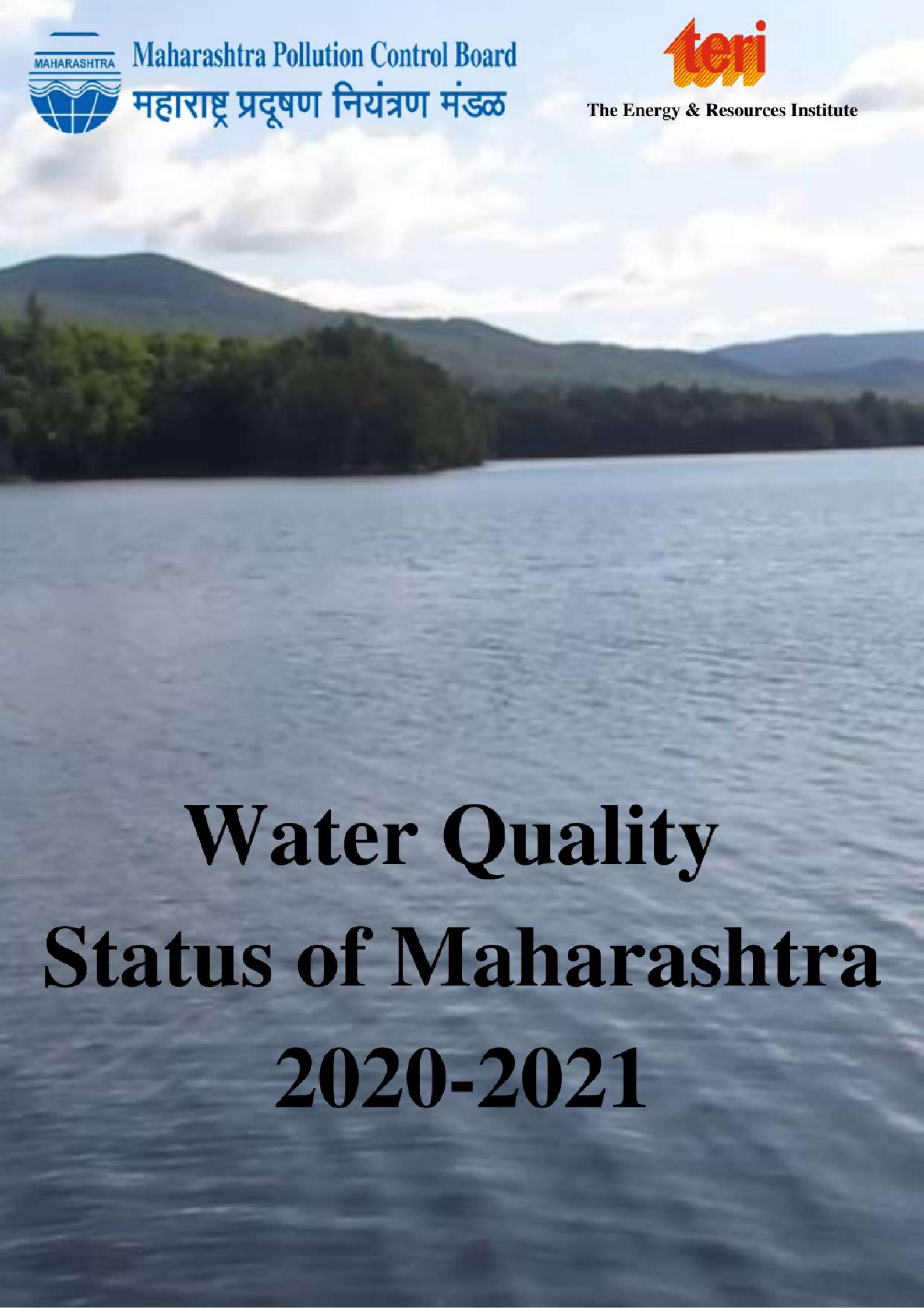

Maharashtra Pollution Control Board
महाराष्ट्र प्रदूषण नियंत्रण मंडळ

The Energy & Resources Institute

Water Quality Status of Maharashtra 2020-2021

Final Report

Water Quality Status of Maharashtra 2020-21

(Compilation of Water Quality Data Recorded by MPCB)

Prepared by

The Energy and Resources Institute

...towards global sustainable development

अशोक शिनगारे, भाप्रसे
सदस्य सचिव
Ashok Shingare, IAS
MEMBER SECRETARY

महाराष्ट्र प्रदूषण नियंत्रण मंडळ
MAHARASHTRA POLLUTION CONTROL BOARD

Preface

Maharashtra Pollution Control Board is monitoring water quality in Maharashtra to comply with the mandate of Water (Prevention & Control of Pollution) Act, 1974 and to disseminate status of water quality in the State of Maharashtra. Board is monitoring water quality under National Water Monitoring Programme (NWMP) and State Water Monitoring Programme (SWMP) at various locations as per the Uniform Monitoring Protocol of Central Pollution Control Board / MoEF & CC, New Delhi.

This document contains compilation & statistical analysis of Water Quality Monitoring data observed at 294 monitoring stations during the period April 2020 to March 2021. Also National Sanitation Foundation, USA's formula has been used to calculate Water Quality Index (WQI) to depict the water quality in an easy to understand the general public at large. The WQI is also used to compare with the water quality of last few years.

In 2020-21, there was a slight increase in WQMS (surface water) having an annual average WQI recorded as 'Non-Polluted' as compared to 2019-20. It includes about 214 WQMS (93.85%) as compared to 205 (89.9%) in the previous year (2019-20). Out of 214 WQMS, 172 WQMS (75.43%) recorded their annual average WQI under 'Good to Excellent' whereas 42 WQMS (18.42%) recorded WQI under the 'Medium to Good' category. Out of the 'Polluted' category, 8 WQMS (3.5%) and 4 WQMS (1.75%) recorded annual average WQI under the 'Bad' and 'Bad to Very bad' categories. Only 2 WQMS (as compared to 1 in 2019-20) were placed in the category of 'Dry'.

In the case of Priority ranking, the Mithi River is placed in Priority I while the Pawna River is placed in Priority II. Priority III and IV include 11 and 14 rivers respectively. Category V observed the inclusion of 24 rivers in 2020-21 as compared to 21 in the previous year (2019-20). 2 rivers namely the Panchganga and the Vashishti (as compared to 1 river namely the Panchganga in 2019-20) were found to be non-polluted (BOD less than 3mg/l).

In the case of WQMS (Groundwater), the highest number of WQMS recording 'Excellent' WQI was found to be in Kolhapur district (5) followed by Raigad district (2). Similarly, the highest number of WQMS recording annual average WQI under the 'Good Water' category was found to be in Nagpur district (7) followed by Kolhapur (3) and Nashik (2).

I place a record of gratitude to *Hon'ble Minister for Environment, Shri. Aditya Thackeray Ji, Hon'ble Minister of State for Environment, Shri. Sanjay Bansode Ji, Hon'ble Principal Secretary (Environment) Govt. of Maharashtra, Smt. Manisha Patankar-Mhaiskar, IAS and Hon'ble Chairman, MPC Board, Shri. A. L. Jarhad, IAS* for having guided through the process.

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Date: 30/03/2022.

(Ashok Shingare, IAS)
Member Secretary

कल्पतरु पॉईंट, सायन सर्कल, सायन (पूर्व), मुंबई - ४०० ०२२. टेलि. : २४०१ ०७०६
Kalpataru Point, Sion Circle, Sion (East), Mumbai - 400 022. Tel.: 2401 0706
E-mail : ms@mpcb.gov.in • Website : www.mpcb.gov.in

Abbreviations

BCM	Billion Cubic Meters
BIS	Bureau of Indian Standards
BOD	Biochemical Oxygen Demand
CAGR	Compound Annual Growth Rate
CGWB	Central Ground Water Board
CPCB	Central Pollution Control Board
CWC	Central Water Commission
DO	Dissolved Oxygen
FC	Fecal Coliform
GIS	Geographical Information System
GSDA	Ground water Surveys & Development Agency
GW	Ground Water
MoEF	Ministry of Environment and Forests
MoEFCC	Ministry of Environment Forest and Climate Change
MPCB	Maharashtra Pollution Control Board
NSFWQI	National Sanitation Foundation Water Quality Index
NWMP	National Water Quality Monitoring Program
pH	Power of Hydrogen
POPs	Persistent Organic Pollutants
RO	Regional Office
SD	Standard Deviation
Shp	Shape files
SPCBs	State Pollution Control Boards
SW	Surface Water
SWMP	State Water Quality Monitoring Program
TDS	Total Dissolved Solids
TH	Total Hardness
WHO	World Health Organisation
WQI	Water Quality Index
WQMS	Water Quality Monitoring Stations

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Executive Summary

Water resources are very complex ecosystems that support a wide array of biodiversity (plants, vertebrates, invertebrates, microbes) including humans. These resources either freshwater or marine water plays a pivotal role in providing important ecosystem and life-supporting services such as regulation of nutrient cycle, carbon sequestration, regulation of microclimatic conditions and more. These resources play an immense role in our daily life, the role which can not be replaced by any other resources on this planet. However, in today's; world, these precious resources are facing grave danger due to climate change and pollution triggered by ever-increasing anthropogenic pressures. Due to the release of industrial and household discharge, these water resources are becoming more and more polluted thereby making water contained by these resources non-potable. Severe climatic conditions such as drought, less precipitation, rise in temperature are also affecting these resources, some of which are already vanished or are on verge of vanishing. Since water is a universal solvent, most of the pollutants (chemicals) get dissolved easily which leads to deterioration of the overall water quality. Therefore, it is necessary to conduct regular monitoring of water resources. It not only helps in recording the levels of various pollutants in water bodies but also helps policymakers and government bodies to formulate policies and interventions to help conserve these resources, while also minimizing the impacts on human health and the environment.

In India, water quality management is executed under the provisions of the Water (Prevention and Control of Pollution) Act, 1974[1]. The main objective of this act is to restore and maintain the quality of all national aquatic resources by prevention and control of pollution. This act empowers the Central Pollution Control Board (CPCB) at the apex level and State Pollution Control Board (SPCB) at the state level as the regulatory authorities to monitor and maintain water quality.

Though an installed network of about 294 water quality monitoring stations, Maharashtra Pollution Control Board (MPCB); a nodal agency under the CPCB regularly collects water samples and monitors the levels of water pollutants thereby keeping track of overall water quality. Out of 294 WQMS, 228 WQMS are installed for surface water monitoring (176 on rivers, 36 on sea/creeks, 12 on drains and 4 on dams) whereas 66 WQMS are installed to monitor groundwater quality (29 on borewells, 35 on dug well, 1 each on handpump and tubewell). These WQMS are installed under the National Water Quality Monitoring Program (NWMP) and State Water Quality Monitoring Program (SWMP). MPCB conducts monitoring of surface water samples on a monthly basis while ground water samples are monitored twice a year.

Based on statistically analysed data, this report presents the overall surface and ground water quality in the state of Maharahstra for the year 2020-21. This status is presented in the form of spatial representations and illustrations. Through graphical representations, the level of parameters (Dissolved Oxygen/DO, Biochemical Oxygen Demand/BOD, pH and Fecal Coliform/FC) the annual average WQI has been provided for surface water. This includes 5 major basins (both Intra and Interbasin) namely the Tapi, the Godavari, the Krishna, the West Flowing Rivers as well as as the water samples representing saline (sea/creek). This report also

[1]http://mpcb.gov.in/envtdata/QAQC-%20An%20Overview-%20VAM.pdf

illustrates the levels of pH, Nitrate, Total Hardness and Flouride in ground water samples in form of graphical representation. The WQI provides a comprehensive value which is indicative of the overall water quality of a particular water body at a particular period after assessing several water quality parameters for that particular water body. The index simplifies the complex parametric data into comprehensive information for easy understanding. It also helps to identify on going and future problems with the water in the region. The WQI in this report has been calculated using the formula developed by National Sanitation Foundation (NSF) and modified by CPCB.

Surface Water Quality

For testing and analysis of Surface water samples, MPCB has considered a total of 43 parameters which are divided into 4 sections namely Field observations, Core parameters, General parameters and Trace metals. List of all these parameters is included in Table No. 8. However, for calculating WQI, 4 parameters namely pH, DO, BOD and FC are taken into consideration. Color codes are assigned for each WQI category for easy interpretation. This method is also useful as it helps conveying about the water quality status effectively to the stakeholders. The assigned color codes and its interpretation (remark) can be shown in Table No. 1

In 2020-21, water quality monitoring was done at about 228 stations which are installed at various waterbodies (rivers, creek, sea and nallahs). In case of river WQMS (Tapi, Godavari, Krishna and West flowing rivers) classification is done based on basin and sub basins (Table No. 2). It is important to note that, out of 228 WQMS, 216 WQMS recorded annual average WQI in 'Non-Polluted' category (up from 205 WQMS in 2019-20).

Out of remaining 12, 8 WQMS recorded annual average WQI in 'Polluted' category while 4 WQMS recorded it under the 'Heavily Polluted' category.

It is important to note that, 214 WQMS (as compared to 205 WQMS in 2019-20) recorded annual average WQI in 'Non-polluted' category (172 WQMS under 'Good to Excellent' and 42 WQMS under 'Medium to Good'). As compared to 22 WQMS (2019-20), only 12 WQMS recorded annual average WQI in the 'Polluted' category (8 WQMS under 'Bad' and 4 under 'Bad to Very Bad'). Only 2 WQMS installed at Amravati River D/s of Dondaicha (Tapi Middle) and Manjra at D/s of Latur, near Latur-Nanded Bridge (Manjra) were found to be 'Dry' throughout the monitoring period.

Table No. 1: Classification of Water Quality for Surface Water
Source: http://www.mpcb.gov.in/envtdata/Ebulletin_pdf/E_bulletin_Oct2016.pdf

Water Quality Index - Surface Water			
WQI	Quality Classification	Remarks	Colour Code
63-100	Good to Excellent	Non-Polluted	
50-63	Medium to Good	Non-Polluted	
38-50	Bad	Polluted	
38 and less	Bad to very Bad	Heavily Polluted	

Table No. 2: Annual Average WQI for surface WQMS in various basins and sub basins

Basin	Sub basin	Rivers	G2E	M2G	B	B2V	Dry	Grand Total
Tapi	Tapi Upper	Tapi, Purna, Pedhi	5					5
	Tapi Middle	Tapi, Girna, Rangavali, Amravati, Bori, Burai, Gomai, Hiwara, Kan, Mor, Panzara, Titur, Waghur,	13	1			1	15
Godavari 1	Godavari Upper	Godavari, Darna	18	2				20
	Godavari Middle	Godavari, Bindusara	10	1				11
	Manjra	Godavari, Manjra	1				1	2
Godavari 2	Wardha	Wardha, Painganga	12					12
	Wainganga	Kolar, Kanhan, Wainganga	11		4			15
	Pranhita & Others	Wainganga	1					1
Krishna	Bhima Upper	Bhima, Nira, Chandrabhaga, Mutha, Ghod, Indrayani, Pawana, Sina, Vel, Mula-Mutha	23	13				36
	Krishna Upper	Krishna, Panchganga, Koyna, Urmodi, Venna	21					21
Coastal	West Flowing Rivers	Kalu, Ulhas, Patalganga, Bhatsa, Vashishti, Mithi, Kundalika, Savitri, Amba, Kundalik, Muchkundi, Surya, Tansa, Vaitarna,	40	1	1			42
	Sea/Creek		14	22				36
Nallah	Nallah	Rabodi nallah, Colour Chem nallah, Sandoz nalla, BPT Navapur, Tarapur MIDC nallah, Pimpal-Paneri nallah, Chikali Nallah,Nallah at Alkai Mandir,Moti Nallah and Lowki Nallah	3	2	3	4		12
Grand Total			**172**	**42**	**8**	**4**	**2**	**228**

Legend

G2E: Good to Excellent	M2G: Medium to Good	B: Bad	B2V: Bad to Very bad	Dry	No data

As illustrated in Figure No. 1, the increased share of percentage of observations recorded under the 'Good to Excellent' category was found by the WQMS installed at sub basins namely Tapi Middle (27.45% to 42.15%), Wainganga (63.33% to 68.88%), Bhima Upper (42.11% to 53.82%) and Krishna Upper (85.71% to 92.06%) in the year 2020-21. A sizable decrease in the similar WQI category was recorded by WQMS at the Godavari Middle (69.69% to 39.39%) and the Manjra sub basin (54.16% to 25%). This may be due to the reason that about 46.96% of the total observations from the Godavari Middle and 45.83% from the Manjra sub basin were categorized under the category of 'Not Collected' in 2020-21.

Only 2 sub basins namely the Godavari Upper (24.60% to 27.77%) and the Coastal (38.88% to 39.81%) basin recorded increasing trend in percentage of observations under the 'Medium to Good' category. Rest all sub basins witnessed decreasing trend for the same.

It is important to mention that out of total number of observations (recorded from WQMS installed at all sub basins); about 11.25% observations were categorized as 'Dry' followed by ~5.08% under 'Not Collected' and ~3.43% under the category of 'No Data'. In the previous year (2019-20) however, the percentage share of observations under the 'Dry' category was found to be around 13.74% while no single observation was recorded under the categories of 'Not Collected' and 'No Data'.

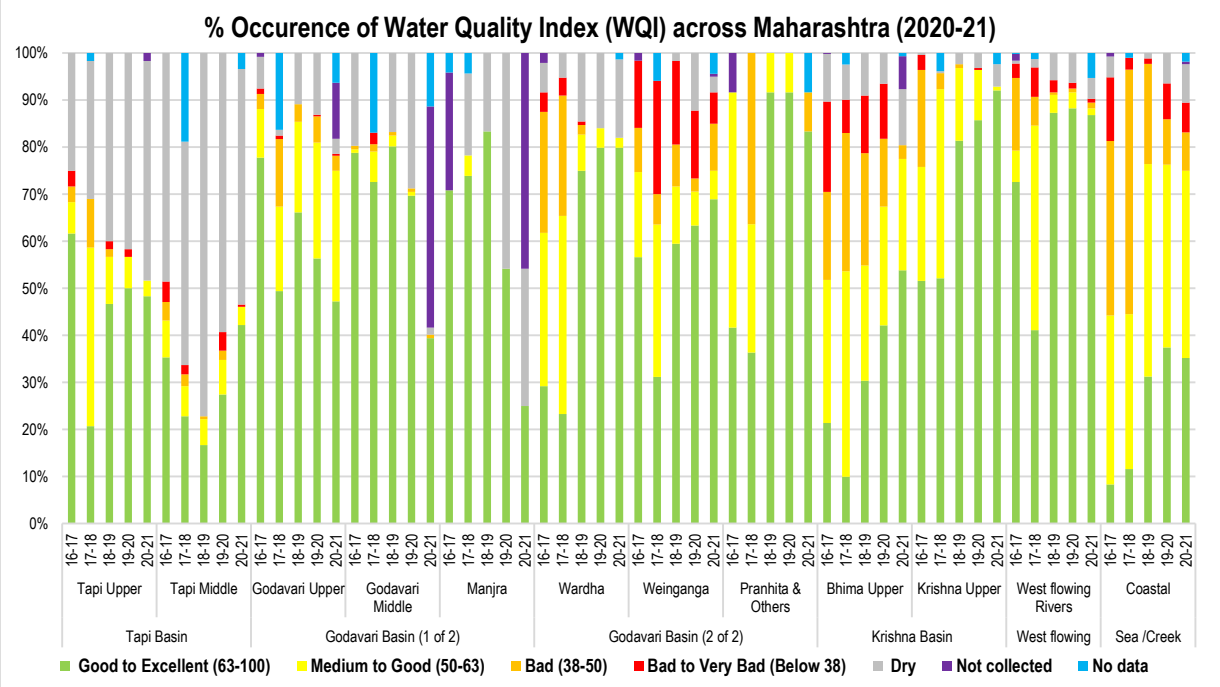
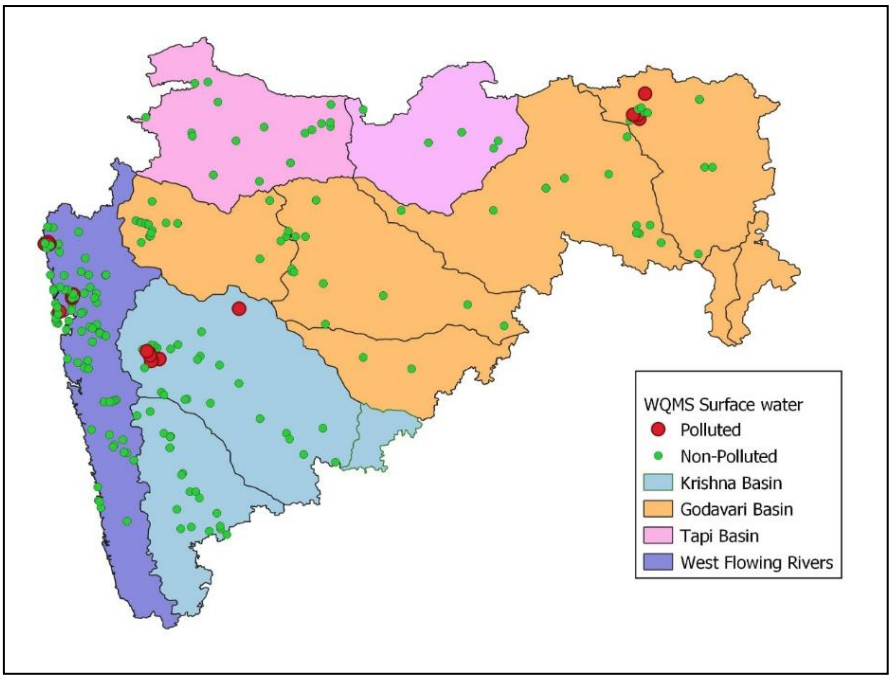


Figure No. 1: Average occurrence of different category of WQI across WQMS in respective sub basins of Maharashtra

Note: The above comparison is based on the WQI recorded at a monitoring station and the average number of times the WQI was of a certain category at all the WQMS in that basin.



Map No. 1: Spatial representation of surface WQMS which recorded WQI as polluted for more than 50% of the observations

Map No. 1 highlights spatial representation of the polluted locations which recorded WQI under 'Polluted' category for more than 50% of the observations and the corresponding details of WQMS are mentioned in Table No. 3. The districts of Nagpur, Mumbai, Thane and Palghar have polluted rivers as per the analyzed data.

Table No. 3: WQMS which recorded WQI as polluted for more than 50% observations in 2020-21

Sr No.	Station Code	Station Name	Village	Taluka	District
1	186	Nag River Near, Bhandewadi Bridge, Nagpur	Nagpur	Nagpur	Nagpur
2	187	Nag River Near, Asoli Bridge, Bhandara Road, Nagpur	Nagpur	Nagpur	Nagpur
3	188	Pill River Near, Wanjra Layout Kamptee Road, Nagpur	Nagpur	Nagpur	Nagpur
4	189	Pill River Near, Mankapur on Koradi Road, Nagpur	Nagpur	Nagpur	Nagpur
5	2168	Mithi River at near bridge	Mahim	Bandra	Mumbai
6	2782	Rabodi Nalla	Rabodi	Thane	Thane
7	2783	Colour Chem Nalla	Majiwada	Thane	Thane
8	2784	Sandoz Nalla	Sandozbaug	Thane	Thane
9	2785	BPT Navapur	Navapur	Palghar	Palghar
10	2786	Tarapur MIDC Nalla, near sump No 1	MIDC Tarapur	Palghar	Palghar
11	2787	Tarapur MIDC Nalla	MIDC Tarapur	Palghar	Palghar
12	2788	Tarapur MIDC Nalla near sump-III	MIDC Tarapur	Palghar	Palghar

It has been observed that, the samples collected from nallas from Thane and Palghar district have been consistently recording WQI in polluted category. This might be due to the release of industrial effluents from nearby areas and waste from human settlements around the nallas.

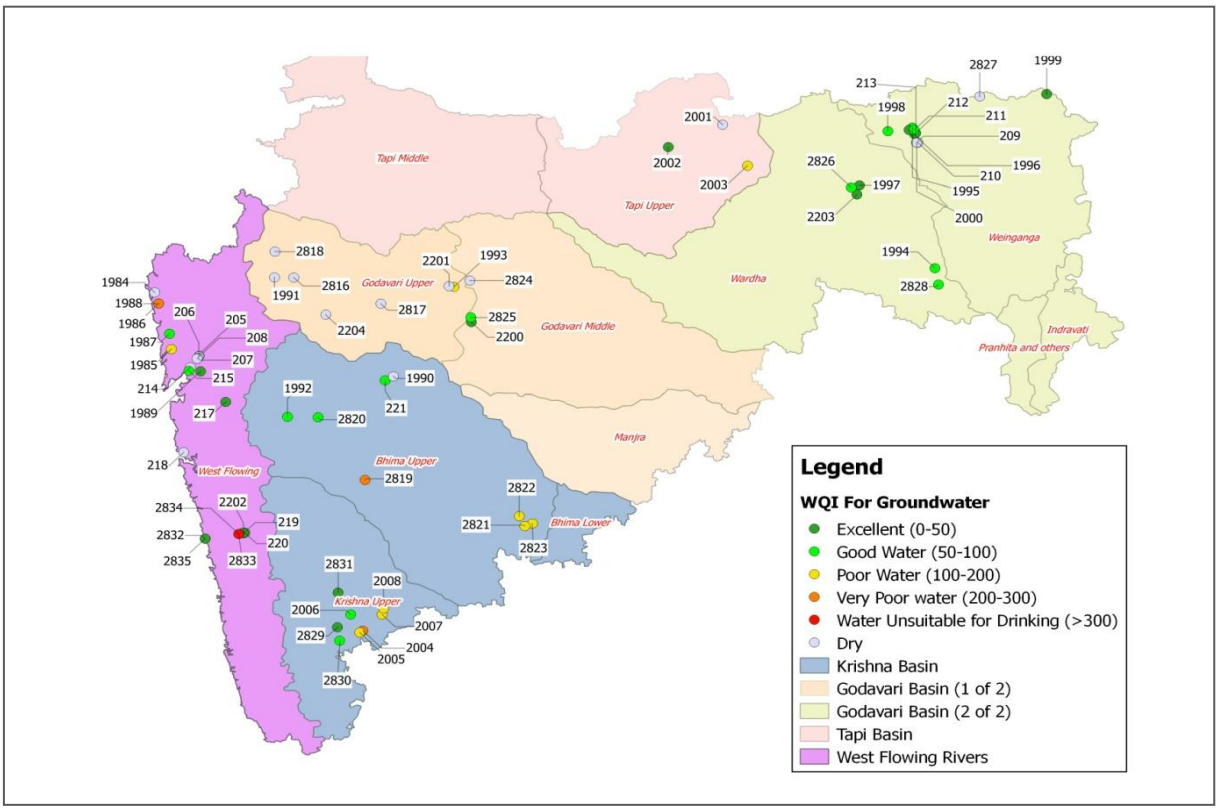
Ground water Quality

Total 66 WQMS has been installed by MPCB across Maharashtra for groundwater quality monitoring. Every after 6 months, MPCB records the levels of water pollutants by analyzing the water samples collected from these WQMS. For calculating WQI, 9 parameters namely pH, Total Hardness, Total Dissolved Solids, Calcium, Magnesium, Chloride, Fluoride, Sulphate and Nitrate are taken into consideration. With respect to drinking, CPCB has assigned specific weightage to each of these parameters based on parameter stringency and its relative importance in overall water quality. For easy interpretation, color codes are assigned for each category of WQI. (Table No. 4)

Table No. 4: Classification of Water Quality for Ground water

Water Quality Index – Ground Water			
WQI	**Water Quality**		**Colour Code**
<50	Excellent	Non Polluted	
50-100	Good Water	Non Polluted	
100-200	Poor Water	Polluted	
200-300	Very Poor Water	Polluted	
>300	Water Unsuitable for Drinking	Heavily Polluted	

Source: http://www.mpcb.gov.in/envtdata/Ebulletin_pdf/E_bulletin_English_March2017_13062017.pdf



Map No. 2: Spatial representation for average groundwater WQI

A spatial representation for average WQI recorded by WQMS (groundwater) is depicted in Map No. 2. In the year 2020-21, 7 WQMS recorded average WQI under the category of 'Excellent'. Out of these 7 WQMS, 2 are in Raigad district and 5 are in Kolhapur district. In

case of 'Good Water', 17 WQMS recorded average WQI in this category. It inludes 7 WQMS from Nagpur district followed by 3 WQMS in Kolhapur, 2 in Nashik and 1 WQMS each in Amaravati, Aurangabad, Chandrapur, Navi Mumbai and Pune district.

In case of Polluted water, 12 WQMS (3 each in Kolhapur, Aurangabad and 2 each in Thane, Nashik and Pune district) recorded average WQI under 'Poor Water' category whereas 6 WQMS (4 in Kolhapur and 2 in Nashik district) recorded average WQI in 'Very Poor Water' category.

In 2020-21, Only 1 WQMS (compared to 3 WQMS in 2019-20) recorded WQI under the category of 'Water Unsuitable for Drinking' (Table No.6). It includes Bore well at BMW site, Burudgaon, District Ahmednagar. It recorded an average WQI of 347 with high levels of average concentration for parameters such as Total Hardness (1,036 mg/l), Magnesium $CaCO_3$ (512 mg/l), Calcium $CaCO_3$ (524 mg/l), Chlorides (545 mg/l), Sulphate (563 mg/l) and Total Dissolved solids (3,333 mg/l).

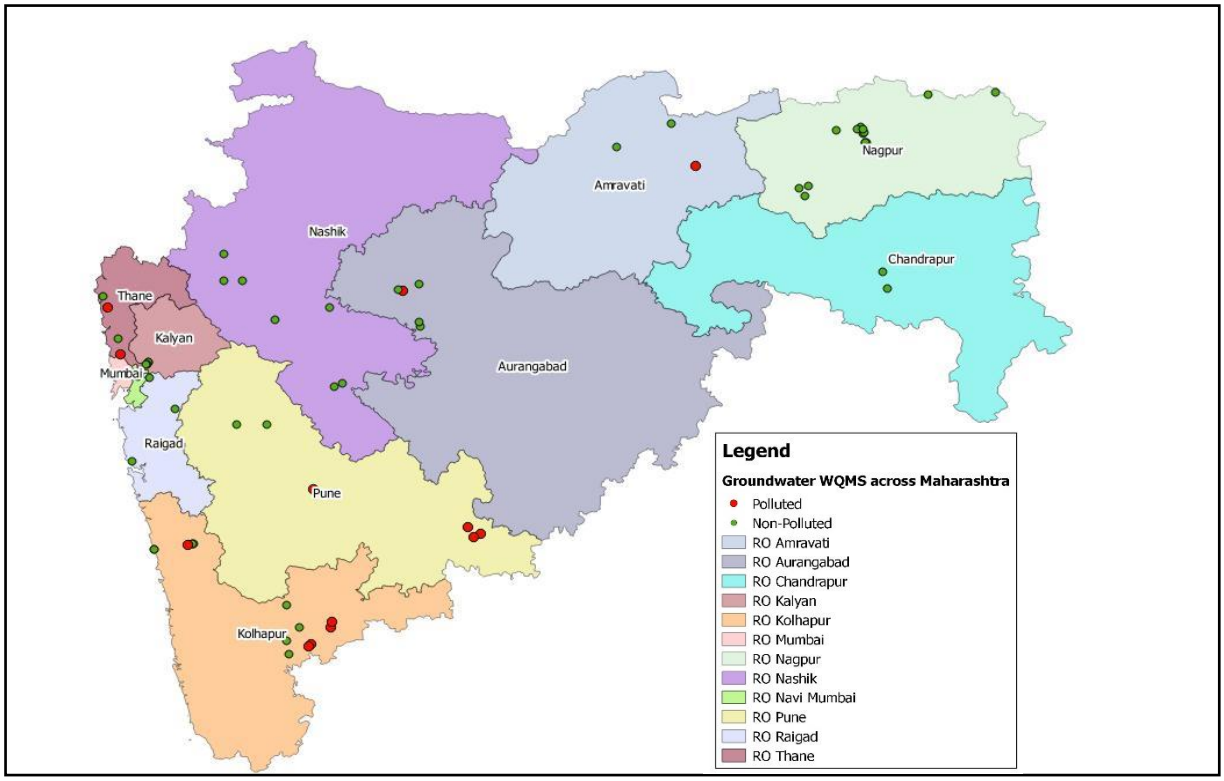
Table No. 5: List of WQMS which recorded annual average WQI in 'Water Unsuitable for Drinking' category

Station ID	Regional Office	Water Body	Station Name	Village	Taluka	District
1990	Nashik	Borewell	Bore well at BMW Site, Burudgaon	Burudgaon	Ahmednagar	Ahmednagar

Table No. 6: WQMS which recorded WQI as polluted for more than 50% observations in 2020-21 (Ground Water)

Sr No	Region	Stn code	Station Name	Village	Taluka	District
1	Nashik	221	Well water of Bappaji, Akolner, Ahmadnagar, Nashik	Akolner	Ahmednagar	Ahmednagar
2	Thane	1985	Dug well at 5 Star Industrial Estate	Kashimira	Mira-Bhayander	Thane
3	Thane	1987	Bore well at Vasai	Gokhiware	Vasai	Thane
4	Nashik	1991	Borw well at MSW site, Pathardi, Nashik	Pathardi	Nashik	Nashik
5	Thane	1992	Dug well at MSW site, owned by Shri. Dattu Kondiba Borate at Borate vasti	Moshi	Haveli	Pune
6	Aurangabad	1993	Dug well at Pandarpur, Gangapur, Aurangabad	Pandharpur	Gangapur	Aurangabad
7	Kolhapur	2004	Bore well at Parvati	Yadrav	Shirol	Kolhapur

Sr No	Region	Stn code	Station Name	Village	Taluka	District
			Industrial Estate, Yadrav, Kolhapur			
8	Kolhapur	2006	Bore well at Shinoli near M/S Aqua alloy steel	Shinoli	Chandgad	Kolhapur
9	Kolhapur	2007	Bore well sta Saval, near Gram Panchayat office	Savali	Miraj	Sangli
10	Kolhapur	2008	Dug well at Sambarwadi, owned by Shri. Kishan Hali Rajput	Sambarwadi	Miraj	Sangli
11	Aurangabad	2201	Dug well at Ranjhngaon	Ranjhangaon	Gangapur	Aurangabad
12	Nashik	2816	Dug well of Mr. Sampat Walunj, near M/s. Mahajeet Clayton	Shinde Village	Nashik	Nashik
13	Nashik	2818	Bore well at M/s Spectron Ethers Rasegaon near Siddheshwar Mahadev Mandir	Rasegaon	Dindori	Nashik
14	Pune	2820	Dug well owned by Shri Shivaji Baban Darekar	Sanaswadi	Shirur	Pune
15	Aurangabad	2825	Bore Well at Wahegaon, near Zilla Parishad School	Wahegaon	Paithan	Aurangabad
16	Kolhapur	2830	Bore well at MIDC Gokul, Shirgaon	Gokul, Shirgaon	Karvir	Kolhapur
17	Kolhapur	2831	Dug well at Sakharli near MIDC Islampurnear Krishna Milk Industry	Sakharli	Walwa	Sangli
18	Kolhapur	2834	Dug well No. 2 at Arketwadi	Arketwadi	Khed	Ratnagiri



Map No. 3: Spatial representation of ground WQMS which recorded WQI as polluted for more than 50% of the observations

The overall Surface water quality has improved in the year 2020-21, as 214 WQMS (as compared to 205 WQMS in 2019-20) recorded annual average WQI in 'Non-Polluted' category. This means about 94% of WQMS recorded annual average WQI under the 'Non-Polluted' category (75.4% in 'Good to Excellent' and 18.4% in 'Medium to Good'). In the case of WQMS under the 'Polluted' category, about 3.5% WQMS were found under the 'Bad' WQI category while the share of percentages of WQMS coming under the 'Bad to Very Bad' WQI category was found to be around 1.75%. Only 2 WQMS (about 0.87%) were found to be in the 'Dry' category.

In the case of WQMS (Groundwater), the highest number of WQMS recording 'Excellent' WQI was found to be in Kolhapur district (5) followed by Raigad district (2). Similarly, the highest number of WQMS recording annual average WQI under the 'Good Water' category was found to be in Nagpur district (7) followed by Kolhapur (3) and Nashik (2). The 'Poor Water' WQI was recorded at Aurangabad, Kolhapur and Nashik district (3 each) followed by Pune and Thane district (2 each). 4 WQMS from Kolhapur district and 1 WQMS from Nashik district recorded annual average WQI in the 'Very Poor' WQI category. Only 1 WQMS (compared to 3 WQMS in 2019-20) recorded WQI under the category of 'Water Unsuitable for Drinking'. It includes Bore well at BMW site, Burudgaon, District Ahmednagar with an average WQI of about 347.

Introduction

Water Pollution

According to World Health Organization (WHO), water pollution is defined as any change in the physical, chemical and biological properties of water that has negative impacts on living beings. Despite around 70% of the earth's surface being covered with water, water pollution is a global cause of concern due to the limited availability of fresh water on the earth. Degradation of the quality of water from these sources due to pollution will lead to water scarcity, ecosystem degradation and negative impacts on human health. It is estimated that by 2025, about half of the world's population would be living in water-stressed areas[2].

Therefore, it is imperative to regularly monitor water pollution and take timely actions to mitigate the same.

Globally, at least 2 billion people use a drinking water source contaminated with fecal matter. Consumption of such contaminated water can transmit diseases like Diarrhea, Cholera, Dysentery, Typhoid, Malaria, and Polio. As per the report of the World Health Organization (WHO, 2019), approximately 485000 people die of

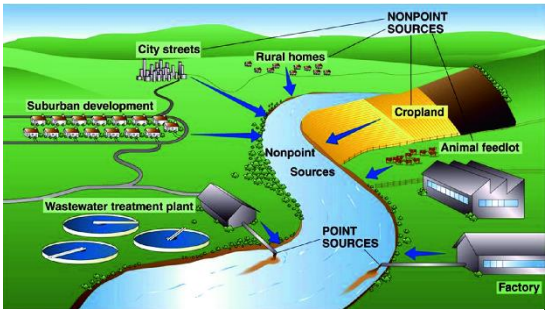


Figure No. 2: Source of Water Pollution

Image Source: https://link.springer.com/chapter/10.1007/978-3-030-22320-5_3

Figure No. 3: Effect of water pollution on human health.

Image source:
http://cpcbenvis.nic.in/water_pollution_control.html#

[2] https://www.who.int/news-room/fact-sheets/detail/drinking-water#:~:text=Contaminated%20drinking%20water%20is%20estimated,22%25%20no%20waste%20management%20service.

contaminated water can transmit diseases like Diarrhea, Cholera, Dysentery, Typhoid, Malaria, and Polio. As per the report of the World Health Organization (WHO, 2019), approximately 485000 people die of Diarrheal disease by drinking polluted water each year[3]. Today, because of various human practices like indiscriminate dumping of domestic residues, industrial waste, scattering settlement or unplanned urbanization, the release of agricultural runoff and other activities like vehicle washing effluents released into freshwater bodies which results in water contamination and also increases the risk of microbial contamination which could further results in health hazards.[4]. Microbial contamination such as the presence of indicator organisms like E.coli and Enterobacter in freshwater bodies due to incorporation of fecal matter is associated mainly with Gastroenteresis disease and also shows the risk of potential contamination of pathogenic organisms (bacterias, protozoans, viruses, helminths)[5]. Furthermore, another source of water pollution is heavy metals contamination. Incorporation of heavy metal contamination occurs due to discharge of wastewater effluent, electroplating, mining and other industrial processes which releases trace elements like Zinc (Zn), Lead (Pb), Copper (Cu), Cadmium (Cd), Chromium (Cr) causing an accumulation and toxicity effects in aquatic organisms (fish and shellfish) which ultimately show ill effects on public health[6,7]. Activities like agricultural runoff, mining, erosion and sedimentation result in groundwater contamination. The presence of arsenic in groundwater causes severe health issues like skin, lung, kidney and bladder cancer; coronary heart disease, bronchiectasis, hyperkeratosis and arsenicosis[8]. Crops irrigated with heavy metal polluted water show a high level of bioaccumulation such as Arsenic (As), Cadmium (Cd), Chromium (Cr), and Mercury (Hg) in plants which are consumed by animals and humans leading deleterious to health[9]. Prolong exposure to heavy metals has been linked to chronic & acute toxicity developing retardation, neurotoxicity, kidney damage, various cancers, liver damage, lung damage, fragile bones, and even death[10].

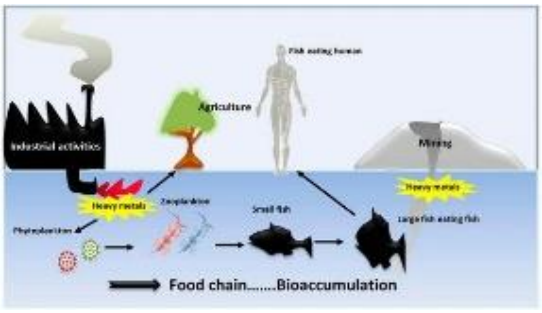


Figure No. 4: Heavy metal contamination in water bodies showing bioaccumulation in fish affecting food chain.

Image source: https://www.mdpi.com/2076-2615/10/5/811

Some statistical data of water-borne diseases in India, 2020.

- In the Western Region of India, due to poor hygienic practices such as using non-treated water for drinking and cooking purposes show water-

[3] https://rb.gy/h4wpim

[4] https://rb.gy/o6ulhw

[5] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4025003/

[6] http://surl.li/alfhl

[7] http://surl.li/alfit

[8] http://surl.li/altpk

[9] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6748284/

[10] http://surl.li/alfie

borne disease cholera in 4.18% of the total population[11].

