.40**	2.4	**40**	2.4
13	**10.00**	60	**17.70**	**0.30**	1.8	60	1.8
14	**10.00**	80	**17.70**	**0.30**	1.8	80	1.8
15	**10.00**	100	**17.70**	**0.30**	1.8	100	1.8
16	**10.00**	120	**17.70**	**0.30**	1.8	120	1.8

Date	**06.01.2022**
Village	**Titwi**
Taluka	**Ghatanji**
District	**Yavatmal**
Coordinates	**20.064302, 78.425957**
Elevation/RL (mamsl)	306
Initial water level	18
Geology	Deccan trap
Soil Type	Gravely clay loam
Final Infiltration Rate(cm/hr)	4.8
Total Precipitation	14.9



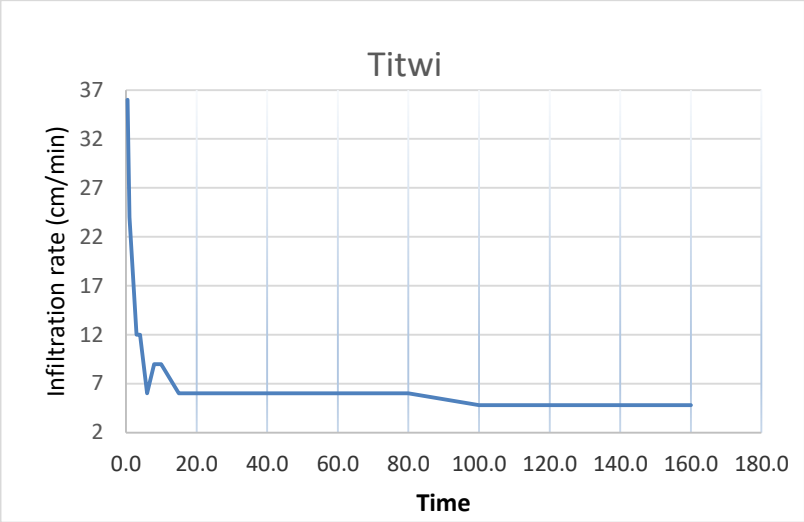
S.no	Duration (min)	Cum Time (min)	Water level Depth (cm)	Infiltrated water depth (cm)	Infiltration rate (cm/hr)	Time (Min)	Infiltration rate (cm/min)
1	**0.50**						
2	**0.50**	**0.50**	**17.70**	**0.30**	36	**0.5**	36
3	**1.00**	**1**	**17.80**	**0.20**	24	**1**	24
4	**1.00**	**2**	**17.70**	**0.30**	18	**2**	18
5	**1.00**	**3**	**17.80**	**0.20**	12	**3**	12
6	**2.00**	**4**	**17.80**	**0.20**	12	**4**	12
7	**2.00**	**6**	**17.80**	**0.20**	6	**6**	6
8	**2.00**	**8**	**17.70**	**0.30**	9	**8**	9
9	**5.00**	**10**	**17.70**	**0.30**	9	**10**	9
10	**5.00**	**15**	**17.50**	**0.50**	6	**15**	6
11	**5.00**	**20**	**17.50**	**0.50**	6	**20**	6
12	**5.00**	**25**	**17.50**	**0.50**	6	**25**	6
13	**10.00**	**30**	**17.50**	**0.50**	6	**30**	6
14	**10.00**	**40**	**17.00**	**1.00**	6	**40**	6
15	**10.00**	**50**	**17.00**	**1.00**	6	**50**	6
16	**20.00**	**60**	**17.00**	**1.00**	6	**60**	6
17	**20.00**	**80**	**16.00**	**2.00**	6	**80**	6
18	**20.00**	**100**	**16.40**	**1.60**	4.8	**100**	4.8
19	**20.00**	**120**	**16.40**	**1.60**	4.8	**120**	4.8
20	**20.00**	**140**	**16.40**	**1.60**	4.8	**140**	4.8
		160	**16.40**	**1.60**	4.8	**160**	4.8

Date	
Village	**Veni**
Taluka	**Babulgaon**
District	**Yavatmal**
Coordinates	**20.533064, 78.257582**
Elevation/RL (mamsl)	255
Initial water level	19
Geology	Deccan trap
Soil Type	Clay loam
Final Infiltration Rate(cm/hr)	7.2
Total Precipitation	20.5
Infiltration Coeficient	
Infiltration Coeficient (%)	
S.no	Duration (min)



1	**1.00**	Cum Time (min)	Water level Depth (cm)	Infiltrated water depth (cm)	Infiltration rate (cm/hr)	Time (Min)	Infiltration rate (cm/min)
2	**1.00**	**1**	**17.90**	**1.10**	66	**1**	66
3	**1.00**	**2**	**18.00**	**1.00**	60	**2**	60
4	**2.00**	**3**	**18.40**	**0.60**	36	**3**	36
5	**2.00**	**5**	**18.20**	**0.80**	24	**5**	24
6	**3.00**	**7**	**18.10**	**0.90**	27	**7**	27
7	**5.00**	**10**	**18.50**	**0.50**	10	**10**	10
8	**5.00**	**15**	**18.10**	**0.90**	10.8	**15**	10.8
9	**10.00**	**20**	**18.00**	**1.00**	12	**20**	12
10	**10.00**	**30**	**17.90**	**1.10**	6.6	**30**	6.6
11	**10.00**	**40**	**17.80**	**1.20**	7.2	**40**	7.2
12	**10.00**	**50**	**17.80**	**1.20**	7.2	**50**	7.2
13	**10.00**	**60**	**17.80**	**1.20**	7.2	**60**	7.2
14	**10.00**	**70**	**17.80**	**1.20**	7.2	**70**	7.2
15	**10.00**	**80**	**17.80**	**1.20**	7.2	**80**	7.2
16	**10.00**	**90**	**17.80**	**1.20**	7.2	**90**	7.2
17	**10.00**	**100**	**17.80**	**1.20**	7.2	**100**	7.2
18	**10.00**	**110**	**17.80**	**1.20**	7.2	**110**	7.2
19	**10.00**	**120**	**17.80**	**1.20**	7.2	**120**	7.2
20	**10.00**	**130**	**17.80**	**1.20**	7.2	**130**	7.2
Date	**06.01.2022**	**140**	**17.80**	**1.20**	7.2	**140**	7.2

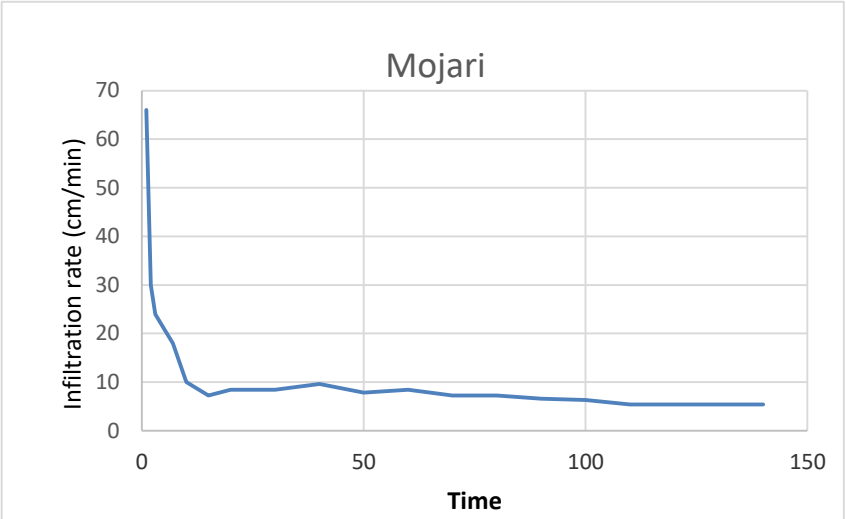
Unique ID no.	
Village	**Titwi**
Taluka	**Ghatanji**
District	**Yavatmal**
Coordinates	**20.064302, 78.425957**
Elevation/RL (mamsl)	306
Initial water level	18
Geology	Deccan trap
Soil Type	Gravely clay loam
Final Infiltration Rate(cm/hr)	4.8
Total Precipitation	14.9
S.no	Duration (min)



1	**0.50**	Cum Time (min)	Water level Depth (cm)	Infiltrated water depth (cm)	Infiltration rate (cm/hr)	Time (Min)	Infiltration rate (cm/min)
2	**0.50**	**0.50**	**17.70**	**0.30**	36	**0.5**	36
3	**1.00**	**1**	**17.80**	**0.20**	24	**1**	24
4	**1.00**	**2**	**17.70**	**0.30**	18	**2**	18
5	**1.00**	**3**	**17.80**	**0.20**	12	**3**	12
6	**2.00**	**4**	**17.80**	**0.20**	12	**4**	12
7	**2.00**	**6**	**17.80**	**0.20**	6	**6**	6
8	**2.00**	**8**	**17.70**	**0.30**	9	**8**	9
9	**5.00**	**10**	**17.70**	**0.30**	9	**10**	9
10	**5.00**	**15**	**17.50**	**0.50**	6	**15**	6
11	**5.00**	**20**	**17.50**	**0.50**	6	**20**	6
12	**5.00**	**25**	**17.50**	**0.50**	6	**25**	6
13	**10.00**	**30**	**17.50**	**0.50**	6	**30**	6
14	**10.00**	**40**	**17.00**	**1.00**	6	**40**	6
15	**10.00**	**50**	**17.00**	**1.00**	6	**50**	6
16	**20.00**	**60**	**17.00**	**1.00**	6	**60**	6
17	**20.00**	**80**	**16.00**	**2.00**	6	**80**	6
18	**20.00**	**100**	**16.40**	**1.60**	4.8	**100**	4.8
19	**20.00**	**120**	**16.40**	**1.60**	4.8	**120**	4.8
20	**20.00**	**140**	**16.40**	**1.60**	4.8	**140**	4.8

			16.40	**1.60**	4.8	**160**	4.8

Date	
Unique ID no.	
Village	**Mojari**
Taluka	**Ner**
District	**Yavatmal**
Coordinates	**20.509543, 77.794020**
Elevation/RL (mamsl)	331
Initial water level	14
Geology	Deccan trap
Soil Type	Silty loam
Final Infiltration Rate (cm/hr)	5.4
Total Precipitation	26.00 cm



S.no	Duration (min)	Cum Time (min)	Water level Depth (cm)	Infiltrated water depth (cm)	Infiltration rate (cm/hr)	Time (Min)	Infiltration rate (cm/min)
1	**1.00**	**1**	**15.10**	**1.10**	66	**1**	66
2	**1.00**	**2**	**14.50**	**0.50**	30	**2**	30
3	**1.00**	**3**	**14.40**	**0.40**	24	**3**	24
4	**2.00**	**5**	**14.70**	**0.70**	21	**5**	21
5	**2.00**	**7**	**14.60**	**0.60**	18	**7**	18
6	**3.00**	**10**	**14.50**	**0.50**	10	**10**	10
7	**5.00**	**15**	**14.60**	**0.60**	7.2	**15**	7.2
8	**5.00**	**20**	**14.70**	**0.70**	8.4	**20**	8.4
9	**10.00**	**30**	**15.40**	**1.40**	8.4	**30**	8.4
10	**10.00**	**40**	**15.60**	**1.60**	9.6	**40**	9.6
11	**10.00**	**50**	**15.30**	**1.30**	7.8	**50**	7.8
12	**10.00**	**60**	**15.40**	**1.40**	8.4	**60**	8.4
13	**10.00**	**70**	**15.20**	**1.20**	7.2	**70**	7.2
14	**10.00**	**80**	**15.20**	**1.20**	7.2	**80**	7.2
15	**10.00**	**90**	**15.10**	**1.10**	6.6	**90**	6.6
16	**10.00**	**100**	**15.05**	**1.05**	6.3	**100**	6.3
17	**10.00**	**110**	**14.90**	**0.90**	5.4	**110**	5.4
18	**10.00**	**120**	**14.90**	**0.90**	5.4	**120**	5.4
19	**10.00**	**130**	**14.90**	**0.90**	5.4	**130**	5.4
20	**10.00**	**140**	**14.90**	**0.90**	5.4	**140**	5.4

