

# Drinking Water Characteristics of Ujjain, India @2022

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## ABSTRACT

Clean drinking water availability and clean sanitation in a small city like Ujjain is one of the biggest challenges of the century. As we know that the average rainfall in Ujjain 943mm (1) and this year it rained about 14.2 inches in monsoon season till now. This led us to search out alternate drinking water sources. Ujjain is rich water city as it has Sapt sagars, River Shipra and Gambhir Dam for drinking water source (2). This year due to lack rain all of them are not filled fully so we analyze ground water in all 54 wards of the city these are all in public places as roads, parks etc. and can be used easily by local people. This report leads us to find the various problems possessed by ground water of Ujjain city.

Key Words – Ujjain, rain, ground water, Gambhir, Shipra, sapt sagars

## INTRODUCTION

Where does water environment begin? The Water Environment begins, where a single drop of rain falls to earth (3). This raindrop joins with other raindrops to form tiny trickles. These trickles combine and run off the land to create rivulets, creeks, streams, and rivers.

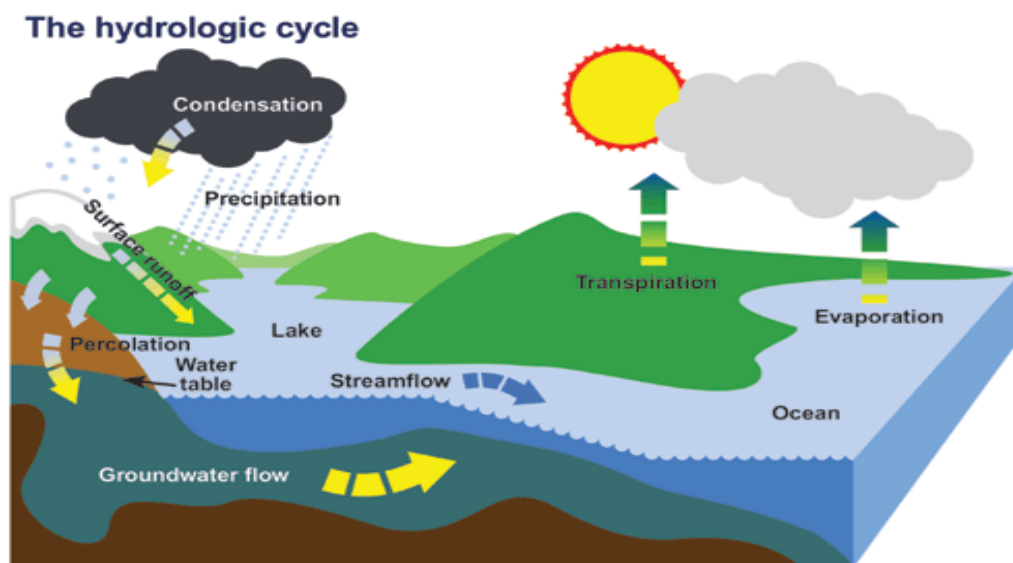


Fig: 01 – The Water Cycle \* Wikipedia

The small streams and powerful rivers of the arena unite to supply the sizable oceans and seas that surround us. The water surroundings are the whole global of water that we recognize and love: from cool, Clear Mountain streams to the dynamic and salty oceans (4). It is the loud cascading creeks and waterfalls and the quiet, gradual shifting rivers and nonviolent lakes. It is the wetland waters full of lush, inexperienced plant life and the sterile soften waters jogging from glaciers throughout barren landscapes. The water surroundings additionally consist of mystery waters—springs, seeps, and groundwater—and the often-invisible atmospheric water poised to fall in the world in an unexpected cloudburst. The Hydrologic Cycle although the arena of water is substantial and all encompassing, it's far linked in an unmarried herbal cycle (5). Water actions from the sea to the land and again to the sea once more constantly. This cyclic motion of water via the surroundings is referred to as the hydrologic cycle. It starts as water actions from the sea's floor into the air above via evaporation. During evaporation, best the clean water vapor and different unstable compounds input the ecosystem. Minerals, salts, and different impurities are left at the back of within side the ocean (6). The buildup of those minerals and salts through the years has made the sea salty. Water evaporates into the ecosystem and paperwork clouds above the sea. The triumphing ocean winds blow those clouds