- Children under age group of five in the states of West Bengal and Bihar account for 36% and 25.6% diarrheal disease respectively[12].
- In all over India, Acute diarrheal disease and Typhoid account for 10.55% and 2.90% of the total deaths due to communicable disease[13].

Thus, intending to provide safe and clean drinking water free from contaminants for all the life-forms, it is important to have a frequent water monitoring/status report of essential natural (water) resources.

Water Pollution Act

The Water (Prevention and Control of Pollution) Act was enacted in 1974 by the Ministry of Environment Forest and Climate Change (MoEFCC) to provide prevention and control of water pollution, and for the maintaining or restoring of wholesomeness of water in the country. The act determines the standards for water quality and effluent released. The Act empowers the SPCB and CPCB to check and control water pollution and improve water quality. The also mandates that all the industries should take permission from their respective Control Boards to discharge waste effluents into any water body. Later on, The Water (Prevention and Control of Pollution) Cess Act was enacted in 1977, to provide for the levy and collection of a cess (tax) on water consumed by persons operating and carrying on certain types of industrial activities. This cess is collected with a view of prevention and control of water pollution embedded under the Water (Prevention and Control of Pollution) Act, 1974[14].

National Water Quality Monitoring Program

To collect, monitor the level of water pollutants and to estimate the overall water quality, CPCB in collaboration with respective SPCBs have created a network of monitoring stations across the country. These WQMS are instllaed at various water sources such as rivers, lakes, creeks/sea/coastal, nallahs, groundwater sources (borewll/dugwell) and so on. Water samples from all these sources are periodically analysed for 62 parameters which include 7 field observations, 9 core parameters 19 general physio-chemical and 3 bacteriological parameters, 9 trace metals and 15 pesticides. However by taqking into account the limited resources, a liited number of organic pollution related parameters are monitored. Micro pollutants (Toxic Metals & Persistent Organic Pollutants (POPs) are assessed only once a year[15].

[11] https://iwaponline.com/washdev/article/11/3/405/81233/Prevalence-of-water-borne-diseases-in-western

[12] http://rchiips.org/nfhs/factsheet_NFHS-5.shtml

[13] http://www.cbhidghs.nic.in/showfile.php?lid=1147

[14] https://cpcb.nic.in/water-pollution/

[15] http://www.cpcbenvis.nic.in/wq-2005/watmain2005.htm

Water Quality Monitoring in Maharashtra

Monitoring network in Maharashtra

As far as the river basins are concerned, the state of Maharshtra is divided into 5 basins namely the Godavari, the Tapi, the Narmada, the Krishna and the West flowing rivers of the Konkan region. MPCB, being a nodal agency for monitoring environmental pollution, monitors and records water quality in Maharashtra through a network of WQMS installed at important locations. There are total 294 WQMS (176 are on rivers, 36 on sea/creek, 12 on nallahs and 66 ground water), the highest across all states of India (Table No. 7). MPCB has infrastructure to monitor 44 parameters including field observations, general parameters, core parameters and trace metals (Table No. 8). The water samples are monitored with a monthly and six monthly frequencies for surface and ground water stations respectively.

Table No. 7: Basin and water body typewise tally of WQMS in Maharashtra

	Water body	Basin				
		Tapi	Godavari	Krishna	West Flowing Rivers	**Total**
Surface Water	Rivers	20	61	57	40	176
	Dam		2		2	4
	Sea				16	16
	Creek				20	20
	Nalla	2	1	1	8	12
Ground water	Bore well	1	10	10	8	29
	Dug well	1	14	6	13	34
	Hand pump		1			1
	Tube well	1				1
	Well		1			1
Total		**25**	**88**	**74**	**107**	**294**

Table No. 8: List of parameters tested and analyzed by MPCB

Sr.No	Field observations	Core parameters	General parameters	Trace metals
1	Weather	Temperature	Turbidity	Cadmium
2	Depth of Water Body	Dissolved Oxygen	Phenophthalein alkalinity	Copper
3	Human activities	pH	Total Alkalinity	Lead
4	Floating Matter (Visible Effluent discharge)	Conductivity	Chlorides	Chromium total
5	Color	BOD	COD	Nickel
6	Odour	Nitrate	Total Kjeldahl-N	Zinc
7		Ammonia-N	Hardness as $CaCO_3$	Iron
8		Fecal Coliform	Calcium $CaCO_3$	Arsenic
9		Total coliform	Magnesium $CaCO_3$	Mercury
10			Sulphate	Pesticides
11			Sodium	
12			Total dissolved solids	
13			Total fixed solids	
14			Total suspended solids	
15			Phosphate	
16			Boron	
17			Potassium	
18			Fluoride	

Methodology

All WQMS installed in the state of Maharashtra records comprehensive data (season-wise) throughout the year for multiple parameters. To effectively assess and represent such data, the following methodology is adopted which is illustrated in **Figure No. 5**

Organizing the dataset	• Assemble the comprehensive dataset (basin wise) recorded by WQMS across the state • This helps in identifying the data gaps (if any) and evaluation of both surface and ground water quality
WQI calculation	• WQI calculation using Using the formula provided by the NSF* and the relative weights modified by CPCB • Basic parameters considered for WQI calculation includes pH, BOD (mg/l), DO (mg/l) and FC (MPN/100ml)
Data Representation	• Using GIS software, final data can be represented in spatial format by developing maps • Concentration of basic parameters and WQI is also provided in graphical and tabular format

Figure No. 5: Methodology adopted for Water Quality Status Report

Tapi Basin Number of WQMS - 25

- Tapi Upper - Tapi, Purna, Pedhi
- Tapi Middle - Tapi, Girna, Rangavali, Amaravati, Bori, Burai, Gomai, Hiwara, Kan, Mor, Panzara, Titur, Waghur

Godavari 1 Number of WQMS - 44

- Godavari Upper - Godavari, Darna, Kadwa, Kham, Shivna and Harsool dam
- Godavari Middle - Godavari, Bindusara, Sukhna and Purna
- Manjra - Godavari, Manjra

Godavari 2 Number of WQMS - 44

- Wardha - Wardha, Penganga, Wena and Morna
- Wainganga - Kolar, Kanhan, Wainganga, Wena, Pill and Nag
- Pranhita and Others

Krishna Number of WQMS - 74

- Bhima Upper - Bhima, Nira, Chandrabhaga, Mutha, Ghod, Indrayani, Pawana, Sina, Vel, Mula-Mutha, Mula
- Krishna Upper - Krishna, Panchganga, Koyna, Urmodi, Venna, Warna

West Flowing Rivers Number of WQMS - 71

- Kalu, Ulhas, Patalganga, Bhatsa, Vashishti, Mithi, Kundlika, Savirtri, Amba, Muchkundi, Kundli, Surya, Tansa, Vaitarna, Balganga, Jog, Jagbudi, Sonpatra
- Nallahs of Rabodi, ColourChem, Sandoz, BPT Navapur, Tarapur MIDC, Pimpal-Paneri, Chikali, Moti, Lowki and Nallah at Alkai Mandir

Saline Number of WQMS - 36

- Creeks of Dahanu, Dandi, Karambavane, Kharekuran, Mahim, Panvel, Sarwali, Savta, Thane, Ulhas, Vashi, Uttan sea, Madvi sea and Navapur sea

Figure No. 6: Classification of the rivers considered under basins and sub basins in the report

Spatial Maps

Sub -basin level maps

Among the 5 major river basins, Narmada basin comprises of just 0.5%[16] of the total area. Hence, the WQMS under this basin were included in the Tapi basin for ease and convenience. The remaining WQMS were divided into the four basins. Since the basins are huge and have many WQMS within them, the sub basin level map was generated in accordance with the data and demarcation published by Central Ground Water Board (CGWB), Ministry of Water Resources Government of India[17]. The images, for the basins of Tapi, Krishna and Godavari, were downloaded and the maps were digitized after geo-referencing them to generate shape (.shp) files

MPCB Regional Office (RO) maps

Maps depicting the jurisdiction of the regional offices of MPCB, were superimposed with district boundaries to generate RO Maps. The peak season water quality index for the stations in each RO have been compiled in this report for the necessary action by the respective RO's of MPCB.

Organizing and presentation of the data sets

The data sets for water quality parameters (temperature, dissolved oxygen, pH, conductivity, BOD, COD, Fecal Coliform and others) for the years 2008 to 2021, were received from MPCB in soft copy. These data sets were organised in spread sheets for further analysis and illustrative presentation. Stock graphs were generated to depict the minimum, maximum, 25th and 75th percentile values along with the mean values observed for parameters- pH, BOD, DO and FC. The standard deviation (SD) values were calculated and have been presented along with the data sets in the spread sheets.

Water Quality Index

A water quality index is a single, comprehensive value that expresses overall water quality of a certain water sample (location and time specific), based on multiple water quality parameters. The objective of developing an index is to simplify the complex water quality parametric data into comprehensive information that is easy to interpret not only for policy makers and scientists, but also for a layman. Assessment of water quality index thus serves as a simple indicator of water quality and provides an overview of the possible problems with the water quality in the region.

In 1970, the National Sanitation Foundation, USA developed the Water Quality Index (NSFWQI), a standardized method for comparing the water quality of various water bodies[18]. NSFWQI is one of the most widely used water quality index in the United States. Nine water quality parameters selected for calculating the index included

[16] Maharashtra Water Resources Regulatory Authority, http://www.mwrra.org/introduction.php?link=wr

[17] Central Ground Water Board, http://cgwb.gov.in/watershed/list-ws.html

[18] http://bcn.boulder.co.us/basin/watershed/wqi_nsf.html

- Dissolved Oxygen (DO)
- Faecal Coliform (FC)
- pH
- Biochemical Oxygen Demand (BOD) (5-day)
- Temperature change (from 1 mile upstream)
- Total phosphate
- Nitrate
- Turbidity
- Total Solids

The expression for calculation the NSFWQI is expressed as;

$$\text{NSFWQI} = \sum_{i=1}^{p} \text{WiIi}$$

Where;

Ii= sub index for i^{th} water quality parameter

Wi= weight (in terms of importance) associated with water quality parameter

P= number of water quality parameters

WQI for surface water

To calculate WQI in the Indian context, the NSF WQI has been modified and relative weights been assigned by CPCB. This ensures uniformity in the WQI assessment across the country, based on the parameters monitored in India under the NWMP. The modified weights as per CPCB are presented in Table No. 9 and the equations used to determine the sub index values are indicated in Table No. 10. Upon determining the Water Quality Index, the water quality is described for easy interpretation. The description used in the report for classifying and the describing the water quality is presented in Table No. 11.

Table No. 9: Modified weights for computation of WQI based on DO, FC, pH and BOD

Parameters	Original Weights from NSF WQI	Modified Weights by CPCB
Dissolved Oxygen (DO)	0.17	0.31
Fecal Coliform (FC)	0.15	0.28
pH	0.12	0.22
BOD	0.1	0.19
Total	0.54	1

Table No. 10: Sub index equation used to calculate NSF WQI for DO, FC, pH and BOD

Water Quality Parameters (units)	Range Applicable	Equation
Dissolved Oxygen (DO)(% Saturation)	0-40	0.18 + 0.66 X % Saturation DO
	40-100	(-13.55) + 1.17 X % Saturation DO
	100-140	163.34 - 0.62 X % Saturation DO
Fecal Coliform (FC) (counts/100 ml)	1 - 10^3	97.2 - 26.6 X log FC
	10^3 - 10^5	42.33 - 7.75 X log FC
	>10^5	2
pH	02 - 05	16.1 + 7.35 X (pH)
	05 - 7.3	(-142.67) + 33.5 X (pH)
	7.3 - 10	316.96 - 29.85 X (pH)
	10 – 12	96.17 - 8.0 X (pH)
	<2, >12	0
BOD (mg/l)	0 – 10	96.67 - 7 X (BOD)
	10 – 30	38.9 - 1.23 X (BOD
	>30	2

Table No. 11: Water Quality Classification and Best Designated use

WQI	Quality classification	Class by CPCB	Class by MPCB	Remarks	Colour code
63 - 100	Good to Excellent	A	A-I	Non Polluted	
50 - 63	Medium to Good	B	Not Prescribed	Non Polluted	
38 - 50	Bad	C	A-II	Polluted	
38 and less	Bad to Very Bad	D, E	A-III, A-IV	Heavily Polluted	

Sample calculation for determining Surface WQI

Month wise WQI was calculated by considering the data availability for all 4 parameters {Biological Oxygen Demand (BOD), Dissolved Oxygen (DO), pH, Fecal Coliform (FC) } In case of data unavailability for any one of the above mentioned parameter , the WQI for that particular month was considered as NA.

Parameters considered in the year 2020-2021 Biological Oxygen Demand (BOD), Dissolved Oxygen (DO), pH, Fecal Coliform (FC)

Station Name	:	Godavari River at Paithan U/s of Paithan Intake pump house			
Station Code	:	2158	Month :	April 2020	
Sub basin	:	Godavari Middle	Basin	:	Godavari
BOD	:	2.4 mg/l	DO	:	6.8 mg/l
FC	:	2.0 MPN/100 ml	pH	:	8.08

Formula

$$NSFWQI = \sum_{i=1}^{p} WiIi$$

Where;

Ii= sub index for water quality parameter

Wi= weight (in terms of importance) associated with water quality parameter

P= number of water quality parameters

Sub index for BOD

BOD value = 2.4 mg/l

Since 2.4 lies in range (0-10), the corresponding formula is used Table No.12

Sub Index (BOD) = 96.67 – 7 X (BOD value)

= 96.67 – 7 X 2.4

= 80 X Modified Weights by CPCB for BOD (Table No.11)

= 80 X 0.19

= 15.52

Sub index for Dissolved Oxygen (DO)

DO value = 6.8 mg/l

DO (saturation %) = 6.8 /6.5 X 100 [6.5 has been taken as constant as per DO vs temp]

= 105

Since 105 lies in range (100-140), the corresponding formula is used from Table No.12

Sub Index (DO) = 163.34 - 0.62 X % Saturation DO

= 163.34 - 0.62 X 105

= 98 X Modified Weights by CPCB for DO (Table No.11)

= 98* 0.31

= 30.38

Sub index for Fecal Coliform (FC)

Fecal Coliform value = 2.0 MPN/100ml

Since 2.0 lies in range (0-10^3), the corresponding formula is used from Table No.12

Sub Index (FC) = 97.2 - 26.6 X log FC

= 97.2-26.6 X log 2

= 89 X Modified Weights by CPCB for FC (Table No.11)

= 89 X 0.28

= 25

Sub Index for pH

pH value = 8.08

Since 8.08 lies in range (7.3-10), the corresponding formula is used from Table No.12

Sub Index (pH) = 316.96 - 29.85 X (pH)

= 316.96-29.85 X 8.08

= 76 X Modified Weights by CPCB for pH (Table No.11)

= 76 X 0.22

= 17

WQI of Godavari River at Paithan U/s of Paithan Intake pump house

WQI = ∑ (sub –index of all parameters)

= ∑ (15.52+30.38+25+17)

= 87.9

Quality Classification: Good to Excellent

WQI for ground water

The status of parameters such as pH, total hardness, Calcium, Magnesium, Chloride, Total Dissolved Solids (TDS), Fluoride, Manganese, Nitrate, Sulphates and so on is assessed once in every six months by MPCB to monitor ground water quality. To determine the WQI for ground water, these parameters are assigned specific weights based on the stringency of the parameters and its relative importance in the overall quality of water for drinking purposes[19]. The relative weights of the same have been determined (Table No. 12) for the parameters monitored and recorded by MPCB for the water samples monitored in the year 2020-21. These weights indicate the relative harmfulness when present in water. The maximum weight assigned is 5 and minimum is 1.

Table No. 12: Relative Weight of chemical parameters used for calculating WQI for Ground water

Chemical Parameters	Indian Standards for Drinking Water Quality[20]		Weight (Wi)			
	Acceptable Limit	Permissible Limits	Weight	Relative Weight	Weight w/o Iron, Manganese and Bicarbonate	Relative Weight w/o Iron, Manganese and Bicarbonate
pH	6.5-8.5	No relaxation	4	0.09756	4	0.13333
Total Hardness (TH)	300	600	2	0.04878	2	0.06667
Calcium	75	200	2	0.04878	2	0.06667
Magnesium	30	No relaxation	2	0.04878	2	0.06667
Bicarbonate	244	732	3	0.07317	-	-
Chloride	250	1000	3	0.07317	3	0.10000
Total Dissolved Solids (TDS)	500	2000	4	0.09756	4	0.13333
Fluoride	1	1.5	4	0.09756	4	0.13333
Manganese	0.1	0.3	4	0.09756	-	-
Nitrate	45	No relaxation	5	0.12195	5	0.16667
Iron	0.3	No relaxation	4	0.09756	-	-
Sulphate	200	400	4	0.09756	4	0.13333
			41	1	30	1

Source: BIS 10500 and CPCB 2001

[19] C. R. Ramakrishnaiah, Assessment of Water Quality Index for the Groundwater , E-Journal of Chemistry, 2009, 6(2), 523-530; ISSN: 0973-4945

[20] Bureau of Indian Standards, *Draft Indian Standard Drinking Water – Specification*; Second Revision of IS 10500, ICS No. 13.060.20

The relative weight is then computed from the following equation

$$Wi = \frac{wi}{\sum_{i=1}^{n} wi}$$

Where;

Wi = the relative weight

wi = the weight of each parameter

n = number of parameters

In the next step a quality rating scale (qi) for each parameter is assigned by dividing its concentration in each water sample by its respective standard according to the guidelines published by Bureau of Indian Standards (BIS) and the result thus obtained is multiplied by 100.

$$qi = (Ci/Si) \times 100$$

Where;

Qi = quality rating

Ci = the concentration of each chemical parameter in each water sample in mg/L

Si = the Indian drinking water standard for each chemical parameter in mg/L according to the guidelines of the BIS 10500, (2004-2005).

Based on the absolute value of the index determined from the calculations, water quality is classified as presented below in Table No. 13.

Table No. 13: Ground water classification based on the Water Quality Index

WQI Value	Water Quality	Colour code used in this report
<50	Excellent	
50-100	Good water	
100-200	Poor Water	
200-300	Very Very Poor water	
>300	Water Unsuitable for drinking	

Sample Calculation for determining Ground WQI

Month wise WQI was calculated by considering the data availability for all 9 parameters pH,Calcium,Chlorides,Fluoride,Magnesium,Nitrate,Sulphate,Total Dissolved Solids,Total Hardness } In case of data unavailability for any one of the above mentioned parameter , the WQI for that particular month was considered as NA.

Station name : Dug well at Pandarpur, Gangapur, Aurangabad

Station code	: 1993			Month :	April
Calcium	: 158 mg/l	Chlorides	: 280 mg/l	Fluoride: 0.81	
Magnesium	: 122 mg/l	Nitrate	: 0.52 mg/l	Sulphate:350 mg/l	
pH	: 7.8	TDS	: 1040 mg/l	TH	: 280 mg/l

Formula

$$WQI = \sum_{i=1}^{n=9} qi.wi$$

Where;

Wi = relative weight

qi = quality rating

wi = relative of each weight

$$qi = (Ci/Si) \times 100$$

Where;

Ci = the concentration of each chemical parameter in each water sample in mg/l

Si = the Indian drinking water standard for each chemical parameter in mg/l according to the guidelines of the BIS 10500, (2004-2005)

Parameters considered for ground water monitoring: pH, Total hardness, Calcium, Magnesium, Chloride, Total Dissolved Solids, Fluoride and Sulphate.

*The relative weight (wi) without iron, manganese and Bicarbonate has been considered in calculation.

Sub Index for pH

pH = 7.8

Sub index (pH) = Concentration /Standard X 100

= 7.8/7.5 X 100

= 104 X relative weight (Table no. 14)

= 104 X 0.13333

= 13.86

Sub index for Total hardness

Total hardness = 280

Sub index (TH) = Concentration /Standard X 100

= 280/ 300*100

= 93 X relative weight (Table no. 14)

= 93 X 0.06667

= 6.2

Sub index Calcium

Calcium = 158

Sub index (Calcium) = Concentration /Standard *100

= 158/ 75 X 100

= 210 X relative weight (Table no. 13)

= 210X 0.0666

= 13.9

Sub index for Chloride

Chloride = 280

Sub index (Chloride) = Concentration /Standard X 100

= 280/ 250 X 100

= 112 X relative weight (Table no. 14)

= 112 X 0.1

= 11.2

Sub index for Fluoride

Fluoride = 0.81

Sub index (Fluoride) = Concentration /Standard X 100

= 0.81/ 1 X 100

= 81X relative weight (Table no. 13)

= 81 X 0.1333

= 10.79

Sub index for Magnesium

Magnesium = 122

Sub index (Mg) = Concentration/ Standard X 100

= 122/ 30*100

= 406.66 X relative weight (Table no. 14)

= 406.66 X 0.06667

= 27.10

Sub index for Nitrate

Nitrate = 0.52

Sub index (Nitrate) = Concentration/ Standard X 100

= 0.52/45 *100

= 1.15 X relative weight (Table no. 14)

= 1.15 X 0.16667

= 0.19

Sub index for Sulphate

Sulphate = 350

Sub index (Sulphate) = Concentration/ Standard X 100

= 350/ 200 X 100

= 175 X relative weight (Table no. 13)

= 175X 0.13333

= 23.3

Total Dissolved Solids

Total Dissolved Solids= 1040

Sub index (TDS) = Concentration/ Standard X 100

= 1040/ 500 X 100

= 208 X relative weight (Table no. 14)

= 193.6 X 0.13333

= 27.66

WQI of Dug well at Pandarpur, Gangapur, Aurangabad

WQI = ∑ (sub –index of all parameters)

= ∑ (13.86 + 6.2 + 13.9+ 11.2 + 10.79+ 27.10 + 0.19+ 23.3+ 27.6)

= 134.14

Quality Classification: Poor Water

CAGR: Compound Annual Growth Rate

Compound Annual Growth Rate= ((End value/Start value) ^ (1/Number of intervals))- 1

Number of intervals = (Number of observations)-1 *100

Sample Calculation for determining CAGR

Example Station code: 2177
WQI of 2020-2021 (End value): 79; WQI of 2011-12 (Start value) 67; Number of intervals 10

CAGR % = ((End value/Start Value) ^1/Number of intervals)) - 1 X 100

= ((79/67) ^ (1/10)-1 *100 = 1.63% = Quality Improved

Surface Water Quality

Surface Water is any body of water above ground that includes streams, lakes, rivers, creeks, reservoirs wetlands and sea/ocean. There are three types of Surface water namely perennial or permanent (surface water which persists throughout the year), ephemeral or semi-permanent (water exists only for some part of the year) and man-made (water which is present in artificial structures such as dams, holding ponds and constructed wetlands. Surface water plays a very important role in the hydrological cycle in which it gets continuously replenished by precipitation and depletes through discharge to the oceans, evaporation and groundwater recharge. Apart from drinking purposes, this source of freshwater gets utilized for many other day to day purposes such as industrial and agricultural activities, sanitation and so on. Apart from this, these water resources provide habitat for numerous plant and animal species thereby supporting the entire ecosystem.

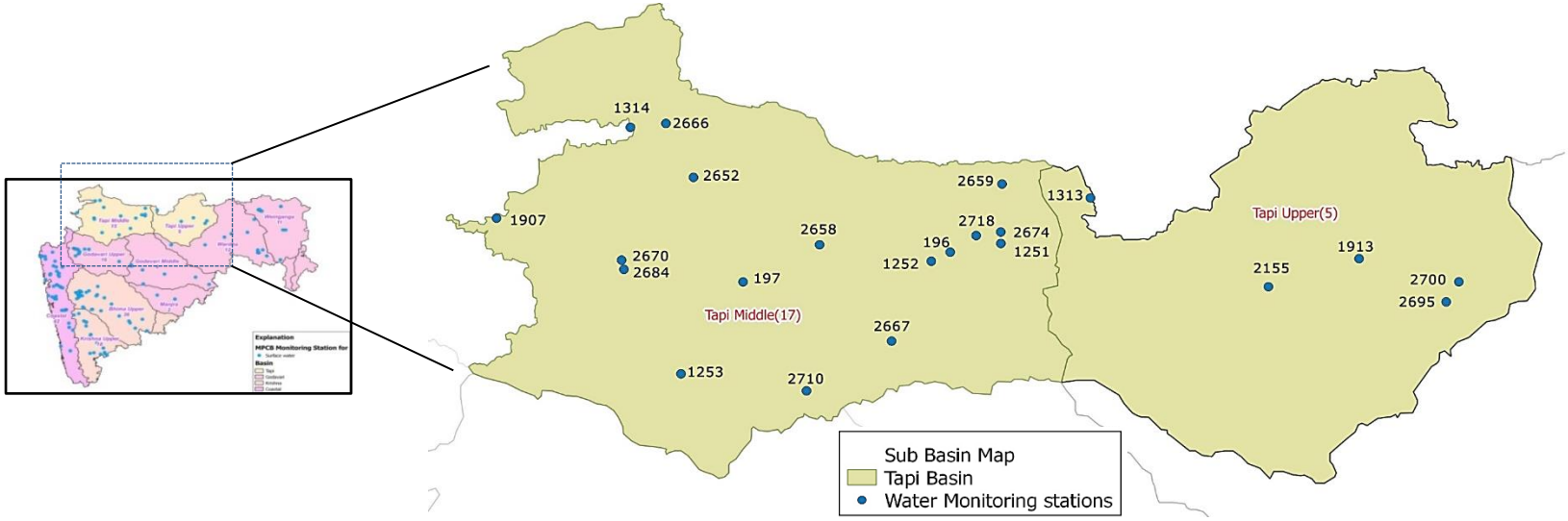
To regularly monitor and record the overall water quality (SW), MPCB has created a network of WQMS. These WQMS, installed in specific locations of a particular water resource, continuously monitor and record the overall water quality. The total WQMS for year 2020-21 are represented in the Table No. 14. Water quality is monitored per month across all the stations. The spatial presence of the stations is presented basin wise in the respective sections.

Table No. 14: List of monitoring stations across different type of water bodies under MPCB

Water Quality monitoring stations	
Water Bodies	**2020-21**
Rivers	176
Sea and Creek	36
Nalla	12
Dams	4
Total	**228**

The following section presents the intra as well as inters basin performance and WQI of major river basins (Tapi, Godavari, Krishna and West flowing rivers) and coastal basin (Sea/Creek). Further, it also represents level of parameters (pH, DO, BOD and FC) in graphical format recorded by all 228 surface WQMS of MPCB.

Tapi Basin



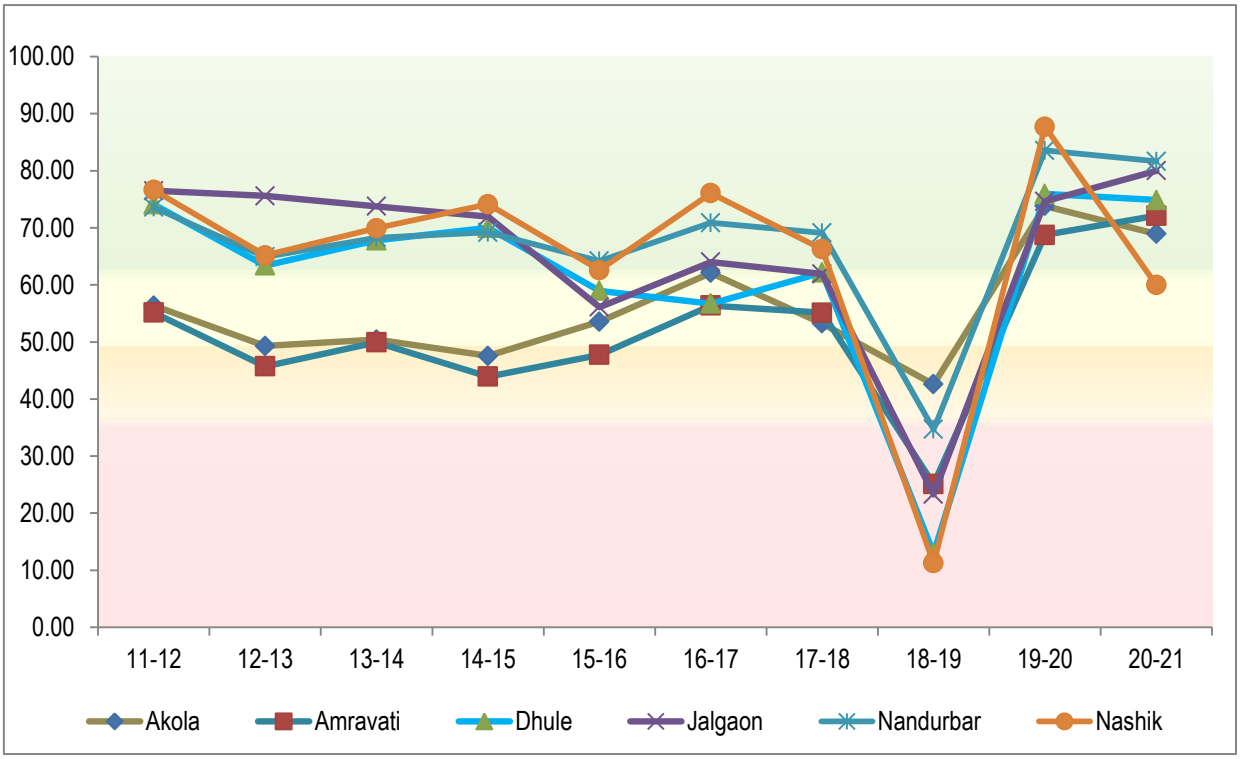
Map No. 4: Network of surface water quality monitoring stations in Tapi basin

With a total length (from origin to outfall into the Arabian Sea) of about 724 km, the Tapi River is the second largest westward draining interstate river of the peninsula. Tapi River has its origin in the state of Madhya Pradesh which covers a distance of about 282 km followed by 228 km in Maharashtra and 214 km in Gujarat state where it meets the Arabian Sea. Out of 14 tributaries, 4 tributaries namely the Vaki, the Gomai. the Arunavati, and the Aner join the Tapi river from the right bank whereas from the left bank 10 tributaries namely the Nesu, the Arunavati, the Buray, the Panjhra, the Bori, the Girna, the Waghur, the Purna, the Mona and the Sipna drain into the main channel. Tapi basin's total drainage area is about 65,145 sq. km out of which the major part of about 66.19% of the total area is agricultural land while forest area and waterbodies cover about 25% and 2.99% of the total basin area respectively[21].

A list of the station and the codes has been provided below in. Table No. 15

[21] https://indiawris.gov.in/downloads/Tapi%20Basin.pdf

Tapi Basin (Intra Basin analysis)



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure No. 7: Trend of annual average WQI across districts of Tapi basin

Note: This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data maybe analyzed to pin point the most affected and polluted patches of rivers in that district.

The Intrabasin performance of the Tapi basin across 6 districts of the state is illustrated in Figure No. 7. The Annual average WQI was found to be in the 'Good to Excellent' category in all districts except Nashik (59.97) where the WQI was found to be in the 'Medium to Good' category. Out of the remaining 5 districts, 2 districts namely Amaravati (68.7 in 2019-20 to 72.1 in 2020-21) and Jalgaon (74.6 in 2019-20 to 79.9 in 2020-21) showed improvement in annual average WQI. On the other hand, there was a slight decrease in WQI was recorded by stations installed at districts of Akola (73.8 in 2019-20 to 68.9 in 2020-21), followed by Dhule (75.9 in 2019-20 to 74.8 in 2020-21) and Nandurbar (83.5 in 2019-20 to 81.6 in 2020-21). Stations installed at Nashik showed a considerable decrease with WQI recorded under the Medium to Good category compared to Good to Excellent in the previous year.

Note: Around 49% of the observations in Tapi basin were recorded under 'Dry' category

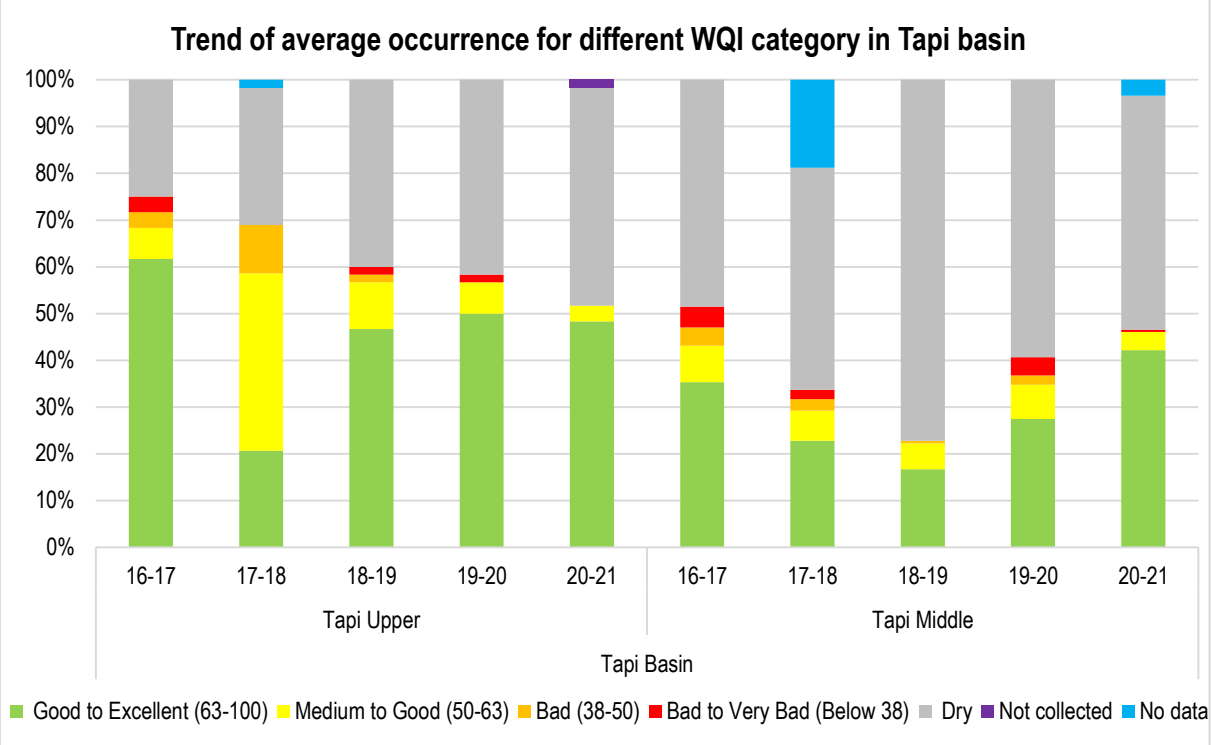
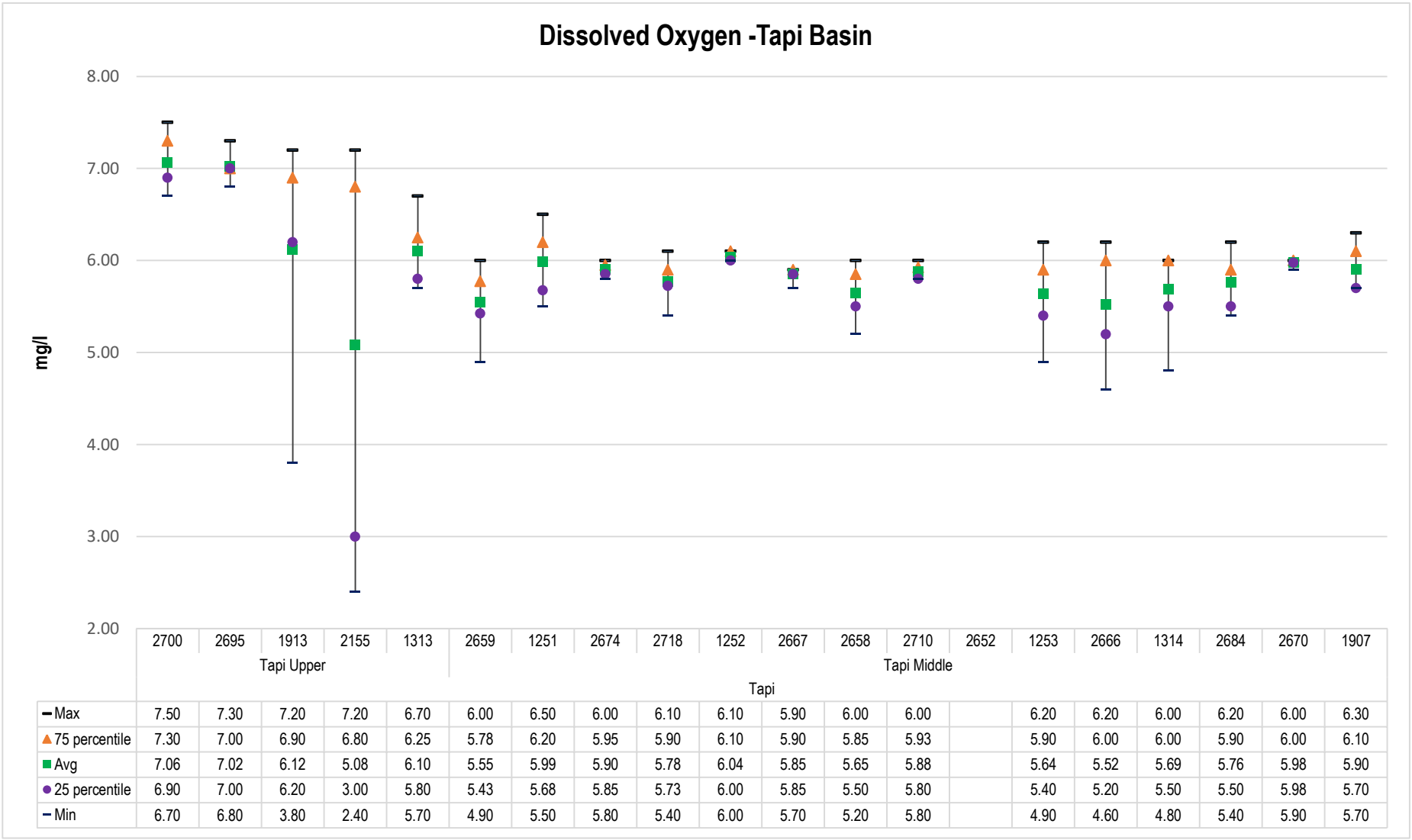


Figure No. 8: Trend in Average occurrence for different category of WQI in Tapi Basin

The Interbasin analysis of the Tapi basin is depicted in Figure No. 8. In Tapi Upper, the total percentage share of observations coming under the category of the 'Good to Excellent' was found to be around 48% whereas 3.3% observations were recorded under the 'Medium to Good' WQI category.

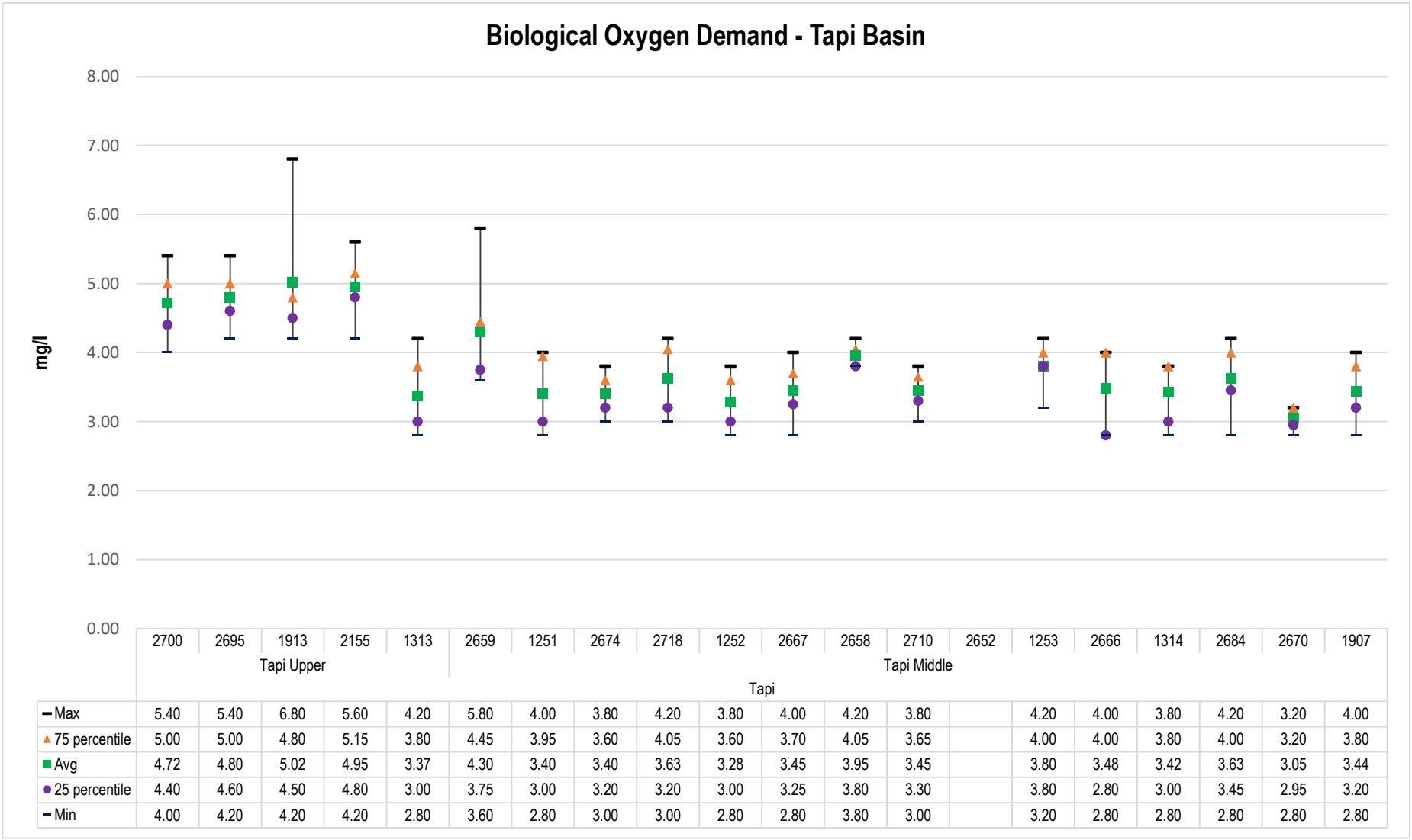
In the case of Tapi Middle, the total share of the 'Good to Excellent' category observations increased from about 27.4% (2019-20) to about 42.1% in 2020-21 whereas 'Medium to Good' category observations decreased from 7.3% (2019-20) to about 3.9% in 2020-21. A similar trend was observed in the case of observations coming under the 'Bad to Very Bad' category. The total share of observations under this category was decreased from about 3.9% (2019-20) to about 0.5% in 2020-21.