Annexure 8. Location of proposed Percolation tanks in Yavatmal district

S.No	Taluka	Village	X	Y	Type of Structure
1	Babulgaon	Karalgaon	20.471743	78.132805	Percolation Tank
2	Babulgaon	Sawar	20.475987	78.089492	Percolation Tank
3	Babulgaon	Wai	20.47693	78.173432	Percolation Tank
4	Babulgaon	Sukali	20.480546	78.163192	Percolation Tank
5	Babulgaon	Chondhi	20.488248	78.145228	Percolation Tank
6	Babulgaon	Panchgavhan	20.493097	78.162857	Percolation Tank
7	Babulgaon	Sawar	20.495473	78.072201	Percolation Tank
8	Babulgaon	Galwha	20.496558	78.122879	Percolation Tank
9	Babulgaon	Galwha	20.508365	78.117696	Percolation Tank
10	Babulgaon	Bagapur	20.509152	78.132958	Percolation Tank
11	Babulgaon	Umarda	20.514341	78.165544	Percolation Tank
12	Babulgaon	Anjangaon	20.520937	78.128926	Percolation Tank
13	Babulgaon	Antargaon	20.528491	78.145388	Percolation Tank
14	Babulgaon	Antargaon	20.533365	78.13279	Percolation Tank
15	Babulgaon	Gimona	20.540929	78.143876	Percolation Tank
16	Babulgaon	Gimona	20.545003	78.156474	Percolation Tank
17	Babulgaon	Kangokul	20.5711	78.174111	Percolation Tank
18	Babulgaon	Dabha	20.611979	78.019822	Percolation Tank
19	Babulgaon	Kharda	20.613552	78.177974	Percolation Tank
20	Babulgaon	Kharda	20.618268	78.17125	Percolation Tank
21	Babulgaon	Falegaon	20.620312	78.120528	Percolation Tank
22	Babulgaon	Sarul	20.635878	78.162017	Percolation Tank
23	Babulgaon	Gharfal	20.64657	78.208881	Percolation Tank
24	Babulgaon	Sarul	20.648739	78.152447	Percolation Tank
25	Darwha	Khopdi Kh.	20.199477	77.855803	Percolation Tank
26	Darwha	Bhileshwar	20.201211	77.827248	Percolation Tank
27	Darwha	Mahatoli	20.209562	77.867226	Percolation Tank
28	Darwha	Naigaon	20.218386	77.83867	Percolation Tank
29	Darwha	Wadgaon Andha (N.V.)	20.219174	77.894605	Percolation Tank
30	Darwha	Lakhkhind	20.222326	77.790966	Percolation Tank
31	Darwha	Dob	20.222483	77.769466	Percolation Tank
32	Darwha	Jawala	20.241392	77.70614	Percolation Tank
33	Darwha	Lakhkhind	20.241234	77.782903	Percolation Tank
34	Darwha	Jawala	20.242022	77.714707	Percolation Tank
35	Darwha	Dolhari	20.246119	77.728816	Percolation Tank
36	Darwha	Palashi	20.247156	77.767661	Percolation Tank
37	Darwha	Khed	20.25195	77.806252	Percolation Tank
38	Darwha	Antargaon	20.254943	77.752164	Percolation Tank
39	Darwha	Lakhkhind	20.256046	77.782064	Percolation Tank
40	Darwha	Dolhari	20.25841	77.726129	Percolation Tank
41	Darwha	Khed	20.260931	77.797349	Percolation Tank

S.No	Taluka	Village	X	Y	Type of Structure
42	Darwha	Deulgaon	20.266392	77.761105	Percolation Tank
43	Darwha	Deulgaon	20.270386	77.749981	Percolation Tank
44	Darwha	Khopadi Bk.	20.275428	77.722265	Percolation Tank
45	Darwha	Nilona	20.278557	77.671333	Percolation Tank
46	Darwha	Hatni	20.279975	77.703106	Percolation Tank
47	Darwha	Mangkinhi	20.290844	77.646957	Percolation Tank
48	Darwha	Teldhari	20.290398	77.744774	Percolation Tank
49	Darwha	Bagwadi	20.29351	77.7838	Percolation Tank
50	Darwha	Bijora	20.313999	77.709158	Percolation Tank
51	Darwha	Darwha	20.318421	77.746984	Percolation Tank
52	Darwha	Husanapur	20.326601	77.744798	Percolation Tank
53	Darwha	Telgavhan	20.329121	77.643763	Percolation Tank
54	Darwha	Dhulapur	20.330088	77.731349	Percolation Tank
55	Darwha	Darwha	20.329931	77.760433	Percolation Tank
56	Darwha	Dhamangaon Bk.	20.334635	77.597867	Percolation Tank
57	Darwha	Pimpalgaon	20.375023	77.638383	Percolation Tank
58	Darwha	Hatola	20.446001	77.614679	Percolation Tank
59	Digras	Sakari	20.022391	77.700499	Percolation Tank
60	Digras	Sakari	20.027208	77.719077	Percolation Tank
61	Digras	Singad	20.030999	77.650314	Percolation Tank
62	Digras	Singad	20.040318	77.642244	Percolation Tank
63	Digras	Vasantpur	20.049479	77.663259	Percolation Tank
64	Digras	Sevanagar (N.V.)	20.06022	77.689487	Percolation Tank
65	Digras	Kolura	20.063379	77.720926	Percolation Tank
66	Digras	Nimbha	20.064643	77.735889	Percolation Tank
67	Digras	Jawala	20.081386	77.762116	Percolation Tank
68	Digras	Ukali	20.092127	77.736225	Percolation Tank
69	Digras	Kalsa	20.137143	77.726056	Percolation Tank
70	Digras	Dhanora Kh.	20.147251	77.776995	Percolation Tank
71	Digras	Kalsa	20.148042	77.722861	Percolation Tank
72	Digras	Arambho	20.156796	77.834493	Percolation Tank
73	Digras	Tewari	20.161214	77.773633	Percolation Tank
74	Digras	Mandwa	20.164154	77.693689	Percolation Tank
75	Digras	Arambho	20.163817	77.836006	Percolation Tank
76	Digras	Mokh	20.176597	77.729668	Percolation Tank
77	Digras	Shiwani	20.176439	77.857022	Percolation Tank
78	Digras	Amala	20.180225	77.801541	Percolation Tank
79	Digras	Mokh	20.18275	77.743623	Percolation Tank
80	Digras	Shiwani	20.184801	77.875684	Percolation Tank
81	Digras	Ramgaon	20.187247	77.725802	Percolation Tank
82	Digras	Tewari	20.189692	77.773969	Percolation Tank
83	Digras	Ramgaon	20.193952	77.742614	Percolation Tank
84	Digras	Ghandinagar	20.196082	77.702432	Percolation Tank

S.No	Taluka	Village	X	Y	Type of Structure
85	Digras	Khekadi	20.204681	77.725633	Percolation Tank
86	Digras	Donad	20.210755	77.708317	Percolation Tank
87	Digras	Harshul	20.224638	77.664105	Percolation Tank
88	Mahagaon	Chili Ijara	19.675274	77.818668	Percolation Tank
89	Mahagaon	Nandgavhan	19.689052	77.71352	Percolation Tank
90	Mahagaon	Nandgavhan	19.690259	77.724288	Percolation Tank
91	Mahagaon	Chili Ijara	19.689685	77.823042	Percolation Tank
92	Mahagaon	Ghanmukh	19.695545	77.74784	Percolation Tank
93	Mahagaon	Dagad Thar	19.698244	77.770889	Percolation Tank
94	Mahagaon	Beldari	19.701881	77.689968	Percolation Tank
95	Mahagaon	Bijora	19.702354	77.732867	Percolation Tank
96	Mahagaon	Chili Ijara	19.702829	77.835828	Percolation Tank
97	Mahagaon	Fulsawangi	19.713598	77.854839	Percolation Tank
98	Mahagaon	Wadad	19.714293	77.772067	Percolation Tank
99	Mahagaon	Bijora	19.720718	77.736653	Percolation Tank
100	Mahagaon	Dharegaon	19.736272	77.698211	Percolation Tank
101	Mahagaon	Tembhurdara	19.738619	77.653292	Percolation Tank
102	Mahagaon	Mudana	19.738936	77.741616	Percolation Tank
103	Mahagaon	Tembhurdara	19.739728	77.64673	Percolation Tank
104	Mahagaon	Dharegaon	19.746708	77.683995	Percolation Tank
105	Mahagaon	Bhumb	19.758098	77.826912	Percolation Tank
106	Mahagaon	Lohara Kh.	19.774062	77.70023	Percolation Tank
107	Mahagaon	Lohara Kh.	19.777066	77.690724	Percolation Tank
108	Mahagaon	Sawana	19.797226	77.730512	Percolation Tank
109	Mahagaon	Wakodi	19.798321	77.719072	Percolation Tank
110	Mahagaon	Dongargaon	19.80023	77.669442	Percolation Tank
111	Mahagaon	Sawana	19.806476	77.735812	Percolation Tank
112	Mahagaon	Pohandul	19.883678	77.877214	Percolation Tank
113	Mahagaon	Wadad	19.984675	77.646226	Percolation Tank
114	Mahagaon	Wadad	19.994247	77.659685	Percolation Tank
115	Mahagaon	Sai	20.005635	77.674994	Percolation Tank
116	Maregaon	Rohpat	20.024284	78.735473	Percolation Tank
117	Maregaon	Arjuni	20.034204	78.784766	Percolation Tank
118	Maregaon	Kegaon	20.036891	78.81059	Percolation Tank
119	Maregaon	Khandani	20.039294	78.704516	Percolation Tank
120	Maregaon	Hiwari	20.047245	78.791916	Percolation Tank
121	Maregaon	Wagaon	20.048907	78.826653	Percolation Tank
122	Maregaon	Vasantnagar (N.V.)	20.05462	78.666999	Percolation Tank
123	Maregaon	Wagaon	20.063412	78.838405	Percolation Tank
124	Maregaon	Takalkheda	20.079488	78.810422	Percolation Tank
125	Maregaon	Sarati	20.081165	78.695769	Percolation Tank
126	Maregaon	Awalgaon	20.087327	78.673057	Percolation Tank
127	Maregaon	Narsala	20.101706	78.787458	Percolation Tank