of wet air inland and as they upward push to transport over the mountaintops, the air in them cools. Because bloodless air can't keep as lots moisture as heat air, water falls from the clouds as rain or snow. The second a raindrop moves the floor of the earth, it starts its adventure again to the sea. Sometimes the raindrop soaks into the earth and actions slowly into the groundwater. Sometimes it runs off the land floor and actions speedy in a swift-flowing stream. Other instance the raindrop rests in deep river swimming pools or lakes, is taken up via way of means of flowers and animals, or enters the ecosystem once more via evaporation(7). Ultimately, the raindrop makes its manner again to the sea, which is sort of a large reservoir. Water is saved with inside the ocean till it's far added to the land due to evaporation and precipitation. Once the water reaches the land, it starts making its manner again to the sea via groundwater or floor water flow, and the cycle continues (8).

All the waters of the arena are linked via way of means of the hydrologic cycle. The rivers and streams are linked to the lakes, ponds, and wetlands. The floor water is attached to the groundwater (9). The rivers are linked to the bays and estuaries, which might be linked to the oceans and seas. These connections are extraordinarily crucial to water first-class; they permit substances getting into the water at any factor with inside the hydrologic cycle to transport from one water frame to the next. For instance, precipitation falling on uncovered mine tailings excessive with inside the mountains can also additionally select out up and deliver contaminants from the tailings into close by streams, downstream lakes, and groundwater (10). These contaminants can also additionally display up many miles from their factor of origin, probably polluting a community's ingesting water deliver. Although water takes on many distinct paperwork because it actions constantly via the hydrologic cycle, the arena's deliver of water is finite; we can't make any extra of it (11). What we've now's all we get. Because it's far finite, defensive it's first-class is crucial. Our very survival relies upon on it

**UJJAIN: The Holy City** – Ujjain is organized withinside the coronary heart at focal factor of India. Thus its miles on the middle of India. There are a variety of implications to the phrase Ujjain. It implies triumph and delight. Different names of Ujjain are Kushsthal, Avanthipuri, and Avantika and so on Ujjain holds are substantial spot from antiquated events (1). It is a substantial strict or an adventure network its miles moreover referred to as the town of sanctuaries. Ujjain holds its delight at the Mahakaleshwer Temple that's one the various 12 Jyotirlingas. Ujjain attempts to be a focus of strict and social the journey enterprise depending on the set of reviews and folklore associated with the city, normal social events and through protecting the real man or woman and moderating the fabricated and regular legacy (12, 24).

**Significance of Shipra River** – The Shipra starts her tour withinside the Vindhya Range from a large slope referred to as Kokri Tekdi organized an awesome approaches off of eleven km from Ujjain round 14Kms from Indore on Kampes avenue in the direction of Dewas and withinside the wake of streaming round  $\frac{1}{3}$  rd of its duration it enters the vicinity Dewas near city Sazanodkheda and Gaznodekheda (13). Shipra waterway is going round 10 Kms. lengths near Dewas city. Last River crosses duration of 18 Kms. via Ujjain city. This waterway is 195 Kms in duration, out of which ninety three Kms flow via Ujjain. The catchments vicinity of flow Shipra is round 560 Sq. Km. it at that factor contacts Ratlam and Mandsaur, previous to becoming a member of the flow Chambal. The precept feeders of Shipra are Khan and Gambhir (14).

The Shipra has been referenced now no longer simply in vintage Hindu writings, just like the Puranas, but in Buddhist and Jain sacred texts also. Rumors from a ways and huge propose that after Lord Shiva, the Destroyer of the Universe, went asking, making use of the cranium of Lord Brahma, the Creator of the Universe, as an asking bowl. No vicinity with inside the 3 universes did he discern out a way to get any donations. At remaining, he went to Vaikunth, or the seat of Lord Vishnu, and requested Lord Vishnu for contributions. Consequently, Lord Vishnu established Lord Shiva his pointer, which incensed the remaining, mentioned. Ruler Shiva took out his trishul, or pike, and reduce Lord Vishnu's hands. The Preserver's hands began out to empty lavishly, and the blood accrued in Brahma's cranium and earlier than lengthy flooded from it. The flow was a flow ultimately a waterway – the Shipra. The Puranas, or vintage Hindu writings, likewise advocate that the Shipra began out from the middle of Varaha, Lord Vishnu's manifestation as a pig (15, 16).