The total share of observations recorded as 'Dry' was found to be around 46.6% in the Tapi Upper and about 50% in Tapi Middle. Around 1.6% of observations in the Tapi Upper were recorded as 'Not Collected' while 3.43% of observations in the Tapi Middle was found to be in the 'No Data' Category.



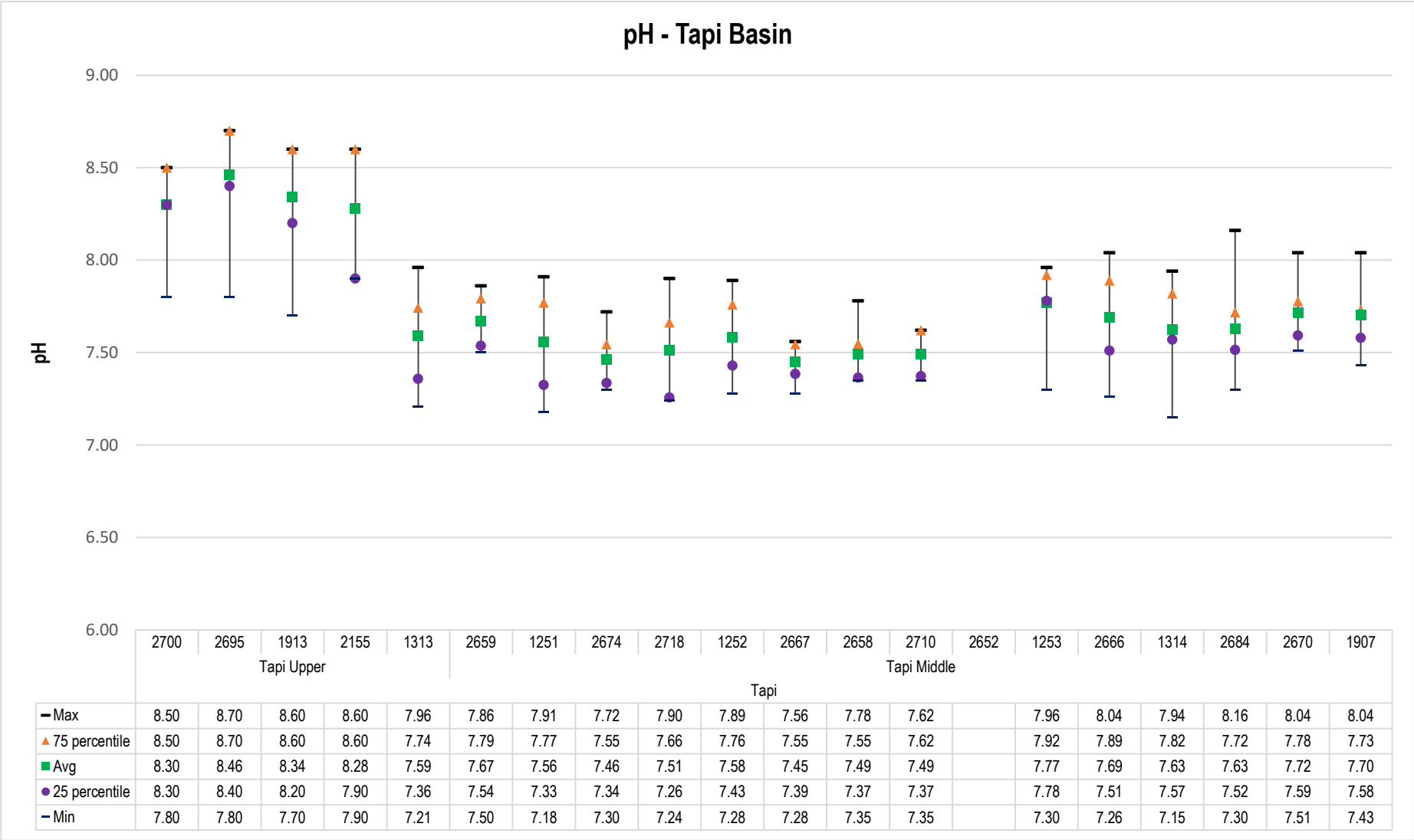
	2700	2695	1913	2155	1313	2659	1251	2674	2718	1252	2667	2658	2710	2652	1253	2666	1314	2684	2670	1907
Max	7.50	7.30	7.20	7.20	6.70	6.00	6.50	6.00	6.10	6.10	5.90	6.00	6.00		6.20	6.20	6.00	6.20	6.00	6.30
75 percentile	7.30	7.00	6.90	6.80	6.25	5.78	6.20	5.95	5.90	6.10	5.90	5.85	5.93		5.90	6.00	6.00	5.90	6.00	6.10
Avg	7.06	7.02	6.12	5.08	6.10	5.55	5.99	5.90	5.78	6.04	5.85	5.65	5.88		5.64	5.52	5.69	5.76	5.98	5.90
25 percentile	6.90	7.00	6.20	3.00	5.80	5.43	5.68	5.85	5.73	6.00	5.85	5.50	5.80		5.40	5.20	5.50	5.50	5.98	5.70
Min	6.70	6.80	3.80	2.40	5.70	4.90	5.50	5.80	5.40	6.00	5.70	5.20	5.80		4.90	4.60	4.80	5.40	5.90	5.70

Figure No. 9: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Tapi basin



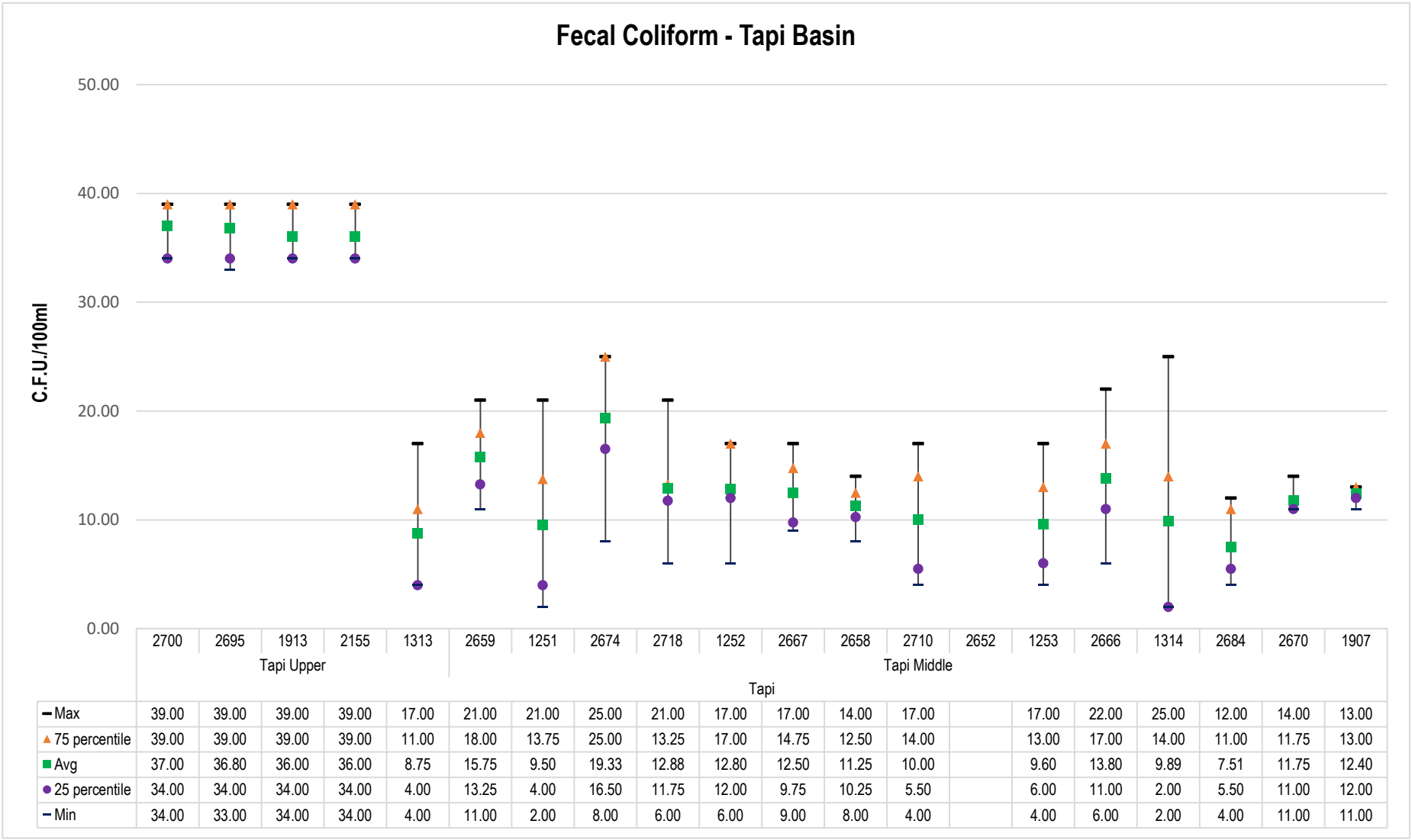
	2700	2695	1913	2155	1313	2659	1251	2674	2718	1252	2667	2658	2710	2652	1253	2666	1314	2684	2670	1907
	Tapi Upper					Tapi Middle														
	Tapi																			
Max	5.40	5.40	6.80	5.60	4.20	5.80	4.00	3.80	4.20	3.80	4.00	4.20	3.80		4.20	4.00	3.80	4.20	3.20	4.00
75 percentile	5.00	5.00	4.80	5.15	3.80	4.45	3.95	3.60	4.05	3.60	3.70	4.05	3.65		4.00	4.00	3.80	4.00	3.20	3.80
Avg	4.72	4.80	5.02	4.95	3.37	4.30	3.40	3.40	3.63	3.28	3.45	3.95	3.45		3.80	3.48	3.42	3.63	3.05	3.44
25 percentile	4.40	4.60	4.50	4.80	3.00	3.75	3.00	3.20	3.20	3.00	3.25	3.80	3.30		3.80	2.80	3.00	3.45	2.95	3.20
Min	4.00	4.20	4.20	4.20	2.80	3.60	2.80	3.00	3.00	2.80	2.80	3.80	3.00		3.20	2.80	2.80	2.80	2.80	2.80

Figure No. 10: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Tapi basin



	2700	2695	1913	2155	1313	2659	1251	2674	2718	1252	2667	2658	2710	2652	1253	2666	1314	2684	2670	1907
	Tapi Upper					Tapi Middle														
	Tapi																			
Max	8.50	8.70	8.60	8.60	7.96	7.86	7.91	7.72	7.90	7.89	7.56	7.78	7.62		7.96	8.04	7.94	8.16	8.04	8.04
75 percentile	8.50	8.70	8.60	8.60	7.74	7.79	7.77	7.55	7.66	7.76	7.55	7.55	7.62		7.92	7.89	7.82	7.72	7.78	7.73
Avg	8.30	8.46	8.34	8.28	7.59	7.67	7.56	7.46	7.51	7.58	7.45	7.49	7.49		7.77	7.69	7.63	7.63	7.72	7.70
25 percentile	8.30	8.40	8.20	7.90	7.36	7.54	7.33	7.34	7.26	7.43	7.39	7.37	7.37		7.78	7.51	7.57	7.52	7.59	7.58
Min	7.80	7.80	7.70	7.90	7.21	7.50	7.18	7.30	7.24	7.28	7.28	7.35	7.35		7.30	7.26	7.15	7.30	7.51	7.43

Figure No. 11: Trend of pH levels recorded at WQMS at Tapi basin



	2700	2695	1913	2155	1313	2659	1251	2674	2718	1252	2667	2658	2710	2652	1253	2666	1314	2684	2670	1907
Max	39.00	39.00	39.00	39.00	17.00	21.00	21.00	25.00	21.00	17.00	17.00	14.00	17.00		17.00	22.00	25.00	12.00	14.00	13.00
75 percentile	39.00	39.00	39.00	39.00	11.00	18.00	13.75	25.00	13.25	17.00	14.75	12.50	14.00		13.00	17.00	14.00	11.00	11.75	13.00
Avg	37.00	36.80	36.00	36.00	8.75	15.75	9.50	19.33	12.88	12.80	12.50	11.25	10.00		9.60	13.80	9.89	7.51	11.75	12.40
25 percentile	34.00	34.00	34.00	34.00	4.00	13.25	4.00	16.50	11.75	12.00	9.75	10.25	5.50		6.00	11.00	2.00	5.50	11.00	12.00
Min	34.00	33.00	34.00	34.00	4.00	11.00	2.00	8.00	6.00	6.00	9.00	8.00	4.00		4.00	6.00	2.00	4.00	11.00	11.00

Figure No. 12: Trend of Fecal Coliform levels recorded at WQMS at Tapi basin

Water Quality Index for WQMS in Tapi Basin

April					83.96		80.87												
May					82.20														
June					78.90														
July	75.35	76.13	78.58	73.42	85.47		84.98		83.17			82.05					78.45			
August	72.60	72.03	71.41		84.12	82.02	85.40	80.17	82.89	81.85	81.98	81.95	80.99		62.98	84.91	79.89	82.04	82.48	83.54
September	71.23	70.15	58.05	53.32	81.29	69.87	75.64	77.85	77.79	80.77	80.83	75.41	80.62			75.34	80.71	75.14	79.23	78.11
October	71.35	69.00	71.24	70.87	86.25	78.30	85.05	86.56	82.24	85.10	85.74	82.27	86.34		64.48	78.12	79.91	78.83	83.07	78.54
November	72.56	70.68	71.19	72.50	79.60	78.49	85.69		77.39	85.43	80.51		84.72		57.26	84.96	86.47	82.00	82.35	79.07
December					86.74		81.70		81.27	80.25					60.68	69.65	74.90	86.74		84.47
January					85.96		84.86		83.00						54.47		86.49	84.06		
February					87.89		91.77		80.76								86.90	87.45		
March					83.71		84.37										85.53	81.14		
Station code	2700	2695	1913	2155	1313	2659	1251	2674	2718	1252	2667	2658	2710	2652	1253	2666	1314	2684	2670	1907
Sub Basin	Tapi Upper					Tapi Middle														
Basin	Tapi																			

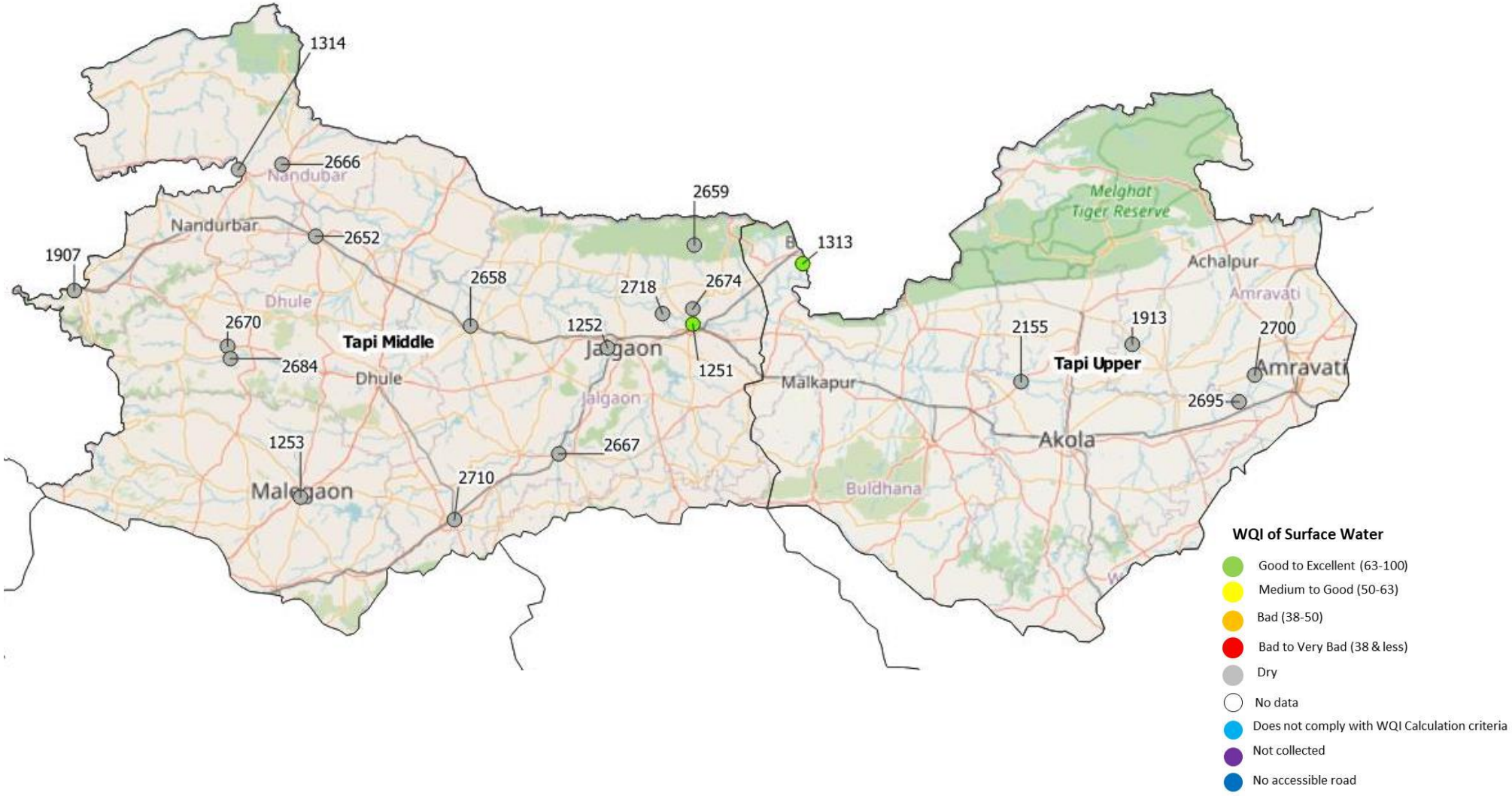
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

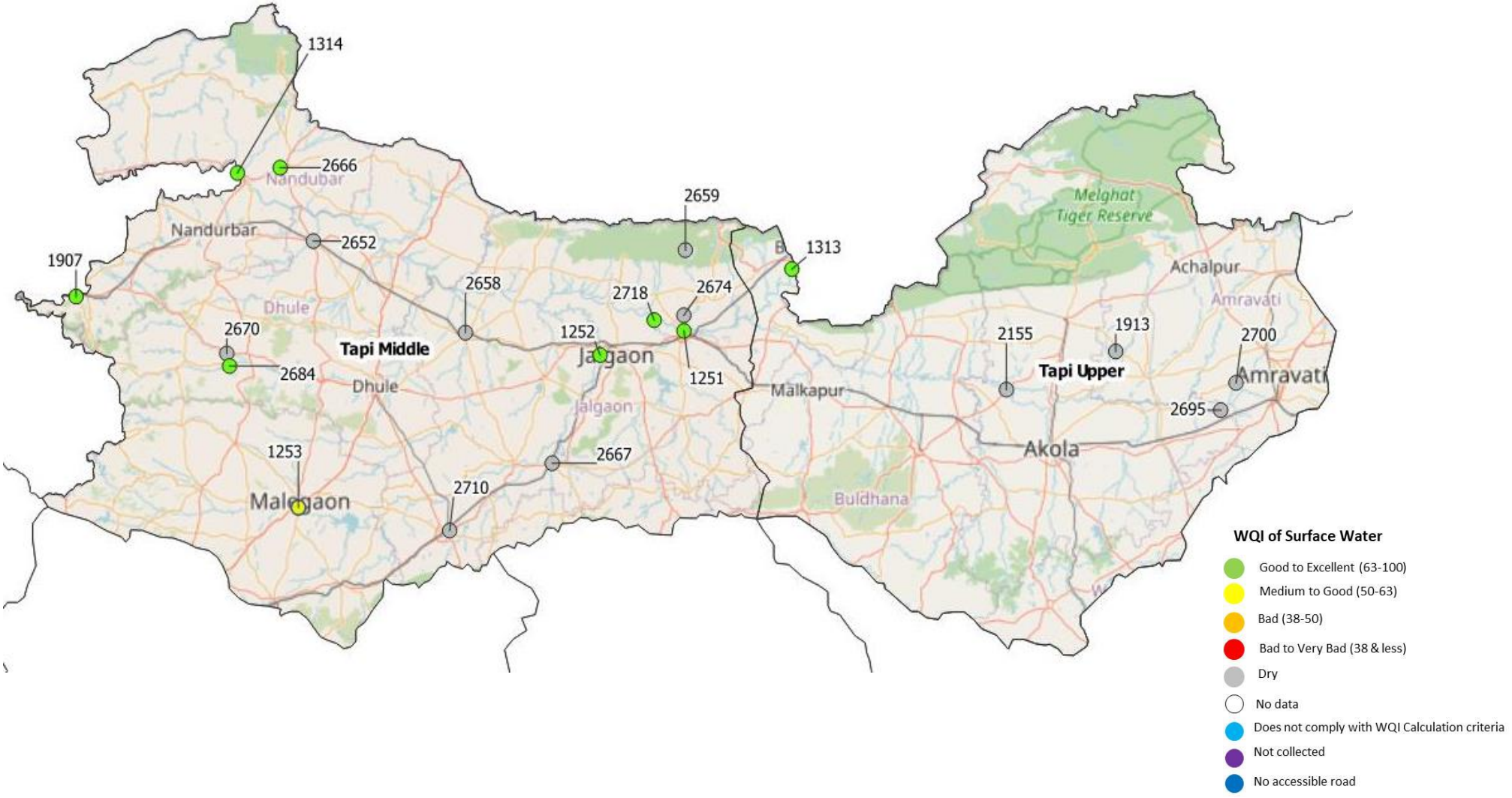
Table No. 15: Surface water quality monitoring stations in Tapi basin

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	2700	Purna	Purna near Achalpur-Amravati Road Bridge, Asegaon	Asegaon	Chandur bazaar	Amravati
NWMP	2695	Pedhi	Pedhi near Road Bridge at Dadhi-Pedhi village	Asegaon	Chandur Bazar	Amravati
NWMP	1913	Purna	Purna at Dhupeshwar at U/s of Malkapur Water works	Malkapur	Akola	Akola
NWMP	2155	Purna	Purna at D/s of confluence of Morna & Purna at Andhura village	Andura	Balapur	Akola
NWMP	1313	Tapi	Tapi at Ajnad	Ajnad	Raver	Jalgaon
NWMP	2659	Burai	Burai before confluece to Tapi	Mukudas	Dhule	Dhule
NWMP	1251	Tapi	Tapi at Bhusawal	Bhusawal Railway Colony	Bhusawal	Jalgaon
NWMP	2674	Mor	Mor near Padalshe	Padalashe	Jalgaon	Jalgaon
NWMP	2718	Waghur	Waghur at Sakegaon before Confluence with Tapi	Sakegaon	Jalgaon	Jalgaon
NWMP	1252	Girna	Girna at Jalgaon at intake of Girna pump house	Girna pump house area	Jalgaon	Jalgaon
NWMP	2667	Hiwara	Hiwara D/s of Pachora	Pachora	Jalgaon	Jalgaon
NWMP	2658	Bori	Bori D/s of Amalner	Amalner	Jalgaon	Jalgaon
NWMP	2710	Titur	Titur D/s of Chalisgaon	Chalisgaon	Jalgaon	Jalgaon
NWMP	2652	Amravati	Amravati D/s of Dondaicha	Dondaicha	Dhule	Dhule
NWMP	1253	Girna	Girna at Malegaon at Malegaon road bridge	Malegaon	Malegaon	Nashik
NWMP	2666	Gomai	Gomai D/s of Shahada	Shahada	Dhule	Dhule
NWMP	1314	Tapi	Tapi at Ubad village near Gujrat border	Ubad	Shahada	Nandurbar
NWMP	2684	Panjhra	Panjhra near Panzarakan SSK Ltd	Panjhre	Dhule	Dhule
NWMP	2670	Kan	Kan near Sakri water works	Sakri	Dhule	Dhule
NWMP	1907	Rangavali	Rangavali at D/s of Navapur near Rangavali bridge	Navapur	Navapur	Nandurbar

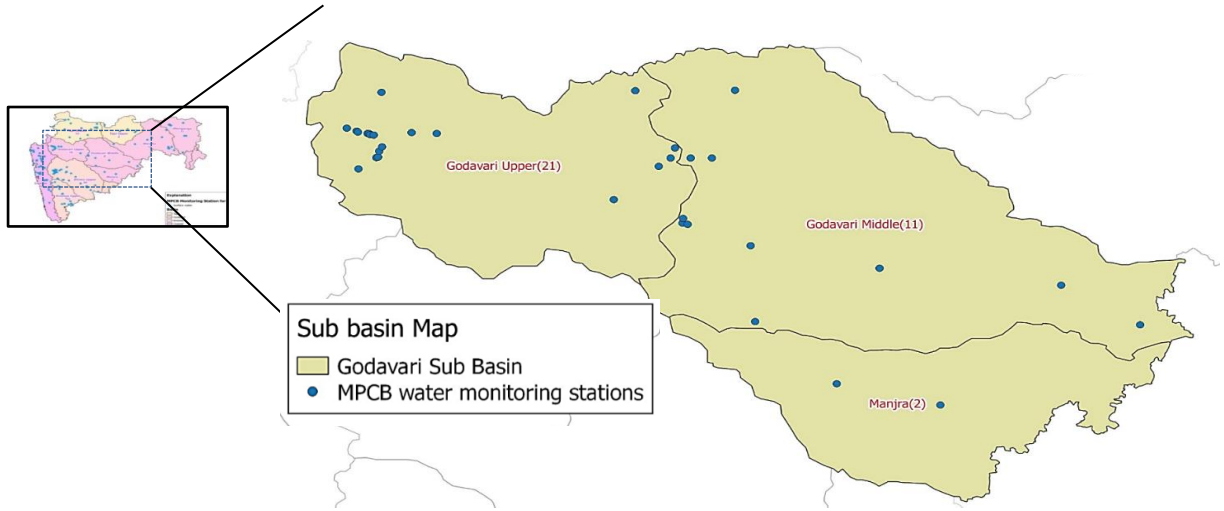
Spatial map of Surface WQI at Tapi Basin (April -2020)



Spatial map of Surface WQI at Tapi Basin (December-2020)



Godavari Basin (1 of 2): Godavari upper, Godavari Middle and Manjra Sub basin



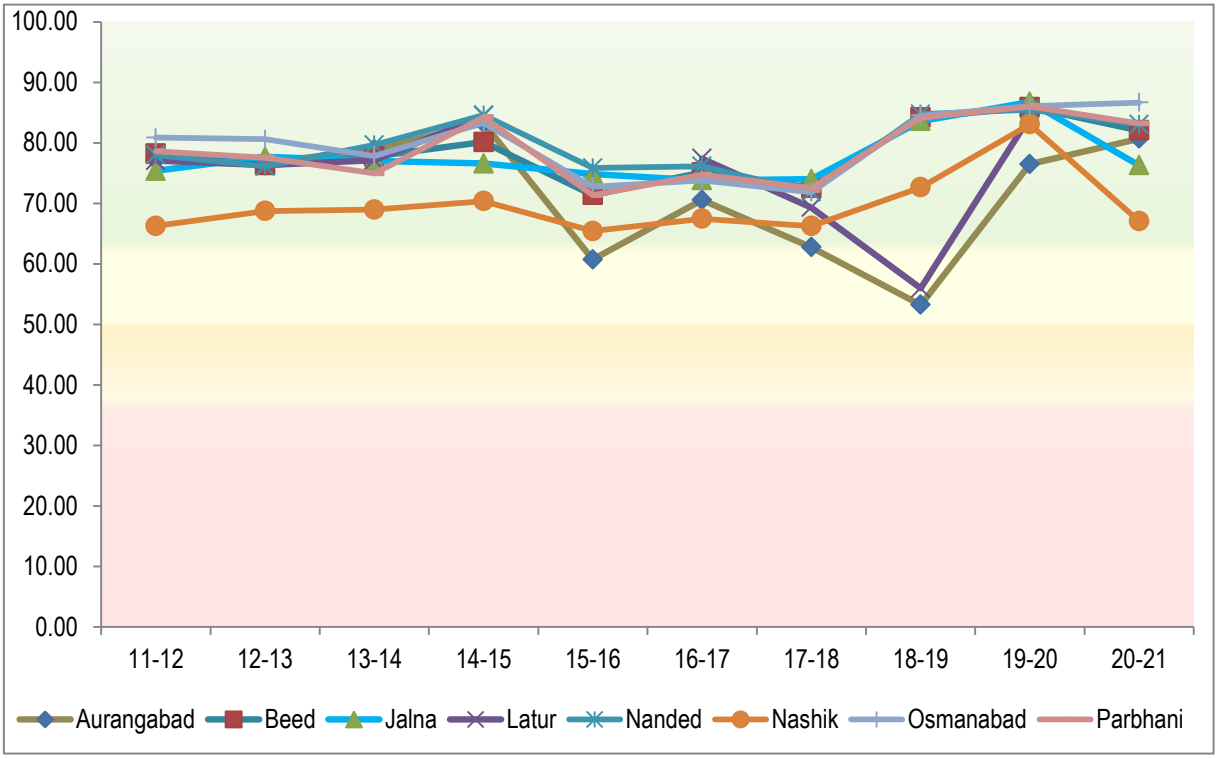
Map No. 5: Network of surface water quality monitoring stations in Godavari basin 1 of 2 –Godavari upper, Godavari middle and Manjra Sub basin

Also known as the Dakshin Ganga, the Godavari River is the largest river in peninsular India and possesses the second largest basin after the Ganga River. The total basin accounts for about 9.50% of the total geographical area. With a total length of about 1465 km, the main river with its flow creates an interstate boundary between the states of Telangana - Maharashtra and Telangana - Chattisgarh. The river finally meets the Bay of Bengal (Andhra Pradesh)[22] The principal tributaries includes the Pravara, the Purna, the Manjira, the Penganga, the Wardha, the Wainganga, the Pranhita, the Kinnersani, the Sabari, the Indravati, the Kolab and the Machkund[23]. In Maharashtra state, the Godavari basin gets divided into 6 sub basins namely Godavari Upper, Godavari middle, Manjra, Wardha, Wainganga and Pranhita. For analysis purposes, these sub-basins have been categorized into two, Godavari 1 Basin comprising of Godavari Upper, Godavari Middle and Manjra sub-basin and Godavari 2 covering Wardha, Wainganga, Indravati and Pranhita.

[22] http://grmb.gov.in/grmb/basin

[23] http://www.sakti.in/godavaribasin/tributaries.htm

Godavari Basin (1 of 2) (Intra Basin analysis)



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure No. 13: Trend of annual average WQI across districts of Godavari basin (1 of 2)

Note: This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data maybe analyzed to pin point the most affected and polluted patches of rivers in that district

The intrabasin performance and annual average WQI recorded by WQMS across all 8 districts of the Godavari basin (1 of 2) are illustrated graphically in Figure No. 13. These 8 districts include Auranagabad, Beed, Jalna, Latur, Nanded, Nashik, Osmanabad and Parbhani.

In 2020-21, all districts except Latur recorded annual average WQI in the 'Good to Excellent' category. Though in the 'Good to Excellent' category, WQMS was installed at only 2 districts namely Aurangabad (76.4 in 2019-20 to 80.6 in 2020-21) and Osmanabad (84.5 in 2019-20) to 86.0 in 2020-21) showed an increasing trend in WQI. A slight decrease in annual average WQI was recorded by WQMS of Beed (85.9 to 82.0) followed by Nanded (85.4 to 83.0) and Parbhani (86.0 to 83.2) whereas a considerable decrease was recorded by WQMS installed at districts of Jalna (86.7 to 76.2) followed by Nashik (83.0 to 67.0).

Note: No WQI was calculated for Latur district as all the observations were found to be under the dry category.

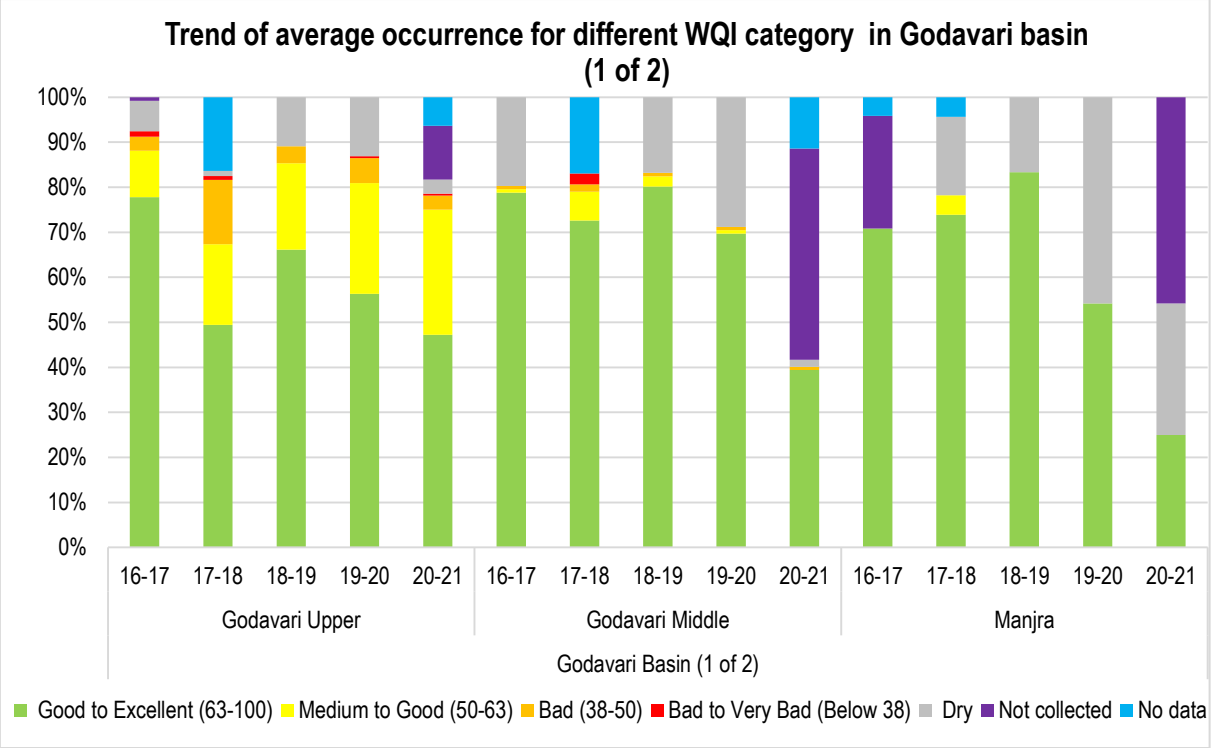


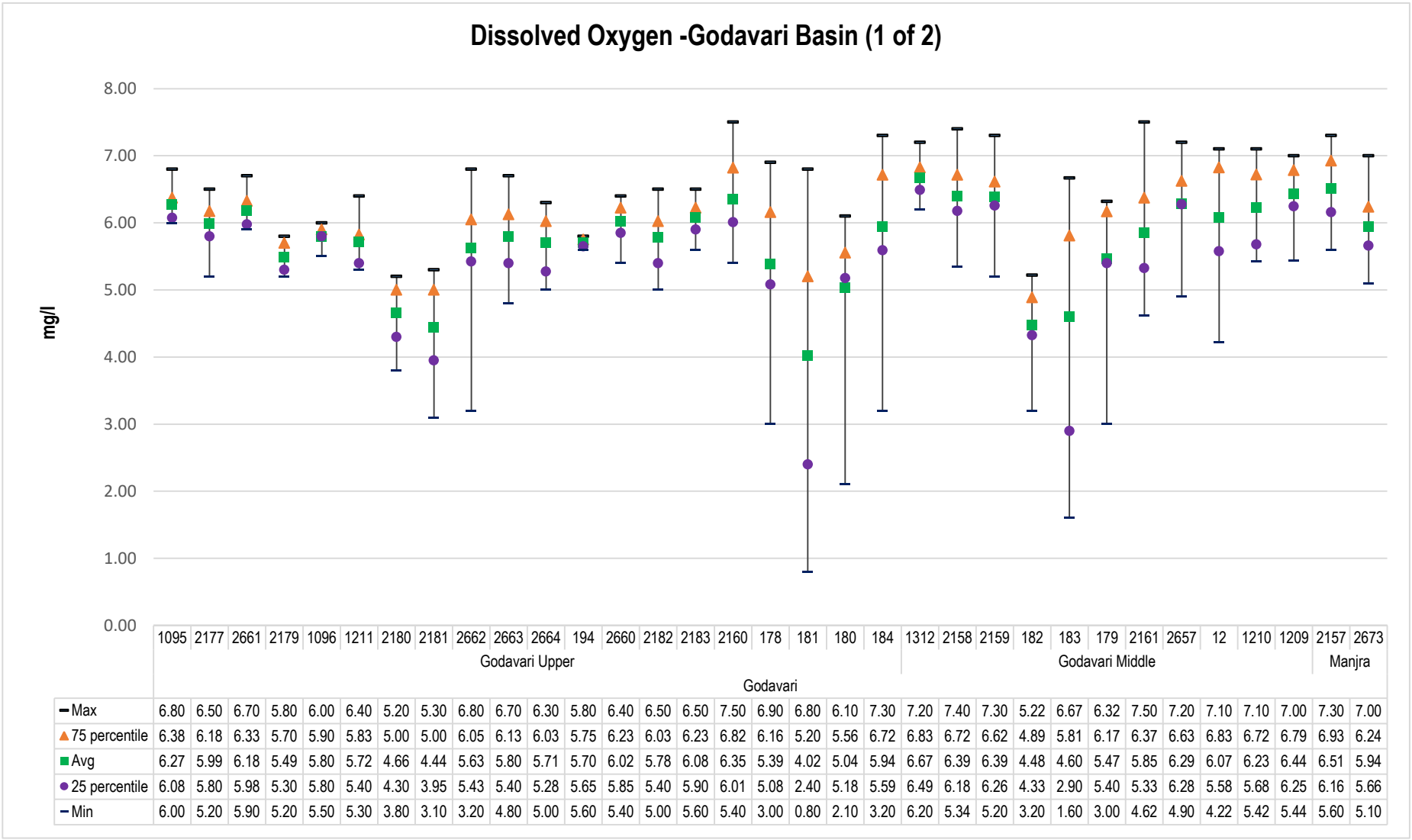
Figure No. 14: Trend of average occurrence for different category of WQI in Godavari basin (1 of 2)

Out of 34 Surface Water Quality Monitoring Stations installed in the Godavari basin, 21 WQMS are installed at the Godavari Upper, 11 at the Godavari Middle and only 2 WQMS are installed at the Manjra sub basin. The list of stations and their respective codes are listed below in Table No. 16 and Table No. 17. Figure No. 14 illustrates the interbasin performance of the Godavari basin (1 of 2) for the five consecutive years (2016-17 to 2020-21).

In the Godavari Upper, compared to 2019-20, the total share of observations coming under the 'Good to Excellent' WQI category has decreased from about 56.3% to about 47.2%. Similar trend was observed in the case of 'Bad' category observations (5.5% to about 3.1% in 2020-21.). The share of 'Medium to Good' category observations increased slightly from about 24.6% in 2019-20 to about 27.7% in 2020-21. The share of 'Dry', 'Not collected' and 'No Data' category observations were found to be about 3.1%, 11.9% and 6.3% respectively.