S.No	Taluka	Village	X	Y	Type of Structure
128	Maregaon	Buranda	20.104234	78.730257	Percolation Tank
129	Maregaon	Chinchoni Botoni	20.107236	78.693919	Percolation Tank
130	Maregaon	Chinchoni Botoni	20.111502	78.690554	Percolation Tank
131	Maregaon	Gawarala	20.110696	78.868548	Percolation Tank
132	Maregaon	Khekadwai	20.120982	78.721677	Percolation Tank
133	Maregaon	Shivnala	20.122088	78.748595	Percolation Tank
134	Maregaon	Salebhatti	20.122545	78.855594	Percolation Tank
135	Maregaon	Salebhatti	20.123809	78.82876	Percolation Tank
136	Maregaon	Shivnala	20.137257	78.733118	Percolation Tank
137	Maregaon	Akapur	20.13937	78.872585	Percolation Tank
138	Maregaon	Pisgaon	20.150192	78.832965	Percolation Tank
139	Maregaon	Dol. Dongargaon	20.150982	78.880408	Percolation Tank
140	Maregaon	Kinhala	20.164726	78.833302	Percolation Tank
141	Maregaon	Kinhala	20.167728	78.835489	Percolation Tank
142	Maregaon	Rameshwar	20.202671	78.809328	Percolation Tank
143	Maregaon	Hiwara-Majara	20.213099	78.906064	Percolation Tank
144	Maregaon	Chopan	20.223212	78.871744	Percolation Tank
145	Maregaon	Khairgaon	20.227794	78.827329	Percolation Tank
146	Ner	Ghareful	20.44371	77.749552	Percolation Tank
147	Ner	Bangaon	20.453192	77.789982	Percolation Tank
148	Ner	Indrathana	20.475424	77.851939	Percolation Tank
149	Ner	Ner	20.491981	77.860378	Percolation Tank
150	Pusad	Isapur	19.732464	77.464034	Percolation Tank
151	Pusad	Shilona	19.748417	77.612421	Percolation Tank
152	Pusad	Amdari	19.750943	77.503897	Percolation Tank
153	Pusad	Shilona	19.753248	77.631897	Percolation Tank
154	Pusad	Buti Ijara	19.765821	77.469446	Percolation Tank
155	Pusad	Shivaji Nagar (N.V.)	19.769234	77.623586	Percolation Tank
156	Pusad	Gopwadi	19.777862	77.451954	Percolation Tank
157	Pusad	Gaul Kh.	19.7905	77.604857	Percolation Tank
158	Pusad	Warwat	19.848076	77.602761	Percolation Tank
159	Pusad	Jawali	19.868298	77.44389	Percolation Tank
160	Pusad	Adgaon	19.88561	77.443405	Percolation Tank
161	Pusad	Hiwalni	19.904897	77.403717	Percolation Tank
162	Pusad	Hanwat Kheda	19.934447	77.371044	Percolation Tank
163	Pusad	Nandura Ijara	19.94227	77.402171	Percolation Tank
164	Pusad	Ramnagar	19.959773	77.600868	Percolation Tank
165	Pusad	Pandhurna Kh.	19.979881	77.378831	Percolation Tank
166	Pusad	Pandhurna Kh.	19.981255	77.40819	Percolation Tank
167	Pusad	Nandipur	19.992164	77.605727	Percolation Tank
168	Pusad	Udadi	20.014397	77.400518	Percolation Tank
169	Pusad	Bansi	20.02032	77.507081	Percolation Tank
170	Pusad	Belgavhan	20.02254	77.626272	Percolation Tank

S.No	Taluka	Village	X	Y	Type of Structure
171	Pusad	Chondhi	20.035738	77.552085	Percolation Tank
172	Pusad	Chondhi	20.042564	77.534539	Percolation Tank
173	Pusad	Rajana	20.058809	77.420087	Percolation Tank
174	Pusad	Pimpalgaon	20.065939	77.477984	Percolation Tank
175	Umarkhed	Chatari	19.479973	77.80322	Percolation Tank
176	Umarkhed	Chatari	19.482806	77.790781	Percolation Tank
177	Umarkhed	Sakara	19.508996	77.757796	Percolation Tank
178	Umarkhed	Sondabi	19.525064	78.0563	Percolation Tank
179	Umarkhed	Therdi	19.529017	78.109667	Percolation Tank
180	Umarkhed	Mathuranagar (N.V.)	19.536367	77.982924	Percolation Tank
181	Umarkhed	Marlegaon	19.542155	77.686444	Percolation Tank
182	Umarkhed	Mathuranagar (N.V.)	19.542975	77.998924	Percolation Tank
183	Umarkhed	Bittargaon Bk.	19.544875	77.948649	Percolation Tank
184	Umarkhed	Sondabi	19.546988	78.046788	Percolation Tank
185	Umarkhed	Chincholi Sangam	19.55245	77.665789	Percolation Tank
186	Umarkhed	Bittargaon Bk.	19.555527	77.939172	Percolation Tank
187	Umarkhed	Rajapur	19.56275	77.710649	Percolation Tank
188	Umarkhed	Vidul	19.564441	77.767481	Percolation Tank
189	Umarkhed	Vidul	19.574489	77.764801	Percolation Tank
190	Umarkhed	Manyali	19.57441	77.931358	Percolation Tank
191	Umarkhed	Morchandi	19.574644	78.007755	Percolation Tank
192	Umarkhed	Akoli	19.585327	77.904341	Percolation Tank
193	Umarkhed	Kharus Kh.	19.590776	77.873216	Percolation Tank
194	Umarkhed	Baldi	19.600253	77.733096	Percolation Tank
195	Umarkhed	Meth	19.607559	77.851023	Percolation Tank
196	Umarkhed	Dahgaon	19.613032	77.667507	Percolation Tank
197	Umarkhed	Krishnpur	19.612448	77.839752	Percolation Tank
198	Umarkhed	Umarkhed(Rural)	19.615287	77.702611	Percolation Tank
199	Umarkhed	Govindpur	19.615582	77.823827	Percolation Tank
200	Umarkhed	Tembhurdara	19.615628	77.89444	Percolation Tank
201	Umarkhed	Kailas Nagar(N.V.)	19.619142	77.656819	Percolation Tank
202	Umarkhed	Sakali (Jahagir)	19.633068	77.693455	Percolation Tank
203	Umarkhed	Ningnur Gahagir	19.635512	77.861685	Percolation Tank
204	Umarkhed	Bhawani	19.634549	78.007847	Percolation Tank
205	Umarkhed	Ningnur Gahagir	19.640437	77.82576	Percolation Tank
206	Umarkhed	Warud Bibi	19.646026	77.729945	Percolation Tank
207	Umarkhed	Ningnur Gahagir	19.647468	77.880487	Percolation Tank
208	Umarkhed	Ningnur Gahagir	19.651368	77.814678	Percolation Tank
209	Umarkhed	Palshi	19.652872	77.622531	Percolation Tank
210	Umarkhed	Korta	19.649901	78.046704	Percolation Tank
211	Umarkhed	Rampur	19.651509	77.982617	Percolation Tank
212	Umarkhed	Amanjur	19.659448	77.715104	Percolation Tank
213	Umarkhed	Chili	19.660394	77.695966	Percolation Tank

S.No	Taluka	Village	X	Y	Type of Structure
214	Umarkhed	Nagapur	19.663349	77.592723	Percolation Tank
215	Umarkhed	Bhawani	19.660487	78.011557	Percolation Tank
216	Umarkhed	Botha	19.681405	77.675371	Percolation Tank
217	Umarkhed	Ambli	19.688498	77.661495	Percolation Tank
218	Umarkhed	Dongargaon	19.688066	77.963497	Percolation Tank
219	Umarkhed	Isapur	19.698368	77.871469	Percolation Tank
220	Umarkhed	Pimpaldri	19.719616	77.529972	Percolation Tank
221	Umarkhed	Mohdari	19.743172	77.568566	Percolation Tank
222	Wani	Chanakha	19.853711	79.061622	Percolation Tank
223	Wani	Welabai	19.883603	78.982919	Percolation Tank
224	Wani	Babapur	19.893552	78.935861	Percolation Tank
225	Wani	Kawadshi	19.918692	79.061871	Percolation Tank
226	Wani	Shirpur	19.939432	79.010608	Percolation Tank
227	Wani	Rasa	19.994655	78.874668	Percolation Tank
228	Wani	Chargaon	19.993394	79.006792	Percolation Tank
229	Wani	Rasa	20.003014	78.85939	Percolation Tank
230	Wani	Besa	20.006292	79.024382	Percolation Tank
231	Wani	Borda	20.010426	78.827828	Percolation Tank
232	Wani	Borda	20.011845	78.821449	Percolation Tank
233	Wani	Nawegaon	20.015942	78.854018	Percolation Tank
234	Wani	Mohorli	20.033783	78.895128	Percolation Tank
235	Wani	Pimpalgaon	20.042282	79.065048	Percolation Tank
236	Wani	Parsoda	20.074223	78.901948	Percolation Tank
237	Wani	Wani	20.073814	78.955738	Percolation Tank
238	Wani	Gowari	20.081707	79.024084	Percolation Tank
239	Wani	Kona	20.08824	78.997967	Percolation Tank
240	Wani	Nimbala	20.101058	78.887203	Percolation Tank
241	Wani	Wanjri	20.110964	78.951037	Percolation Tank
242	Wani	Nandepera	20.138322	78.936617	Percolation Tank
243	Zari Jamni	Khatera	19.760316	78.911613	Percolation Tank
244	Zari Jamni	Hirapur	19.771952	78.815262	Percolation Tank
245	Zari Jamni	Rajpur	19.799562	78.746831	Percolation Tank
246	Zari Jamni	Ruikot	19.815905	78.816293	Percolation Tank
247	Zari Jamni	Khadaki	19.823593	78.883761	Percolation Tank
248	Zari Jamni	Satapalli	19.832854	78.641502	Percolation Tank
249	Zari Jamni	Pardi	19.830786	78.835369	Percolation Tank
250	Zari Jamni	Chalbardi	19.846571	78.697793	Percolation Tank
251	Zari Jamni	Pardi	19.850906	78.807766	Percolation Tank
252	Zari Jamni	Mudhati	19.85629	78.664883	Percolation Tank
253	Zari Jamni	Dongargaon	19.858385	78.836618	Percolation Tank
254	Zari Jamni	Marki Kh.	19.861119	78.781039	Percolation Tank
255	Zari Jamni	Parsodi	19.862794	78.68486	Percolation Tank
256	Zari Jamni	Kasara	19.863337	78.858468	Percolation Tank

S.No	Taluka	Village	X	Y	Type of Structure
257	Zari Jamni	Pawanar	19.867468	78.801455	Percolation Tank
258	Zari Jamni	Kadpakhindi	19.869578	78.716096	Percolation Tank
259	Zari Jamni	Shindhi Wadhona	19.869492	78.860731	Percolation Tank
260	Zari Jamni	Gavonra	19.874551	78.653716	Percolation Tank
261	Zari Jamni	Matharjun	19.890167	78.681942	Percolation Tank
262	Zari Jamni	Matharjun	19.892553	78.689525	Percolation Tank
263	Zari Jamni	Surd	19.912925	78.825599	Percolation Tank
264	Zari Jamni	Dabhadi	19.914915	78.751255	Percolation Tank
265	Zari Jamni	Karegaon	19.920991	78.604041	Percolation Tank
266	Zari Jamni	Dabhadi	19.926707	78.741532	Percolation Tank
267	Zari Jamni	Pandharwani	19.93179	78.706153	Percolation Tank
268	Zari Jamni	Junoni	19.93141	78.785175	Percolation Tank
269	Zari Jamni	Yesapur	19.941068	78.804626	Percolation Tank
270	Zari Jamni	Rajani	19.944635	78.676246	Percolation Tank
271	Zari Jamni	Ambezari Kh.	19.947025	78.622668	Percolation Tank
272	Zari Jamni	Yesapur	19.94999	78.79385	Percolation Tank
273	Zari Jamni	Gangapur	19.951215	78.736914	Percolation Tank
274	Zari Jamni	Ambezari Kh.	19.959894	78.626605	Percolation Tank
275	Zari Jamni	Shibala	19.960117	78.69199	Percolation Tank

Note: Construction of AR structures may be taken up at these sites after field checks/verification only