Additionally at the banks of the Shipra is Sage Sandipani's ashram or withdrawal wherein the blue god, Krishna, Lord Vishnu's 8th manifestation, had examined. Stream Shipra is substantial for Ujjain city in view that starting, thus far because the water deliver is concern (17). Arrangement of floods has been advanced throughout it for placing away approximately 6.882 MCUM (245.zero MCFT) of ingesting water, for deliver to Ujjain. Extra purposes of deliver from Gambhir River become introduced on this manner in 1980(18). Being a non-enduring waterway and coursing via substantial cities like Dewas and Ujjain a development of prevent dam and blasts are constructed throughout it viz. for crude water wellspring of public water deliver Biloda, Kithoda, Triveni and Gaughat of absolute quantum of potential 4.985 MCUM of water(19). Other than those floods others torrent are advanced at d/s of washing Ghat viz. Ramghat prevent dam, Chakratirth prevent dam, Kaliyadeh droop dam and so forth.

**Singhastha Ujjain on Shipra River** – Singhastha is an extremely mainstream strict birthday party of Ujjain which takes place as soon as in 12 years state-of-the-art become in 2016. The enthusiasts take strict dunk withinside the blessed waterway of Shipra withinside the lengthy stretch of vaishakh from the total moon night. Individuals from anywhere the arena amass in Ujjain (20, 23). It is stated that after the divine beings and the evil presences produced the nectar from the ocean there has been a quarrel among them. During the direction couple of drops of nectar sprinkled into the streams withinside the city regions of Ujjain, Nashik, Prayag and Haridwar. To understand this event the birthday party of Kumbh is praised in some of these cities. During that birthday party aficionados and the holy humans from anywhere India bring together in a massive flood of population numbering in extra of now no longer many Lakhs of people into the town (21, 22).

## **MATERIAL & METHODS**

Ujjain city is been divided in 54 wards each ward possess an alderman. We selected all 54 wards and various famous places in these wards.

As in ward 01 we select Bherugadh Jail premises were a hand pump is been situated. In ward 02 Siddhwat a submersible pump is present on Ghat end and is run by Siddhwat mandir samiti. In Ward 03 Khilchipura about 4 hand pumps are present nearby roadside area. In ward 04 Krishna colony a hand pump is present in their garden. Similarly in Ward 05 Indira Nagar many hand pumps are present along roadside area.

In ward 06 Mohan nagar a hand pump is present on the gate of entrance of the colony. In ward 07 Durga colony a well is present nearby the well a hand pump is present which give sweet water. In ward 08 Shrikrishna Colony a submersible pump is fitted on hand pump by local people and they use it as they want. In ward 09 Mullapura a hand pump is placed which is very old still it gives sweet water. In ward 10 Tilleshwar Dham a colony is also present with this name and a hand pump is there in temple premises.

In ward 11 Nayapura Jain colony is very old colony in city the maximum houses present have tube well with them this is reason that the hand pumps present has to go more than 100 meters for sweet water. In ward 12 Ranjeet Hanuman Temple is present with a hand pump in its premises it's close to Shipra River still the depth is high due to saline water. In ward 13 it's very close to Shipra River we selected Durgadas ki Chatri area were a submersible pump is feed by local government and its run by local people. Ward 14 is also densely populated area and its Kamri Marg were various hand pumps are present on Roadside area due to large number of tube wells the depth increased. In ward 15 Geeta colony is present were various people have their personal tube wells we selected a hand pump present on the edge of road and garden.

In ward 16 there is a large place present were sabji mandi is there in it we have 4-5 hand pumps. In ward 17 comes another mandi, Chimanganj Mandi were grains and cereals were sold it's also a big area having 5-6 submersible pumps all are been run by Chimanganj Mandi Samiti. Ward 18 comes sudama nagar were we have selected a hand pump present in premises of Sukhdev Cotton Press. In ward 19 present office of Municipal Commissioner and fire brigade office were 4 big submersible pumps are present with a big overhead tank which can fill a fire brigade in 2 mins. In ward 20 comes Brahaspati mandir were a hand pump is present in temple premises which give sweet water from years.

In ward 21 comes Gopalmandir area were various hand pumps are present on road side giving sweet water. In ward 22 comes Durgadas Marg were we select a hand pump present on vicinity of road. In ward 23 comes mochiwada were various shops of foot wares are there we select a roadside hand pump. In ward 24 comes one of the sapt sagars of the city its Khir Sagar we selected a hand pump just near to the Sagar.