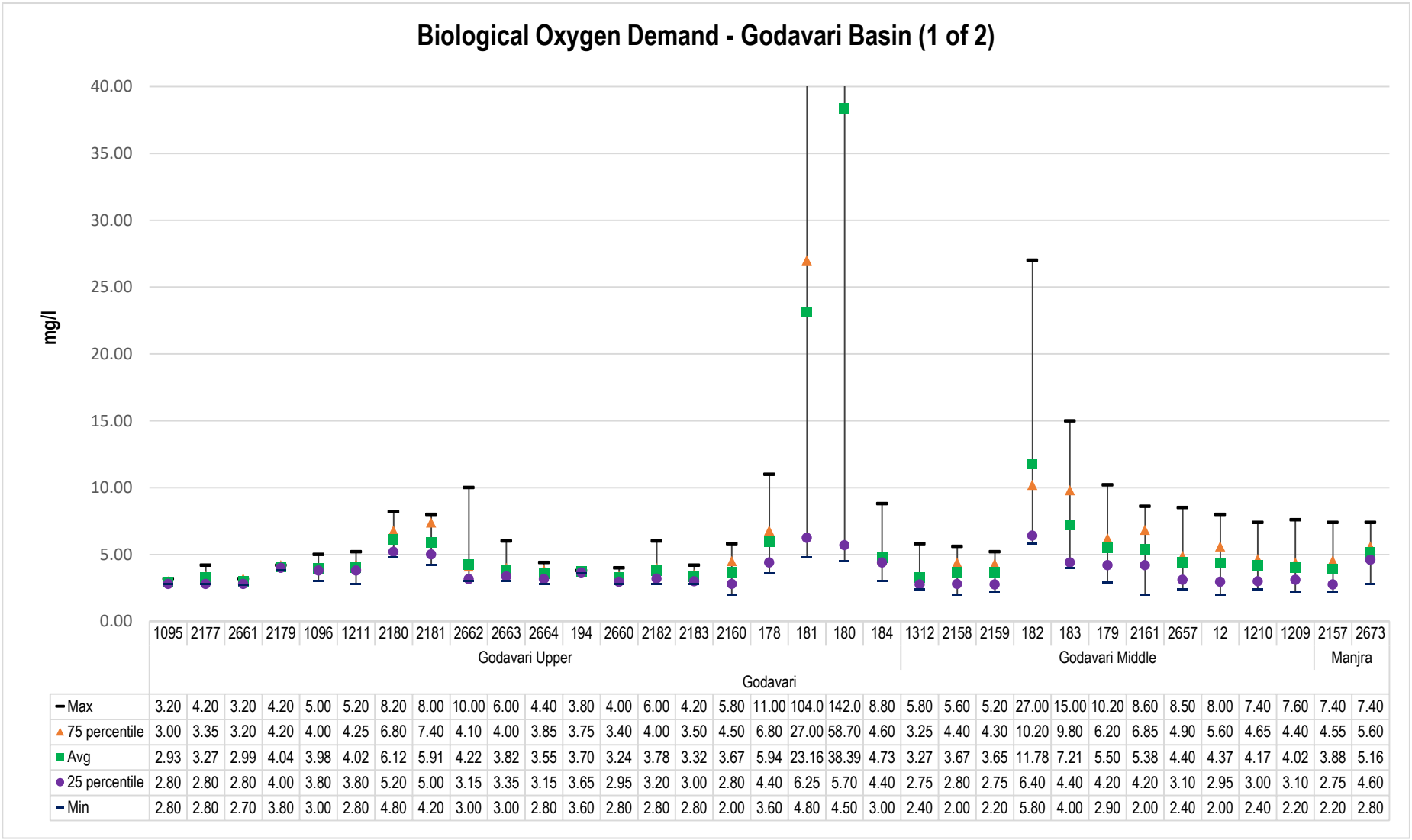
In case of the Godavari Middle, the total share of observations in 'Good to Excellent' category decreased considerably from about 69.7% in 2019-20 to about 39.4% in 2020-21. This may be due to the reason that about 47% of the total observations were found to be in category of Not Collected. Similat to the Godavari Upper, Godavari Middle too recorded observations under the 'Dry' (~1.5%) and 'No Data' (~11.36%).

The Manjra sub basin too, recorded a similar trend like the Godavari Middle. The total share of 'Good to Excellent' category observations decreased from about 54.1% to about 25%. This may be due to the reason that about 45.8% of the total observations were found to be under the category of 'Not Collected' followed by 29.1% observations under the 'Dry' category.



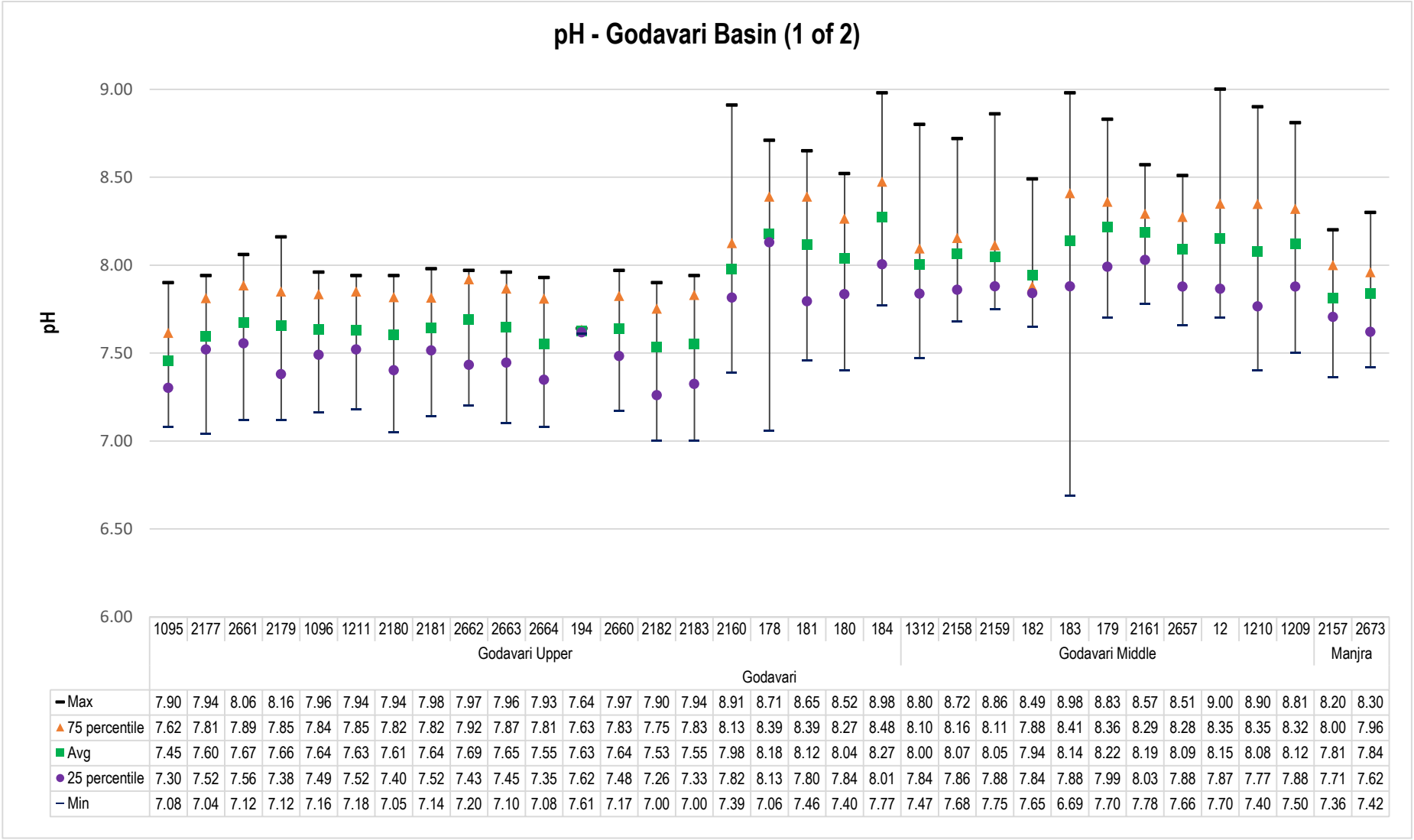
	1095	2177	2661	2179	1096	1211	2180	2181	2662	2663	2664	194	2660	2182	2183	2160	178	181	180	184	1312	2158	2159	182	183	179	2161	2657	12	1210	1209	2157	2673
	Godavari Upper																				Godavari Middle											Manjra
	Godavari																															
Max	6.80	6.50	6.70	5.80	6.00	6.40	5.20	5.30	6.80	6.70	6.30	5.80	6.40	6.50	6.50	7.50	6.90	6.80	6.10	7.30	7.20	7.40	7.30	5.22	6.67	6.32	7.50	7.20	7.10	7.10	7.00	7.30	7.00
75 percentile	6.38	6.18	6.33	5.70	5.90	5.83	5.00	5.00	6.05	6.13	6.03	5.75	6.23	6.03	6.23	6.82	6.16	5.20	5.56	6.72	6.83	6.72	6.62	4.89	5.81	6.17	6.37	6.63	6.83	6.72	6.79	6.93	6.24
Avg	6.27	5.99	6.18	5.49	5.80	5.72	4.66	4.44	5.63	5.80	5.71	5.70	6.02	5.78	6.08	6.35	5.39	4.02	5.04	5.94	6.67	6.39	6.39	4.48	4.60	5.47	5.85	6.29	6.07	6.23	6.44	6.51	5.94
25 percentile	6.08	5.80	5.98	5.30	5.80	5.40	4.30	3.95	5.43	5.40	5.28	5.65	5.85	5.40	5.90	6.01	5.08	2.40	5.18	5.59	6.49	6.18	6.26	4.33	2.90	5.40	5.33	6.28	5.58	5.68	6.25	6.16	5.66
Min	6.00	5.20	5.90	5.20	5.50	5.30	3.80	3.10	3.20	4.80	5.00	5.60	5.40	5.00	5.60	5.40	3.00	0.80	2.10	3.20	6.20	5.34	5.20	3.20	1.60	3.00	4.62	4.90	4.22	5.42	5.44	5.60	5.10

Figure No. 15: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Godavari basin (1of 2)



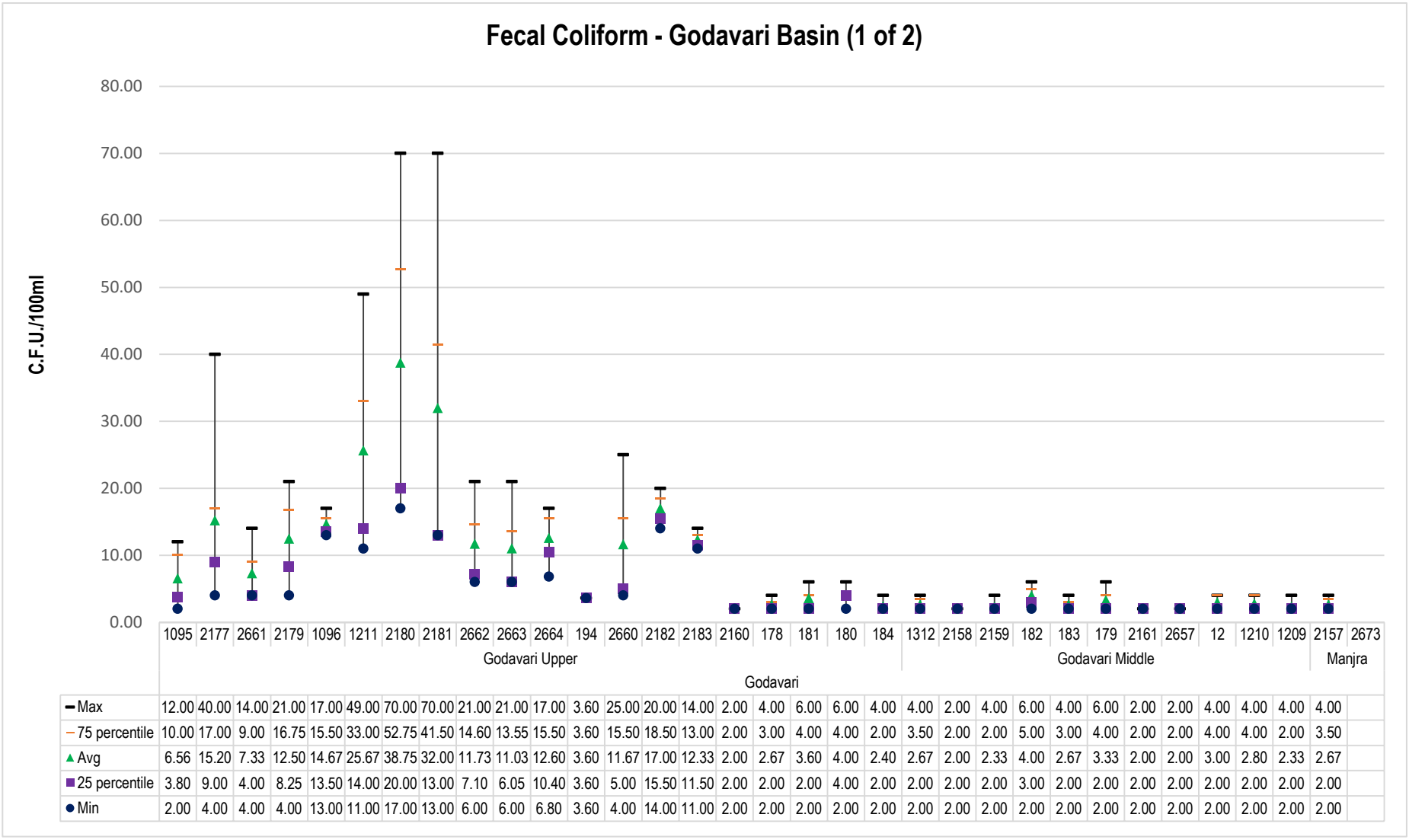
	1095	2177	2661	2179	1096	1211	2180	2181	2662	2663	2664	194	2660	2182	2183	2160	178	181	180	184	1312	2158	2159	182	183	179	2161	2657	12	1210	1209	2157	2673
	Godavari Upper																				Godavari Middle											Manjra
	Godavari																															
Max	3.20	4.20	3.20	4.20	5.00	5.20	8.20	8.00	10.00	6.00	4.40	3.80	4.00	6.00	4.20	5.80	11.00	104.0	142.0	8.80	5.80	5.60	5.20	27.00	15.00	10.20	8.60	8.50	8.00	7.40	7.60	7.40	7.40
75 percentile	3.00	3.35	3.20	4.20	4.00	4.25	6.80	7.40	4.10	4.00	3.85	3.75	3.40	4.00	3.50	4.50	6.80	27.00	58.70	4.60	3.25	4.40	4.30	10.20	9.80	6.20	6.85	4.90	5.60	4.65	4.40	4.55	5.60
Avg	2.93	3.27	2.99	4.04	3.98	4.02	6.12	5.91	4.22	3.82	3.55	3.70	3.24	3.78	3.32	3.67	5.94	23.16	38.39	4.73	3.27	3.67	3.65	11.78	7.21	5.50	5.38	4.40	4.37	4.17	4.02	3.88	5.16
25 percentile	2.80	2.80	2.80	4.00	3.80	3.80	5.20	5.00	3.15	3.35	3.15	3.65	2.95	3.20	3.00	2.80	4.40	6.25	5.70	4.40	2.75	2.80	2.75	6.40	4.40	4.20	4.20	3.10	2.95	3.00	3.10	2.75	4.60
Min	2.80	2.80	2.70	3.80	3.00	2.80	4.80	4.20	3.00	3.00	2.80	3.60	2.80	2.80	2.80	2.00	3.60	4.80	4.50	3.00	2.40	2.00	2.20	5.80	4.00	2.90	2.00	2.40	2.00	2.40	2.20	2.20	2.80

Figure No. 16: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Godavari basin (1 of 2)



	1095	2177	2661	2179	1096	1211	2180	2181	2662	2663	2664	194	2660	2182	2183	2160	178	181	180	184	1312	2158	2159	182	183	179	2161	2657	12	1210	1209	2157	2673
	Godavari Upper																				Godavari Middle											Manjra
	Godavari																															
Max	7.90	7.94	8.06	8.16	7.96	7.94	7.94	7.98	7.97	7.96	7.93	7.64	7.97	7.90	7.94	8.91	8.71	8.65	8.52	8.98	8.80	8.72	8.86	8.49	8.98	8.83	8.57	8.51	9.00	8.90	8.81	8.20	8.30
75 percentile	7.62	7.81	7.89	7.85	7.84	7.85	7.82	7.82	7.92	7.87	7.81	7.63	7.83	7.75	7.83	8.13	8.39	8.39	8.27	8.48	8.10	8.16	8.11	7.88	8.41	8.36	8.29	8.28	8.35	8.35	8.32	8.00	7.96
Avg	7.45	7.60	7.67	7.66	7.64	7.63	7.61	7.64	7.69	7.65	7.55	7.63	7.64	7.53	7.55	7.98	8.18	8.12	8.04	8.27	8.00	8.07	8.05	7.94	8.14	8.22	8.19	8.09	8.15	8.08	8.12	7.81	7.84
25 percentile	7.30	7.52	7.56	7.38	7.49	7.52	7.40	7.52	7.43	7.45	7.35	7.62	7.48	7.26	7.33	7.82	8.13	7.80	7.84	8.01	7.84	7.86	7.88	7.84	7.88	7.99	8.03	7.88	7.87	7.77	7.88	7.71	7.62
Min	7.08	7.04	7.12	7.12	7.16	7.18	7.05	7.14	7.20	7.10	7.08	7.61	7.17	7.00	7.00	7.39	7.06	7.46	7.40	7.77	7.47	7.68	7.75	7.65	6.69	7.70	7.78	7.66	7.70	7.40	7.50	7.36	7.42

Figure No. 17: Trend of pH levels recorded at WQMS at Godavari basin (1 of 2)



	1095	2177	2661	2179	1096	1211	2180	2181	2662	2663	2664	194	2660	2182	2183	2160	178	181	180	184	1312	2158	2159	182	183	179	2161	2657	12	1210	1209	2157	2673
Max	12.00	40.00	14.00	21.00	17.00	49.00	70.00	70.00	21.00	21.00	17.00	3.60	25.00	20.00	14.00	2.00	4.00	6.00	6.00	4.00	4.00	2.00	4.00	6.00	4.00	6.00	2.00	2.00	4.00	4.00	4.00	4.00	
75 percentile	10.00	17.00	9.00	16.75	15.50	33.00	52.75	41.50	14.60	13.55	15.50	3.60	15.50	18.50	13.00	2.00	3.00	4.00	4.00	2.00	3.50	2.00	2.00	5.00	3.00	4.00	2.00	2.00	4.00	4.00	2.00	3.50	
Avg	6.56	15.20	7.33	12.50	14.67	25.67	38.75	32.00	11.73	11.03	12.60	3.60	11.67	17.00	12.33	2.00	2.67	3.60	4.00	2.40	2.67	2.00	2.33	4.00	2.67	3.33	2.00	2.00	3.00	2.80	2.33	2.67	
25 percentile	3.80	9.00	4.00	8.25	13.50	14.00	20.00	13.00	7.10	6.05	10.40	3.60	5.00	15.50	11.50	2.00	2.00	2.00	4.00	2.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
Min	2.00	4.00	4.00	4.00	13.00	11.00	17.00	13.00	6.00	6.00	6.80	3.60	4.00	14.00	11.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	

Figure No. 18: Trend of Fecal Coliform levels recorded at WQMS at Godavari basin (1 of 2)

Water Quality Index for WQMS in Godavari Basin (1 of 2): Sub-Basin - Godavari Upper

April	89.97	67.24	67.41			64.12	66.83		63.12	65.12	63.86		68.04	66.30	68.34	86.83				
May	90.50	83.17	62.69	60.83	63.89	61.99	57.56	59.11	64.24	64.30	60.67		64.89	67.09	63.47	87.77		76.62	77.24	81.11
June	83.67	80.67	63.25		59.79	61.13	58.43	56.91	60.31	63.41	63.24		63.54	65.36	65.97	87.22		52.31	48.72	84.16
July	83.27	80.31	84.10	74.72	78.93	70.20	61.56	69.10	71.95	78.20	83.93		81.21	80.42	82.16	87.37	81.76	56.35	74.99	78.12
August	85.23	79.45	62.49	57.00	61.99	61.60	49.58	43.60	37.79	51.65	63.50		61.61	62.02	60.45	84.09	79.09	78.18	76.25	82.31
September	85.33	80.14	63.45	59.95	59.95	59.92	53.76	47.59	57.76	58.45	55.28		62.39	60.67	62.65	89.54	84.20	82.51	85.41	80.65
October	83.98	83.54	64.83	62.59	64.18	60.01	54.87	54.71	66.01	67.53	63.95		68.17	63.29	60.44					
November	87.81	84.28	62.43	57.72	61.14	60.57	54.15	54.29	61.11	61.97	63.45		63.65	61.41	62.92					
December	85.62	80.39	65.60	61.07	61.87	56.57	51.32	54.37	65.61	61.41	60.45		59.69	57.66	67.35					
January	66.14	55.75	61.67	55.61	60.15	55.93	42.61	39.89	57.82	56.34	56.08		60.13	56.31	60.94					
February	87.97	83.27	85.75	82.42	77.97	87.29	68.40	63.18	85.04	82.04	85.71	84.37	86.24	75.63	86.93					
March	89.57	85.36	87.49		78.56	80.28	66.43	68.00	78.86	80.54	74.74	60.68	81.67	77.12	82.76					
Station code	1095	2177	2661	2179	1096	1211	2180	2181	2662	2663	2664	194	2660	2182	2183	2160	178	181	180	184
Sub Basin	Godavari Upper																			
Basin	Godavari																			

Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

Table No. 16: Surface water quality monitoring stations in Godavari Basin (1 of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	1095	Godavari	Godavari at U/s of Gangapur Dam	Gangapur	Nashik	Nashik
NWMP	2177	Godavari	Godavari near Someshwar Temple	Someshwar	Nashik	Nashik
NWMP	2661	Darna	Darna at Aswali (Darna Dam)	Aswali	Igatpuri	Nashik
NWMP	2179	Godavari	Godavari at Hanuman Ghat	Nashik city	Nashik	Nashik
NWMP	1096	Godavari	Godavari at Panchavati at Ramkund	Panchavati	Nashik	Nashik
NWMP	1211	Godavari	Godavari at Nashik D/s of near Amardham	Gadgebaba Maharaj Nagar	Nashik	Nashik
NWMP	2180	Godavari	Godavari at near Tapovan	Tapovan	Nashik	Nashik
NWMP	2181	Godavari	Godavari at Kapila -Godavari confluence point	Tapovan	Nashik	Nashik
NWMP	2662	Darna	Darna at MES site Pumping station	Bhagur	Nashik	Nashik
NWMP	2663	Darna	Darna at Bhagur Pumping station near Pandhurli Bridge	Bhagur	Nashik	Nashik
NWMP	2664	Darna	Darna at Sansari	Sansari	Nashik	Nashik
SWMP	194	Kadwa	Kadwa at Awankhed Village, Taluka - Dindori, District - Nashik	Awankhed Village	Dindori	Nashik
NWMP	2660	Darna	Darna at Chehedi pumping station	Chehedi	Nashik	Nashik
NWMP	2182	Godavari	Godavari at Saikheda	Saikheda	Niphad	Nashik
NWMP	2183	Godavari	Godavari at Nandur-Madhameshwar Dam	Nandur	Niphad	Nashik
NWMP	2160	Godavari	Godavari at U/s of Aurangabad Reservoir Kaigaon Tokka near, Kaigaon Bridge	Kaigaon	Gangapur	Aurangabad
SWMP	178	Shivna	Kannad - D/S of Kannad near Bridge	Kannad	Kannad	Aurangabad
SWMP	181	Kham	Aurangabad - Near Patoda Village	Aurangabad	Aurangabad	Aurangabad
SWMP	180	Kham	Aurangabad - Near Holly cross bridge	Aurangabad	Aurangabad	Aurangabad
SWMP	184	Harsool Dam	Aurangabad - Harsool Dam	Aurangabad	Aurangabad	Aurangabad

Water Quality Index for WQMS in Godavari Basin (1 of 2): Sub-Basin - Godavari Middle and Manjra

April	87.45	87.35	87.49					87.37	86.79	90.43	87.92	87.11	
May	87.77	87.83	89.16					88.66	84.61	85.54	86.81	89.97	
June	84.99	87.45	84.70				86.57	87.89	86.80	85.53	87.67	86.83	
July	84.33	84.83	84.09	40.60	80.69	72.96	71.73	73.03	73.13	78.99	83.42	85.79	
August	90.14	85.27	87.61	68.46	82.09	83.94	70.57	73.34	79.61	80.08	73.04	81.94	
September	88.19	88.75	86.43	77.15	80.78	81.99			88.30	66.60	90.33	88.26	
October													
November													
December													
January													
February													
March													
Station code	1312	2158	2159	182	183	179	2161	2657	12	1210	1209	2157	2673
Sub Basin	Godavari Middle											Manjra	
Basin	Godavari												

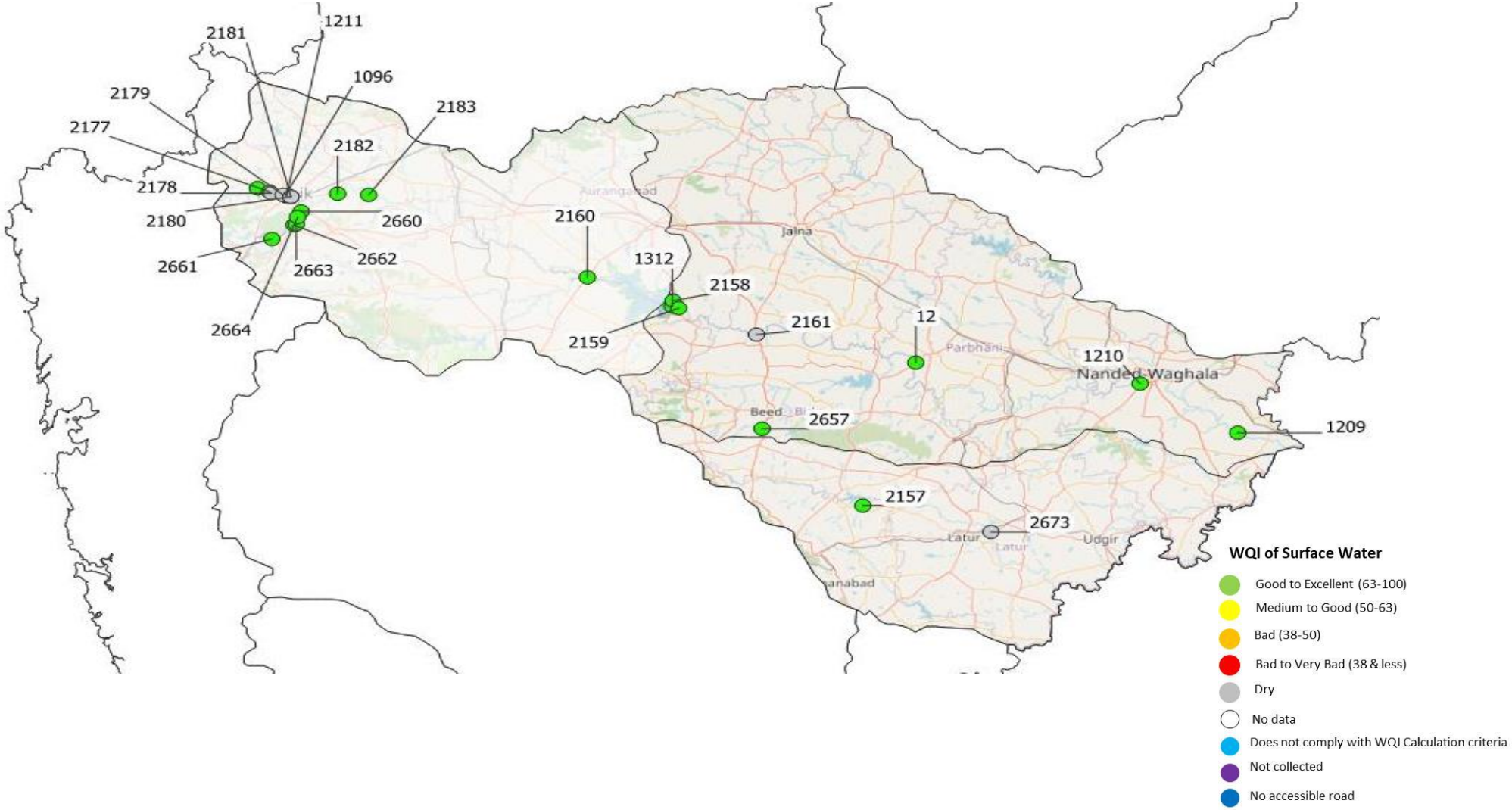
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

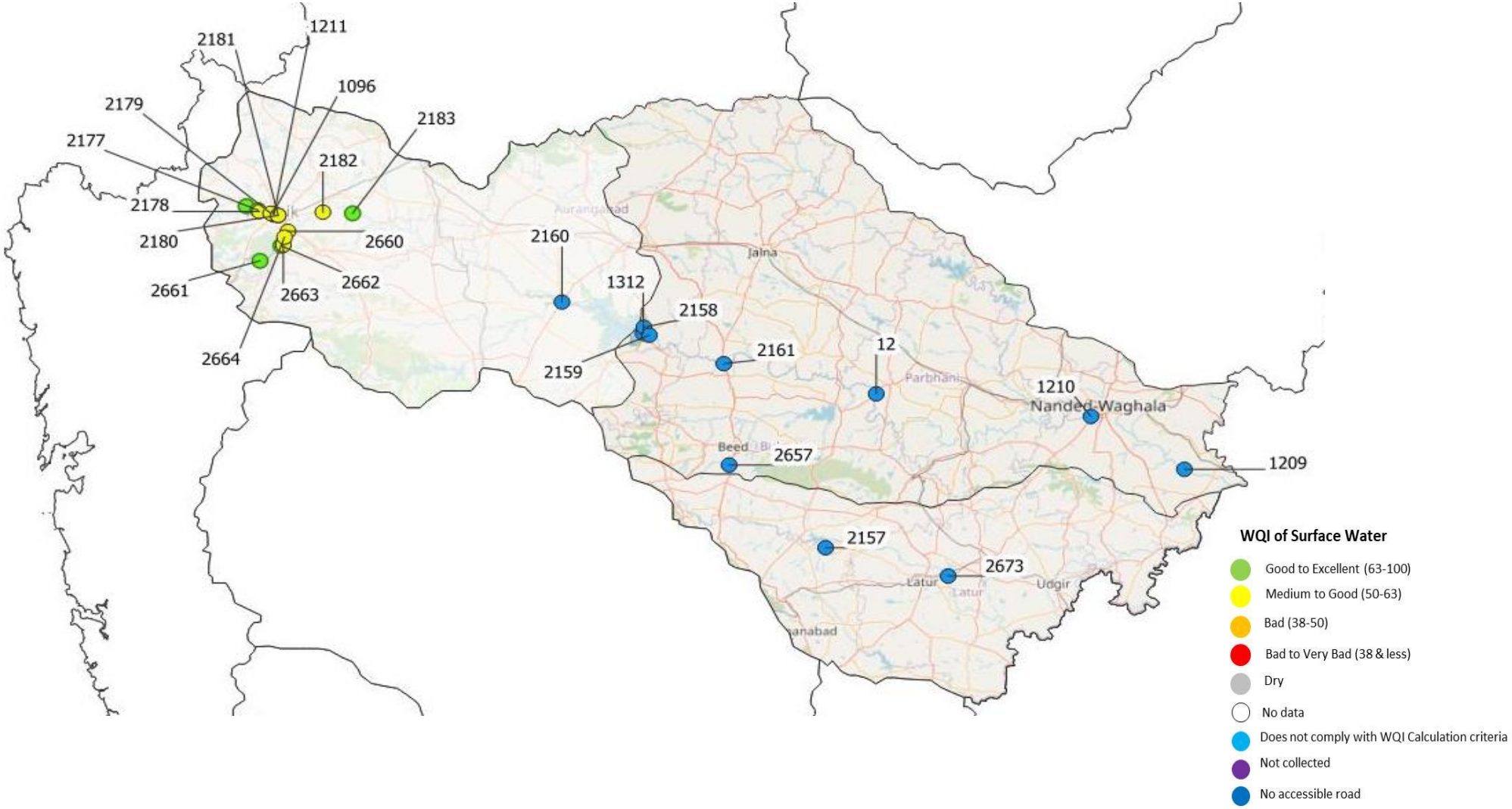
Table No. 17: Surface water quality monitoring stations in Godavari Basin (1of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	1312	Godavari	Godavari at Jaikwadi Dam, Paithan	Paithan	Paithan	Aurangabad
NWMP	2158	Godavari	Godavari at Paithan U/s of Paithan Intake pump house	Jayakwadi	Paithan	Aurangabad
NWMP	2159	Godavari	Godavari at D/s of Paithan at Pathegaon bridge	Pathegaon	Paithan	Aurangabad
SWMP	182	Sukhna	Aurangabad - Near Chikhalthana Bridge	Aurangabad	Aurangabad	Aurangabad
SWMP	183	Sukhna Dam	Aurangabad - At Sukhna Dam	Aurangabad	Aurangabad	Aurangabad
SWMP	179	Purna	Sillod - D/S of Sillod near bridge at bhavan	Sillod	Sillod	Aurangabad
NWMP	2161	Godavari	Godavari at Jalna Intake water pump house Shahagad	Shahabad	Ambad	Jalna
NWMP	2657	Bindusara	Bindusara at Beed, near Intake water pump house at Dam	Paligaon	Beed	Beed
NWMP	12	Godavari	Godavari at Dhalegaon	Dhalegaon	Pathari	Parbhani
NWMP	1210	Godavari	Godavari at Intake of pump house	Vishnupuri	Nanded	Nanded
NWMP	1209	Godavari	Godavari at Raher	Raher	Nayagaon	Nanded
NWMP	2157	Godavari	Godavari at Latur Water intake near pump house	Dhamegaon	Kalumb	Osmanabad
NWMP	2673	Manjra	Manjra at D/s of Latur, near Latur-Nanded Bridge	Bhatkheda	Latur	Latur

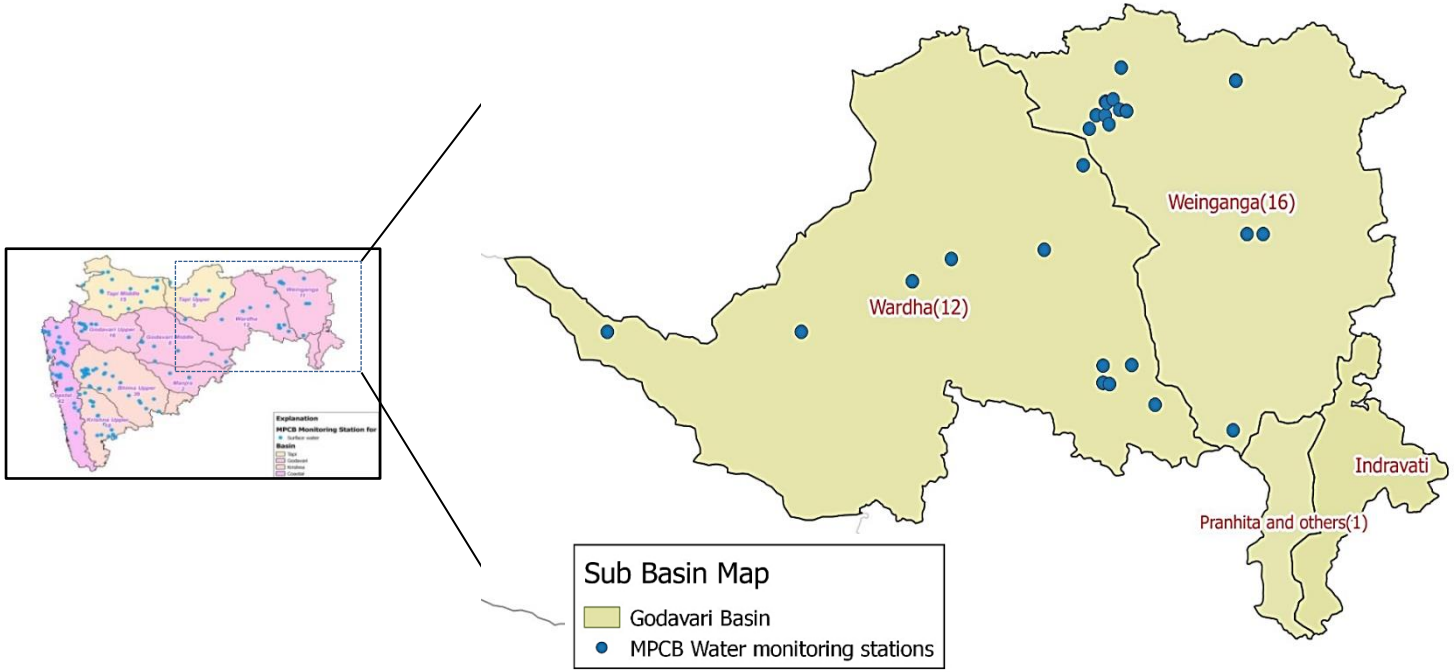
Spatial map of SurfaceWQI at Godavari Basin (1 of 2) (April 2020)



Spatial map of Surface WQI at Godavari Basin (1 of 2) (December 2020)



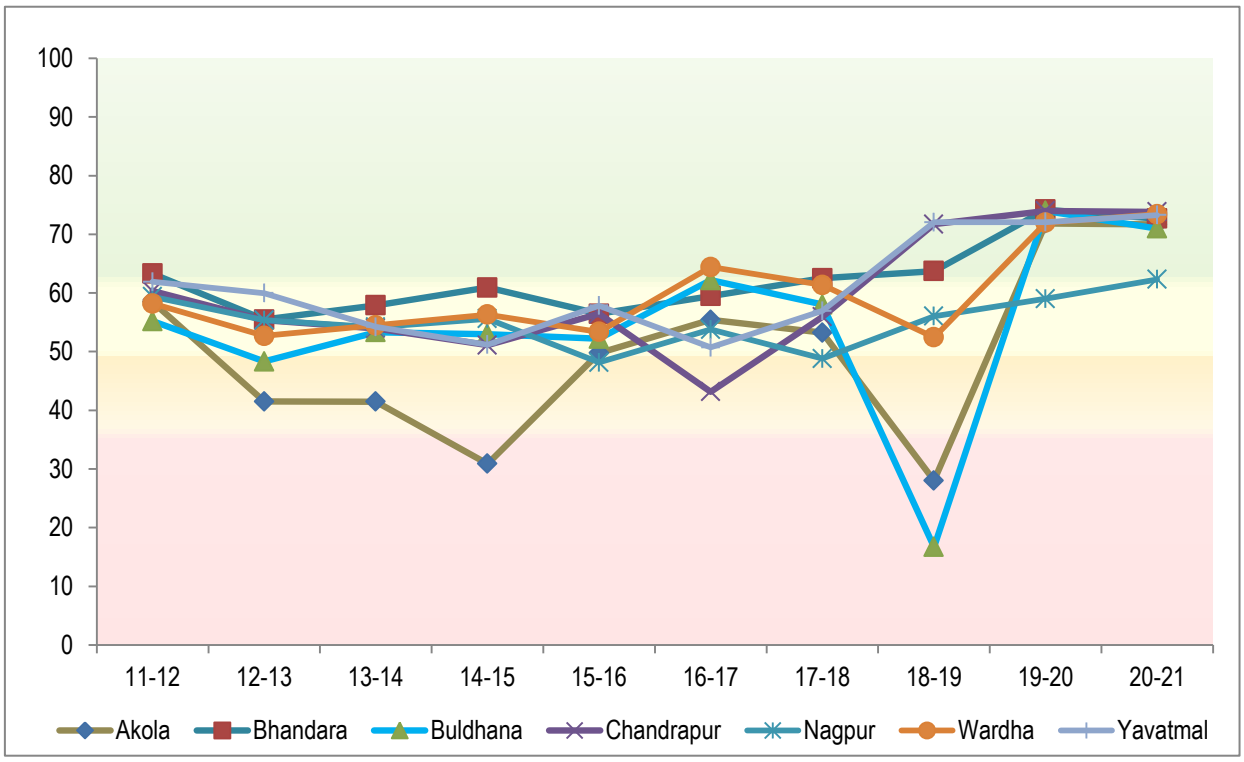
Godavari Basin (2 of 2): Wardha, Wainganga and Pranhita Sub basin



Map No. 6: Network of surface water quality monitoring stations in Godavari basin 2 of 2 –Wardha, Wainganga and Pranhita Sub basin

In basin 2, there are total of 29 surface water monitoring stations (12 on Wardha, 16 on Wainganga and 1 on Pranhita). The list of stations and codes has been provided below in Table No. 18 and Table No. 19

Godavari Basin (2 of 2) (Intra Basin analysis)



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure No. 19: Trend of annual average WQI across districts of Godavari basin (2 of 2)

Note: This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data maybe analyzed to pin point the most affected and polluted patches of rivers in that district

The depiction of intrabasin performance of the Godavari basin (2 of 2) has been illustrated graphically in Figure No. 19. This region covers 7 districts namely Akola, Bhandara, Buldhana, Chandrapur, Nagpur, Wardha and Yavatmal. Out of 7 districts, 3 districts namely Nagpur (59.0 in 2019-20 to 62.3 in 2020-21), Wardha (71.9 to 73.4) and Yavatmal (72.0 to 73.2) showed a slight improvement in annual average WQI. The remaining 4 districts showed a slight decrease in annual average WQI (recorded by WQMS) which includes Akola (71.8 in 2019-20 to 71.6 in 2020-21) followed by Bhandara (74.1 to 72.6), Buldhana (73.9 to 70.9) and Chandrapur (73.9 to 73.8). In 2020-21, apart from Nagpur (which recorded WQI in the 'Medium to Good' category), all other districts recorded annual average WQI in the 'Good to Excellent' WQI category.