Annexure 9. Location of proposed check dam in Yavatmal district

S.No	Taluka	Village	X	Y	Type of Structure
1	Babulgaon	Karalgaon	20.44391	78.1318	Check Dam
2	Babulgaon	Karalgaon	20.4491	78.13398	Check Dam
3	Babulgaon	Sukali	20.46717	78.1689	Check Dam
4	Babulgaon	Wai	20.46749	78.17528	Check Dam
5	Babulgaon	Wai	20.46749	78.17528	Check Dam
6	Babulgaon	Galwha	20.47833	78.1177	Check Dam
7	Babulgaon	Galwha	20.47833	78.1177	Check Dam
8	Babulgaon	Sawar	20.48572	78.07892	Check Dam
9	Babulgaon	Sawar	20.49043	78.06162	Check Dam
10	Babulgaon	Sawar	20.49279	78.09537	Check Dam
11	Babulgaon	Bhiluksa	20.5019	78.08479	Check Dam
12	Babulgaon	Bhiluksa	20.50614	78.08513	Check Dam
13	Babulgaon	Pimpalgaon	20.5118	78.05793	Check Dam
14	Babulgaon	Bhiluksa	20.51353	78.08932	Check Dam
15	Babulgaon	Borgaon	20.51385	78.07506	Check Dam
16	Babulgaon	Pimpalgaon	20.51683	78.06733	Check Dam
17	Babulgaon	Kamaljapur	20.52233	78.09671	Check Dam
18	Babulgaon	Rani Amravti	20.52233	78.1093	Check Dam
19	Babulgaon	Chendkapur	20.52752	78.07757	Check Dam
20	Babulgaon	Rani Amravti	20.54182	78.11938	Check Dam
21	Babulgaon	Nagri	20.558	78.09755	Check Dam
22	Babulgaon	Dabha	20.58645	78.0069	Check Dam
23	Babulgaon	Muradabad	20.58833	78.18518	Check Dam
24	Babulgaon	Paloti	20.5921	78.17629	Check Dam
25	Babulgaon	Paloti	20.59399	78.1637	Check Dam
26	Babulgaon	Dabha	20.59745	78.00589	Check Dam
27	Babulgaon	Pratappur	20.59713	78.14086	Check Dam
28	Babulgaon	Gawandi	20.59855	78.18754	Check Dam
29	Babulgaon	Dabha	20.6009	78.02838	Check Dam
30	Babulgaon	Kharda	20.59996	78.15698	Check Dam
31	Babulgaon	Kharda	20.60059	78.17461	Check Dam
32	Babulgaon	Kharda	20.60169	78.16621	Check Dam
33	Babulgaon	Dabha	20.60656	78.0304	Check Dam
34	Babulgaon	Dabha	20.60719	78.00857	Check Dam
35	Babulgaon	Dabha	20.6097	78.03392	Check Dam
36	Babulgaon	Pahur	20.61112	78.03997	Check Dam
37	Babulgaon	Dabha	20.61332	78.01059	Check Dam
38	Babulgaon	Mitanapur	20.61285	78.13851	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
39	Babulgaon	Sarul	20.61473	78.14859	Check Dam
40	Babulgaon	Mitanapur	20.61677	78.13381	Check Dam
41	Babulgaon	Dabha	20.61787	78.01445	Check Dam
42	Babulgaon	Kolhi	20.6196	78.10108	Check Dam
43	Babulgaon	Sarul	20.6196	78.14624	Check Dam
44	Babulgaon	Falegaon	20.62353	78.13465	Check Dam
45	Babulgaon	Falegaon	20.62762	78.13314	Check Dam
46	Babulgaon	Kolhi	20.62982	78.09957	Check Dam
47	Babulgaon	Falegaon	20.63233	78.13633	Check Dam
48	Babulgaon	Sarfali	20.63233	78.20281	Check Dam
49	Babulgaon	Kolhi	20.63642	78.10712	Check Dam
50	Babulgaon	Sarul	20.63736	78.17125	Check Dam
51	Babulgaon	Parsodi	20.63956	78.19459	Check Dam
52	Babulgaon	Falegaon	20.64113	78.11786	Check Dam
53	Babulgaon	Pimpalkhuta	20.64192	78.03443	Check Dam
54	Babulgaon	Parsodi	20.6416	78.18183	Check Dam
55	Babulgaon	Rustampur	20.64805	78.09201	Check Dam
56	Babulgaon	Gharfal	20.64773	78.19962	Check Dam
57	Babulgaon	Kotha	20.6493	78.05995	Check Dam
58	Babulgaon	Gharfal	20.64993	78.19895	Check Dam
59	Babulgaon	Shekapur	20.65606	78.09419	Check Dam
60	Babulgaon	Mahamadpur	20.65763	78.18401	Check Dam
61	Babulgaon	Gharfal	20.65952	78.19778	Check Dam
62	Babulgaon	Mahamadpur	20.66015	78.17293	Check Dam
63	Babulgaon	Rahimatpur	20.6614	78.0586	Check Dam
64	Babulgaon	Gharfal	20.66957	78.18804	Check Dam
65	Babulgaon	Gharfal	20.67177	78.20449	Check Dam
66	Darwha	Mahagaon	20.19952	77.90838	Check Dam
67	Darwha	Bhileshwar	20.20125	77.82221	Check Dam
68	Darwha	Khopdi Kh.	20.20109	77.86353	Check Dam
69	Darwha	Mahagaon	20.20109	77.87478	Check Dam
70	Darwha	Bhileshwar	20.20282	77.82641	Check Dam
71	Darwha	Mahagaon	20.20471	77.91392	Check Dam
72	Darwha	Naigaon	20.21322	77.81851	Check Dam
73	Darwha	Dob	20.21637	77.76913	Check Dam
74	Darwha	Lakhkhind	20.21794	77.78929	Check Dam
75	Darwha	Naigaon	20.21778	77.82221	Check Dam
76	Darwha	Dob	20.21841	77.774	Check Dam
77	Darwha	Palashi	20.22015	77.7656	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
78	Darwha	Naigaon	20.22282	77.83279	Check Dam
79	Darwha	Sindhi	20.22393	77.73234	Check Dam
80	Darwha	Mahagaon	20.22487	77.90804	Check Dam
81	Darwha	Mahatoli	20.22676	77.87495	Check Dam
82	Darwha	Wadgaon Andha (N.V.)	20.22692	77.88402	Check Dam
83	Darwha	Palashi	20.22802	77.76476	Check Dam
84	Darwha	Mahatoli	20.22802	77.87059	Check Dam
85	Darwha	Jawala	20.23196	77.69976	Check Dam
86	Darwha	Mahatoli	20.23101	77.85967	Check Dam
87	Darwha	Mahatoli	20.23259	77.86807	Check Dam
88	Darwha	Lakhkhind	20.23479	77.78912	Check Dam
89	Darwha	Palashi	20.23511	77.75754	Check Dam
90	Darwha	Sindhi	20.23527	77.74293	Check Dam
91	Darwha	Jawala	20.23558	77.71454	Check Dam
92	Darwha	Sindhi	20.23652	77.73806	Check Dam
93	Darwha	Mangala	20.2359	77.84909	Check Dam
94	Darwha	Umari	20.23652	77.8118	Check Dam
95	Darwha	Jawala	20.23873	77.70614	Check Dam
96	Darwha	Lakhkhind	20.2403	77.79349	Check Dam
97	Darwha	Umari	20.24046	77.81919	Check Dam
98	Darwha	Khed	20.24597	77.79433	Check Dam
99	Darwha	Kurhad Bk.	20.25023	77.66331	Check Dam
100	Darwha	Lakhkhind	20.24975	77.78509	Check Dam
101	Darwha	Palashi	20.25023	77.75485	Check Dam
102	Darwha	Kurhad Bk.	20.25196	77.65726	Check Dam
103	Darwha	Kurhad Bk.	20.25243	77.66734	Check Dam
104	Darwha	Umari	20.25259	77.81398	Check Dam
105	Darwha	Palashi	20.257	77.76863	Check Dam
106	Darwha	Antargaon	20.25889	77.73906	Check Dam
107	Darwha	Kurhad Bk.	20.26267	77.64903	Check Dam
108	Darwha	Khopadi Bk.	20.26739	77.71874	Check Dam
109	Darwha	Nanadgavhn	20.26802	77.63761	Check Dam
110	Darwha	Malegaon	20.26771	77.69069	Check Dam
111	Darwha	Kurhad Bk.	20.26865	77.64601	Check Dam
112	Darwha	Taroda	20.26991	77.77854	Check Dam
113	Darwha	Taroda	20.27007	77.76795	Check Dam
114	Darwha	Nanadgavhn	20.27101	77.62904	Check Dam
115	Darwha	Mangkinhi	20.27857	77.65121	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
116	Darwha	Deulgaon	20.27904	77.74226	Check Dam
117	Darwha	Mangkinhi	20.28109	77.63912	Check Dam
118	Darwha	Nanadgavhn	20.28172	77.6319	Check Dam
119	Darwha	Deulgaon	20.28393	77.7614	Check Dam
120	Darwha	Nilona	20.28487	77.66112	Check Dam
121	Darwha	Darwha	20.28424	77.76712	Check Dam
122	Darwha	Darwha	20.28582	77.77467	Check Dam
123	Darwha	Pimpalkhuta	20.2896	77.63778	Check Dam
124	Darwha	Mangkinhi	20.29337	77.65558	Check Dam
125	Darwha	Darwha	20.30881	77.78374	Check Dam
126	Darwha	Both	20.31526	77.69875	Check Dam
127	Darwha	Darwha	20.32282	77.78307	Check Dam
128	Darwha	Darwha	20.32881	77.77703	Check Dam
129	Darwha	Kurhad Kh.	20.33117	77.5716	Check Dam
130	Darwha	Bhopapur	20.33274	77.75385	Check Dam
131	Darwha	Darwha	20.33637	77.76896	Check Dam
132	Darwha	Darwha	20.337	77.7609	Check Dam
133	Darwha	Chorkhopadi	20.33841	77.66684	Check Dam
134	Darwha	Chorkhopadi	20.33841	77.66684	Check Dam
135	Darwha	Mahuli	20.33967	77.72546	Check Dam
136	Darwha	Karjagaon	20.35511	77.6497	Check Dam
137	Darwha	Kurhad Kh.	20.35637	77.5716	Check Dam
138	Darwha	Borgoan	20.36109	77.70916	Check Dam
139	Darwha	Dhamangaon Kh.	20.36361	77.58201	Check Dam
140	Darwha	Bhandegaon	20.36361	77.67859	Check Dam
141	Darwha	Dhamangaon Kh.	20.36629	77.60166	Check Dam
142	Darwha	Borgoan	20.36944	77.70782	Check Dam
143	Darwha	Dhamangaon Kh.	20.37148	77.58503	Check Dam
144	Darwha	Palodi	20.37117	77.77266	Check Dam
145	Darwha	Ghatkinhi	20.37322	77.76392	Check Dam
146	Darwha	Dhamangaon Kh.	20.37463	77.58772	Check Dam
147	Darwha	Pimpalgaon	20.37526	77.64718	Check Dam
148	Darwha	Palodi	20.37511	77.78089	Check Dam
149	Darwha	Talegaon	20.37857	77.76661	Check Dam
150	Darwha	Ramgaon (Rameshwar)	20.38125	77.59511	Check Dam
151	Darwha	Pimpalgaon	20.38408	77.65172	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
152	Darwha	Talegaon	20.38424	77.77367	Check Dam
153	Darwha	Palodi	20.38456	77.7866	Check Dam
154	Darwha	Pimpalgaon	20.38928	77.64147	Check Dam
155	Darwha	Chorodi	20.39243	77.79265	Check Dam
156	Darwha	Lalapur	20.40975	77.75821	Check Dam
157	Darwha	Lalapur	20.41479	77.7604	Check Dam
158	Darwha	Ishrampur	20.41889	77.74024	Check Dam
159	Darwha	Fudgaon	20.41983	77.75989	Check Dam
160	Darwha	Fudgaon	20.42393	77.77434	Check Dam
161	Darwha	Fudgaon	20.42503	77.75519	Check Dam
162	Darwha	Fudgaon	20.42786	77.75015	Check Dam
163	Digras	Bhilwadi	20.01238	77.65018	Check Dam
164	Digras	Sakari	20.01664	77.71302	Check Dam
165	Digras	Sakari	20.01822	77.70587	Check Dam
166	Digras	Bhilwadi	20.02762	77.64269	Check Dam
167	Digras	Vasantpur	20.03339	77.67129	Check Dam
168	Digras	Singad	20.0424	77.6326	Check Dam
169	Digras	Rui	20.04572	77.70637	Check Dam
170	Digras	Singad	20.05085	77.6559	Check Dam
171	Digras	Vitholi	20.05141	77.74507	Check Dam
172	Digras	Vasantpur	20.05702	77.67567	Check Dam
173	Digras	Sevanagar (N.V.)	20.05891	77.69501	Check Dam
174	Digras	Vasantpur	20.06499	77.66011	Check Dam
175	Digras	Nandgavhan	20.06934	77.66608	Check Dam
176	Digras	Rahati	20.08743	77.66288	Check Dam
177	Digras	Pelu	20.09383	77.66053	Check Dam
178	Digras	Dhanora Bk.	20.09595	77.73926	Check Dam
179	Digras	Kati	20.104	77.67693	Check Dam
180	Digras	Ramnagar	20.10937	77.6813	Check Dam
181	Digras	Ramnagar	20.10969	77.67685	Check Dam
182	Digras	Digras	20.11214	77.72269	Check Dam
183	Digras	Digras	20.11521	77.7221	Check Dam
184	Digras	Ramnagar	20.11624	77.68694	Check Dam
185	Digras	Digras	20.11687	77.70099	Check Dam
186	Digras	Dhanora Bk.	20.11695	77.74801	Check Dam
187	Digras	Ramnagar	20.11774	77.67432	Check Dam
188	Digras	Digras	20.12106	77.69409	Check Dam
189	Digras	Ramnagar	20.12374	77.68383	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
190	Digras	Digras	20.12492	77.71066	Check Dam
191	Digras	Digras	20.13092	77.73144	Check Dam
192	Digras	Digras	20.13298	77.72446	Check Dam
193	Digras	Mandwa	20.14719	77.67895	Check Dam
194	Digras	Chincholi	20.15895	77.76155	Check Dam
195	Digras	Arambho	20.16108	77.84525	Check Dam
196	Digras	Arambho	20.16629	77.8238	Check Dam
197	Digras	Arambho	20.16645	77.84466	Check Dam
198	Digras	Amala Kh	20.16756	77.78973	Check Dam
199	Digras	Arambho	20.16748	77.84071	Check Dam
200	Digras	Mandwa	20.16921	77.68257	Check Dam
201	Digras	Arambho	20.16977	77.83112	Check Dam
202	Digras	Morkhed	20.17158	77.67373	Check Dam
203	Digras	Morkhed	20.17285	77.68231	Check Dam
204	Digras	Arambho	20.17269	77.81842	Check Dam
205	Digras	Tewari	20.17837	77.7608	Check Dam
206	Digras	Morkhed	20.18027	77.65641	Check Dam
207	Digras	Tewari	20.18003	77.78275	Check Dam
208	Digras	Tewari	20.18398	77.78258	Check Dam
209	Digras	Amala	20.1869	77.81118	Check Dam
210	Digras	Dorli	20.18808	77.71167	Check Dam
211	Digras	Morkhed	20.18856	77.65312	Check Dam
212	Digras	Amala	20.18832	77.79941	Check Dam
213	Digras	Tewari	20.18982	77.75869	Check Dam
214	Digras	Dorli	20.19029	77.70948	Check Dam
215	Digras	Tewari	20.19337	77.78199	Check Dam
216	Digras	Dorli	20.19519	77.70603	Check Dam
217	Digras	Ghandinagar	20.19535	77.68736	Check Dam
218	Digras	Lingi	20.19748	77.75676	Check Dam
219	Digras	Ghandinagar	20.19898	77.69367	Check Dam
220	Digras	Ghandinagar	20.20087	77.69443	Check Dam
221	Digras	Ramgaon	20.20174	77.74969	Check Dam
222	Digras	Ramgaon	20.20395	77.7348	Check Dam
223	Digras	Wai	20.20482	77.77661	Check Dam
224	Digras	Ghandinagar	20.20585	77.69434	Check Dam
225	Digras	Harshul	20.20853	77.67188	Check Dam
226	Digras	Ghandinagar	20.21066	77.68273	Check Dam
227	Digras	Ghandinagar	20.21106	77.69813	Check Dam
228	Digras	Khekadi	20.21208	77.74086	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
229	Digras	Ghandinagar	20.2135	77.67886	Check Dam
230	Digras	Khekadi	20.21461	77.72378	Check Dam
231	Digras	Khekadi	20.21492	77.74305	Check Dam
232	Digras	Khekadi	20.21508	77.72866	Check Dam
233	Digras	Donad	20.2154	77.70881	Check Dam
234	Digras	Sakara	20.2154	77.7184	Check Dam
235	Digras	Ghandinagar	20.21674	77.6967	Check Dam
236	Digras	Harshul	20.21848	77.67222	Check Dam
237	Digras	Sakara	20.2199	77.71218	Check Dam
238	Digras	Ghandinagar	20.22006	77.69762	Check Dam
239	Digras	Donad	20.22029	77.70132	Check Dam
240	Digras	Harshul	20.22471	77.67828	Check Dam
241	Digras	Harshul	20.22574	77.67357	Check Dam
242	Mahagaon	Dagad Thar	19.66547	77.78452	Check Dam
243	Mahagaon	Dagad Thar	19.66785	77.79175	Check Dam
244	Mahagaon	Dagad Thar	19.67434	77.75121	Check Dam
245	Mahagaon	Dagad Thar	19.67608	77.77947	Check Dam
246	Mahagaon	Dagad Thar	19.67798	77.78368	Check Dam
247	Mahagaon	Chili Ijara	19.68099	77.83011	Check Dam
248	Mahagaon	Dagad Thar	19.68305	77.77055	Check Dam
249	Mahagaon	Ghanmukh	19.68511	77.75188	Check Dam
250	Mahagaon	Nandgavhan	19.69017	77.72143	Check Dam
251	Mahagaon	Nandgavhan	19.69096	77.71419	Check Dam
252	Mahagaon	Dagad Thar	19.69096	77.8047	Check Dam