In ward 25 present Charak Hospital which is a 400 bed government hospital were a submersible pump is present for the hospital area. In ward 26 Madhav area is present were a hand pump is been selected which is in between a school, a garden and a Petrol pump. In ward 27 a hand pump is selected near Panwasa square. In ward 28 Malipura a hand pump is selected present on boundary of Kalidas Kanya Mahavidhyalaya. Ward 29 Sakhapura is too densely populated and we select a submersible pump present in Gupta ji ki bawdi which is a personal pump.

In ward 30 and 31 present Begum Bag colony with safiqui Masjid were number of hand pumps are present. In ward 32 Naliya Bakhhal area is present which is densely populated were we have taken a hand pump present in middle of road. In ward 33 present chintaman jawasiya colonies were a hand pump is present in local park area. In ward 34 comes Chintaman Dham colony were a hand pump is present in temple area.

Ward 35 comes with a PHE colony and yantramahal were water purification plant is there in the PHE colony we have taken a tube well run by the local people. In ward 36 there is another old colony named Vivekanand colony

were hand pump is been selected present on 1<sup>st</sup> garden area. In ward 37 comes a densely populated area called Prakash nagar were a hand pump is selected present on main road. Ward 38 consist of freegunj area were main shops are present here we select a hand pump in front of a flour mill. Ward 39 comes an industrial area were a hand pump is been selected in front of power loom factory.

In ward 40 a hand pump is selected on Piliakhedi Square. Ward 41 comes another sabji mandi of maksiroad were hand pumps are present we select a hand pumps just behind Maa Ambey Fruit stall. Ward 42 comes with Nagar Nigam colony were there are government quarters were a hand pump is selected which is in side of electricity office. In ward 43 Tatya Tope marg a hand pump is selected present in front of Madhav nagar Civil Hospital. In ward 44 Police control room is present were we select a hand pump in the vicinity area.

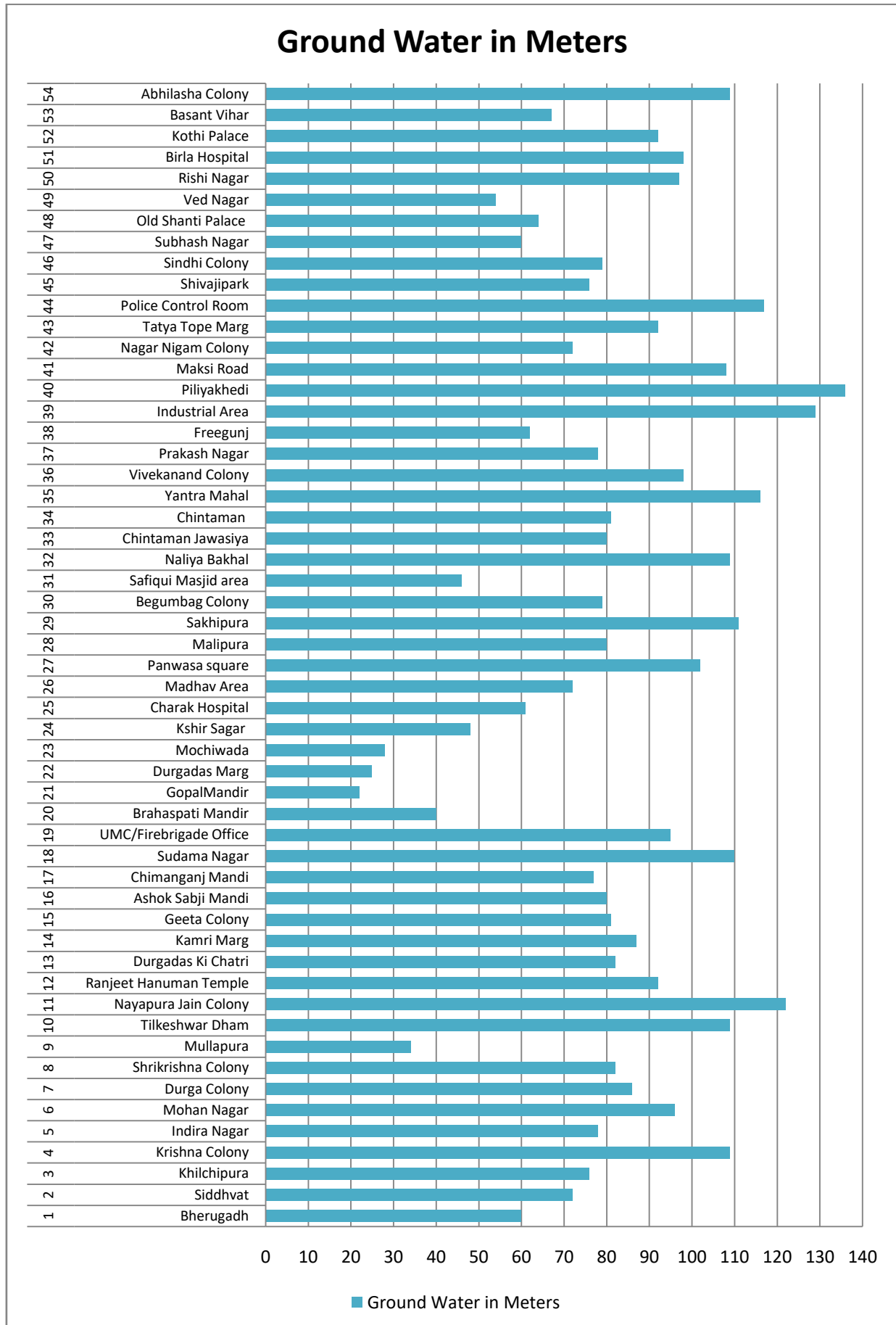
In ward 45 Saint Colony and Shivaji Park are present were we have taken a Hand pump in Park of Shivaji Park colony. Ward 46 comes Sindhi Colony were we select a hand pump present on main road area. Ward 47 we select a hand pump present near Do talab area of Shubhash Nagar. In ward 48 various hotels are present but we Select Old Shanti Palace hotel demolished by Local government a submersible pump is present which is very low in operation. Ward 49 possess Ved nagar area were hand pump is present between road and ved nagar park.