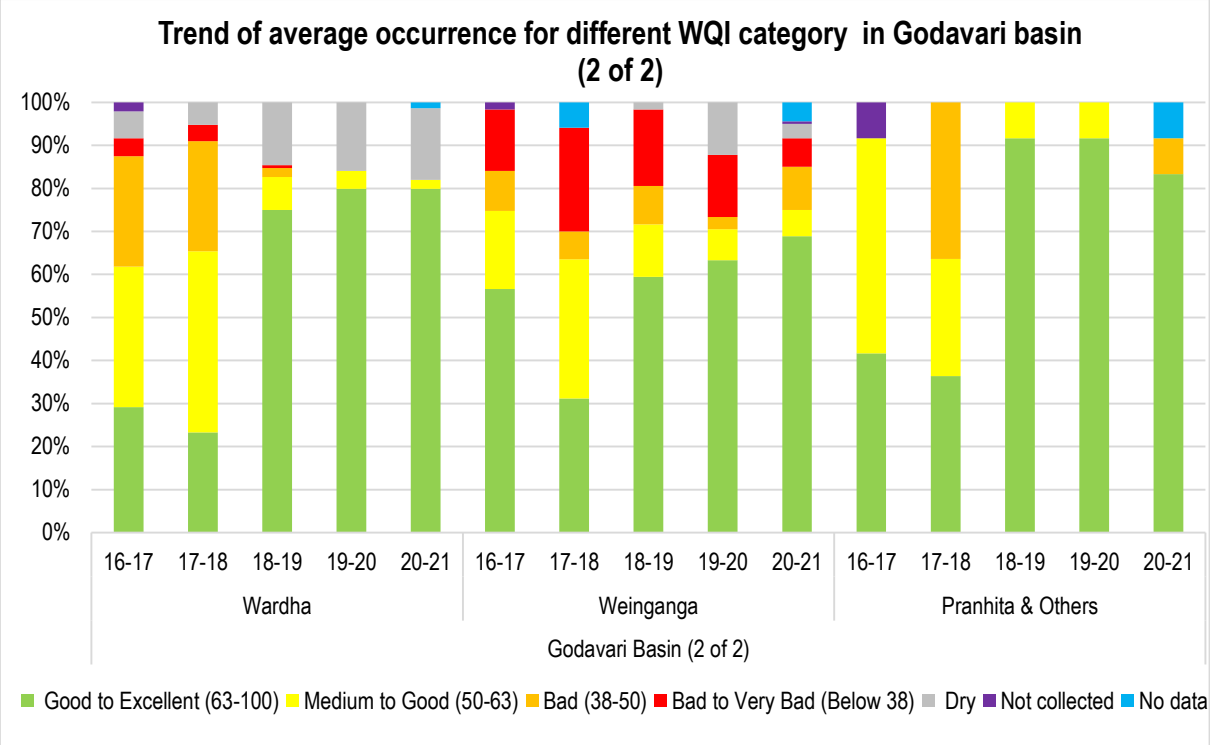


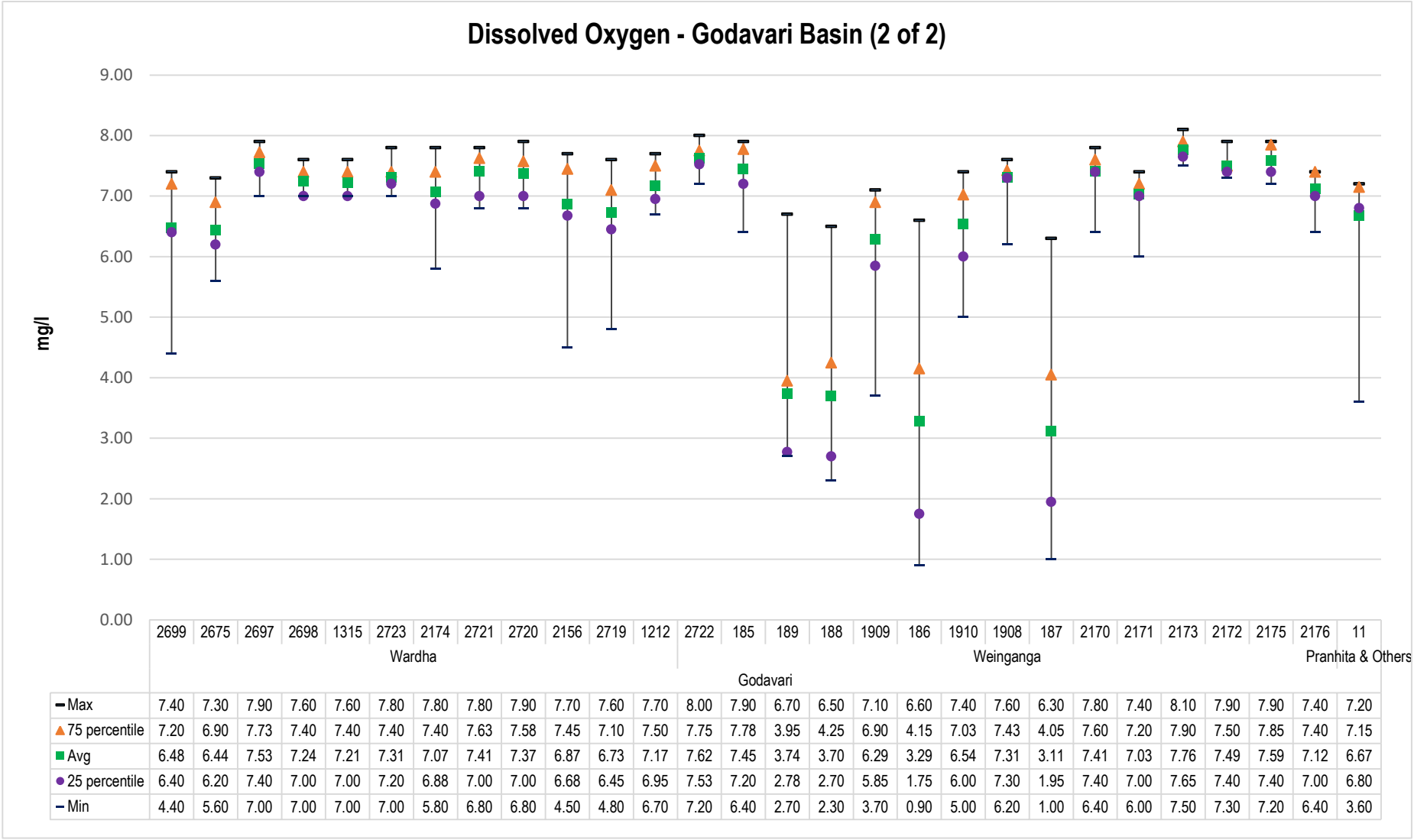
Figure No. 20: Trend of average occurrence for different category of WQI in Godavari basin (2 of 2)

Figure No. 20 depicts the interbasin analysis for the Godavari Basin (2 of 2) for the last 5 consecutive years (2016-17 to 2020-21).

In the Wardha sub basin, about 79.9% observations under the 'Good to Excellent' category followed by ~2.1% in 'Medium to Good', ~16.6% under 'Dry' and only about 1.4% in 'No Data' Category. No observations were found to be under the categories of 'Bad' and 'Bad to Very Bad' categories.

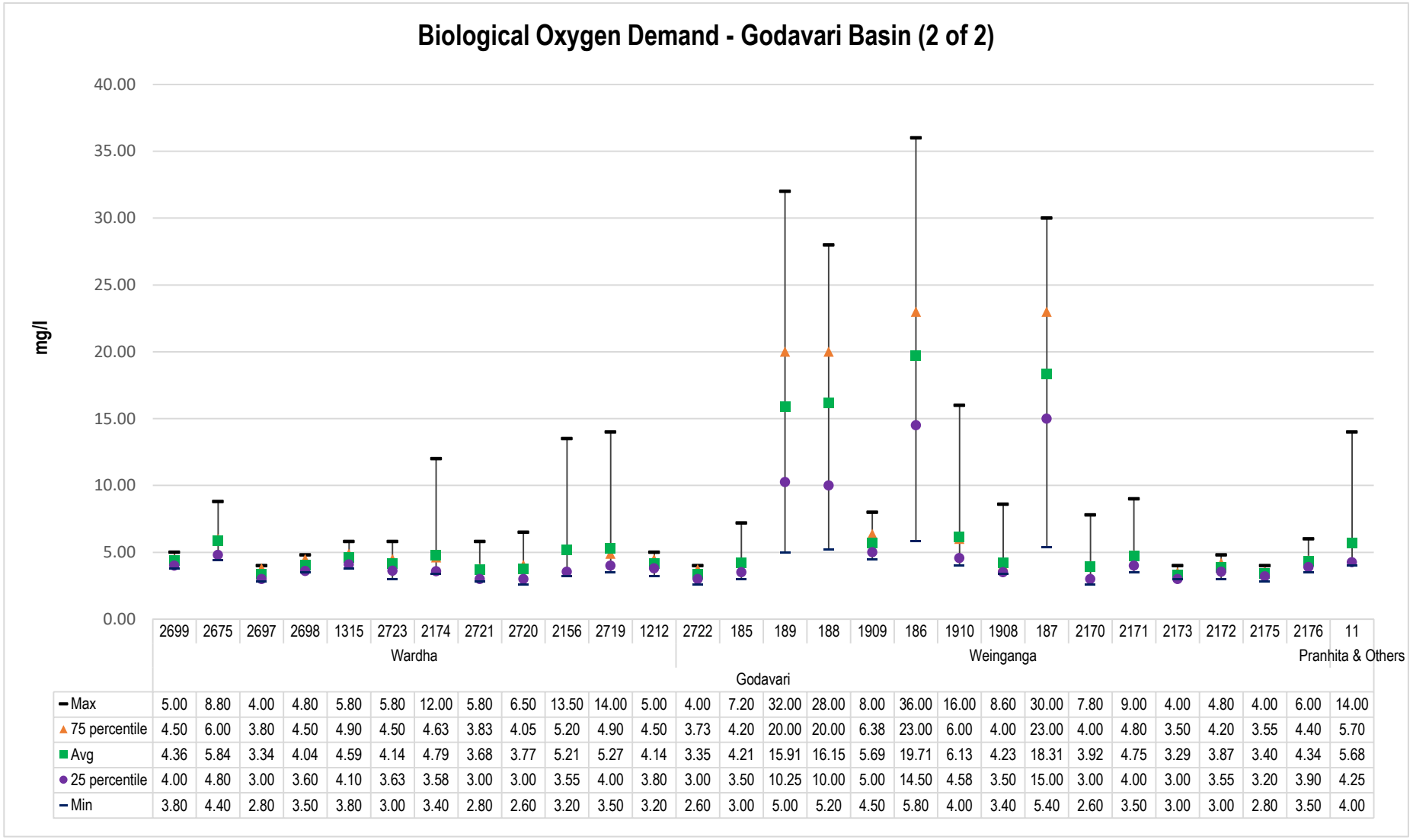
An increasing trend was observed in the Wainganga sub basin for the categories of 'Good to Excellent' (~63.3% to ~68.8%) and 'Bad' (~2.8% to 10%). On the other hand, a decreasing trend was observed for the WQI categories of 'Medium to Good' (~7.2% to ~6.1%) followed by 'Bad to Very Bad' (~14.4% to 6.66%) and 'Dry' category (~12.2% to about 3.33%).

Pranhita and Others sub basin recorded around 83.3% observations in 'Good to Excellent' (as compared to ~91.6% in 2019-20) while ~8.33% in the 'Bad' WQI category. The remaining 8.33% of observations were found to be under the category of 'No Data'. No observations were observed in the category of 'Medium to Good' and 'Bad to Very Bad'.



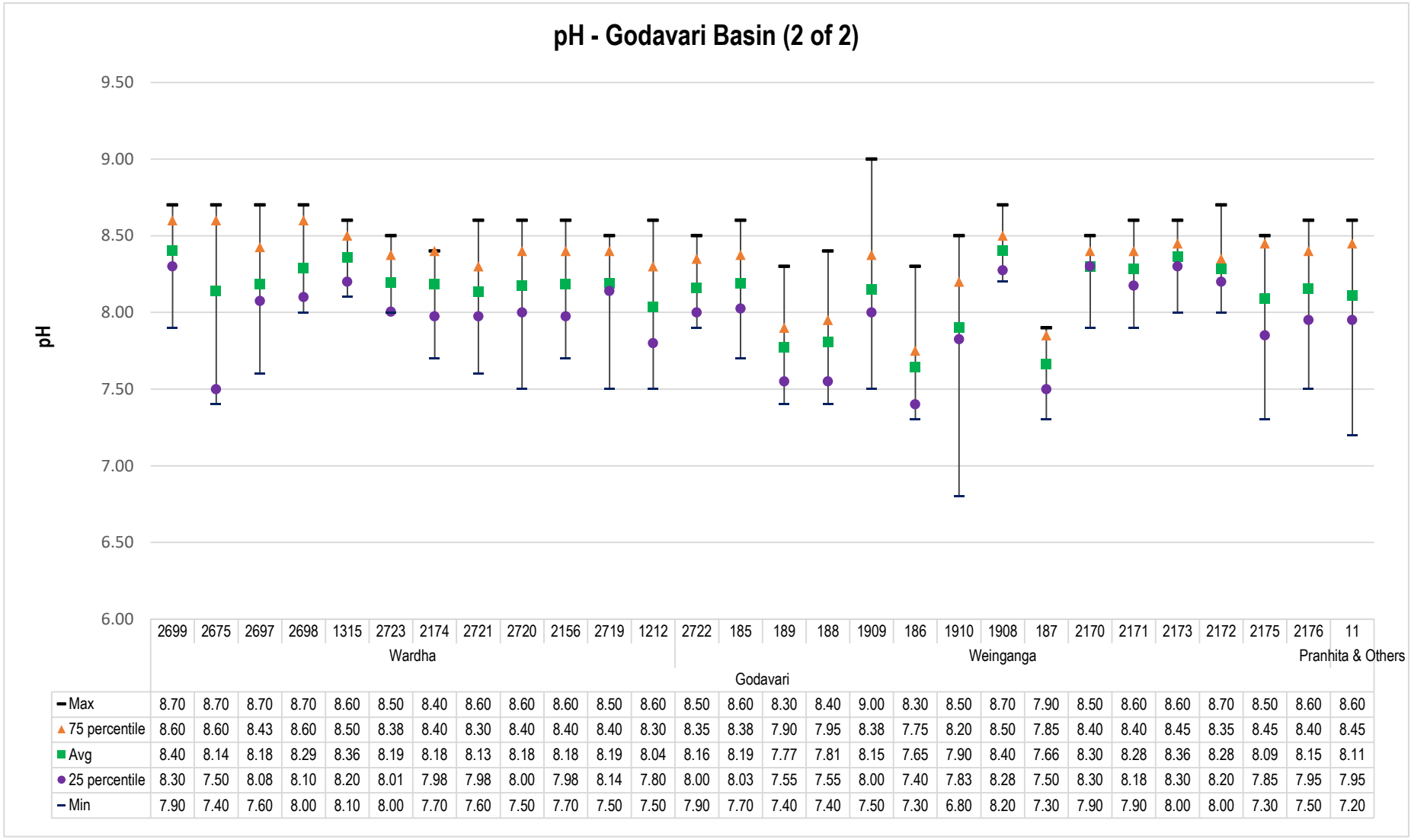
	2699	2675	2697	2698	1315	2723	2174	2721	2720	2156	2719	1212	2722	185	189	188	1909	186	1910	1908	187	2170	2171	2173	2172	2175	2176	11
Max	7.40	7.30	7.90	7.60	7.60	7.80	7.80	7.80	7.90	7.70	7.60	7.70	8.00	7.90	6.70	6.50	7.10	6.60	7.40	7.60	6.30	7.80	7.40	8.10	7.90	7.90	7.40	7.20
75 percentile	7.20	6.90	7.73	7.40	7.40	7.40	7.40	7.63	7.58	7.45	7.10	7.50	7.75	7.78	3.95	4.25	6.90	4.15	7.03	7.43	4.05	7.60	7.20	7.90	7.50	7.85	7.40	7.15
Avg	6.48	6.44	7.53	7.24	7.21	7.31	7.07	7.41	7.37	6.87	6.73	7.17	7.62	7.45	3.74	3.70	6.29	3.29	6.54	7.31	3.11	7.41	7.03	7.76	7.49	7.59	7.12	6.67
25 percentile	6.40	6.20	7.40	7.00	7.00	7.20	6.88	7.00	7.00	6.68	6.45	6.95	7.53	7.20	2.78	2.70	5.85	1.75	6.00	7.30	1.95	7.40	7.00	7.65	7.40	7.40	7.00	6.80
Min	4.40	5.60	7.00	7.00	7.00	7.00	5.80	6.80	6.80	4.50	4.80	6.70	7.20	6.40	2.70	2.30	3.70	0.90	5.00	6.20	1.00	6.40	6.00	7.50	7.30	7.20	6.40	3.60

Figure No. 21: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Godavari basin (2 of 2)



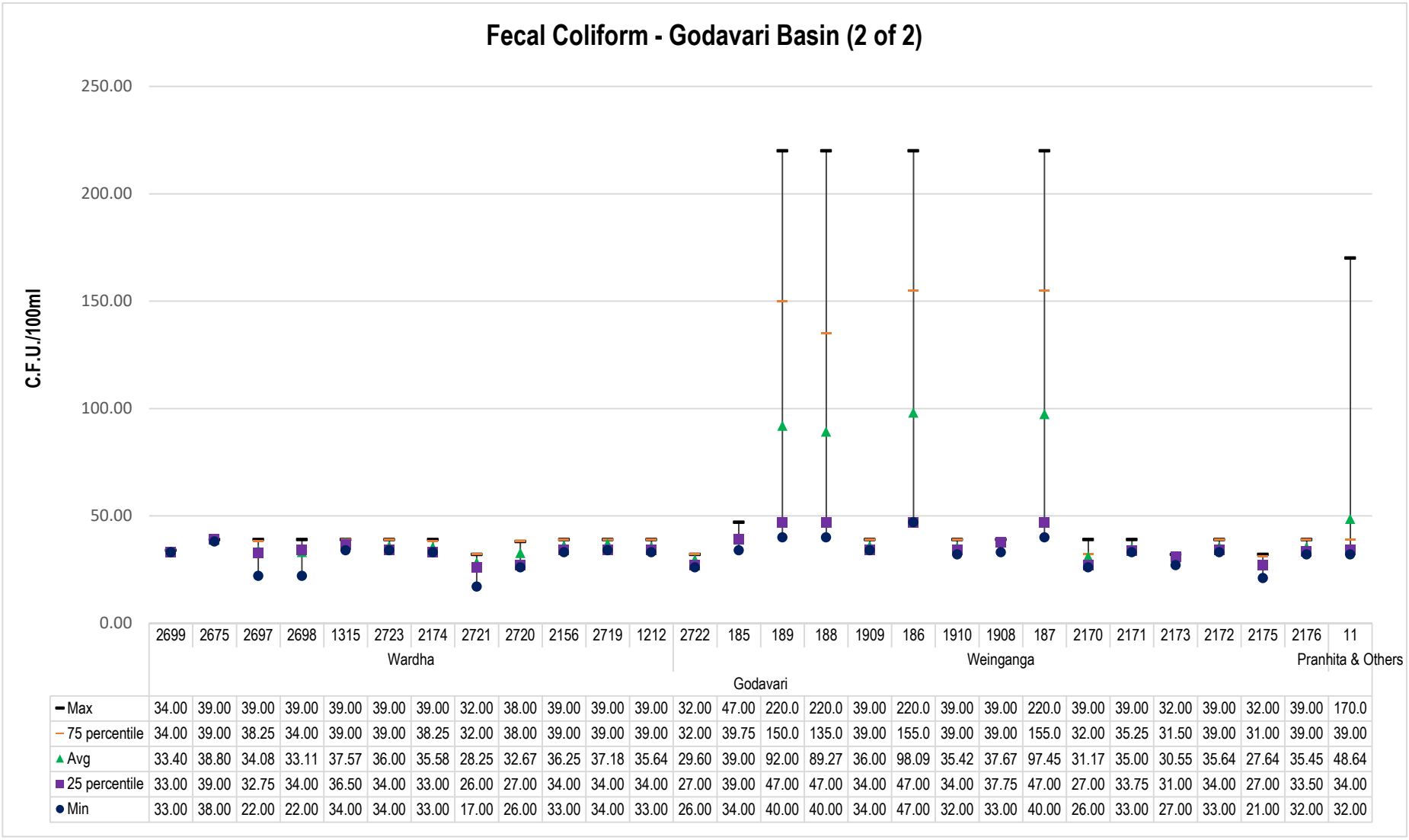
	2699	2675	2697	2698	1315	2723	2174	2721	2720	2156	2719	1212	2722	185	189	188	1909	186	1910	1908	187	2170	2171	2173	2172	2175	2176	11
Max	5.00	8.80	4.00	4.80	5.80	5.80	12.00	5.80	6.50	13.50	14.00	5.00	4.00	7.20	32.00	28.00	8.00	36.00	16.00	8.60	30.00	7.80	9.00	4.00	4.80	4.00	6.00	14.00
75 percentile	4.50	6.00	3.80	4.50	4.90	4.50	4.63	3.83	4.05	5.20	4.90	4.50	3.73	4.20	20.00	20.00	6.38	23.00	6.00	4.00	23.00	4.00	4.80	3.50	4.20	3.55	4.40	5.70
Avg	4.36	5.84	3.34	4.04	4.59	4.14	4.79	3.68	3.77	5.21	5.27	4.14	3.35	4.21	15.91	16.15	5.69	19.71	6.13	4.23	18.31	3.92	4.75	3.29	3.87	3.40	4.34	5.68
25 percentile	4.00	4.80	3.00	3.60	4.10	3.63	3.58	3.00	3.00	3.55	4.00	3.80	3.00	3.50	10.25	10.00	5.00	14.50	4.58	3.50	15.00	3.00	4.00	3.00	3.55	3.20	3.90	4.25
Min	3.80	4.40	2.80	3.50	3.80	3.00	3.40	2.80	2.60	3.20	3.50	3.20	2.60	3.00	5.00	5.20	4.50	5.80	4.00	3.40	5.40	2.60	3.50	3.00	3.00	2.80	3.50	4.00

Figure No. 22: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Godavari basin (2 of 2)



	2699	2675	2697	2698	1315	2723	2174	2721	2720	2156	2719	1212	2722	185	189	188	1909	186	1910	1908	187	2170	2171	2173	2172	2175	2176	11
	Wardha												Weinganga														Pranhita & Others	
	Godavari																											
Max	8.70	8.70	8.70	8.70	8.60	8.50	8.40	8.60	8.60	8.60	8.50	8.60	8.50	8.60	8.30	8.40	9.00	8.30	8.50	8.70	7.90	8.50	8.60	8.60	8.70	8.50	8.60	8.60
75 percentile	8.60	8.60	8.43	8.60	8.50	8.38	8.40	8.30	8.40	8.40	8.40	8.30	8.35	8.38	7.90	7.95	8.38	7.75	8.20	8.50	7.85	8.40	8.40	8.45	8.35	8.45	8.40	8.45
Avg	8.40	8.14	8.18	8.29	8.36	8.19	8.18	8.13	8.18	8.18	8.19	8.04	8.16	8.19	7.77	7.81	8.15	7.65	7.90	8.40	7.66	8.30	8.28	8.36	8.28	8.09	8.15	8.11
25 percentile	8.30	7.50	8.08	8.10	8.20	8.01	7.98	7.98	8.00	7.98	8.14	7.80	8.00	8.03	7.55	7.55	8.00	7.40	7.83	8.28	7.50	8.30	8.18	8.30	8.20	7.85	7.95	7.95
Min	7.90	7.40	7.60	8.00	8.10	8.00	7.70	7.60	7.50	7.70	7.50	7.50	7.90	7.70	7.40	7.40	7.50	7.30	6.80	8.20	7.30	7.90	7.90	8.00	8.00	7.30	7.50	7.20

Figure No. 23: Trend of pH levels recorded at WQMS at Godavari basin (2 of 2)



	2699	2675	2697	2698	1315	2723	2174	2721	2720	2156	2719	1212	2722	185	189	188	1909	186	1910	1908	187	2170	2171	2173	2172	2175	2176	11
Max	34.00	39.00	39.00	39.00	39.00	39.00	39.00	32.00	38.00	39.00	39.00	39.00	32.00	47.00	220.0	220.0	39.00	220.0	39.00	39.00	220.0	39.00	39.00	32.00	39.00	32.00	39.00	170.0
75 percentile	34.00	39.00	38.25	34.00	39.00	39.00	38.25	32.00	38.00	39.00	39.00	39.00	32.00	39.75	150.0	135.0	39.00	155.0	39.00	39.00	155.0	32.00	35.25	31.50	39.00	31.00	39.00	39.00
Avg	33.40	38.80	34.08	33.11	37.57	36.00	35.58	28.25	32.67	36.25	37.18	35.64	29.60	39.00	92.00	89.27	36.00	98.09	35.42	37.67	97.45	31.17	35.00	30.55	35.64	27.64	35.45	48.64
25 percentile	33.00	39.00	32.75	34.00	36.50	34.00	33.00	26.00	27.00	34.00	34.00	34.00	27.00	39.00	47.00	47.00	34.00	47.00	34.00	37.75	47.00	27.00	33.75	31.00	34.00	27.00	33.50	34.00
Min	33.00	38.00	22.00	22.00	34.00	34.00	33.00	17.00	26.00	33.00	34.00	33.00	26.00	34.00	40.00	40.00	34.00	47.00	32.00	33.00	40.00	26.00	33.00	27.00	33.00	21.00	32.00	32.00

Figure No. 24: Trend of Fecal Coliform levels recorded at WQMS at Godavari basin (2 of 2)

Water Quality Index for WQMS at Godavari Basin (2 of 2): Sub-basin- Wardha

April			74.76	73.82		74.30	74.39	76.15	74.83	75.38		
May			78.68				76.58	77.91	79.87	75.31	78.50	76.30
June			76.66				74.02	74.44	72.32	72.27	72.92	78.12
July	76.32	78.35	72.72			74.60	75.68	79.98	73.43	72.75	71.69	77.37
August	74.36	69.56	74.58	74.36	72.19	72.43	74.89	73.81	75.10	74.72	77.16	76.20
September	61.89	69.40	70.31	71.38	69.21	72.11	63.22	70.44	68.96	54.21	56.42	71.11
October	70.73	70.26	71.90	70.43	71.45	71.08	71.88	73.80	73.37	73.49	72.25	71.74
November	71.62	70.84	70.81	71.53	70.75	71.88	73.60	71.53	71.58	72.48	72.25	72.28
December			73.96	73.82	72.62	74.81	72.94	73.50	75.24	75.08	74.68	73.20
January			76.66	77.93	73.35	71.92	72.62	75.33	75.03	72.18	75.83	74.67
February			74.74	74.73	73.82	76.06	71.74	73.94	74.88	72.92	73.13	75.55
March			73.51	72.83		75.28	76.05	79.04	76.16	77.10	74.44	77.52
Station code	2699	2675	2697	2698	1315	2723	2174	2721	2720	2156	2719	1212
Sub Basin	Wardha											
Basin	Godavari											

Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

Table No. 18: Surface water quality monitoring stations in Godavari Basin (2 of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	2699	Penganga	Penganga at Mehkar-Buldana Road Bridge	Mehkar	Mehkar	Buldana
NWMP	2675	Morna	Morna at D/s of Railway Bridge	Akola	Akola	Akola
NWMP	2697	Penganga	Penganga near water supply scheme of Umarkhed MC	Belkhed	Umarkhed	Yavatmal
NWMP	2698	Penganga	Penganga D/s of Isapur Dam	Isapur	Pusad	Yavatmal
NWMP	1315	Wardha	Wardha at Pulgaon Railway Bridge	Pulgaon	wardha	Wardha
NWMP	2723	Wena	Wena at D/s of Mohata Mills, near Bridge on Hinganghat-Wadner Road	Hinganghat	Hinganghat	Wardha
NWMP	2174	Wardha	Wardha at D/s of ACC Ghuggus	Ghuggus	Chandrapur	Chandrapur
NWMP	2721	Wardha	Wardha at U/s of ACC Ghuggus	Ghuggus	Chandrapur	Chandrapur
NWMP	2720	Wardha	Wardha at U/s of Erai	Hadasti	Chandrapur	Chandrapur
NWMP	2156	Wardha	Wardha at confluence point of Penganga & Wardha	Jugad	Wani	Yavatmal
NWMP	2719	Wardha	Wardha at D/s of Erai	Hadasti	Chandrapur	Chandrapur
NWMP	1212	Wardha	Wardha at Rajura bridge	Rajura	Chandrapur	Chandrapur

Water Quality Index for WQMS at Godavari Basin (2 of 2): Sub-basin- Wainganga and Pranhita

April	73.78				67.78		68.67	71.94		73.40	71.97	69.63	70.16			
May			35.62	36.09		36.28	73.15	71.08	34.96	73.58	73.71			77.80	76.52	76.55
June			38.61	37.68		39.43	72.38	71.14	38.49	72.84	71.71	73.96	72.75	80.92	78.19	78.98
July	75.65	72.41	53.80	46.05	76.28	55.05	76.64	73.49	51.29	74.48	74.87	73.70	72.99	80.36	75.71	77.57
August	75.62	74.23	47.18	48.34	74.30	49.75	74.33	68.57	43.10	74.03	69.34	72.52	72.13	75.76	74.46	75.52
September	72.09	71.14	58.27	63.44	71.91	56.82	57.07	72.32	55.24	71.34	71.01	71.23	71.12	72.86	70.54	69.54
October	72.58	73.77	34.79	32.35	68.39	55.34	75.01	71.22	59.78	72.47	71.46	71.43	71.53	73.04	72.92	72.87
November	72.15	72.17	73.19	75.48	72.61	75.70	72.97	72.40	75.41	72.40	72.94	72.29	72.42	72.64	71.46	70.94
December	73.84	73.92	48.56	45.91	73.85	35.40	72.02	72.03	38.09	73.70	73.36	72.39	74.78	71.96	74.85	70.87
January	74.97	70.34	46.86	44.21	73.21	30.65	74.01	71.32	30.46	73.66	72.98	72.82	73.86	71.62	73.05	72.95
February	77.60	70.27	49.32	45.49	57.42	36.50	75.03	70.43	35.97	72.89	74.81	73.64	72.92	73.94	73.76	47.81
March	76.04	74.00	46.34	51.90	73.72	40.52	77.75	74.05	41.74	73.77	73.58	75.40	75.18	76.28	72.92	72.54
Station code	2722	185	189	188	1909	186	1910	1908	187	2170	2171	2173	2172	2175	2176	11
Sub Basin	Weinganga															Pranhita & Others
Basin	Godavari															

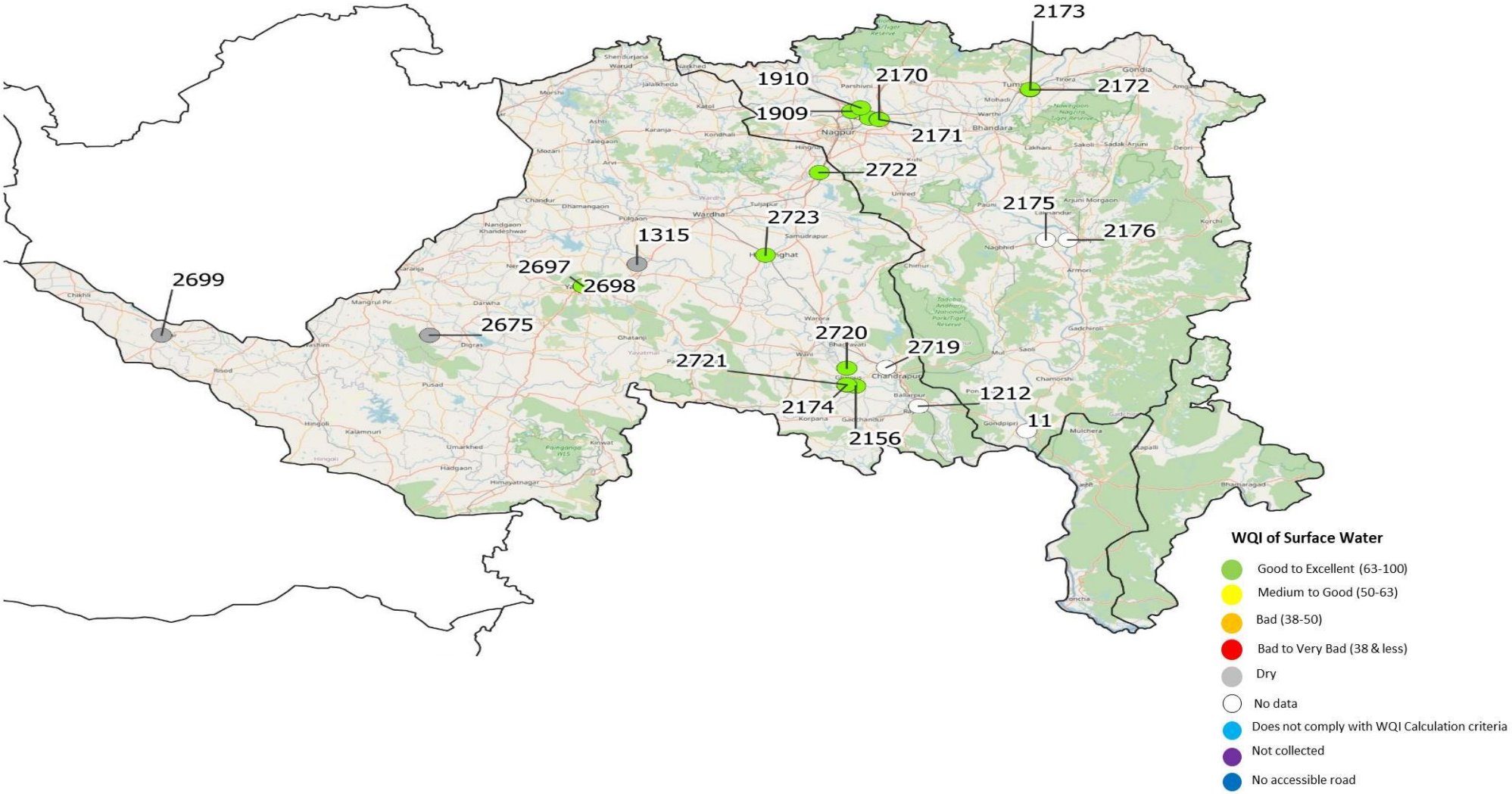
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

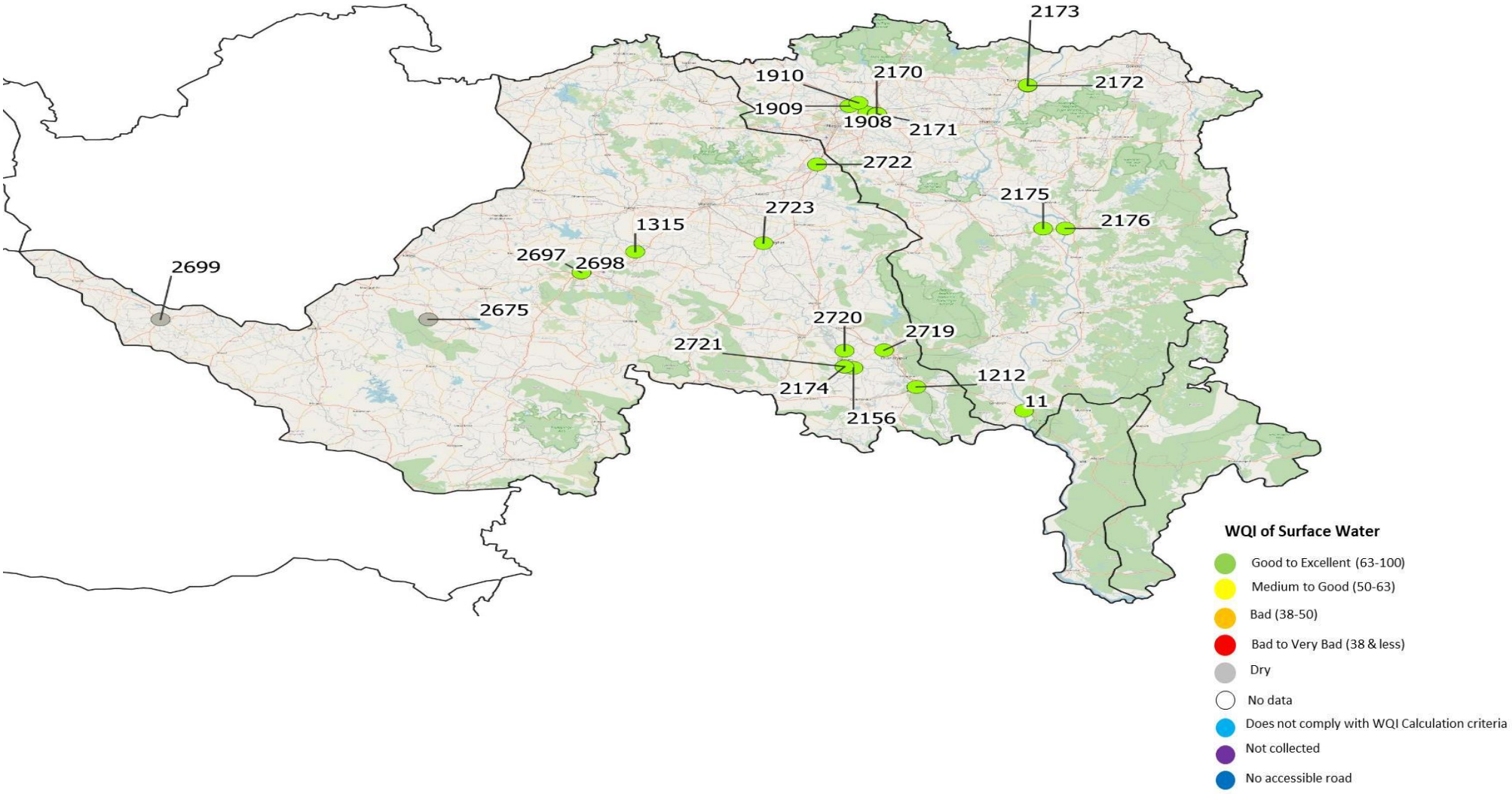
Table No. 19: Surface water quality monitoring stations in Godavari Basin (2 of 2)

Program	Station ID	River/nalla	Station Name	Village	Taluka	District
NWMP	2722	Wena	Wena at U/s of Mohata Mills, nearby Brigde on Hinganghat Wadner Road	Hinganghat	Hinganghat	Wardha
SWMP	185	Nag	Nag Near, Ambazari Lake, Nagpur	Nagpur	Nagpur	Nagpur
SWMP	189	Pill	Pill Near, Mankapur on Koradi Road, Nagpur	Nagpur	Nagpur	Nagpur
SWMP	188	Pill	Pill Near, Wanjra Layout Kamptee Road, Nagpur	Nagpur	Nagpur	Nagpur
NWMP	1909	Kanhan	Kanhan at D/s of Nagpur	Agargaon	Kuhi	Nagpur
SWMP	186	Nag	Nag Near, Bhandewadi Bridge, Nagpur	Nagpur	Nagpur	Nagpur
NWMP	1910	Wainganga	Wainganga after confluence with Kanhan	Ambhora	Kuhi	Nagpur
NWMP	1908	Kolar	Kolar before confluence with Kanhan at Waregaon Bridge	Waregaon	Kamptee	Nagpur
SWMP	187	Nag	Nag Near, Asoli Bridge, Bhandara Road, Nagpur	Nagpur	Nagpur	Nagpur
NWMP	2170	Kanhan	Kanhan (Wainganga basin) at U/s of M/s Vidharba Paper Mill	Sinora	Parseoni	Nagpur
NWMP	2171	Kanhan	Kanhan (Wainganga basin) at D/s of M/s Vidharbha Paper Mills	Sinora	Parseoni	Nagpur
NWMP	2173	Wainganga	Wainganga at U/s of Ellora Paper Mills	Tumsar	Tumsar	Bandara
NWMP	2172	Wainganga	Wainganga at D/s of Ellora Paper Mill	Tumsar	Tumsar	Bandara
NWMP	2175	Wainganga	Wainganga at U/s of Gaurav Paper Mills near Jack Well	Bramhpuri	Chandrapur	Chandrapur
NWMP	2176	Wainganga	Wainganga at D/s of Gaurav Paper Mills Near Jackwell	Bramhpuri	Chandrapur	Chandrapur
NWMP	11	Wainganga	Wainganga at Ashti	Ashti	Gondpipri	Chandrapur

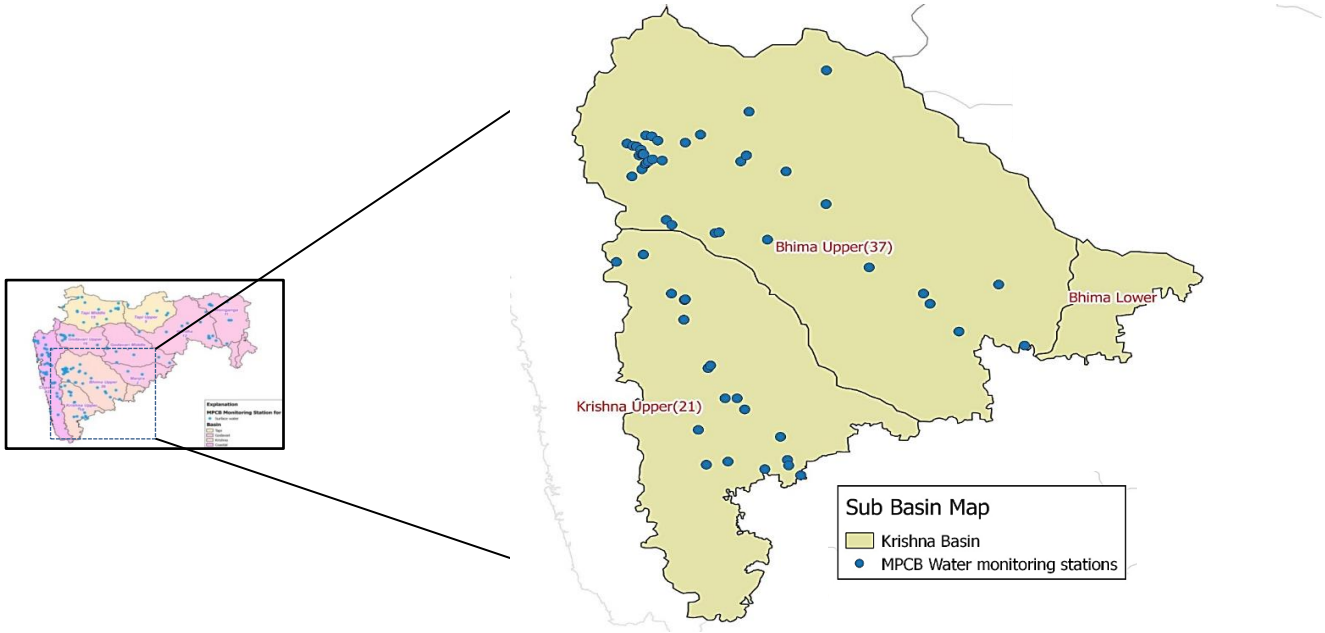
Spatial map of Surface WQI in Godavari Basin (2 of 2) (April 2020)



Spatial map of Surface WQI in Godavari Basin (2 of 2) (December 2020)



Krishna Basin

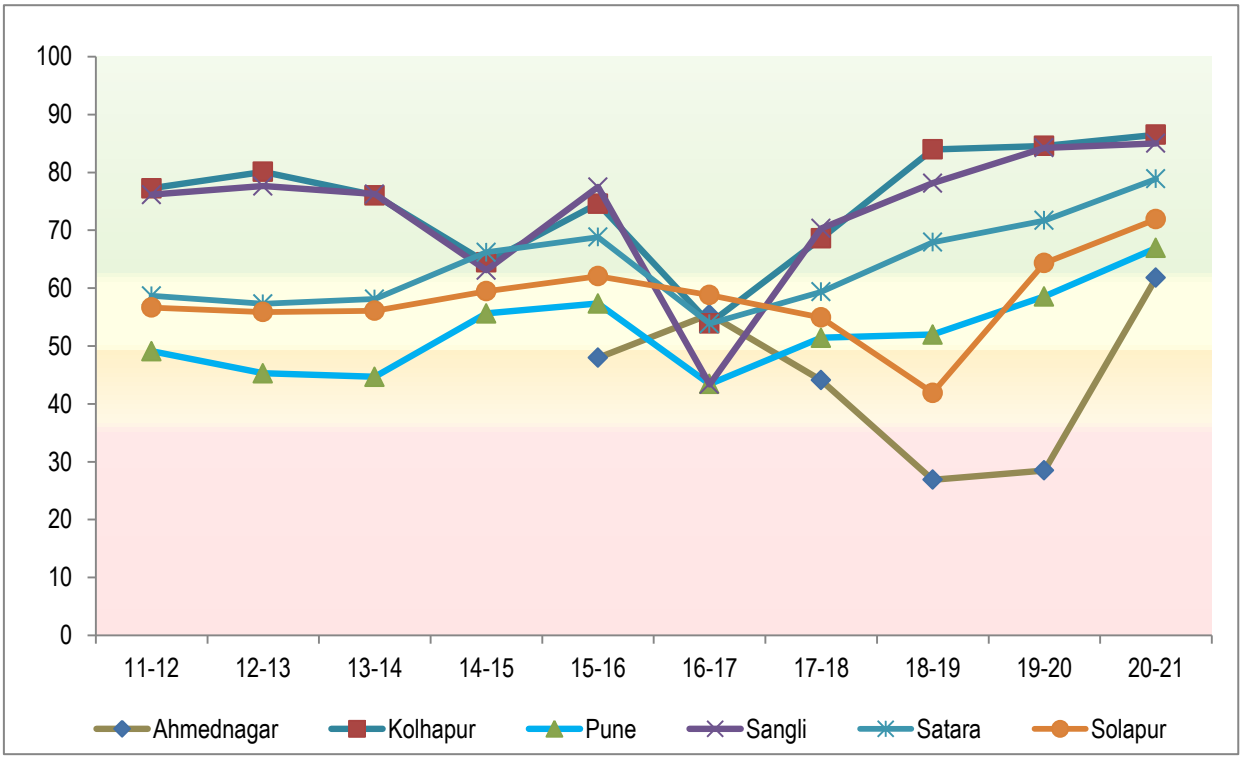


Map No. 7: Network of surface water quality monitoring stations in Krishna basin

With a total drainage area spanning over 2,58,948 sq.km (about 8% of India's total geographic area), the Krishna river is the second largest eastward draining interstate river in Peninsular India. The Krishna River rises in Western Ghats (north of Mahabaleshwar) and flows for about 1400 km through the states of Maharashtra, Karnataka and Andhra Pradesh and finally meets the Bay of Bengal downstream of Vijaywada. 13 tributaries join the Krishna River during its 1400 km journey which includes the Koyna, the Panchganga, the Dudhganga, the Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra, the Dindi, the Peddavagu, the Halia, the Musi and the Munneru[24]. In the state of Maharashtra, the Krishna basin is divided into Krishna Upper (21 stations) and Bhima Upper (37 stations) for analysis in this report.