253	Mahagaon	Ghanmukh	19.6927	77.76164	Check Dam
254	Mahagaon	Ghanmukh	19.69587	77.75238	Check Dam
255	Mahagaon	Ghanmukh	19.6965	77.75709	Check Dam
256	Mahagaon	Chili Ijara	19.6973	77.83516	Check Dam
257	Mahagaon	Chili Ijara	19.7022	77.82994	Check Dam
258	Mahagaon	Ghanmukh	19.70727	77.73808	Check Dam
259	Mahagaon	Fulsawangi	19.70648	77.86191	Check Dam
260	Mahagaon	Fulsawangi	19.71139	77.88563	Check Dam
261	Mahagaon	Beldari	19.72453	77.69787	Check Dam
262	Mahagaon	Dharegaon	19.73244	77.69485	Check Dam
263	Mahagaon	Kothari	19.73387	77.71184	Check Dam
264	Mahagaon	Tembhurdara	19.73688	77.63866	Check Dam
265	Mahagaon	Dharegaon	19.74463	77.67785	Check Dam
266	Mahagaon	Hingani	19.74542	77.71638	Check Dam
267	Mahagaon	Dharegaon	19.74843	77.70174	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
268	Mahagaon	Mudana	19.74891	77.73926	Check Dam
269	Mahagaon	Sadhunagar (N.V.)	19.74986	77.77947	Check Dam
270	Mahagaon	Nahrunagar (N.V.)	19.75033	77.73337	Check Dam
271	Mahagaon	Sadhunagar (N.V.)	19.75413	77.77324	Check Dam
272	Mahagaon	Tembhurdara	19.75651	77.64185	Check Dam
273	Mahagaon	Dharmoha	19.75904	77.68694	Check Dam
274	Mahagaon	Waruna	19.77044	77.70931	Check Dam
275	Mahagaon	Lohara Kh.	19.77345	77.68643	Check Dam
276	Mahagaon	Mahagaon	19.77313	77.76685	Check Dam
277	Mahagaon	Mahagaon	19.77456	77.77526	Check Dam
278	Mahagaon	Amani Bk.	19.77874	77.8116	Check Dam
279	Mahagaon	Botha	19.78089	77.67634	Check Dam
280	Mahagaon	Amani Kh	19.78484	77.79957	Check Dam
281	Mahagaon	Botha	19.78596	77.6723	Check Dam
282	Mahagaon	Mahagaon	19.7869	77.76315	Check Dam
283	Mahagaon	Uti	19.78754	77.74868	Check Dam
284	Mahagaon	Amani Kh	19.78998	77.79604	Check Dam
285	Mahagaon	Dongargaon	19.79292	77.64067	Check Dam
286	Mahagaon	Karanjkhed	19.79496	77.82666	Check Dam
287	Mahagaon	Sevanagar (N.V.)	19.7952	77.83179	Check Dam
288	Mahagaon	Januna	19.79623	77.7968	Check Dam
289	Mahagaon	Dongargaon	19.7983	77.64976	Check Dam
290	Mahagaon	Sevanagar (N.V.)	19.80066	77.83566	Check Dam
291	Mahagaon	Sevanagar (N.V.)	19.80287	77.84399	Check Dam
292	Mahagaon	Karanjkhed	19.80501	77.81253	Check Dam
293	Mahagaon	Karanjkhed	19.80611	77.81732	Check Dam
294	Mahagaon	Sevanagar (N.V.)	19.80785	77.84803	Check Dam
295	Mahagaon	Karanjkhed	19.81284	77.82027	Check Dam
296	Mahagaon	Hiwardari	19.81782	77.84567	Check Dam
297	Mahagaon	Hiwardari	19.81893	77.84231	Check Dam
298	Mahagaon	Anandnagar (N.V.)	19.82035	77.84962	Check Dam
299	Mahagaon	Hiwardari	19.82067	77.8349	Check Dam
300	Mahagaon	Karanjkhed	19.8213	77.82262	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
301	Mahagaon	Anandnagar (N.V.)	19.82336	77.83272	Check Dam
302	Mahagaon	Karanjkhed	19.82494	77.82616	Check Dam
303	Mahagaon	Dhanoda	19.86149	77.86477	Check Dam
304	Mahagaon	Dhanoda	19.86853	77.88437	Check Dam
305	Mahagaon	Dhanoda	19.87058	77.87965	Check Dam
306	Mahagaon	Dahisawali	19.88569	77.89538	Check Dam
307	Mahagaon	Dahisawali	19.8887	77.88874	Check Dam
308	Mahagaon	Pohandul	19.8921	77.87974	Check Dam
309	Mahagaon	Bhosa	19.89748	77.89152	Check Dam
310	Mahagaon	Tiwarang	19.90301	77.89194	Check Dam
311	Mahagaon	Bhosa	19.90649	77.91709	Check Dam
312	Mahagaon	Bhosa	19.90792	77.90884	Check Dam
313	Mahagaon	Bhosa	19.91005	77.91053	Check Dam
314	Mahagaon	Wadad	19.97855	77.64547	Check Dam
315	Mahagaon	Wadad	19.98646	77.65287	Check Dam
316	Mahagaon	Wadad	19.99618	77.66095	Check Dam
317	Mahagaon	Sai	19.99847	77.68669	Check Dam
318	Mahagaon	Sai	20.00132	77.68778	Check Dam
319	Mahagaon	Sai	20.00148	77.67786	Check Dam
320	Mahagaon	Sai	20.00606	77.67634	Check Dam
321	Mahagaon	Sai	20.00915	77.67289	Check Dam
322	Mahagaon	Sai	20.00922	77.67474	Check Dam
323	Maregaon	Godhani	20.01156	78.81312	Check Dam
324	Maregaon	Godhani	20.01282	78.81059	Check Dam
325	Maregaon	Godhani	20.01519	78.81783	Check Dam
326	Maregaon	Godhani	20.01954	78.81783	Check Dam
327	Maregaon	Godhani	20.01977	78.81951	Check Dam
328	Maregaon	Arjuni	20.02175	78.78216	Check Dam
329	Maregaon	Godhani	20.02167	78.80925	Check Dam
330	Maregaon	Arjuni	20.02349	78.78553	Check Dam
331	Maregaon	Godhani	20.0242	78.81051	Check Dam
332	Maregaon	Arjuni	20.02523	78.79167	Check Dam
333	Maregaon	Arjuni	20.02547	78.79402	Check Dam
334	Maregaon	Arjuni	20.02736	78.78754	Check Dam
335	Maregaon	Kegaon	20.0321	78.79461	Check Dam
336	Maregaon	Kegaon	20.03297	78.82178	Check Dam
337	Maregaon	Wagaon	20.0344	78.83524	Check Dam
338	Maregaon	Arjuni	20.03574	78.7846	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
339	Maregaon	Wagaon	20.03764	78.82834	Check Dam
340	Maregaon	Arjuni	20.03811	78.79705	Check Dam
341	Maregaon	Kegaon	20.04175	78.80033	Check Dam
342	Maregaon	Hiwari	20.04198	78.78729	Check Dam
343	Maregaon	Wagaon	20.04657	78.83903	Check Dam
344	Maregaon	Hiwari	20.0487	78.79108	Check Dam
345	Maregaon	Durgada	20.05099	78.64597	Check Dam
346	Maregaon	Hiwari	20.05036	78.79276	Check Dam
347	Maregaon	Wagaon	20.05036	78.81101	Check Dam
348	Maregaon	Vasantnagar (N.V.)	20.05699	78.65017	Check Dam
349	Maregaon	Vasantnagar (N.V.)	20.05699	78.6532	Check Dam
350	Maregaon	Dorli	20.05755	78.79999	Check Dam
351	Maregaon	Durgada	20.06078	78.6352	Check Dam
352	Maregaon	Nawargaon	20.06008	78.79377	Check Dam
353	Maregaon	Mangarul	20.09691	78.83583	Check Dam
354	Maregaon	Gawarala	20.10078	78.86435	Check Dam
355	Maregaon	Gawarala	20.10189	78.84483	Check Dam
356	Maregaon	Maregaon	20.10394	78.8201	Check Dam
357	Maregaon	Maregaon	20.10426	78.81615	Check Dam
358	Maregaon	Gawarala	20.10394	78.85947	Check Dam
359	Maregaon	Gawarala	20.10505	78.86746	Check Dam
360	Maregaon	Salebhatti	20.10671	78.85232	Check Dam
361	Maregaon	Salebhatti	20.10821	78.84727	Check Dam
362	Maregaon	Maregaon	20.10924	78.82498	Check Dam
363	Maregaon	Salebhatti	20.11034	78.84769	Check Dam
364	Maregaon	Salebhatti	20.11129	78.83894	Check Dam
365	Maregaon	Salebhatti	20.1124	78.82843	Check Dam
366	Maregaon	Salebhatti	20.11406	78.83398	Check Dam
367	Maregaon	Salebhatti	20.11619	78.83078	Check Dam
368	Maregaon	Warud	20.1173	78.85215	Check Dam
369	Maregaon	Salebhatti	20.11793	78.83978	Check Dam
370	Maregaon	Bhalewadi	20.11832	78.81699	Check Dam
371	Maregaon	Salebhatti	20.11832	78.85021	Check Dam
372	Maregaon	Net	20.11833	78.86948	Check Dam
373	Maregaon	Salebhatti	20.12117	78.836	Check Dam
374	Maregaon	Salebhatti	20.12536	78.83364	Check Dam
375	Maregaon	Akapur	20.12591	78.86704	Check Dam
376	Maregaon	Bhalewadi	20.12899	78.82397	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
377	Maregaon	Akapur	20.12939	78.87646	Check Dam
378	Maregaon	Akapur	20.12939	78.87646	Check Dam
379	Maregaon	Lakhapur	20.13263	78.88378	Check Dam
380	Maregaon	Chinchala	20.13342	78.8439	Check Dam
381	Maregaon	Pathari	20.13374	78.83331	Check Dam
382	Maregaon	Akapur	20.13437	78.86359	Check Dam
383	Maregaon	Chinchala	20.13547	78.84273	Check Dam
384	Maregaon	Lakhapur	20.13603	78.8895	Check Dam
385	Maregaon	Akapur	20.13642	78.86855	Check Dam
386	Maregaon	Lakhapur	20.1365	78.88765	Check Dam
387	Maregaon	Pathari	20.13721	78.84004	Check Dam
388	Maregaon	Chinchala	20.13887	78.85762	Check Dam
389	Maregaon	Akapur	20.13974	78.87915	Check Dam
390	Maregaon	Chinchala	20.14101	78.85568	Check Dam
391	Maregaon	Akapur	20.14085	78.87057	Check Dam
392	Maregaon	Pandharkawada	20.14306	78.8397	Check Dam
393	Maregaon	Khadaki	20.14464	78.8699	Check Dam
394	Maregaon	Chinchala	20.14606	78.85896	Check Dam
395	Maregaon	Khadaki	20.15096	78.87646	Check Dam
396	Maregaon	Dol. Dongargaon	20.15405	78.87949	Check Dam
397	Maregaon	Dol. Dongargaon	20.1546	78.88639	Check Dam
398	Maregaon	Kanhalgaon	20.1595	78.82792	Check Dam
399	Maregaon	Dol. Dongargaon	20.16005	78.87924	Check Dam
400	Maregaon	Kinhala	20.16353	78.84365	Check Dam
401	Maregaon	Kinhala	20.16875	78.84138	Check Dam
402	Maregaon	Kinhala	20.17025	78.83566	Check Dam
403	Maregaon	Wadgaon	20.17301	78.85063	Check Dam
404	Ner	Bangaon	20.43955	77.77648	Check Dam
405	Ner	Bangaon	20.44779	77.77639	Check Dam
406	Ner	Ghareful	20.45009	77.73998	Check Dam
407	Ner	Wai (Parar)	20.45793	77.75854	Check Dam
408	Ner	Chikani	20.46514	77.77011	Check Dam
409	Ner	Indrathana	20.47306	77.85585	Check Dam
410	Ner	Kolura	20.47514	77.89201	Check Dam
411	Ner	Wai (Ijara)	20.47922	77.83973	Check Dam
412	Ner	Wai (Ijara)	20.48108	77.82867	Check Dam
413	Ner	Ajanti	20.50041	77.83334	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
414	Ner	Ner	20.50523	77.85159	Check Dam
415	Ner	Raipur	20.50686	77.83353	Check Dam
416	Pusad	Shembal Pimpri	19.68753	77.46567	Check Dam
417	Pusad	Jagapur	19.69931	77.49895	Check Dam
418	Pusad	Dagad Dhanora	19.70304	77.52175	Check Dam
419	Pusad	Dagad Dhanora	19.70997	77.50931	Check Dam
420	Pusad	Shembal Pimpri	19.71675	77.47338	Check Dam
421	Pusad	Hiwalni Palampat	19.71942	77.48993	Check Dam
422	Pusad	Dagad Dhanora	19.72289	77.50809	Check Dam
423	Pusad	Shilona	19.74631	77.6201	Check Dam
424	Pusad	Shilona	19.74669	77.60269	Check Dam
425	Pusad	Isapur	19.74795	77.47225	Check Dam
426	Pusad	Shilona	19.75109	77.6255	Check Dam
427	Pusad	Amdari	19.75719	77.49204	Check Dam
428	Pusad	Amdari	19.76009	77.48857	Check Dam
429	Pusad	Sawargaon	19.76389	77.49846	Check Dam
430	Pusad	Shilona	19.765	77.61964	Check Dam
431	Pusad	Sawargaon	19.77025	77.49066	Check Dam
432	Pusad	Gaul Kh.	19.77539	77.60389	Check Dam
433	Pusad	Inapur	19.77619	77.50913	Check Dam
434	Pusad	Sawargaon	19.77972	77.4913	Check Dam
435	Pusad	Buti Ijara	19.78053	77.46822	Check Dam
436	Pusad	Dharamwadi	19.78115	77.58274	Check Dam
437	Pusad	Sawargaon	19.78293	77.50844	Check Dam
438	Pusad	Inapur	19.78391	77.52993	Check Dam
439	Pusad	Inapur	19.7853	77.52747	Check Dam
440	Pusad	Sawargaon	19.78834	77.49904	Check Dam
441	Pusad	Jambanaik 2 (N.V.)	19.78977	77.43243	Check Dam
442	Pusad	Sawargaon	19.79007	77.48221	Check Dam
443	Pusad	Londari	19.79084	77.5455	Check Dam
444	Pusad	Inapur	19.79346	77.51663	Check Dam
445	Pusad	Gaul Kh.	19.79454	77.59618	Check Dam
446	Pusad	Asoli	19.79478	77.62448	Check Dam
447	Pusad	Sawargaon	19.79543	77.50924	Check Dam
448	Pusad	Lohara Kh.(N.V.)	19.79771	77.46571	Check Dam
449	Pusad	Fulwadi	19.80051	77.48343	Check Dam
450	Pusad	Lohara Ijara	19.80397	77.45137	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
451	Pusad	Deothana	19.81654	77.46451	Check Dam
452	Pusad	Dahiwad Bk.	19.81641	77.61504	Check Dam
453	Pusad	Jawla	19.82265	77.42375	Check Dam
454	Pusad	Dahiwad Bk.	19.82846	77.59828	Check Dam
455	Pusad	Manikdoh	19.83207	77.49131	Check Dam
456	Pusad	Yehala	19.83884	77.63217	Check Dam
457	Pusad	Nanand Ijara	19.84088	77.40367	Check Dam
458	Pusad	Sawargaon (Gore)	19.84618	77.44478	Check Dam
459	Pusad	Mop	19.84771	77.38222	Check Dam
460	Pusad	Khairkheda	19.8542	77.40403	Check Dam
461	Pusad	Kondai	19.85919	77.6053	Check Dam
462	Pusad	Fetra	19.87182	77.39773	Check Dam
463	Pusad	Jawali	19.87486	77.45104	Check Dam
464	Pusad	Fetra	19.87931	77.41186	Check Dam
465	Pusad	Khandala	19.88437	77.445	Check Dam
466	Pusad	Kawadipur	19.89747	77.51449	Check Dam
467	Pusad	Hiwalni Kh (N.V.)	19.89849	77.42314	Check Dam
468	Pusad	Pimpalgaon Ijara	19.89909	77.38234	Check Dam
469	Pusad	Amrutnagar (N.V.)	19.8989	77.45002	Check Dam
470	Pusad	Pusad	19.89879	77.57448	Check Dam
471	Pusad	Kawadipur	19.89967	77.54094	Check Dam
472	Pusad	Belura	19.91111	77.33708	Check Dam
473	Pusad	Marwadi Bk	19.91172	77.38502	Check Dam
474	Pusad	Yeldari	19.91574	77.48933	Check Dam
475	Pusad	Yeldari	19.91977	77.48005	Check Dam
476	Pusad	Marwadi Bk	19.92301	77.37898	Check Dam
477	Pusad	Januna	19.93365	77.4521	Check Dam
478	Pusad	Nandura Ijara	19.94035	77.40231	Check Dam
479	Pusad	Hanwat Kheda	19.94222	77.38314	Check Dam
480	Pusad	Jamb Bajar	19.96064	77.46649	Check Dam
481	Pusad	Manjarjawala	19.96274	77.34082	Check Dam
482	Pusad	Pandhurna Kh.	19.97328	77.40873	Check Dam
483	Pusad	Shivaji Nagar(N.V.)	19.97776	77.60316	Check Dam
484	Pusad	Pandhurna Kh.	19.99912	77.40756	Check Dam
485	Pusad	Bajarangnagar	19.9994	77.56581	Check Dam
486	Pusad	Rampur	20.01073	77.39062	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
487	Umarkhed	Bori	19.51823	78.11754	Check Dam
488	Umarkhed	Mathuranagar (N.V.)	19.5238	78.00876	Check Dam
489	Umarkhed	Sondabi	19.53143	78.05071	Check Dam
490	Umarkhed	Sondabi	19.536	78.04698	Check Dam
491	Umarkhed	Tiwadi	19.53927	77.70903	Check Dam
492	Umarkhed	Vidul	19.54556	77.77589	Check Dam
493	Umarkhed	Ganjegaon	19.55094	77.83362	Check Dam
494	Umarkhed	Vidul	19.55505	77.77422	Check Dam
495	Umarkhed	Soit	19.55619	77.80916	Check Dam
496	Umarkhed	Umarkhed	19.55889	77.69105	Check Dam
497	Umarkhed	Soit	19.56084	77.81181	Check Dam
498	Umarkhed	Vidul	19.5619	77.77746	Check Dam