In ward 50 comes Rishi Nagar area were we have selected a hand pump located on main road side. Ward 51 we have selected submersible pump present in Birla Hospital.

In ward 52 a submersible pump present on Kothi Palace is been taken which gives saline water that's reason we have made a Jal Mandir there in my mother's name consisting of RO and Chilling Plant so that people coming to Court, Commissioner and Collrctorate are been benefitted with free chilled pure water(27). In ward 53 present a densely populated Basant Vihar were a hand pump is selected on park area. In ward 54 comes Abhilasha colony were submersible pump is present in garden area run by local people of the area.

## RESULTS AND GRAPH

Ground water table Ujjain Ward wise - 2022					
Ward NO.	Location Area	Ground Water Meters	Ward NO.	Location Area	Ground Water Meters
1	Bherugadh	17	28	Malipura	80
2	Siddhwat	72	29	Sakhipura	111
3	Khilchipura	76	30	Begum bag Colony	79
4	Krishna Colony	109	31	Safiqui Masjid	26
5	Indira Nagar	78	32	Naliya Bakhhal	109
6	Mohan Nagar	96	33	Chintaman Jawasiya	80
7	Durga Colony	86	34	Chintaman	81
8	Shrikrishna Colony	82	35	Yantra Mahal	116
9	Mullapura	34	36	Vivekanand Colony	98
10	Tilkeshwar Dham	109	37	Prakash Nagar	78
11	Nayapura Jain Colony	122	38	Freegunj	62
12	Ranjeet Hanuman Temple	92	39	Industrial Area	129
13	Durgadas ki Chatri	82	40	Piliakhedi	136
14	Kamri Marg	87	41	Maksi Road	108
15	Geeta Colony	81	42	Nagar Nigam Colony	72
16	Ashok Sabji Mandi	80	43	Tatya Tope Marg	92
17	Chimanganj Mandi	77	44	Police Control Room	117
18	Sudama Nagar	110	45	Shivajipark	76
19	UMC/Fire brigade Office	95	46	Sindhi Colony	29
20	Brahaspati Mandir	40	47	Shubhash Nagar	60
21	Gopalmandir	22	48	Old Shanti Palace	34
22	Durgadas Marg	15	49	Ved Nagar	54
23	Mochiwada	28	50	Rishi Nagar	97
24	Khiri Sagar	48	51	Birla Hospital	98
25	Charak Hospital	61	52	Kothi Palace	92
26	Madhav Area	72	53	Basant Vihar	67
27	Panwasa square	102	54	Abhilasha Colony	109



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