[24] http://cwc.gov.in/sites/default/files/admin/About-Krishna-Basin-kgbo.pdf

Krishna Basin (Intra Basin analysis)



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure No. 25: Trend of annual average WQI across districts of Krishna basin

Note: This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data maybe analyzed to pin point the most affected and polluted patches of rivers in that district

The increasing trend in annual average WQI was recorded by WQMS installed across all 6 districts which are depicted in Figure No. 25. A significant increase was recorded in Ahmednagar district with a WQI value increased from 28.5 (2019-20) to 61.8 (2020-21) which is a significant improvement. Other WQMS installed at 5 districts too recorded WQI improvement (though slightly) which includes Kolhapur (84.5 in 2019-20 to 86.5 in 2020-21) followed by Pune (58.5 to 66.9), Sangli (84.2 to 85.0), Satara (71.6 to 78.8) and Solapur (64.3 to 71.9).

This increase in annual average WQI throughout the Krishna basin shows that the basin is having a low level of pollution due to improvement in Water quality.

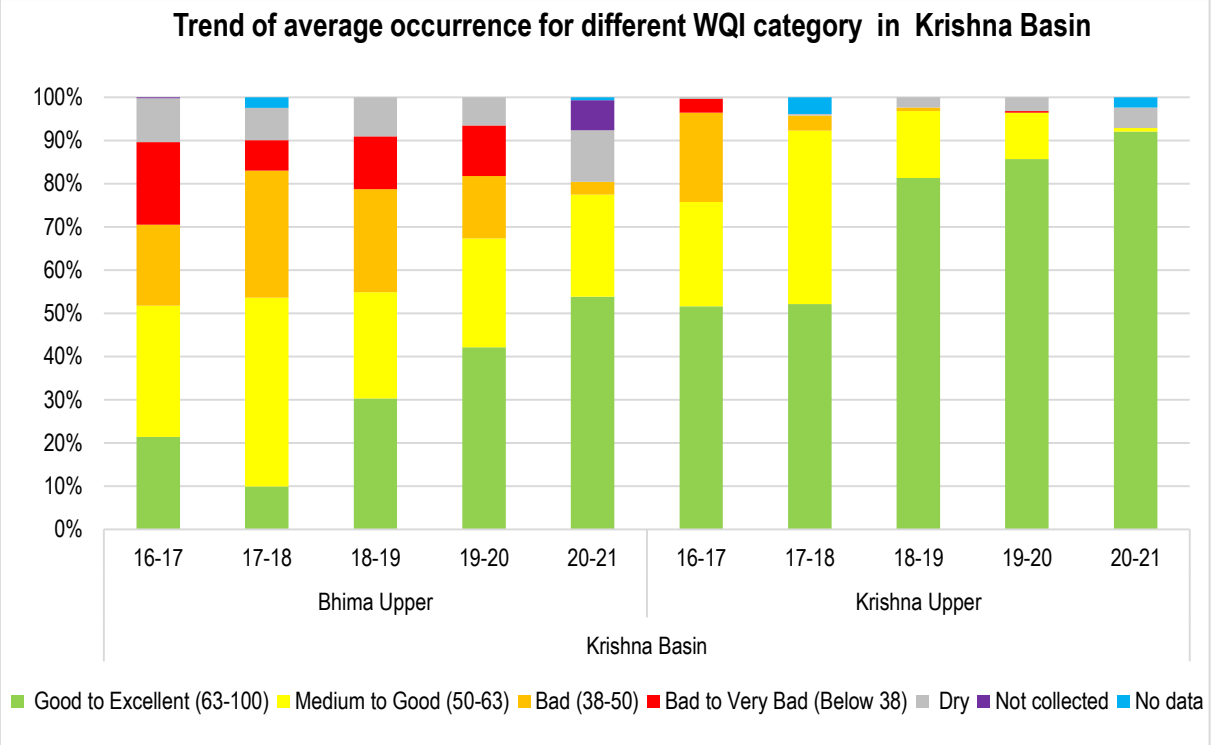
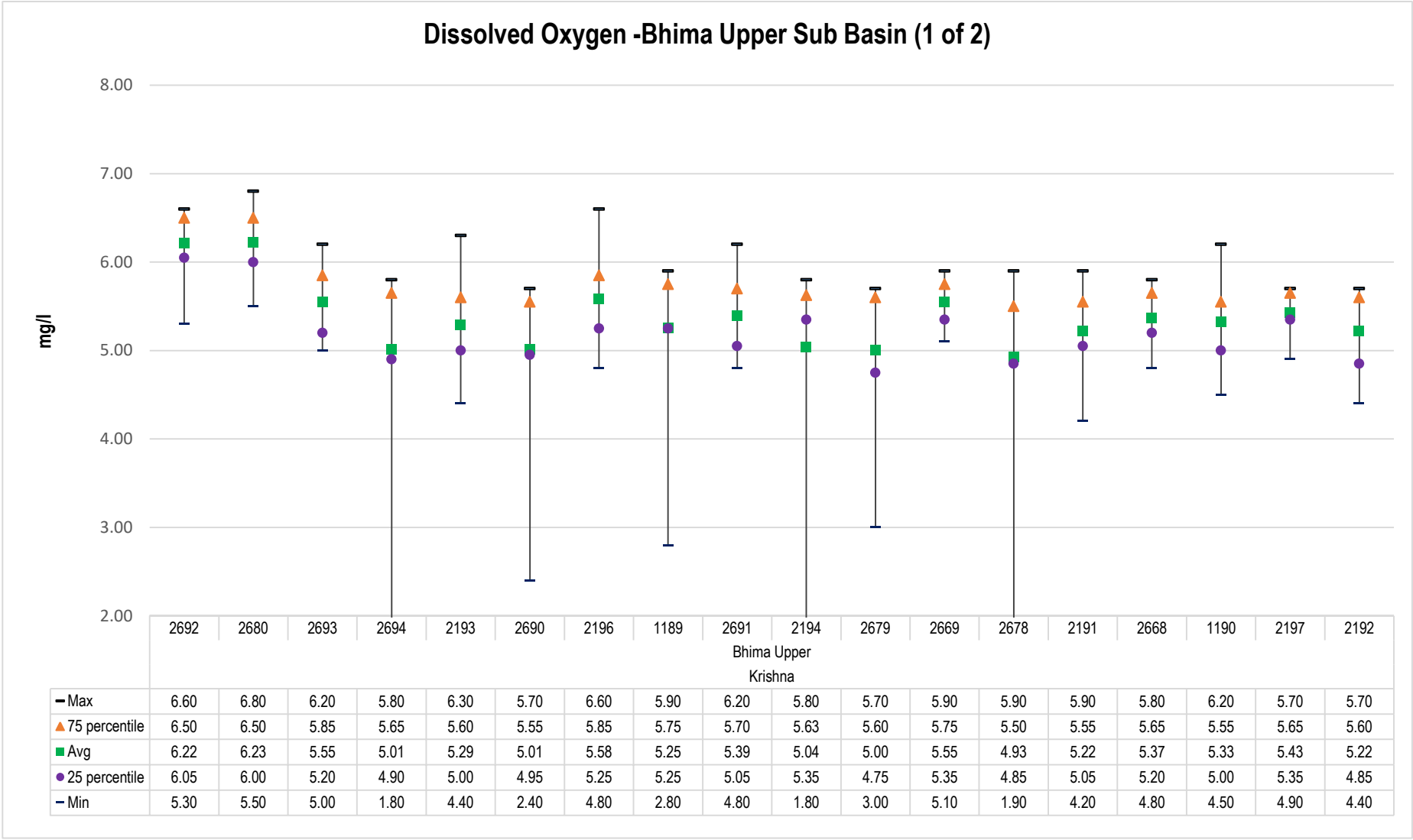


Figure No. 26: Trend of average occurrence for different category of WQI in Krishna basin

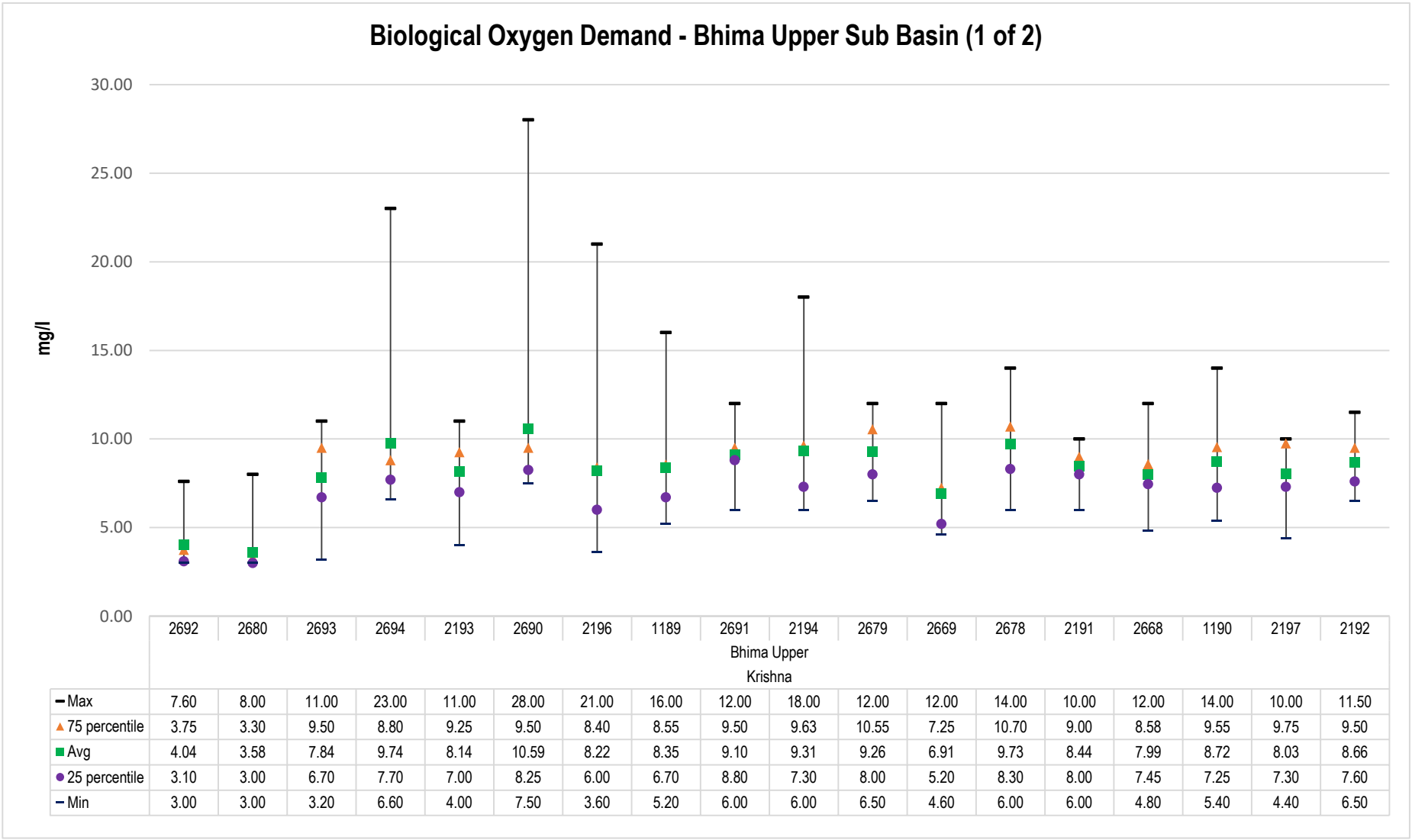
Interbasin analysis for the Krishna basin has been depicted in Figure No. 26. The Water quality of the Bhima Upper sub basin recorded an improvement in 2020-21. This is because the total share of observations coming under the 'Good to Excellent' WQI category increased from about 42.1% in 2019-20 to about 53.8% in 2020-21. Similarly, the percentage share of categories recorded under the WQI category of 'Medium to Good' reduced from about 25.2% to about 23.6%. A similar decrease was observed in the case of observations recorded under the category of 'Bad' (from ~14.4% to ~2.92%). No single observation was recorded in the category of 'Bad to Very Bad' (against 11.7% in 2019-20). About 11.9% and 7% observations were recorded under the 'Dry' and 'Not Collected' categories respectively. Only a small fraction of observations (~ 0.67%) came under the 'No Data' WQI category.

Similar to the Bhima Upper, the Krishna Upper sub basin too recorded an improvement in WQI. The total percentage share of observations ('Good to Excellent') increased from about 85.7% (2019-20) to about 92% in 2020-21. The share of 'Medium to Good' category observations decreased significantly from about 10.7% (2019-20) to about 0.8%in 2020-21. A small fraction of observations (~ 0.4%) was recorded under the category of 'Bad to Very Bad'. No observation was found under the 'Bad' and 'Not Collected' categories. 'Dry' and 'No Data' category witnessed percentage share of about 4.76% and 2.4% observations respectively.



	2692	2680	2693	2694	2193	2690	2196	1189	2691	2194	2679	2669	2678	2191	2668	1190	2197	2192
Max	6.60	6.80	6.20	5.80	6.30	5.70	6.60	5.90	6.20	5.80	5.70	5.90	5.90	5.90	5.80	6.20	5.70	5.70
75 percentile	6.50	6.50	5.85	5.65	5.60	5.55	5.85	5.75	5.70	5.63	5.60	5.75	5.50	5.55	5.65	5.55	5.65	5.60
Avg	6.22	6.23	5.55	5.01	5.29	5.01	5.58	5.25	5.39	5.04	5.00	5.55	4.93	5.22	5.37	5.33	5.43	5.22
25 percentile	6.05	6.00	5.20	4.90	5.00	4.95	5.25	5.25	5.05	5.35	4.75	5.35	4.85	5.05	5.20	5.00	5.35	4.85
Min	5.30	5.50	5.00	1.80	4.40	2.40	4.80	2.80	4.80	1.80	3.00	5.10	1.90	4.20	4.80	4.50	4.90	4.40

Figure No. 27: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (1 of 2)

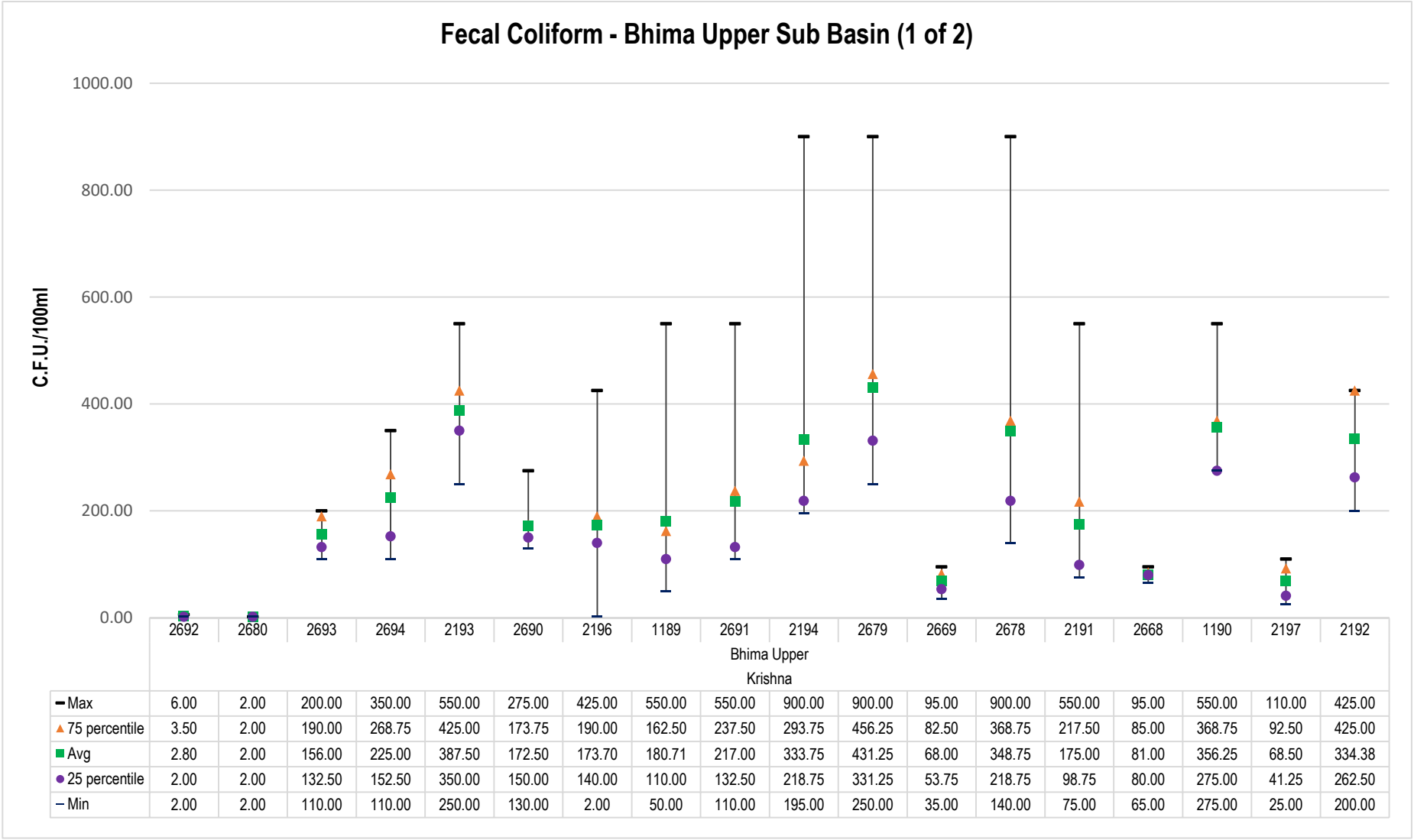


	2692	2680	2693	2694	2193	2690	2196	1189	2691	2194	2679	2669	2678	2191	2668	1190	2197	2192
Max	7.60	8.00	11.00	23.00	11.00	28.00	21.00	16.00	12.00	18.00	12.00	12.00	14.00	10.00	12.00	14.00	10.00	11.50
75 percentile	3.75	3.30	9.50	8.80	9.25	9.50	8.40	8.55	9.50	9.63	10.55	7.25	10.70	9.00	8.58	9.55	9.75	9.50
Avg	4.04	3.58	7.84	9.74	8.14	10.59	8.22	8.35	9.10	9.31	9.26	6.91	9.73	8.44	7.99	8.72	8.03	8.66
25 percentile	3.10	3.00	6.70	7.70	7.00	8.25	6.00	6.70	8.80	7.30	8.00	5.20	8.30	8.00	7.45	7.25	7.30	7.60
Min	3.00	3.00	3.20	6.60	4.00	7.50	3.60	5.20	6.00	6.00	6.50	4.60	6.00	6.00	4.80	5.40	4.40	6.50

Figure No. 28: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (1 of 2)

	2692	2680	2693	2694	2193	2690	2196	1189	2691	2194	2679	2669	2678	2191	2668	1190	2197	2192
	Bhima Upper Krishna																	
Max	8.60	8.50	8.20	8.90	8.30	8.00	8.20	8.40	8.90	8.40	8.10	8.40	8.30	8.00	8.50	8.30	8.60	8.20
75 percentile	8.10	8.10	7.95	7.95	8.15	7.85	8.05	7.85	8.00	7.90	7.95	7.95	8.00	7.95	8.03	8.00	8.15	8.10
Avg	7.79	7.79	7.65	7.74	7.75	7.59	7.74	7.65	7.74	7.61	7.67	7.65	7.70	7.67	7.74	7.69	7.82	7.77
25 percentile	7.43	7.50	7.40	7.40	7.45	7.35	7.45	7.50	7.45	7.23	7.45	7.40	7.35	7.45	7.63	7.45	7.65	7.60
Min	7.10	6.88	6.90	7.00	6.80	6.88	6.91	6.70	6.86	6.75	6.72	6.40	7.03	6.75	6.70	6.72	6.78	6.70

Figure No. 29: Trend of pH levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (1 of 2)



	2692	2680	2693	2694	2193	2690	2196	1189	2691	2194	2679	2669	2678	2191	2668	1190	2197	2192
Max	6.00	2.00	200.00	350.00	550.00	275.00	425.00	550.00	550.00	900.00	900.00	95.00	900.00	550.00	95.00	550.00	110.00	425.00
75 percentile	3.50	2.00	190.00	268.75	425.00	173.75	190.00	162.50	237.50	293.75	456.25	82.50	368.75	217.50	85.00	368.75	92.50	425.00
Avg	2.80	2.00	156.00	225.00	387.50	172.50	173.70	180.71	217.00	333.75	431.25	68.00	348.75	175.00	81.00	356.25	68.50	334.38
25 percentile	2.00	2.00	132.50	152.50	350.00	150.00	140.00	110.00	132.50	218.75	331.25	53.75	218.75	98.75	80.00	275.00	41.25	262.50
Min	2.00	2.00	110.00	110.00	250.00	130.00	2.00	50.00	110.00	195.00	250.00	35.00	140.00	75.00	65.00	275.00	25.00	200.00

Figure No. 30: Trend of Fecal Coliform levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (1 of 2)

Water Quality Index for WQMS at Krishna Basin (1 of 2): Sub-basin - Bhima upper (1 of 2)

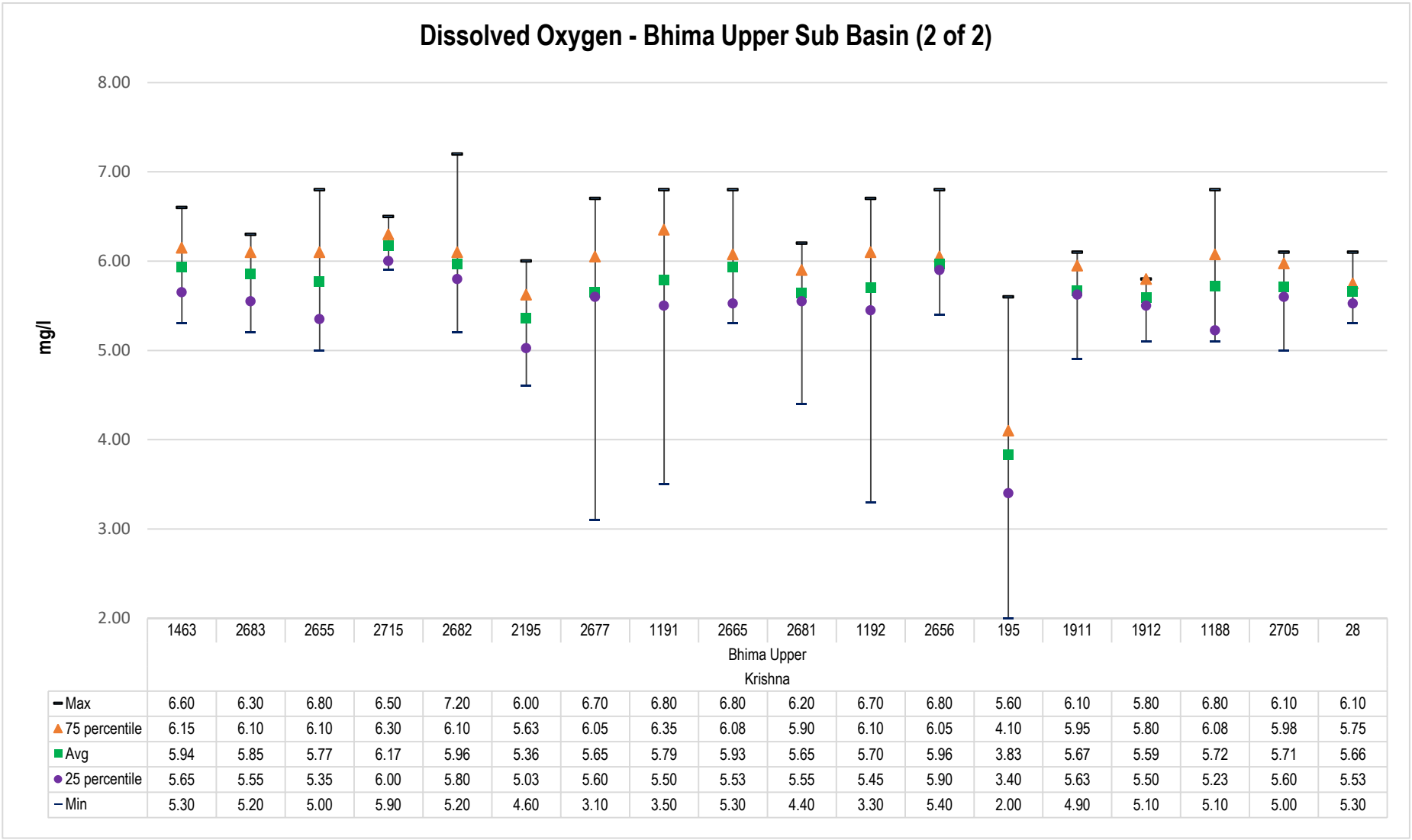
April																		
May																		
June	81.10	73.66	68.67	51.88	51.11	61.67	62.07	65.08	55.31	54.56	57.38	55.90	58.51	58.22	56.16	56.25	56.27	60.18
July	89.64	88.03	67.00	66.53	69.32	63.99	67.61	62.96	63.26	64.67	60.76	71.53	53.41	57.65	71.40	65.26	67.00	56.51
August	87.96	85.99	58.93	65.01	57.36	64.18	66.22	64.07	59.49	57.90	54.26	65.24	56.46	62.65	57.85	56.36	58.51	57.68
September	92.61	85.99	62.94	59.38	64.69	58.29	65.78	67.69	58.93	59.88	62.86	68.68	70.82	68.29	65.76	62.96	65.95	66.20
October	79.94	93.83	60.89	62.56	59.13	64.11	59.43	62.28	63.31	62.54	63.32	63.91	61.19	64.55	64.01	63.67	67.17	61.28
November	86.58	89.44	67.10	64.96	57.96	64.60	88.18	53.24	61.90	52.21	59.86	68.86	58.00	64.02	68.07	58.53	65.35	59.53
December	90.98	86.02	64.40	62.22	56.69	59.88	68.91	61.21	62.87	42.53	49.62	77.17	48.43	62.00	72.81	48.34	74.35	49.63
January	85.36	85.75	58.87	58.99	55.24	57.79	61.97	48.23	57.86	42.29	46.59	70.98	50.16	62.31	62.39	46.11	63.78	49.67
February	84.07	86.77	61.04	60.22	57.38	60.23	60.30	65.14	59.15	67.11	55.75	69.05	56.54	59.54	64.24	63.00	71.28	54.22
March	77.47	85.79	73.85	59.81	54.29	60.57	61.88	63.50	61.99	63.62	57.41	71.91	59.04	67.47	65.27	57.14	66.55	53.63
Station code	2692	2680	2693	2694	2193	2690	2196	1189	2691	2194	2679	2669	2678	2191	2668	1190	2197	2192
Sub Basin	Bhima Upper (1 of 2)																	
Basin	Krishna																	

Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

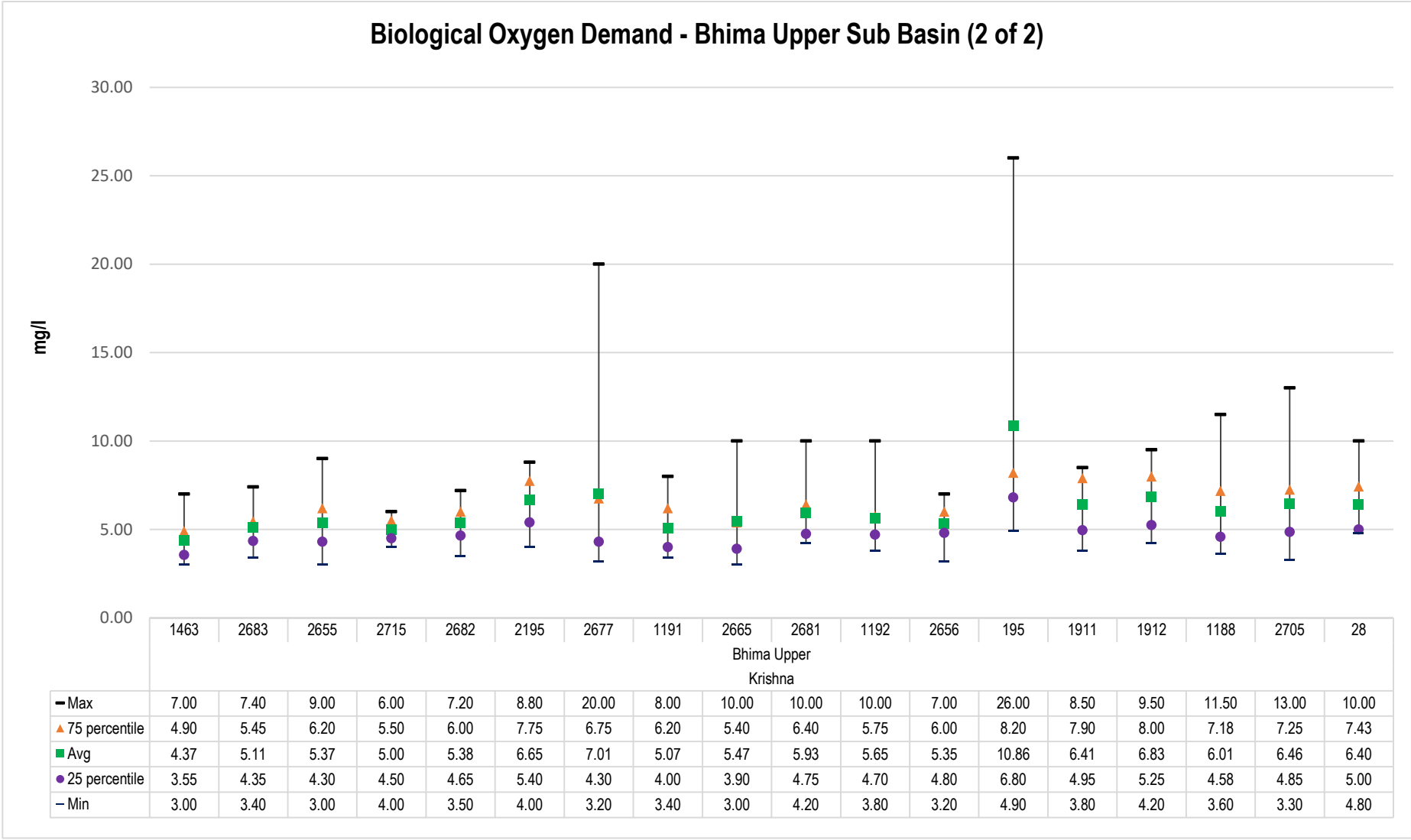
Table No. 20: Surface water quality monitoring stations in Krishna Basin (1 of 2) Sub Basin –Bhima Upper (1 of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	2692	Pawana	Pawana at Ravet Weir, Pune	Ravet	Haweli	Pune
NWMP	2680	Mutha	Mutha at Khadakvasla Dam Pune	Kadakvasla	Haweli	Pune
NWMP	2693	Pawana	Pawana at Chinchwadgaon, Pune	Chinchwadgaon	Haweli	Pune
NWMP	2694	Pawana	Pawana at Pimprigaon, Pune	Pimprigaon	Haweli	Pune
NWMP	2193	Mula	Mula at Aundh Bridge -Aundgaon	Aundhgaon	Haweli	Pune
NWMP	2690	Pawana	Pawana at Kasarwadi Pune	Kasarwadi	Haweli	Pune
NWMP	2196	Pawana	Pawana at Sangavigaon, Pune	Sangavigaon	Haweli	Pune
NWMP	1189	Bhima	Bhima at Pune(Mutha) at U/s of Vithalwadi near Sankar Mandir	Vithalwadi	Haweli	Pune
NWMP	2691	Pawana	Pawana at Dapodi Bridge at Pawana-Mulla Sangan Pune	Dapodi	Haweli	Pune
NWMP	2194	Mula	Mula at Harrison Bridge near Mula -Pawana Sangam	Bopodi	Haweli	Pune
NWMP	2679	Mutha	Mutha at Deccan Bridge, Pune	Deccan	Pune	Pune
NWMP	2669	Indrayani	Indrayani at U/s of Moshigaon, Pune	Moshigaon	Haweli	Pune
NWMP	2678	Mutha	Mutha near Veer Savarkar Bhavan	Pune M.C	Pune	Pune
NWMP	2191	Mutha	Mutha at Sangam Bridge Near Ganpathi Ghat	Shivaji Nagar	Pune	Pune
NWMP	2668	Indrayani	Indrayani at D/s of Moshi village	Moshi	Haveli	Pune
NWMP	1190	Bhima	Bhima at D/s of Bundgarden, Pune	Yerwada	Haweli	Pune
NWMP	2197	Indrayani	Indrayani at D/s of Alandigaon, Pune	Alandigaon	Haweli	Pune
NWMP	2192	Mula-Mutha	Mula-Mutha at Mundhwa Bridge	Mundhawa	Haweli	Pune



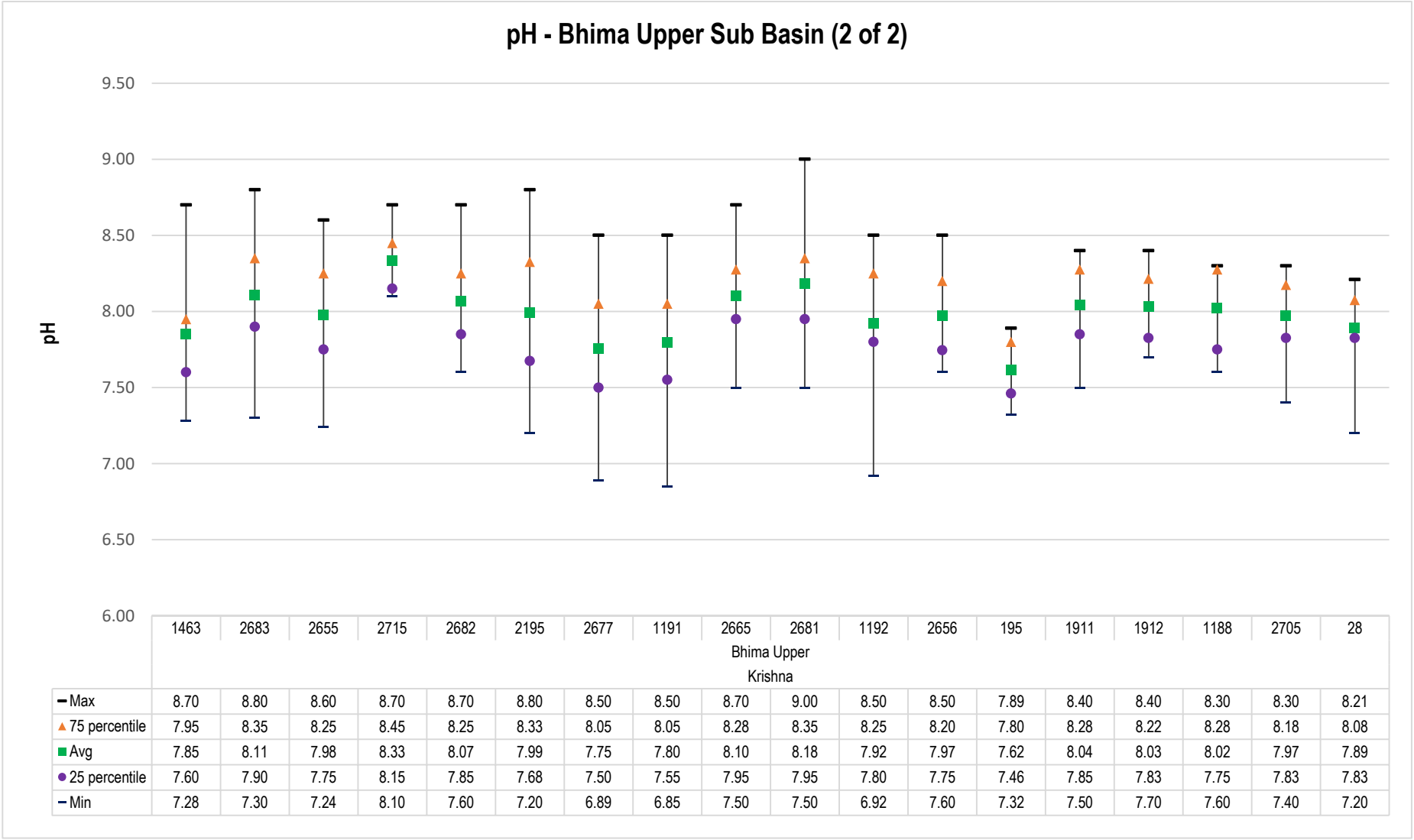
	1463	2683	2655	2715	2682	2195	2677	1191	2665	2681	1192	2656	195	1911	1912	1188	2705	28
	Bhima Upper																	
	Krishna																	
Max	6.60	6.30	6.80	6.50	7.20	6.00	6.70	6.80	6.80	6.20	6.70	6.80	5.60	6.10	5.80	6.80	6.10	6.10
75 percentile	6.15	6.10	6.10	6.30	6.10	5.63	6.05	6.35	6.08	5.90	6.10	6.05	4.10	5.95	5.80	6.08	5.98	5.75
Avg	5.94	5.85	5.77	6.17	5.96	5.36	5.65	5.79	5.93	5.65	5.70	5.96	3.83	5.67	5.59	5.72	5.71	5.66
25 percentile	5.65	5.55	5.35	6.00	5.80	5.03	5.60	5.50	5.53	5.55	5.45	5.90	3.40	5.63	5.50	5.23	5.60	5.53
Min	5.30	5.20	5.00	5.90	5.20	4.60	3.10	3.50	5.30	4.40	3.30	5.40	2.00	4.90	5.10	5.10	5.00	5.30