499	Umarkhed	Umarkhed	19.57432	77.68507	Check Dam
500	Umarkhed	Kopra Kh.	19.57657	77.82193	Check Dam
501	Umarkhed	Morchandi	19.57659	78.00487	Check Dam
502	Umarkhed	Manyali	19.57927	77.9243	Check Dam
503	Umarkhed	Umarkhed	19.58405	77.66658	Check Dam
504	Umarkhed	Nagapur	19.5843	77.71486	Check Dam
505	Umarkhed	Dhanki	19.58551	77.86027	Check Dam
506	Umarkhed	Morchandi	19.58459	78.00132	Check Dam
507	Umarkhed	Umarkhed	19.5884	77.67386	Check Dam
508	Umarkhed	Krishnpur	19.58769	77.80433	Check Dam
509	Umarkhed	Dhanki	19.59197	77.85974	Check Dam
510	Umarkhed	Zadgaon	19.59398	77.72566	Check Dam
511	Umarkhed	Akoli	19.59758	77.88168	Check Dam
512	Umarkhed	Zadgaon	19.604	77.72761	Check Dam
513	Umarkhed	Akoli	19.60615	77.89422	Check Dam
514	Umarkhed	Umarkhed	19.60823	77.66718	Check Dam
515	Umarkhed	Balkhed	19.60943	77.65008	Check Dam
516	Umarkhed	Krishnpur	19.60847	77.81855	Check Dam
517	Umarkhed	Piranji	19.61002	77.79305	Check Dam
518	Umarkhed	Balkhed	19.6122	77.6459	Check Dam
519	Umarkhed	Tembhurdara	19.61073	77.88831	Check Dam
520	Umarkhed	Govindpur	19.61209	77.83207	Check Dam
521	Umarkhed	Balkhed	19.6142	77.65708	Check Dam
522	Umarkhed	Meth	19.61605	77.8553	Check Dam
523	Umarkhed	Umarkhed	19.61839	77.69016	Check Dam
524	Umarkhed	Govindpur	19.61931	77.82081	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
525	Umarkhed	Warud Bibi	19.62278	77.6915	Check Dam
526	Umarkhed	Ningnur Gahagir	19.62595	77.85436	Check Dam
527	Umarkhed	Ningnur Gahagir	19.62612	77.84885	Check Dam
528	Umarkhed	Balkhed	19.62777	77.63933	Check Dam
529	Umarkhed	Tembhurdara	19.6272	77.89047	Check Dam
530	Umarkhed	Piranji	19.62879	77.78086	Check Dam
531	Umarkhed	Pardi	19.62938	77.75506	Check Dam
532	Umarkhed	Kailas Nagar(N.V.)	19.63421	77.64228	Check Dam
533	Umarkhed	Tembhurdara	19.6334	77.88821	Check Dam
534	Umarkhed	Ningnur Gahagir	19.63399	77.84384	Check Dam
535	Umarkhed	Kailas Nagar(N.V.)	19.63565	77.65374	Check Dam
536	Umarkhed	Ningnur Gahagir	19.63513	77.85748	Check Dam
537	Umarkhed	Kailas Nagar(N.V.)	19.63735	77.64462	Check Dam
538	Umarkhed	Ningnur Gahagir	19.63884	77.83778	Check Dam
539	Umarkhed	Pardi	19.64027	77.77022	Check Dam
540	Umarkhed	Ningnur Gahagir	19.64204	77.83259	Check Dam
541	Umarkhed	Korta	19.64299	78.0349	Check Dam
542	Umarkhed	Marsul	19.64731	77.67905	Check Dam
543	Umarkhed	Marsul	19.64748	77.67456	Check Dam
544	Umarkhed	Kupti	19.64839	77.63773	Check Dam
545	Umarkhed	Dindala	19.65012	77.7336	Check Dam
546	Umarkhed	Ghamapur	19.64995	77.9536	Check Dam
547	Umarkhed	Marsul	19.65423	77.67156	Check Dam
548	Umarkhed	Palshi	19.65672	77.62241	Check Dam
549	Umarkhed	Amanjur	19.65694	77.72045	Check Dam
550	Umarkhed	Ningnur Gahagir	19.65845	77.86303	Check Dam
551	Umarkhed	Pimpri Diwat	19.66095	77.60373	Check Dam
552	Umarkhed	Ningnur Gahagir	19.65965	77.80909	Check Dam
553	Umarkhed	Dindala	19.66018	77.73019	Check Dam
554	Umarkhed	Korta	19.65825	78.05012	Check Dam
555	Umarkhed	Ningnur Gahagir	19.66016	77.81446	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
556	Umarkhed	Ningnur Gahagir	19.66347	77.83261	Check Dam
557	Umarkhed	Ningnur Gahagir	19.66423	77.80216	Check Dam
558	Umarkhed	Dindala	19.66484	77.73153	Check Dam
559	Umarkhed	Dindala	19.66476	77.74444	Check Dam
560	Umarkhed	Ningnur Gahagir	19.66532	77.82421	Check Dam
561	Umarkhed	Mulawa	19.67067	77.56159	Check Dam
562	Umarkhed	Ningnur Gahagir	19.66908	77.87457	Check Dam
563	Umarkhed	Borgaon	19.66884	77.97958	Check Dam
564	Umarkhed	Vasant Nagar (N.V.)	19.67275	77.60729	Check Dam
565	Umarkhed	Bhawani	19.67047	78.01716	Check Dam
566	Umarkhed	Ambli	19.67345	77.65022	Check Dam
567	Umarkhed	Chili	19.67312	77.70418	Check Dam
568	Umarkhed	Pimpri Diwat	19.67459	77.59758	Check Dam
569	Umarkhed	Amanjur	19.67605	77.71798	Check Dam
570	Umarkhed	Ambli	19.67687	77.65257	Check Dam
571	Umarkhed	Chili	19.67956	77.7064	Check Dam
572	Umarkhed	Botha	19.68075	77.69205	Check Dam
573	Umarkhed	Navin Waltur	19.67868	78.03841	Check Dam
574	Umarkhed	Ambli	19.6822	77.65826	Check Dam
575	Umarkhed	Botha	19.68411	77.6603	Check Dam
576	Umarkhed	Sukali Navinwadi (N.V.)	19.68602	77.54428	Check Dam
577	Umarkhed	Isapur	19.6843	77.87977	Check Dam
578	Umarkhed	Botha	19.68584	77.69078	Check Dam
579	Umarkhed	Kalambula	19.68736	77.59911	Check Dam
580	Umarkhed	Ambli	19.69103	77.65237	Check Dam
581	Umarkhed	Tiwarang	19.69269	77.53054	Check Dam
582	Umarkhed	Dongargaon	19.69061	77.9728	Check Dam
583	Umarkhed	Ambli	19.69289	77.66269	Check Dam
584	Umarkhed	Kalambula	19.69412	77.59394	Check Dam
585	Umarkhed	Sukali Navinwadi (N.V.)	19.69673	77.5442	Check Dam
586	Umarkhed	Januna	19.6969	77.63544	Check Dam
587	Umarkhed	Tiroda	19.69849	77.59861	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
588	Umarkhed	Sukali Navinwadi (N.V.)	19.69885	77.53464	Check Dam
589	Umarkhed	Januna	19.70042	77.62038	Check Dam
590	Umarkhed	Januna	19.70351	77.63331	Check Dam
591	Umarkhed	Tiroda	19.70449	77.60532	Check Dam
592	Umarkhed	Wanegaon	19.70716	77.54745	Check Dam
593	Umarkhed	Pimpaldri	19.71476	77.53937	Check Dam
594	Umarkhed	Pimpaldri	19.71598	77.51689	Check Dam
595	Umarkhed	Keli	19.71589	77.55795	Check Dam
596	Umarkhed	Pimpaldri	19.7202	77.52417	Check Dam
597	Umarkhed	Pimpaldri	19.7218	77.53289	Check Dam
598	Umarkhed	Dorli	19.72505	77.54132	Check Dam
599	Umarkhed	Pardi (Bangala)	19.72643	77.56454	Check Dam
600	Umarkhed	Pimpaldri	19.73046	77.53134	Check Dam
601	Umarkhed	Dhanaj	19.73321	77.5569	Check Dam
602	Umarkhed	Dorli	19.7341	77.54384	Check Dam
603	Umarkhed	Dhanaj	19.7372	77.55634	Check Dam
604	Umarkhed	Dhanaj	19.73771	77.53763	Check Dam
605	Umarkhed	Adad	19.74855	77.51535	Check Dam
606	Umarkhed	Adad	19.75055	77.52595	Check Dam
607	Umarkhed	Mohdari	19.75427	77.57343	Check Dam
608	Umarkhed	Mohdari	19.75559	77.55994	Check Dam
609	Umarkhed	Dhanaj	19.75658	77.55327	Check Dam
610	Umarkhed	Adad	19.75785	77.52193	Check Dam
611	Umarkhed	Adad	19.7587	77.51686	Check Dam
612	Umarkhed	Mohdari	19.76047	77.57042	Check Dam
613	Umarkhed	Dhanaj	19.76129	77.54662	Check Dam
614	Umarkhed	Dhanaj	19.76435	77.54098	Check Dam
615	Wani	Nimbala Kh.	19.8343	78.97088	Check Dam
616	Wani	Kurai	19.85727	79.0004	Check Dam
617	Wani	Kolgaon	19.85956	79.10629	Check Dam
618	Wani	Shindola	19.86373	79.03186	Check Dam
619	Wani	Mohada	19.8822	78.94253	Check Dam
620	Wani	Wadhona Pilki	19.88415	78.85338	Check Dam
621	Wani	Chendkapur	19.89106	78.91578	Check Dam
622	Wani	Welabai	19.89887	78.99229	Check Dam
623	Wani	Kawadshi	19.91742	79.0543	Check Dam
624	Wani	Sakhara	19.92354	78.81107	Check Dam
625	Wani	Parsoda	19.92766	78.87839	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
626	Wani	Gopalpur	19.92896	79.01321	Check Dam
627	Wani	Mendholi	19.93911	78.96179	Check Dam
628	Wani	Gondhala	19.94733	78.83173	Check Dam
629	Wani	Umanri	19.95015	78.92519	Check Dam
630	Wani	Surdapur	19.94917	79.01191	Check Dam
631	Wani	Suknegaon	19.96444	78.88137	Check Dam
632	Wani	Shirpur	19.96305	78.99076	Check Dam
633	Wani	Shirgiri	19.98605	78.92207	Check Dam
634	Wani	Fulora	19.98863	78.84712	Check Dam
635	Wani	Rasa	20.00011	78.85207	Check Dam
636	Wani	Borda	20.00663	78.81336	Check Dam
637	Wani	Ukani	20.0046	79.04834	Check Dam
638	Wani	Korambi	20.00894	78.91498	Check Dam
639	Wani	Bhatar	20.01325	79.00733	Check Dam
640	Wani	Borda	20.01742	78.84069	Check Dam
641	Wani	Vyankatpur	20.03674	78.88979	Check Dam
642	Wani	Vyankatpur	20.03696	78.89372	Check Dam
643	Wani	Kolera	20.06228	79.02914	Check Dam
644	Wani	Bramhani	20.07681	79.0106	Check Dam
645	Wani	Parsoda	20.07967	78.90551	Check Dam
646	Wani	Chikhalgaon	20.081	78.94174	Check Dam
647	Wani	Kona	20.08225	78.9941	Check Dam
648	Wani	Zarpa	20.08394	78.8938	Check Dam
649	Wani	Nimbala	20.09439	78.89307	Check Dam
650	Wani	Sawarla	20.1007	78.99059	Check Dam
651	Zari Jamni	Khatera	19.75981	78.90798	Check Dam
652	Zari Jamni	Wedad	19.76129	78.94297	Check Dam
653	Zari Jamni	Rajur	19.7694	78.82219	Check Dam
654	Zari Jamni	Yedashi	19.76904	78.88445	Check Dam
655	Zari Jamni	Bahilampur	19.77158	78.83471	Check Dam
656	Zari Jamni	Adegaon	19.78101	78.87228	Check Dam
657	Zari Jamni	Mangali	19.78326	78.789	Check Dam
658	Zari Jamni	Govindpur	19.78302	78.83152	Check Dam
659	Zari Jamni	Hirapur	19.78848	78.81215	Check Dam
660	Zari Jamni	Adegaon	19.79061	78.87329	Check Dam
661	Zari Jamni	Mangali	19.79238	78.78491	Check Dam
662	Zari Jamni	Mukutban	19.79988	78.84627	Check Dam
663	Zari Jamni	Mangali	19.80313	78.79304	Check Dam
664	Zari Jamni	Adegaon	19.80226	78.88709	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
665	Zari Jamni	Ruikot	19.80684	78.81617	Check Dam
666	Zari Jamni	Ruikot	19.80777	78.83012	Check Dam
667	Zari Jamni	Ruikot	19.81183	78.83482	Check Dam
668	Zari Jamni	Ardhawan	19.8135	78.78781	Check Dam
669	Zari Jamni	Adegaon	19.81857	78.89008	Check Dam
670	Zari Jamni	Ruikot	19.82195	78.8502	Check Dam
671	Zari Jamni	Adegaon	19.82207	78.89535	Check Dam
672	Zari Jamni	Ruikot	19.82655	78.83386	Check Dam
673	Zari Jamni	Adegaon	19.82644	78.89774	Check Dam
674	Zari Jamni	Sawali	19.82755	78.81877	Check Dam
675	Zari Jamni	Khadaki	19.82704	78.8719	Check Dam
676	Zari Jamni	Ardhawan	19.82915	78.81139	Check Dam
677	Zari Jamni	Khadaki	19.82899	78.88064	Check Dam
678	Zari Jamni	Ardhawan	19.83072	78.78412	Check Dam
679	Zari Jamni	Ganeshpur Bk.	19.83765	78.89136	Check Dam
680	Zari Jamni	Ganeshpur Bk.	19.84066	78.87006	Check Dam
681	Zari Jamni	Pardi	19.84275	78.81158	Check Dam
682	Zari Jamni	Marki Bk.	19.84402	78.78604	Check Dam
683	Zari Jamni	Kasara	19.84428	78.86648	Check Dam
684	Zari Jamni	Pandharkawada	19.84657	78.80292	Check Dam
685	Zari Jamni	Marki Bk.	19.85074	78.787	Check Dam
686	Zari Jamni	Pardi	19.85115	78.81053	Check Dam
687	Zari Jamni	Kasara	19.85062	78.86497	Check Dam
688	Zari Jamni	Pandharkawada	19.85205	78.80415	Check Dam
689	Zari Jamni	Dongargaon	19.85268	78.85353	Check Dam
690	Zari Jamni	Dongargaon	19.85376	78.84411	Check Dam
691	Zari Jamni	Kasara	19.85977	78.86945	Check Dam
692	Zari Jamni	Pawanar	19.86158	78.82272	Check Dam
693	Zari Jamni	Dongargaon	19.86472	78.83525	Check Dam
694	Zari Jamni	Dongargaon	19.86501	78.84557	Check Dam
695	Zari Jamni	Marki Kh.	19.86757	78.78171	Check Dam
696	Zari Jamni	Dongargaon	19.87083	78.841	Check Dam
697	Zari Jamni	Adakoli	19.87272	78.79862	Check Dam
698	Zari Jamni	Pawanar	19.87291	78.80618	Check Dam
699	Zari Jamni	Pawanar	19.87335	78.81475	Check Dam
700	Zari Jamni	Wadani	19.87437	78.83277	Check Dam
701	Zari Jamni	Shindhi Wadhona	19.87517	78.86836	Check Dam
702	Zari Jamni	Adakoli	19.87765	78.7891	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
703	Zari Jamni	Shindhi Wadhona	19.88041	78.87758	Check Dam
704	Zari Jamni	Adakoli	19.88524	78.78572	Check Dam
705	Zari Jamni	Bopapur	19.89458	78.83174	Check Dam
706	Zari Jamni	Khadakdoh	19.89709	78.78297	Check Dam
707	Zari Jamni	Khadakdoh	19.89866	78.77849	Check Dam
708	Zari Jamni	Chinchghat	19.89997	78.79492	Check Dam
709	Zari Jamni	Surd	19.90323	78.82053	Check Dam
710	Zari Jamni	Dara	19.9039	78.85583	Check Dam
711	Zari Jamni	Balapur	19.90621	78.84671	Check Dam
712	Zari Jamni	Surd	19.90812	78.82495	Check Dam
713	Zari Jamni	Chinchghat	19.90933	78.8164	Check Dam
714	Zari Jamni	Chinchghat	19.90946	78.80522	Check Dam
715	Zari Jamni	Chinchghat	19.91384	78.81791	Check Dam
716	Zari Jamni	Wallasa	19.91556	78.77785	Check Dam
717	Zari Jamni	Paramba	19.91841	78.58934	Check Dam
718	Zari Jamni	Wallasa	19.91634	78.78163	Check Dam
719	Zari Jamni	Lendhori	19.9186	78.78834	Check Dam
720	Zari Jamni	Narsoda	19.91864	78.86374	Check Dam
721	Zari Jamni	Wallasa	19.92262	78.78506	Check Dam
722	Zari Jamni	Karegaon	19.92729	78.59351	Check Dam
723	Zari Jamni	Karegaon	19.92846	78.58685	Check Dam
724	Zari Jamni	Wallasa	19.92651	78.78162	Check Dam
725	Zari Jamni	Karegaon	19.93008	78.60212	Check Dam
726	Zari Jamni	Karegaon	19.93092	78.61303	Check Dam
727	Zari Jamni	Karegaon	19.93351	78.58996	Check Dam
728	Zari Jamni	Zamkola	19.93309	78.78258	Check Dam
729	Zari Jamni	Karegaon	19.93715	78.59611	Check Dam
730	Zari Jamni	Ambezari Kh.	19.93754	78.62357	Check Dam
731	Zari Jamni	Zamkola	19.93673	78.77726	Check Dam
732	Zari Jamni	Yesapur	19.93807	78.80241	Check Dam
733	Zari Jamni	Junoni	19.93818	78.79355	Check Dam
734	Zari Jamni	Ambezari Kh.	19.94383	78.62612	Check Dam
735	Zari Jamni	Ambezari Kh.	19.9453	78.61727	Check Dam
736	Zari Jamni	Zamkola	19.94455	78.77823	Check Dam
737	Zari Jamni	Yesapur	19.94736	78.79541	Check Dam
738	Zari Jamni	Ambezari Kh.	19.95769	78.63951	Check Dam
739	Zari Jamni	Darara	19.95602	78.78362	Check Dam
740	Zari Jamni	Hiwara Barasa	19.96313	78.6326	Check Dam

S.No	Taluka	Village	X	Y	Type of Structure
741	Zari Jamni	Wadhona	19.96544	78.7772	Check Dam
742	Zari Jamni	Rampur	19.9703	78.65449	Check Dam
743	Zari Jamni	Hiwara Barasa	19.97358	78.64378	Check Dam
744	Zari Jamni	Surla	19.97423	78.78851	Check Dam
745	Zari Jamni	Umarghat	19.97505	78.81221	Check Dam
746	Zari Jamni	Wadhona	19.98387	78.77527	Check Dam
747	Zari Jamni	Palgaon	19.98885	78.65371	Check Dam
748	Zari Jamni	Botoni	19.99259	78.66291	Check Dam
749	Zari Jamni	Botoni	19.99694	78.65511	Check Dam
750	Zari Jamni	Surla	19.99571	78.79606	Check Dam
751	Zari Jamni	Botoni	20.00048	78.65807	Check Dam
752	Zari Jamni	Palgaon	20.00176	78.64166	Check Dam
753	Zari Jamni	Botoni	20.0042	78.64518	Check Dam
754	Zari Jamni	Surla	20.00335	78.80024	Check Dam
755	Zari Jamni	Surla	20.00511	78.79168	Check Dam
756	Zari Jamni	Surla	20.00919	78.78302	Check Dam