Figure No. 31: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (2 of 2)



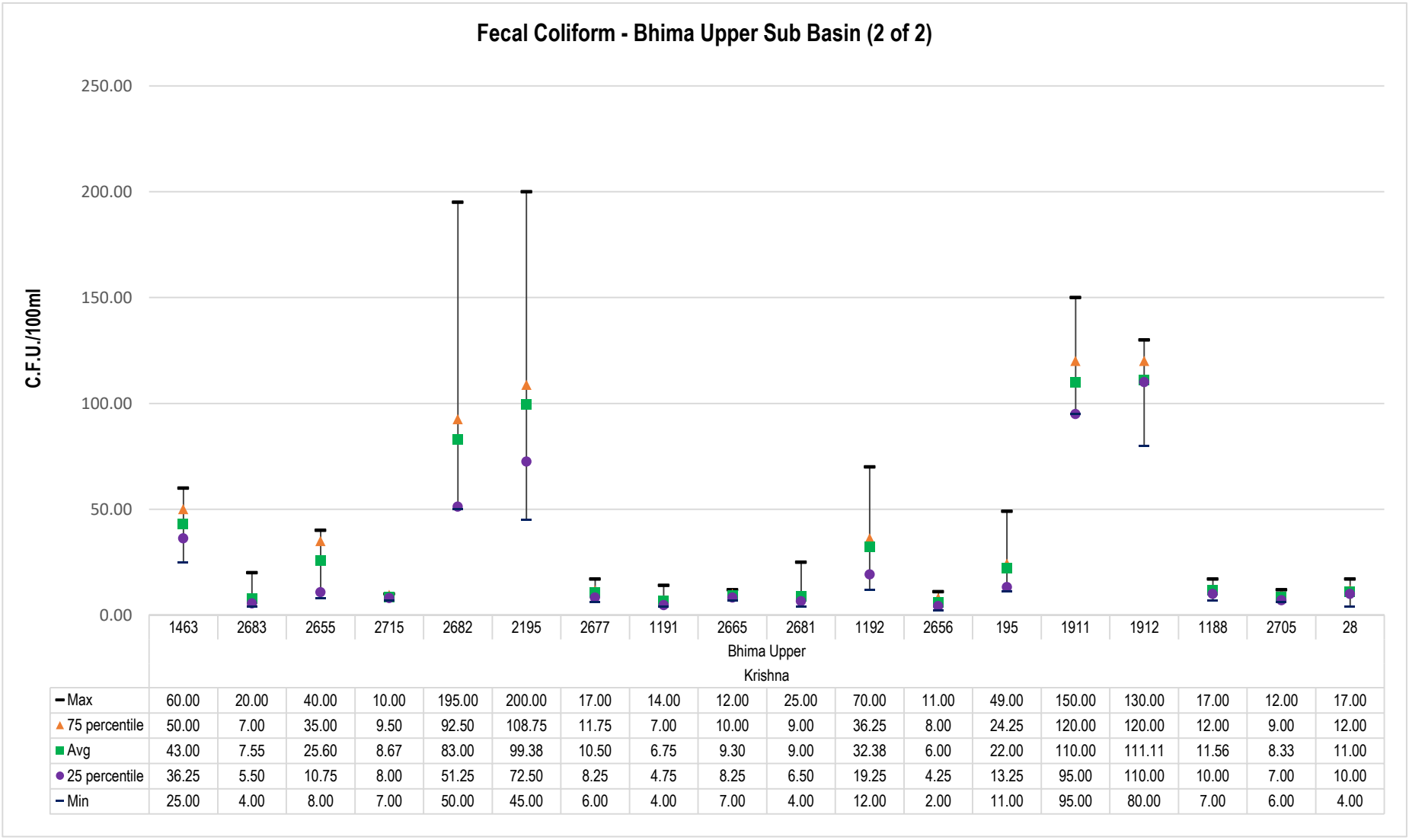
	1463	2683	2655	2715	2682	2195	2677	1191	2665	2681	1192	2656	195	1911	1912	1188	2705	28
Max	7.00	7.40	9.00	6.00	7.20	8.80	20.00	8.00	10.00	10.00	10.00	7.00	26.00	8.50	9.50	11.50	13.00	10.00
75 percentile	4.90	5.45	6.20	5.50	6.00	7.75	6.75	6.20	5.40	6.40	5.75	6.00	8.20	7.90	8.00	7.18	7.25	7.43
Avg	4.37	5.11	5.37	5.00	5.38	6.65	7.01	5.07	5.47	5.93	5.65	5.35	10.86	6.41	6.83	6.01	6.46	6.40
25 percentile	3.55	4.35	4.30	4.50	4.65	5.40	4.30	4.00	3.90	4.75	4.70	4.80	6.80	4.95	5.25	4.58	4.85	5.00
Min	3.00	3.40	3.00	4.00	3.50	4.00	3.20	3.40	3.00	4.20	3.80	3.20	4.90	3.80	4.20	3.60	3.30	4.80

Figure No. 32: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (2 of 2)



	1463	2683	2655	2715	2682	2195	2677	1191	2665	2681	1192	2656	195	1911	1912	1188	2705	28
	Bhima Upper																	
	Krishna																	
Max	8.70	8.80	8.60	8.70	8.70	8.80	8.50	8.50	8.70	9.00	8.50	8.50	7.89	8.40	8.40	8.30	8.30	8.21
75 percentile	7.95	8.35	8.25	8.45	8.25	8.33	8.05	8.05	8.28	8.35	8.25	8.20	7.80	8.28	8.22	8.28	8.18	8.08
Avg	7.85	8.11	7.98	8.33	8.07	7.99	7.75	7.80	8.10	8.18	7.92	7.97	7.62	8.04	8.03	8.02	7.97	7.89
25 percentile	7.60	7.90	7.75	8.15	7.85	7.68	7.50	7.55	7.95	7.95	7.80	7.75	7.46	7.85	7.83	7.75	7.83	7.83
Min	7.28	7.30	7.24	8.10	7.60	7.20	6.89	6.85	7.50	7.50	6.92	7.60	7.32	7.50	7.70	7.60	7.40	7.20

Figure No. 33: Trend of pH levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (2 of 2)



	1463	2683	2655	2715	2682	2195	2677	1191	2665	2681	1192	2656	195	1911	1912	1188	2705	28
Max	60.00	20.00	40.00	10.00	195.00	200.00	17.00	14.00	12.00	25.00	70.00	11.00	49.00	150.00	130.00	17.00	12.00	17.00
75 percentile	50.00	7.00	35.00	9.50	92.50	108.75	11.75	7.00	10.00	9.00	36.25	8.00	24.25	120.00	120.00	12.00	9.00	12.00
Avg	43.00	7.55	25.60	8.67	83.00	99.38	10.50	6.75	9.30	9.00	32.38	6.00	22.00	110.00	111.11	11.56	8.33	11.00
25 percentile	36.25	5.50	10.75	8.00	51.25	72.50	8.25	4.75	8.25	6.50	19.25	4.25	13.25	95.00	110.00	10.00	7.00	10.00
Min	25.00	4.00	8.00	7.00	50.00	45.00	6.00	4.00	7.00	4.00	12.00	2.00	11.00	95.00	80.00	7.00	6.00	4.00

Figure No. 34: Trend of Fecal Coliform levels recorded at WQMS at Bhima upper sub basin -Krishna Basin (2 of 2)

Water Quality Index for WQMS at Krishna Basin (1 of 2): Sub-basin - Bhima upper (2 of 2)

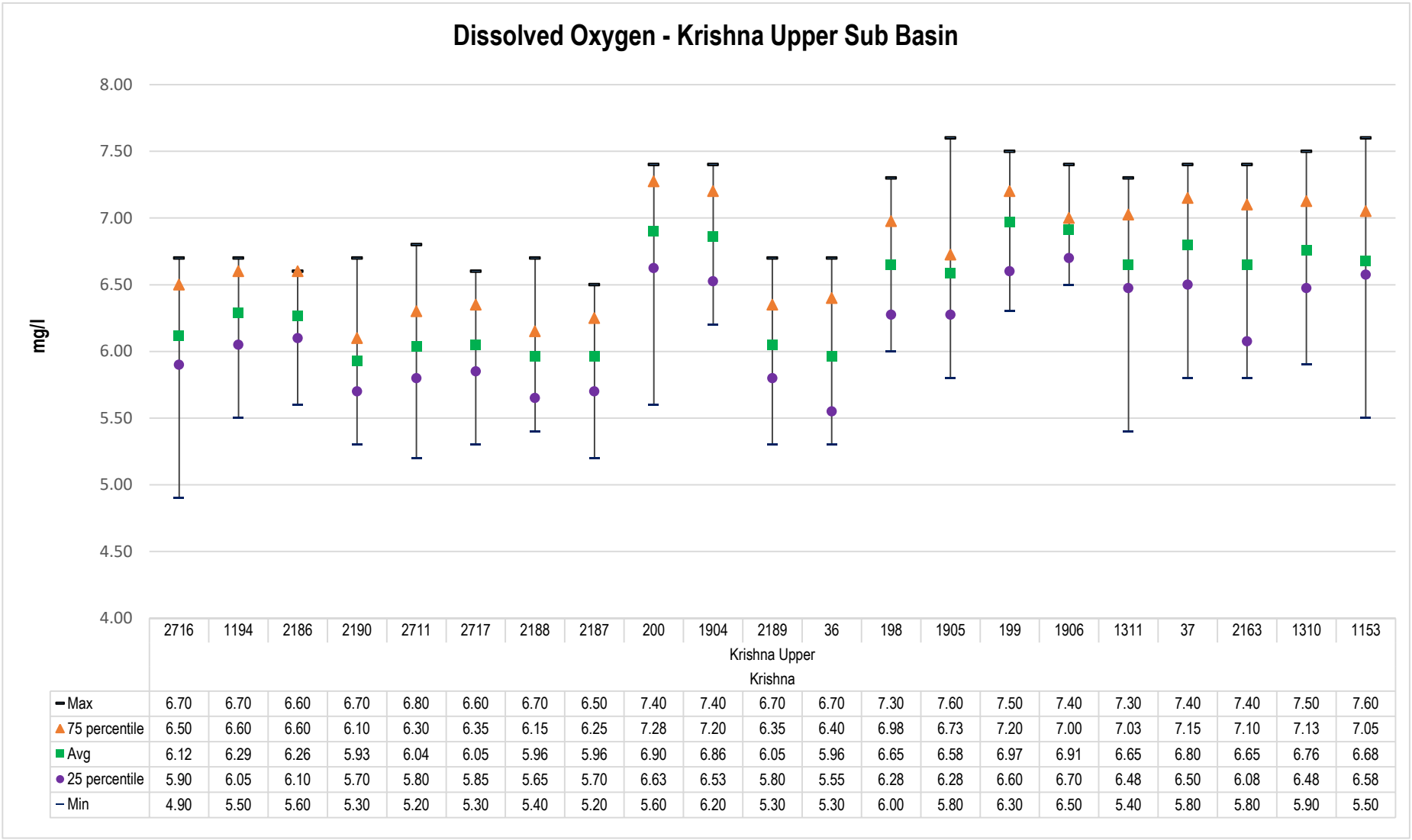
April																		
May		70.46								54.82								
June	62.68	78.68	77.38	73.92	61.87	58.68	72.48	79.89	73.36	67.06	72.50	70.51	59.40					
July	77.91	74.26	83.56	82.58	73.85	72.89	76.15	85.24	83.16	75.38	75.35	81.93		65.62	64.04	68.24	72.65	77.37
August	79.95	78.20	74.20		66.62	61.16	75.84	87.39	78.20	75.91	76.06	85.69	72.63	63.04	63.67	81.08	81.97	82.80
September	76.60	85.56	74.85		75.09	67.45	80.09	77.75	65.78	84.21	73.23	76.14		67.48	64.75	80.09	80.55	74.39
October	75.26	80.75	64.23	75.10	69.45	65.14	78.67	71.45	68.37	80.46	66.38	76.90	73.69	66.72	63.30	73.44	76.47	74.52
November	78.68	80.54	78.86		71.65	58.99	81.82	84.30	81.40	75.61	79.52	85.62	69.12	71.41	63.96	79.45	74.39	73.46
December	77.64	81.14	74.18		71.50	46.30	86.31	64.87	81.53	79.06	61.16	61.16	61.85	70.15	67.80	74.85	77.64	77.10
January	70.90	77.69	68.45		69.79	40.98	75.94	55.45	73.95	73.72	55.13	55.04	50.45	59.67	68.04	67.19	74.39	74.48
February	71.71	71.46	68.52		63.46	65.36	68.32	75.64	78.24	73.23	70.77	82.01	61.29	71.70	67.49	67.68	75.34	68.19
March	69.10	75.09	69.22		70.15	63.97	78.25	75.72	76.02	77.67	74.29	76.66	46.04	62.55	63.42	75.76	72.54	77.96
Station code	1463	2683	2655	2715	2682	2195	2677	1191	2665	2681	1192	2656	195	1911	1912	1188	2705	28
Sub Basin	Bhima Upper (2 of 2)																	
Basin	Krishna																	

Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

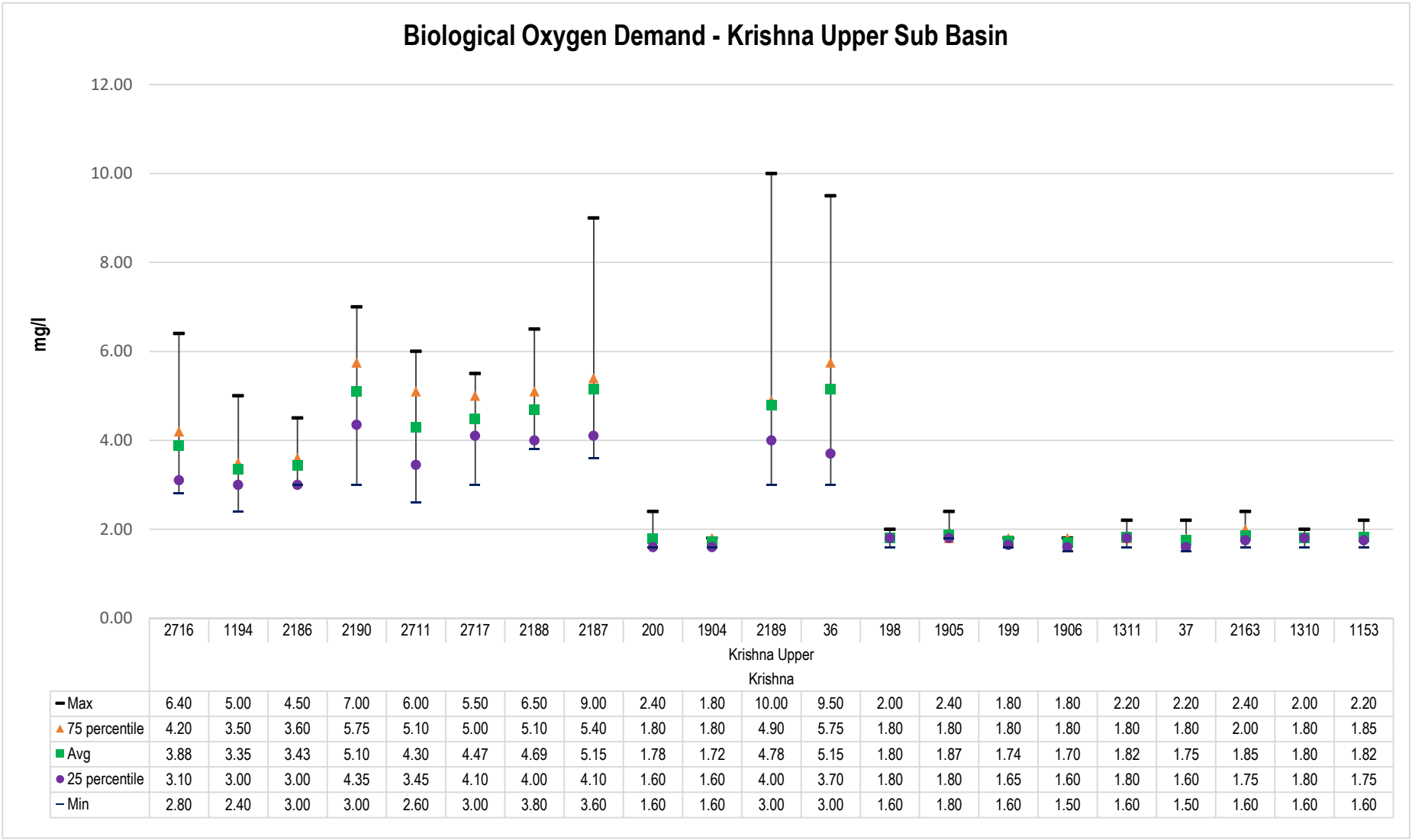
Table No. 21: Surface water monitoring stations at Krishna Basin (1 of 2) Sub Basin Bhima Upper (2 of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	1463	Nira	Nira at Sarola bridge	Sarola	Bhor	Pune
NWMP	2683	Nira	Nira at Shindewadi	Shindewadi, Shirwal	Khandala	Satara
NWMP	2655	Bhima	Bhima at Koregaon near Koregaon Bridge, Pune	Koregaon	Shirur	Pune
NWMP	2715	Vel	Vel at Shikrapur, Pune	Shikrapur	Shirur	Pune
NWMP	2682	Nira	Nira at U/s of Jubilant Organosis Pune	Nira(Datta ghat)	Baramati	Pune
NWMP	2195	Nira	Nira at D/s of Jubilant Organosis Pune	Nimbut	Baramati	Pune
NWMP	2677	Mula-Mutha	Mula-Mutha at D/s of Theur, Pune	Theur	Haweli	Pune
NWMP	1191	Bhima	Bhima after confluence with Mula-Mutha at Pargaon near Vasant Bandara	Pargaon	Daund	Pune
NWMP	2665	Ghod	Ghod at Shirur, Pune	Shirur	Shirur	Pune
NWMP	2681	Nira	Nira at Sangavi	Sangavi	Phaltan	Satara
NWMP	1192	Bhima	Bhima at Daund near Mahadev temple	Daund	Daund	Pune
NWMP	2656	Bhima	Bhima Backwater of Ujani Dam near raw water pump house	Kumbargaon	Indapur	Pune
SWMP	195	Sina	Sina Bridge At Burudgaon Road, A/P Ahmednagar, Taluka & District Ahmednagar	Burudgaon	Ahmednagar	Ahmednagar
NWMP	1911	Chandrabhaga	Chandrabhaga at U/s of Pandharpur town	Gursale	Pandarpur	Solapur
NWMP	1912	Chandrabhaga	Chandrabhaga at D/s of Pandharpur town near Vishnupant Mandir	Gopalpur	Pandarpur	Solapur
NWMP	1188	Bhima	Bhima at Narshingpur near Sangam Bridge after confluence with Nira	Narsingpur	Malshiros	Solapur
NWMP	2705	Sina	Sina near Laboti till naka Solapur	Laboti	Mohal	Solapur
NWMP	28	Bhima	Bhima at Takli	Takali	South Solapur	Solapur



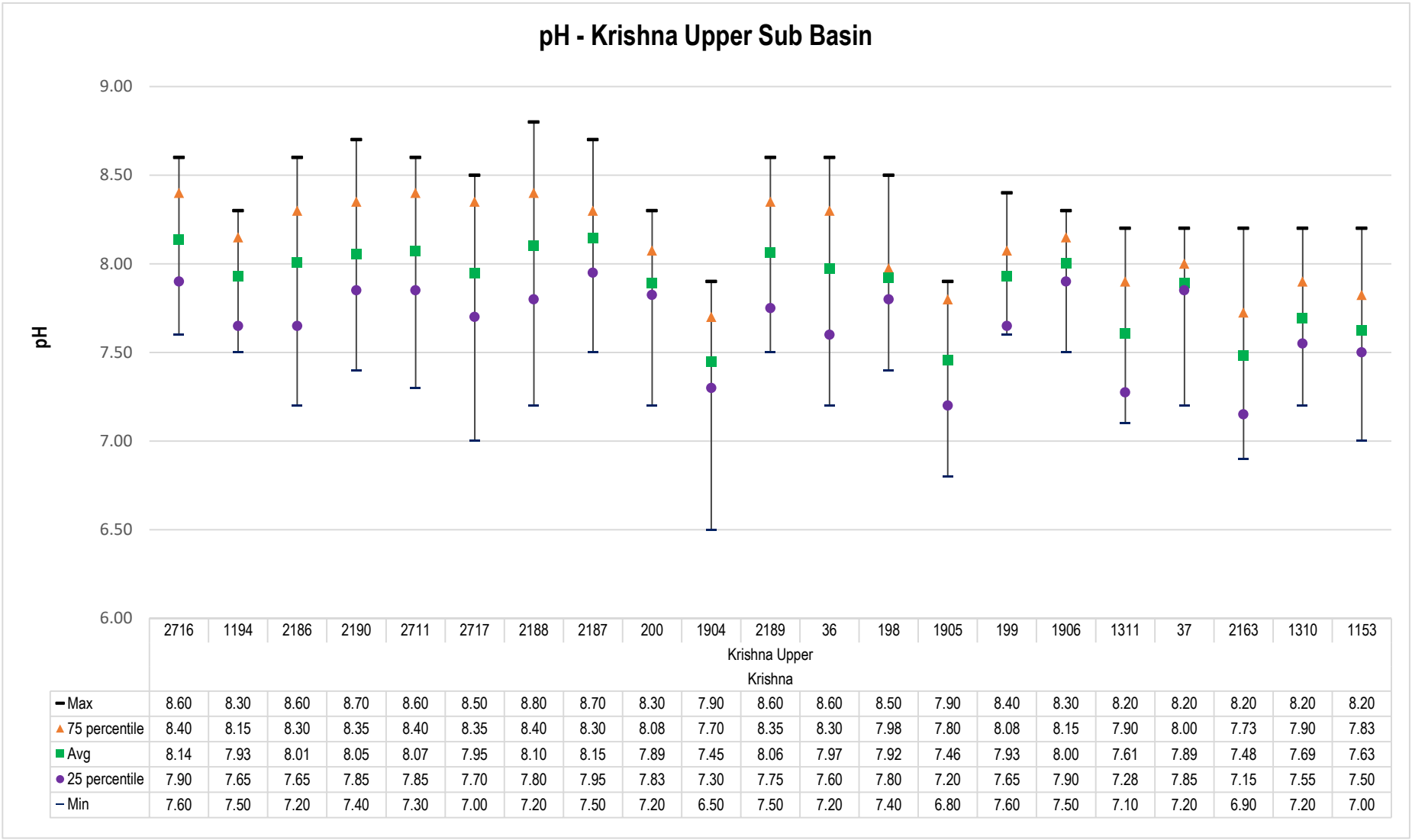
	2716	1194	2186	2190	2711	2717	2188	2187	200	1904	2189	36	198	1905	199	1906	1311	37	2163	1310	1153
	Krishna Upper																				
	Krishna																				
Max	6.70	6.70	6.60	6.70	6.80	6.60	6.70	6.50	7.40	7.40	6.70	6.70	7.30	7.60	7.50	7.40	7.30	7.40	7.40	7.50	7.60
75 percentile	6.50	6.60	6.60	6.10	6.30	6.35	6.15	6.25	7.28	7.20	6.35	6.40	6.98	6.73	7.20	7.00	7.03	7.15	7.10	7.13	7.05
Avg	6.12	6.29	6.26	5.93	6.04	6.05	5.96	5.96	6.90	6.86	6.05	5.96	6.65	6.58	6.97	6.91	6.65	6.80	6.65	6.76	6.68
25 percentile	5.90	6.05	6.10	5.70	5.80	5.85	5.65	5.70	6.63	6.53	5.80	5.55	6.28	6.28	6.60	6.70	6.48	6.50	6.08	6.48	6.58
Min	4.90	5.50	5.60	5.30	5.20	5.30	5.40	5.20	5.60	6.20	5.30	5.30	6.00	5.80	6.30	6.50	5.40	5.80	5.80	5.90	5.50

Figure No. 35: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Krishna upper sub basin -Krishna Basin



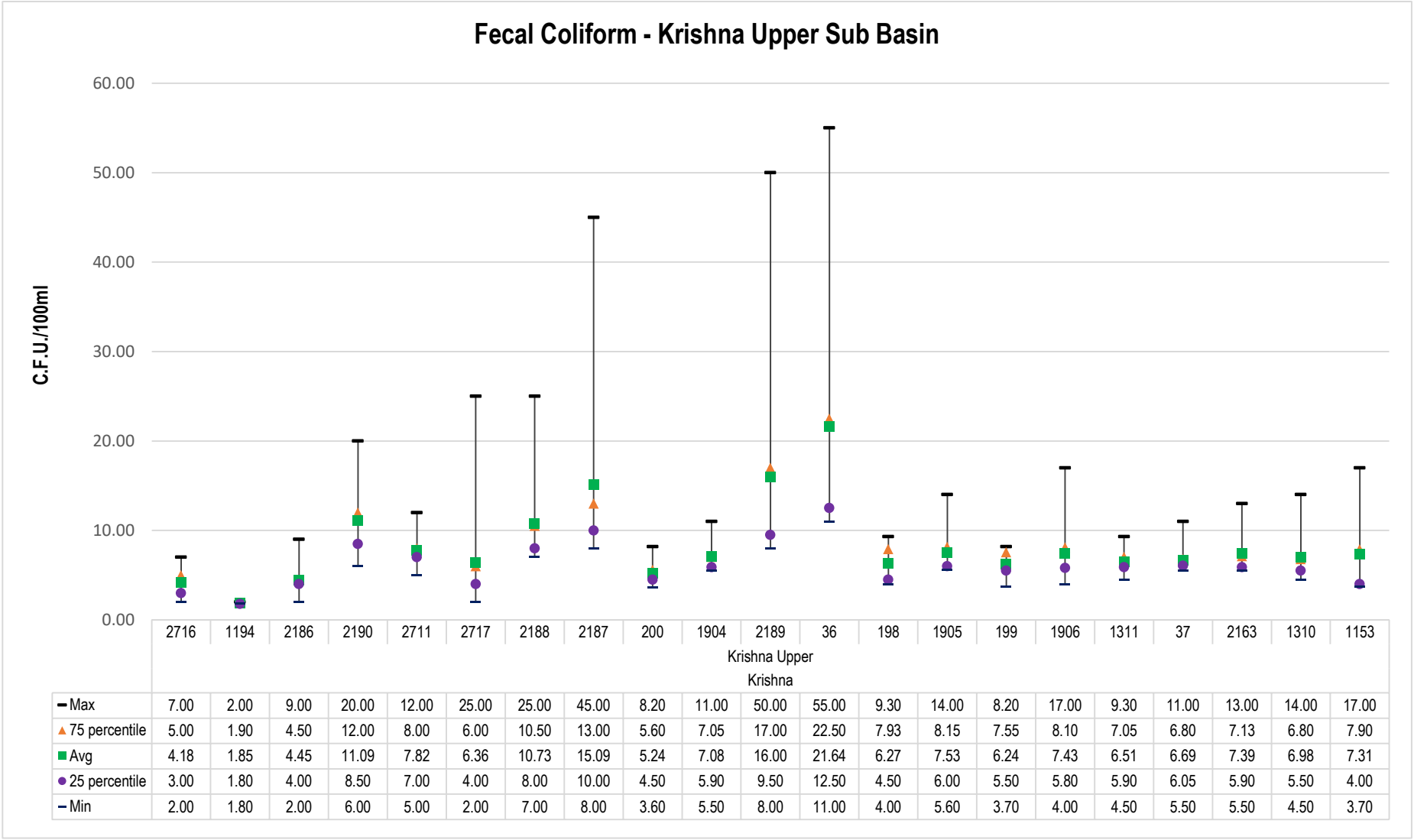
	2716	1194	2186	2190	2711	2717	2188	2187	200	1904	2189	36	198	1905	199	1906	1311	37	2163	1310	1153
Max	6.40	5.00	4.50	7.00	6.00	5.50	6.50	9.00	2.40	1.80	10.00	9.50	2.00	2.40	1.80	1.80	2.20	2.20	2.40	2.00	2.20
75 percentile	4.20	3.50	3.60	5.75	5.10	5.00	5.10	5.40	1.80	1.80	4.90	5.75	1.80	1.80	1.80	1.80	1.80	1.80	2.00	1.80	1.85
Avg	3.88	3.35	3.43	5.10	4.30	4.47	4.69	5.15	1.78	1.72	4.78	5.15	1.80	1.87	1.74	1.70	1.82	1.75	1.85	1.80	1.82
25 percentile	3.10	3.00	3.00	4.35	3.45	4.10	4.00	4.10	1.60	1.60	4.00	3.70	1.80	1.80	1.65	1.60	1.80	1.60	1.75	1.80	1.75
Min	2.80	2.40	3.00	3.00	2.60	3.00	3.80	3.60	1.60	1.60	3.00	3.00	1.60	1.80	1.60	1.50	1.60	1.50	1.60	1.60	1.60

Figure No. 36: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Krishna upper sub basin - Krishna Basin



	2716	1194	2186	2190	2711	2717	2188	2187	200	1904	2189	36	198	1905	199	1906	1311	37	2163	1310	1153
	Krishna Upper Krishna																				
Max	8.60	8.30	8.60	8.70	8.60	8.50	8.80	8.70	8.30	7.90	8.60	8.60	8.50	7.90	8.40	8.30	8.20	8.20	8.20	8.20	8.20
75 percentile	8.40	8.15	8.30	8.35	8.40	8.35	8.40	8.30	8.08	7.70	8.35	8.30	7.98	7.80	8.08	8.15	7.90	8.00	7.73	7.90	7.83
Avg	8.14	7.93	8.01	8.05	8.07	7.95	8.10	8.15	7.89	7.45	8.06	7.97	7.92	7.46	7.93	8.00	7.61	7.89	7.48	7.69	7.63
25 percentile	7.90	7.65	7.65	7.85	7.85	7.70	7.80	7.95	7.83	7.30	7.75	7.60	7.80	7.20	7.65	7.90	7.28	7.85	7.15	7.55	7.50
Min	7.60	7.50	7.20	7.40	7.30	7.00	7.20	7.50	7.20	6.50	7.50	7.20	7.40	6.80	7.60	7.50	7.10	7.20	6.90	7.20	7.00

Figure No. 37: Trend of pH levels recorded at WQMS at Krishna upper sub basin -Krishna Basin



	2716	1194	2186	2190	2711	2717	2188	2187	200	1904	2189	36	198	1905	199	1906	1311	37	2163	1310	1153
Max	7.00	2.00	9.00	20.00	12.00	25.00	25.00	45.00	8.20	11.00	50.00	55.00	9.30	14.00	8.20	17.00	9.30	11.00	13.00	14.00	17.00
75 percentile	5.00	1.90	4.50	12.00	8.00	6.00	10.50	13.00	5.60	7.05	17.00	22.50	7.93	8.15	7.55	8.10	7.05	6.80	7.13	6.80	7.90
Avg	4.18	1.85	4.45	11.09	7.82	6.36	10.73	15.09	5.24	7.08	16.00	21.64	6.27	7.53	6.24	7.43	6.51	6.69	7.39	6.98	7.31
25 percentile	3.00	1.80	4.00	8.50	7.00	4.00	8.00	10.00	4.50	5.90	9.50	12.50	4.50	6.00	5.50	5.80	5.90	6.05	5.90	5.50	4.00
Min	2.00	1.80	2.00	6.00	5.00	2.00	7.00	8.00	3.60	5.50	8.00	11.00	4.00	5.60	3.70	4.00	4.50	5.50	5.50	4.50	3.70

Figure No. 38: Trend of Fecal Coliform recorded at WQMS at Krishna upper sub basin -Krishna Basin

Water Quality Index for WQMS at Krishna Basin (2 of 2): Sub-Basin - Krishna upper

April										86.50				88.62		83.38	85.15	86.72	85.44	83.89	83.92
May	83.43	81.20	79.43	71.68	72.85	76.87	77.02	72.62		86.58	76.00	75.62		83.78			90.18		83.64	89.86	83.25
June	80.44	86.35	82.14	68.53	72.30	77.64	69.74	70.40	85.79	87.27	58.26	61.73	85.08	86.00	84.63	83.29	85.67	80.26	86.98	82.05	83.62
July	85.97	87.35	86.35	83.17	83.45	86.63	81.53	80.28	89.32	87.52	82.84	81.83	86.43	89.54	86.42	87.43	83.52	88.57	85.06	86.60	85.29
August	84.49	89.27	83.45	77.36	82.03	77.27	75.33	76.55	83.26	84.03	74.46	74.24	84.43	88.31	84.97	85.10	89.45	83.20	88.07	90.15	87.87
September	86.64	90.48	90.68	81.39	85.23	87.16	80.50	73.79	83.29	84.80	83.93	77.55	83.22	84.95	86.00	83.87	86.11	84.81	86.68	85.04	84.80
October	82.80	87.25	80.73	74.72	77.26	80.08	71.27	68.78	83.50	86.06	79.71	66.25	86.03	84.86	82.86	84.36	83.45	84.86	86.21	85.47	85.61
November	75.42	87.84	86.60	73.67	81.67	84.90	82.48	82.47	85.64	89.21	79.60	79.35	85.19	89.00	85.82	83.89	87.15	84.75	83.95	85.82	89.35
December	84.20	86.35	86.73	82.47	84.33	84.71	80.11	80.62	85.88	84.66	79.95	78.04	87.97	83.63	84.61	84.82	86.73	85.66	86.25	88.21	87.35
January	72.77	86.36	81.48	73.01	76.53	79.76	72.87	75.96	87.25	86.25	73.35	75.12	87.61	90.85	86.84	86.07	91.88	86.54	88.95	88.88	89.65
February	85.03	88.82	80.68	80.91	76.02	79.18	79.80	78.58	84.34	89.64	79.39	81.46	85.40	86.38	85.81	84.48	89.26	84.16	87.73	86.68	86.12
March	80.31	85.86	82.94	76.74	78.66	79.01	78.81	73.31	85.57	90.71	76.52	76.03	81.19	86.86	83.63	83.21	83.67	84.73	83.07	85.07	85.34
Station code	2716	1194	2186	2190	2711	2717	2188	2187	200	1904	2189	36	198	1905	199	1906	1311	37	2163	1310	1153
Sub Basin	Krishna Upper																				
Basin	Krishna																				

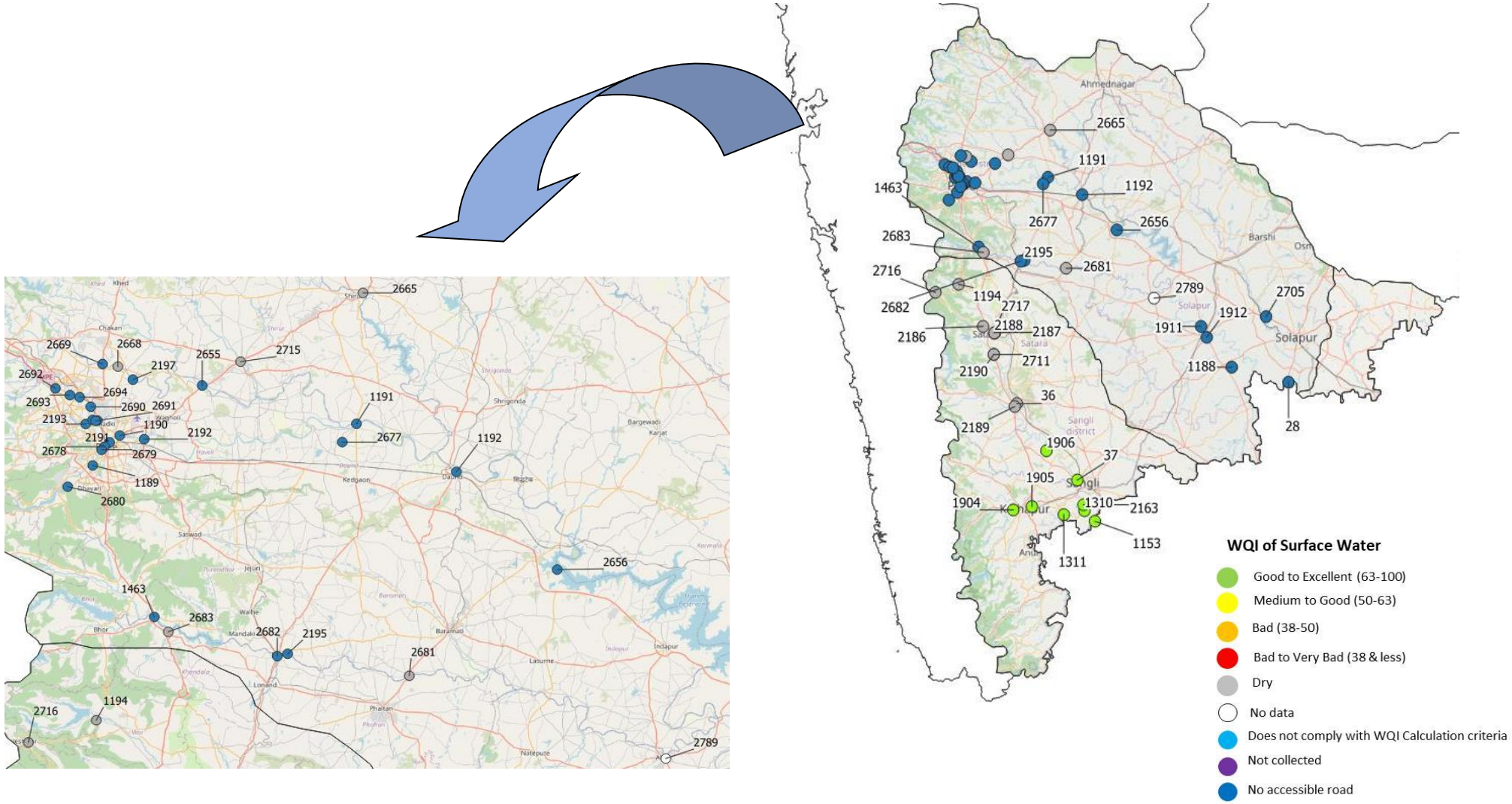
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

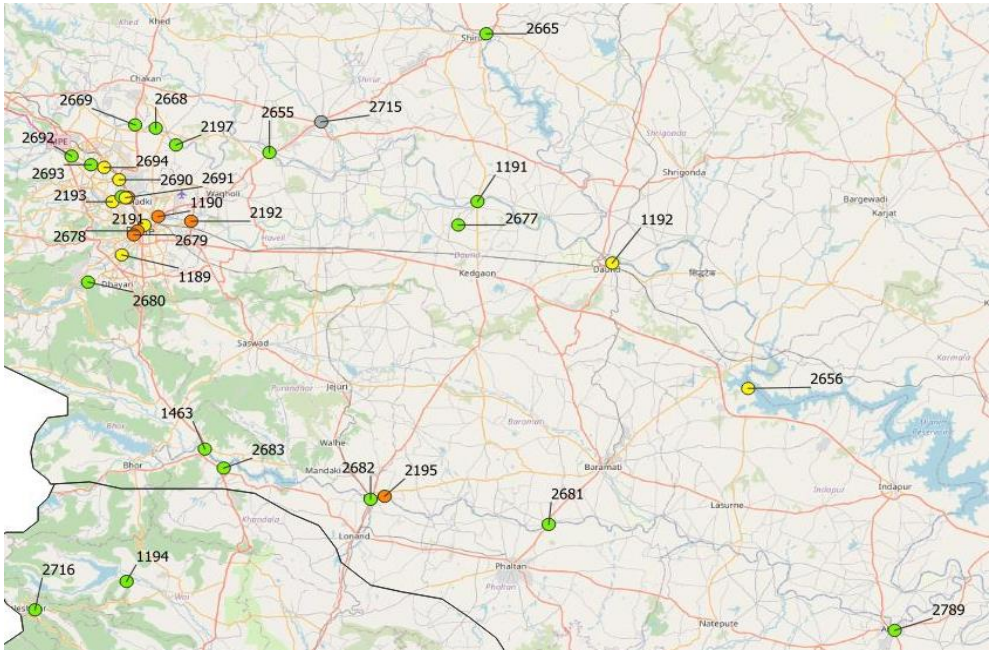
Table No. 22: Surface water quality monitoring stations in Krishna Basin (2 of 2): Sub basin Krishna Upper