Note: Construction of AR structures may be taken up at these sites after field checks/verification only

Annexure 10. Locations of proposed Recharge Shaft in Yavatmal district

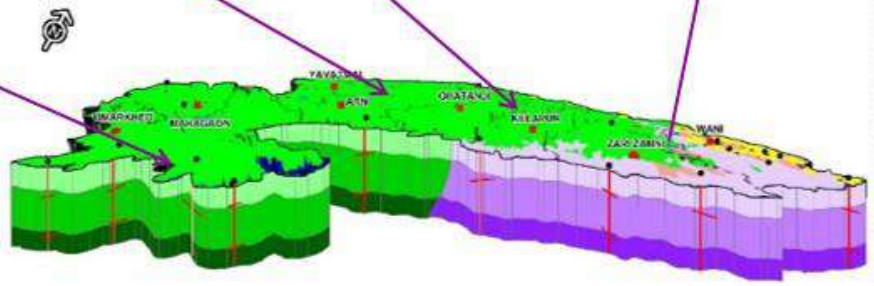
S.No	Taluka	Village	X	Y	Type of Structure
1	Maregaon	Warud	20.1284057062057	78.8641701846994	Recharge Shaft
2	Maregaon	Lakhapur	20.133717189931	78.8789333169712	Recharge Shaft
3	Maregaon	Chinchala	20.1412608015831	78.8576574575754	Recharge Shaft
4	Wani	Gowari	20.081707	79.024084	Recharge Shaft
5	Wani	Kawadshi	19.9182224094439	79.0559085356938	Recharge Shaft
6	Wani	Surdapur	19.9496623786038	79.016134123495	Recharge Shaft
7	Wani	Kawadshi	19.918692	79.061871	Recharge Shaft
8	Wani	Shirpur	19.939432	79.010608	Recharge Shaft
9	Wani	Rasa	19.994655	78.874668	Recharge Shaft
10	Wani	Chargaon	19.993394	79.006792	Recharge Shaft
11	Wani	Rasa	20.003014	78.85939	Recharge Shaft
12	Wani	Besa	20.006292	79.024382	Recharge Shaft
13	Wani	Borda	20.010426	78.827828	Recharge Shaft
14	Wani	Borda	20.011845	78.821449	Recharge Shaft
15	Wani	Kawadshi	19.918692	79.061871	Recharge Shaft

Note: Construction of AR structures may be taken up at these sites after field checks/verification only

PROPOSED MANAGEMENT PLAN

Total Draft –
431.13 MCM

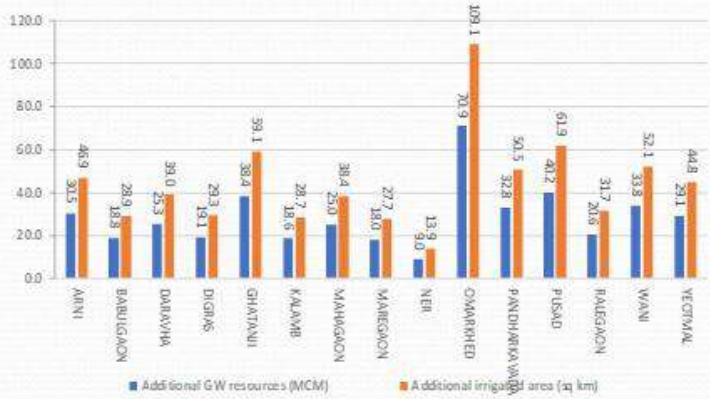
Aquifer I Resources –
Dy- 1186.28 MCM



GW SCENARIO AFTER IMPLEMENTING

A. Artificial Recharge
GWA 1186.28 + 59.13 MCM by AR = 1245.41 MCM
B. WUE- 20.88 MCM

GW AVAILABLE FOR DEVELOPMENT PLAN
After SOD of 70% =461.52 MCM



PROBABLE BENEFITS AFTER IMPLEMENTING AR & WUE MEASURES

- Additional GW Resources by Supply side AR = 59.13 MCM
- Water saving through adopting (Micro Irrigation) = 20.88 MCM
- Balance GWR available for Development after SOD 70% – 461.52 MCM
- Assured GW Irrigation in ADDITIONAL 710.04 sq km area
- Even after above, SOD will be 70% (safe category)
- Increase in GW Availability & Sustainability