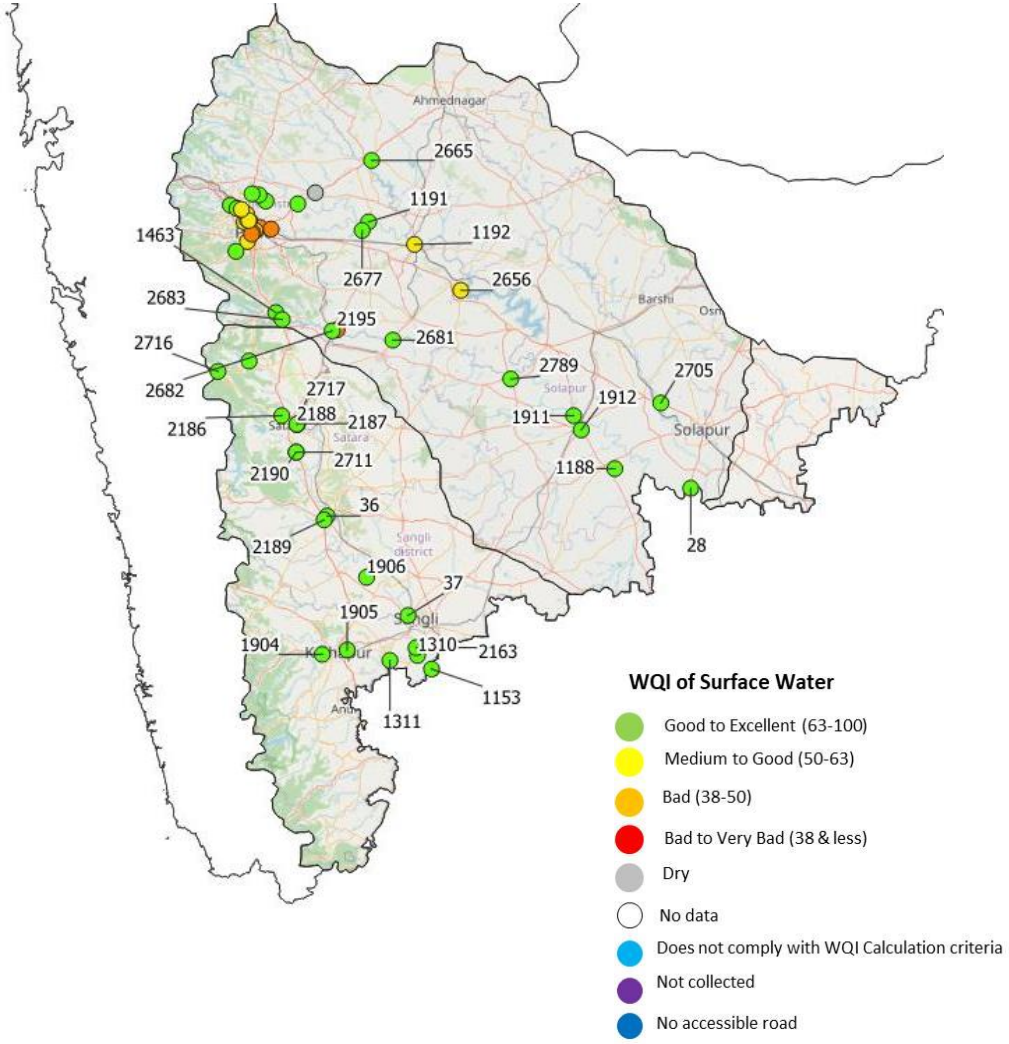
Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	2716	Venna	Venna at Mahabaleshwar	Mahabaleshwar	Mahabaleshwar	Satara
NWMP	1194	Krishna	Krishna at Dhom Dam	Wai	Mahabaleshwar	Satara
NWMP	2186	Venna	Venna at Varya, Satara	Varye	Satara	Satara
NWMP	2190	Krishna	Krishna at Wai	Wai	Wai	Satara
NWMP	2711	Urmodi	Urmodi at Nagthane Satara	Nagthane	Satara	Satara
NWMP	2717	Venna	Venna at Mahuli	Mahuli	Satara	Satara
NWMP	2188	Krishna	Krishna at Krishna-Venna Sangam, Mahuli	Mahuli	Mahuli	Satara
NWMP	2187	Krishna	Krishna at Kshetra Mahuli Satara	Kshetra Mahuli	Mahuli	Satara
SWMP	200	Warna	Mangle Bridge, (After Confluence of Morna)	Mangle	Shirala	Sangli
NWMP	1904	Panchganga	U/s of Kolhapur town near Balinga Pumping Station	Balinga	Karvir	Kolhapur
NWMP	2189	Koyna	Koyna at Karad	Karad	Karad	Satara
NWMP	36	Krishna	Krishna at Krishna Bridge, Karad	Karad	Karad	Satara
SWMP	198	Krishna	Bahe KT Weir, Bahe, Taluka - Walwa, District - Sangli	Bahe	Walwa	Sangli
NWMP	1905	Panchaganga	Panchaganga at D/s of Kolhapur town at Gandhi nagar near NH-4 bridge and MIDC intake well	Uchegaon	Kolhapur	Kolhapur
SWMP	199	Krishna	Borgaon KT Weir, Borgaon, Taluka - Walwa, District - Sangli	Borgaon	Walwa	Sangli
NWMP	1906	Krishna	Krishna at Walwa, D/s of Islampur near Vithal Temple	Walwa	Walwa	Sangli
NWMP	1311	Panchganga	Panchganga at Ichalkaranji near MIDC intake well	Shiradhwad (Ichalkaranji ghat)	Hatkanangale	Kolhapur
NWMP	37	Krishna	Krishna at Maighat, Sangli	Gawali gally	Miraj	Sangli
NWMP	2163	Panchganga	Panchganga at Shirol near Shirol intake well	Shirol	Shirol	Kolhapur
NWMP	1310	Krishna	Krishna at Kurundwad	Narshingwadi, Kurundwad	Shirol	Kolhapur
NWMP	1153	Krishna	Krishna at Rajapur Weir	Rajapur	Shirol	Kolhapur

Spatial map of Surface WQI at Krishna Basin (April 2020)



Spatial map of Surface WQI at Krishna Basin (December 2020)

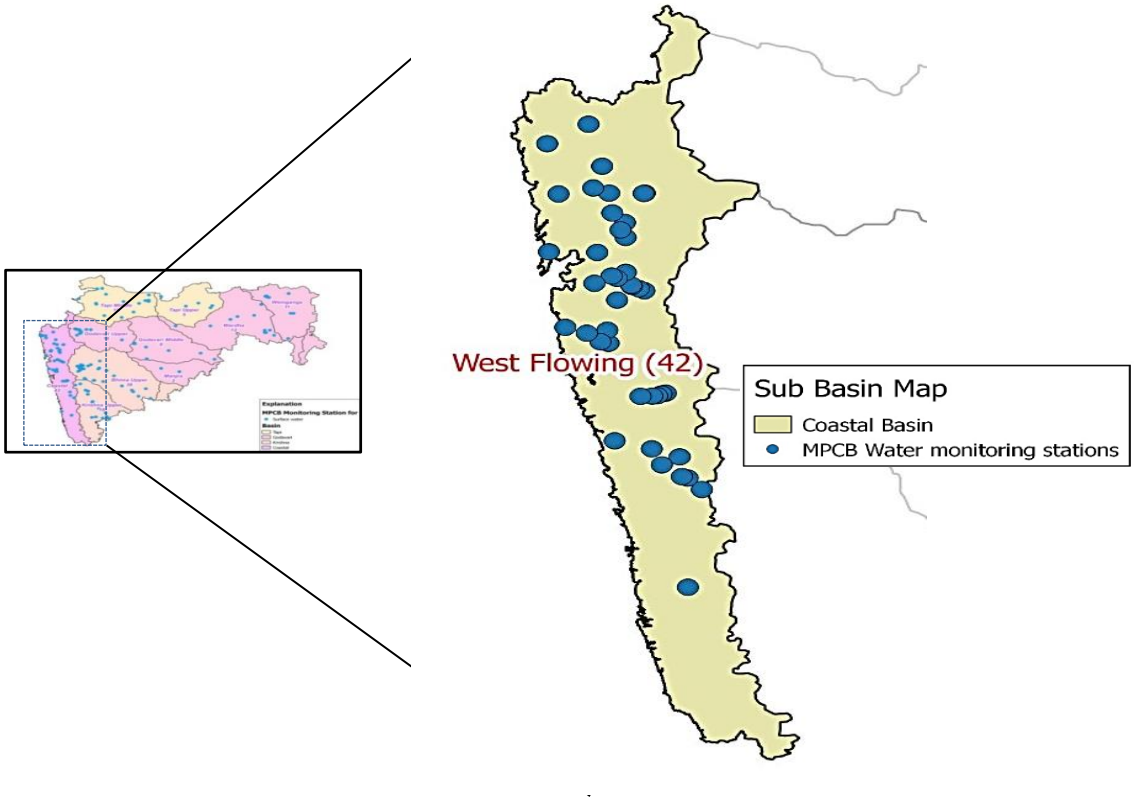




West Flowing Rivers

As compared to eastwards flowing rivers, westwards flowing rivers are small in length and do not deltas. All these rivers originate in the Western Ghats and meet the Arabian Sea at the end. The state of Maharashtra has the presence of west-flowing rivers such as the Damanganga, the Vaitarna, the Ulhas, the Savitri, the Vashishti, the Kundalika, the Shastri, the Karli, the Mithi, the Terekhol, the Surya and so on. Out of total water resources in Maharashtra, about 45% resources are from west flowing rivers which are mainly monsoon specific rivers[25]. In Maharashtra, West Flowing Rivers covers an area of about 3.16 Million hectares which is equivalent to about 10.7% of the state's total geographic area.

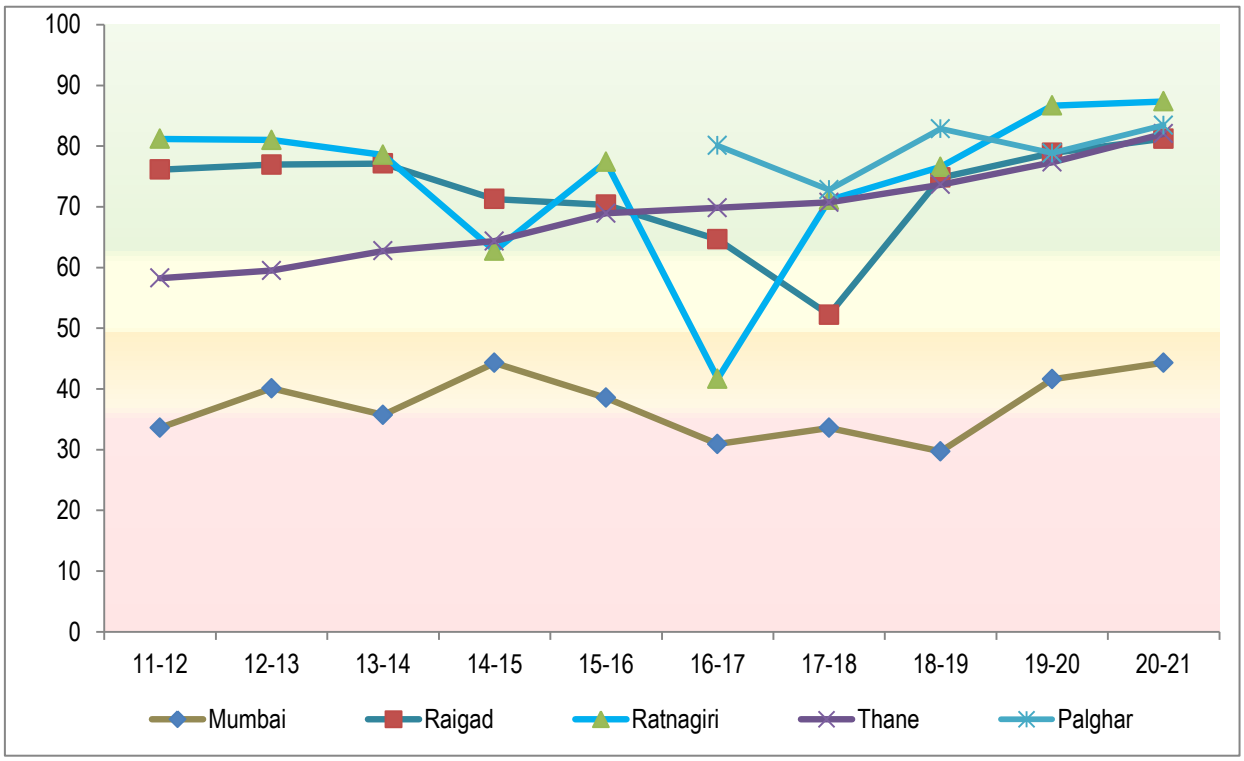
These rivers are a very important source of drinking water, especially for the western part of the state. Apart from drinking purposes, water from these rivers is also utilized extensively for agricultural purposes. This part of the state is having a network of well-established industrial complexes which lie close to the rivers like the Ulhas, the Patalganga, the Amba, the Kundalika, the Vashishti and a few other tributaries. These complexes as well receive water supply from these rivers for daily operations. To monitor the overall status of the river system, MPCB has installed a total of 42 WQMS along the west-flowing rivers (Map No. 8).



Map No. 8: Network of surface water quality monitoring stations in West flowing rivers basin

[25] https://sandrp.files.wordpress.com/2018/03/rivers_of_maharashtra_dec_2011.pdf

West Flowing River Basin (Intra Basin analysis)



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure No. 39: Trend of annual average WQI across districts of West Flowing Rivers basin

Note: This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data maybe analyzed to pin point the most affected and polluted patches of rivers in that district.

The annual average WQI values (intrabasin performance) recorded by WQMS installed at West Flowing Rivers region has been represented graphically in Figure No. 39. Similar to the previous year (2019-20), except Mumbai WQMS, all other WQMS installed in remaining districts recorded annual average WQI values coming under the 'Good to Excellent' category. WQI values recorded by WQMS installed in Mumbai however recorded a slight improvement in WQI (41.6 in 2019-20 to 44.3 in 2020-21), still the WQI is under the category of 'Bad'. This indicates the high level of water pollution in the Mumbai region. To minimize or lower the pollution levels, concrete mitigative measures need to be taken by the government.

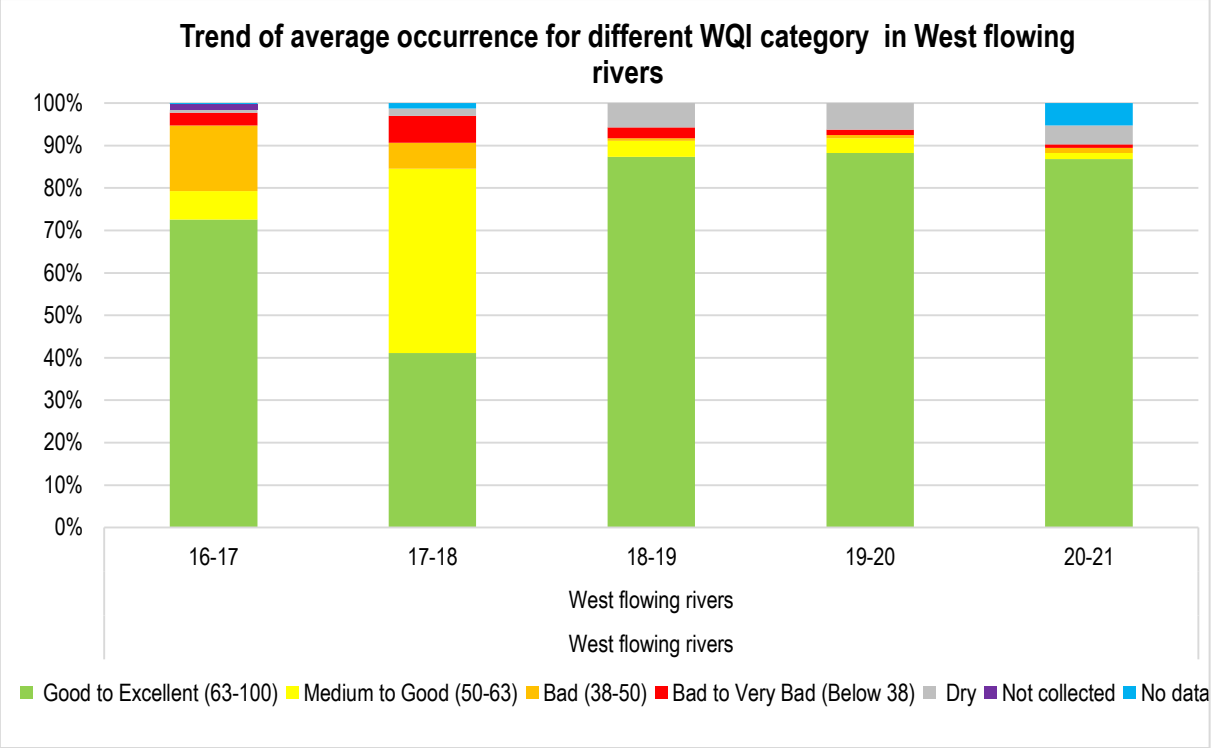
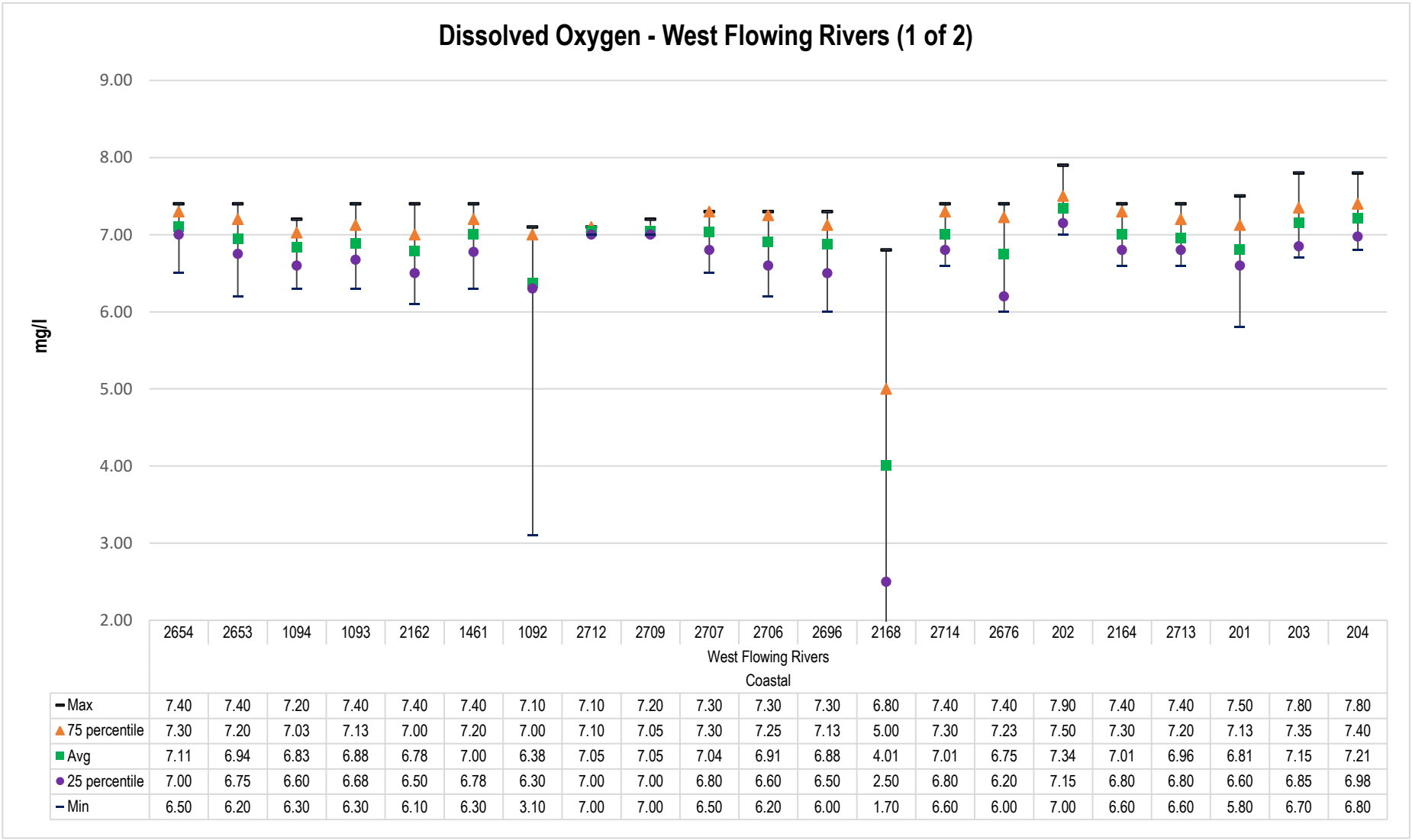


Figure No. 40: Trend of Average occurrence for different category of WQI in West flowing rivers

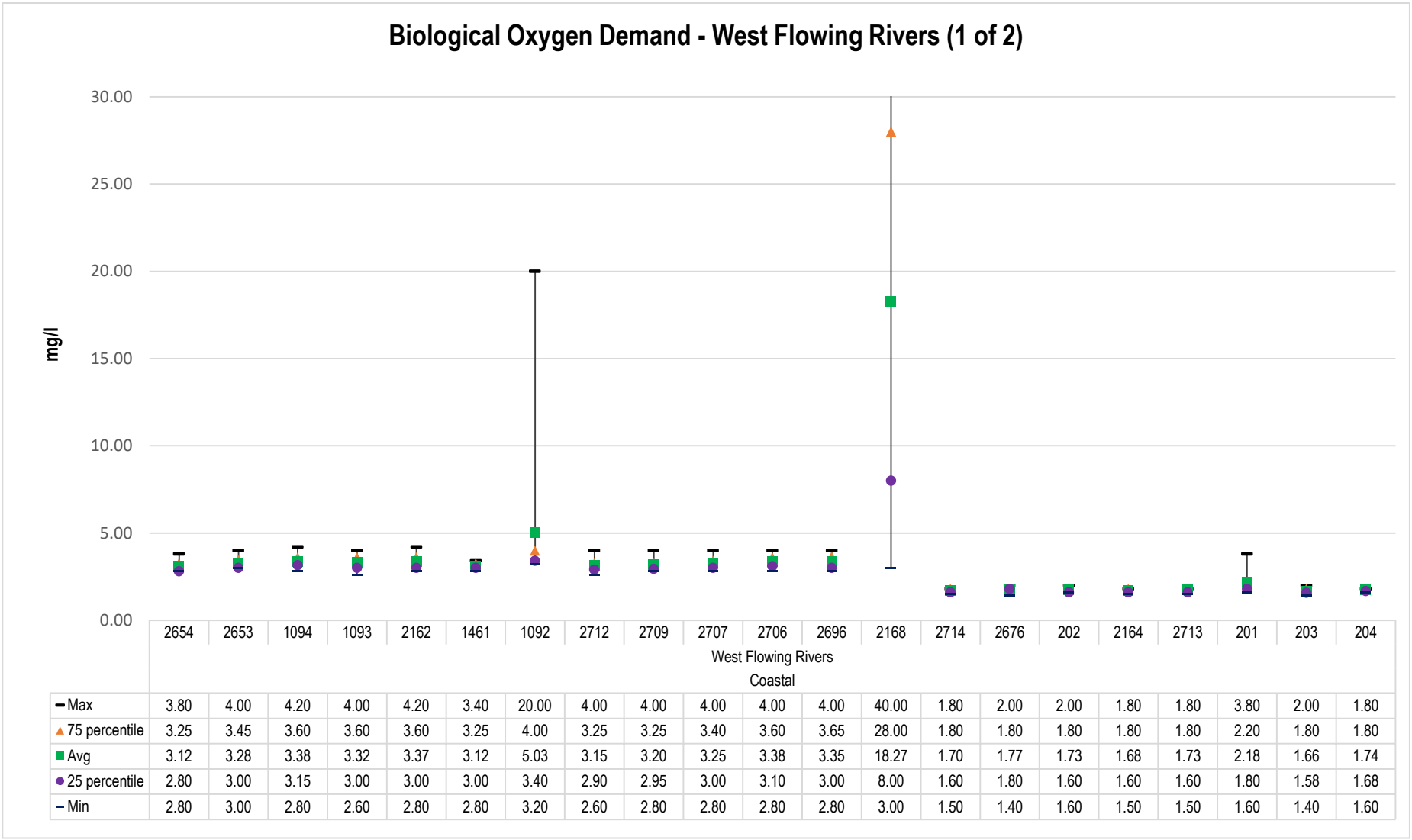
The interbasin performance of the West Flowing Rivers is shown in Figure No. 40. Majority of the observations (~86.8%) were found to be under the WQI category of Good to Excellent. Only about 1.4%, 1.2% and 0.8% observations were recorded under the categories of Medium to Good, Bad and Bad to Very Bad respectively.

The percentage share of Dry category observations was found to be about 4.8% and that of No Data was found to be about 5.28%.



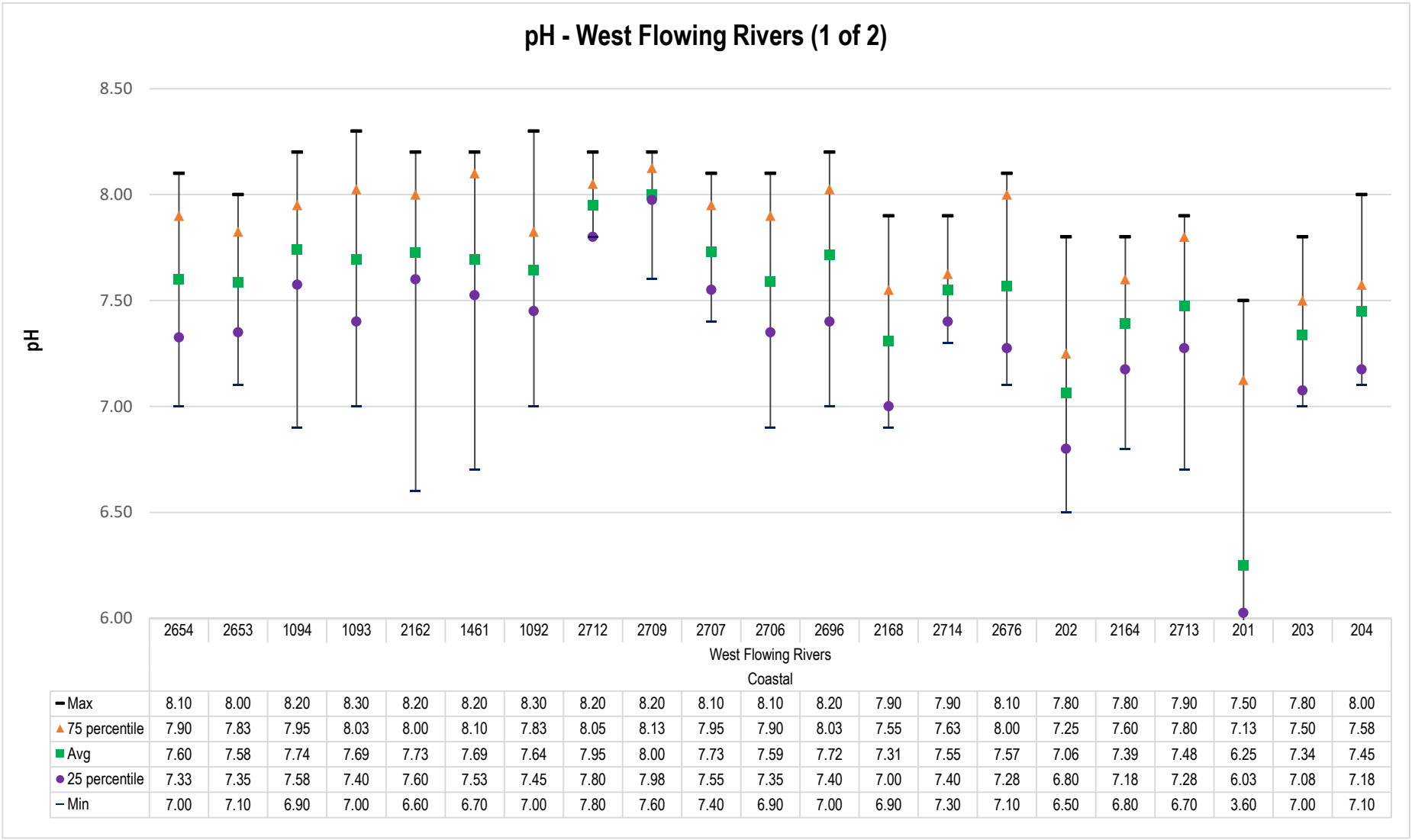
	2654	2653	1094	1093	2162	1461	1092	2712	2709	2707	2706	2696	2168	2714	2676	202	2164	2713	201	203	204
Max	7.40	7.40	7.20	7.40	7.40	7.40	7.10	7.10	7.20	7.30	7.30	7.30	6.80	7.40	7.40	7.90	7.40	7.40	7.50	7.80	7.80
75 percentile	7.30	7.20	7.03	7.13	7.00	7.20	7.00	7.10	7.05	7.30	7.25	7.13	5.00	7.30	7.23	7.50	7.30	7.20	7.13	7.35	7.40
Avg	7.11	6.94	6.83	6.88	6.78	7.00	6.38	7.05	7.05	7.04	6.91	6.88	4.01	7.01	6.75	7.34	7.01	6.96	6.81	7.15	7.21
25 percentile	7.00	6.75	6.60	6.68	6.50	6.78	6.30	7.00	7.00	6.80	6.60	6.50	2.50	6.80	6.20	7.15	6.80	6.80	6.60	6.85	6.98
Min	6.50	6.20	6.30	6.30	6.10	6.30	3.10	7.00	7.00	6.50	6.20	6.00	1.70	6.60	6.00	7.00	6.60	6.60	5.80	6.70	6.80

Figure No. 41: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at West flowing rivers (Coastal basin) (1 of 2)



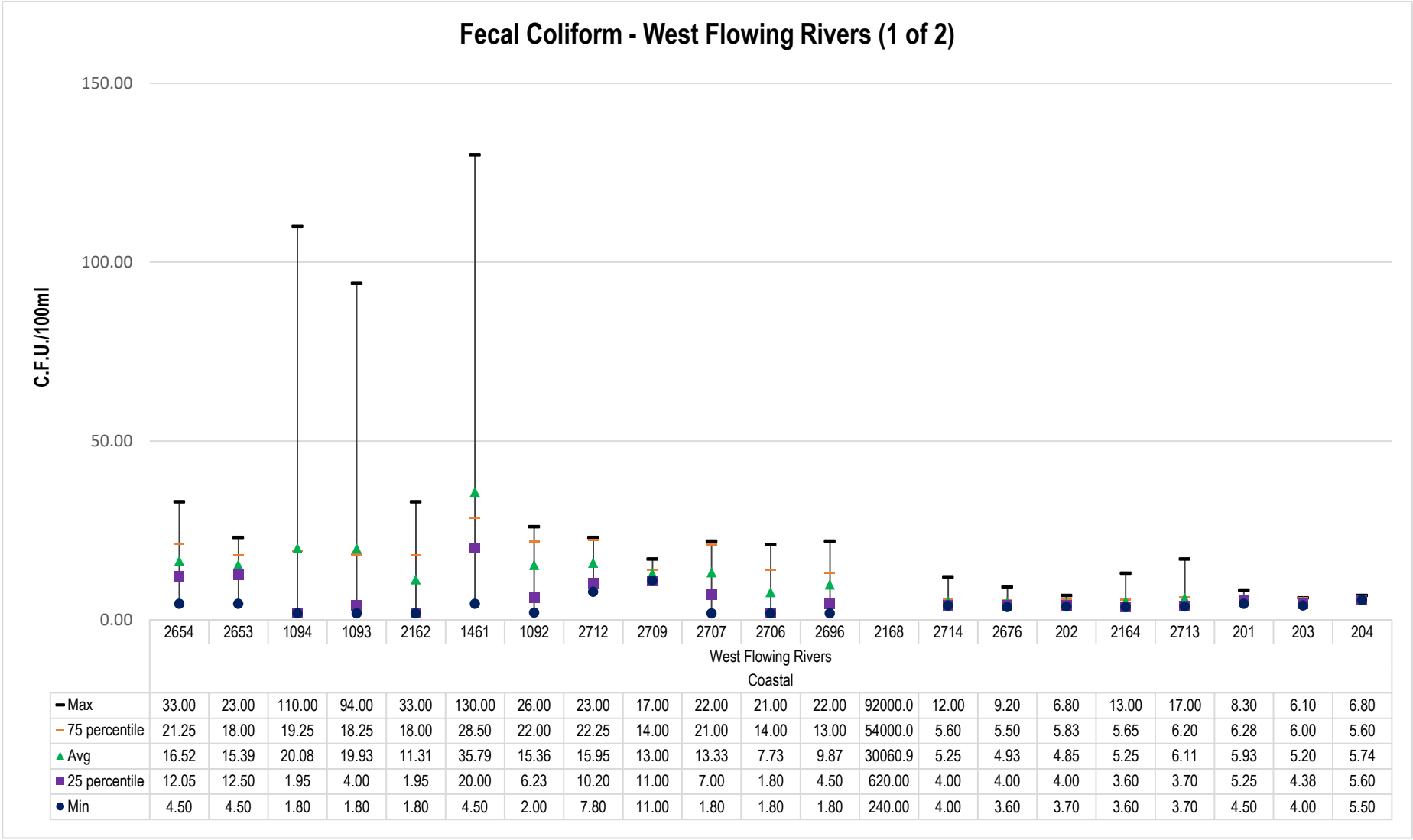
	2654	2653	1094	1093	2162	1461	1092	2712	2709	2707	2706	2696	2168	2714	2676	202	2164	2713	201	203	204
Max	3.80	4.00	4.20	4.00	4.20	3.40	20.00	4.00	4.00	4.00	4.00	4.00	40.00	1.80	2.00	2.00	1.80	1.80	3.80	2.00	1.80
75 percentile	3.25	3.45	3.60	3.60	3.60	3.25	4.00	3.25	3.25	3.40	3.60	3.65	28.00	1.80	1.80	1.80	1.80	1.80	2.20	1.80	1.80
Avg	3.12	3.28	3.38	3.32	3.37	3.12	5.03	3.15	3.20	3.25	3.38	3.35	18.27	1.70	1.77	1.73	1.68	1.73	2.18	1.66	1.74
25 percentile	2.80	3.00	3.15	3.00	3.00	3.00	3.40	2.90	2.95	3.00	3.10	3.00	8.00	1.60	1.80	1.60	1.60	1.60	1.80	1.58	1.68
Min	2.80	3.00	2.80	2.60	2.80	2.80	3.20	2.60	2.80	2.80	2.80	2.80	3.00	1.50	1.40	1.60	1.50	1.50	1.60	1.40	1.60

Figure No. 42: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at West flowing rivers (Coastal basin) (1 of 2)



	2654	2653	1094	1093	2162	1461	1092	2712	2709	2707	2706	2696	2168	2714	2676	202	2164	2713	201	203	204
Max	8.10	8.00	8.20	8.30	8.20	8.20	8.30	8.20	8.20	8.10	8.10	8.20	7.90	7.90	8.10	7.80	7.80	7.90	7.50	7.80	8.00
75 percentile	7.90	7.83	7.95	8.03	8.00	8.10	7.83	8.05	8.13	7.95	7.90	8.03	7.55	7.63	8.00	7.25	7.60	7.80	7.13	7.50	7.58
Avg	7.60	7.58	7.74	7.69	7.73	7.69	7.64	7.95	8.00	7.73	7.59	7.72	7.31	7.55	7.57	7.06	7.39	7.48	6.25	7.34	7.45
25 percentile	7.33	7.35	7.58	7.40	7.60	7.53	7.45	7.80	7.98	7.55	7.35	7.40	7.00	7.40	7.28	6.80	7.18	7.28	6.03	7.08	7.18
Min	7.00	7.10	6.90	7.00	6.60	6.70	7.00	7.80	7.60	7.40	6.90	7.00	6.90	7.30	7.10	6.50	6.80	6.70	3.60	7.00	7.10

Figure No. 43: Trend of pH levels recorded at WQMS at West flowing rivers (Coastal basin) (1 of 2)



	2654	2653	1094	1093	2162	1461	1092	2712	2709	2707	2706	2696	2168	2714	2676	202	2164	2713	201	203	204
Max	33.00	23.00	110.00	94.00	33.00	130.00	26.00	23.00	17.00	22.00	21.00	22.00	92000.0	12.00	9.20	6.80	13.00	17.00	8.30	6.10	6.80
75 percentile	21.25	18.00	19.25	18.25	18.00	28.50	22.00	22.25	14.00	21.00	14.00	13.00	54000.0	5.60	5.50	5.83	5.65	6.20	6.28	6.00	5.60
Avg	16.52	15.39	20.08	19.93	11.31	35.79	15.36	15.95	13.00	13.33	7.73	9.87	30060.9	5.25	4.93	4.85	5.25	6.11	5.93	5.20	5.74
25 percentile	12.05	12.50	1.95	4.00	1.95	20.00	6.23	10.20	11.00	7.00	1.80	4.50	620.00	4.00	4.00	4.00	3.60	3.70	5.25	4.38	5.60
Min	4.50	4.50	1.80	1.80	1.80	4.50	2.00	7.80	11.00	1.80	1.80	1.80	240.00	4.00	3.60	3.70	3.60	3.70	4.50	4.00	5.50

Figure No. 44: Trend of Fecal Coliform recorded at WQMS at West flowing rivers (Coastal basin) (1 of 2)

Water Quality Index for WQMS on West Flowing rivers (1 of 2)

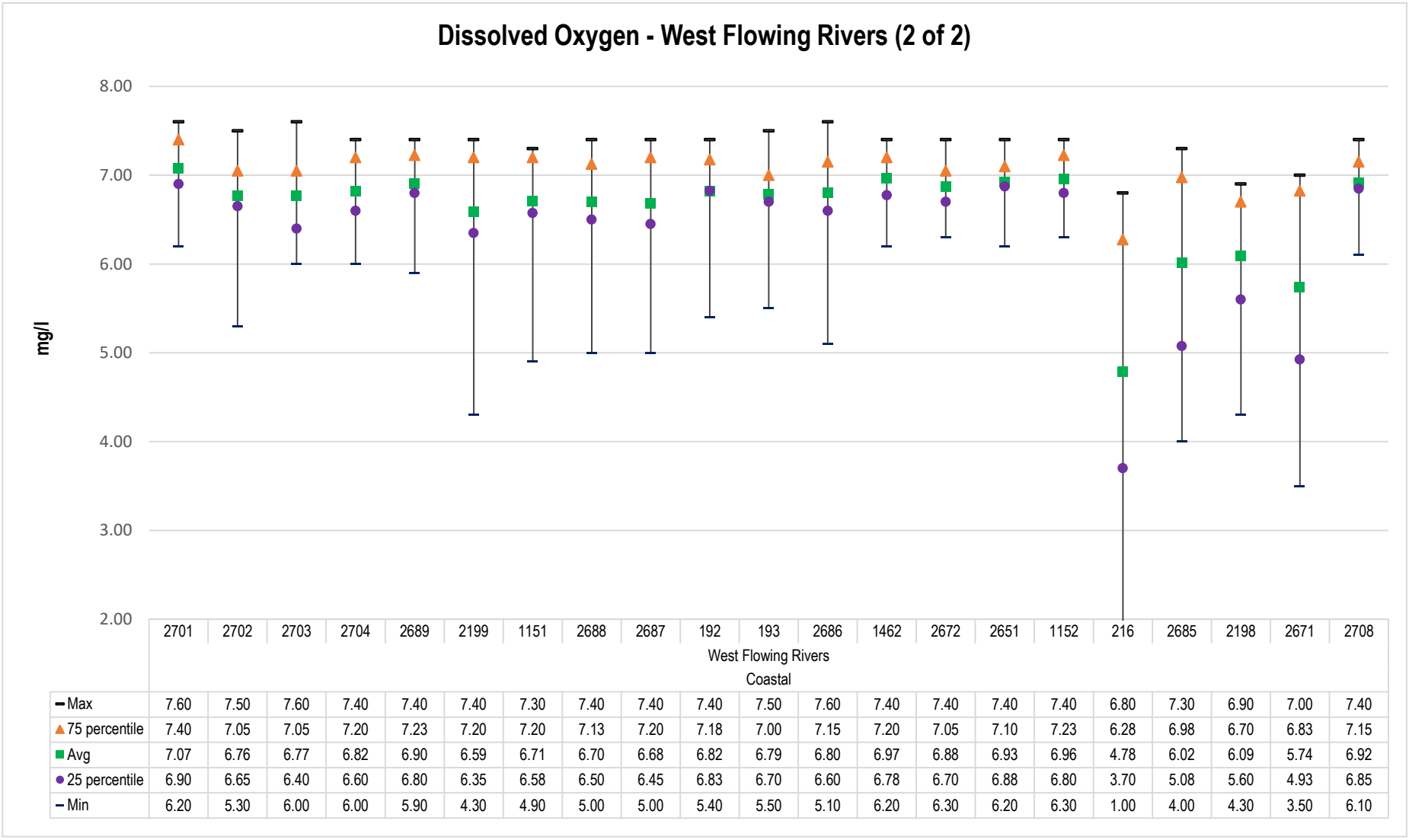
April	88.89	87.60	87.57	84.62	89.22	87.57	55.45					89.22	25.84	84.95	88.28		87.20	86.33			
May	80.48	82.00	88.40	89.28	88.52	77.74	80.22			93.16	89.55	84.11	22.78	91.86	87.21		86.10	84.54			
June	79.53	82.74	87.97	79.39	77.98	80.64	81.84			79.76	79.53	79.89	49.98	87.84	88.55		86.15	87.08			
July	82.24	83.75	90.20	90.95	89.72	81.04	81.84			90.70	89.42	82.95	56.32	87.74	90.40		87.07	89.42			
August	79.28	78.97	79.11	84.88	83.87	78.81	82.01	80.43	83.32	80.52	91.58	83.03	51.91	88.69	84.15	86.07	87.81	87.36	88.11	88.84	88.65
September	79.68	82.07	82.40	84.37	84.82	78.22	77.84	80.04	78.90	78.80	87.43	84.61	64.34	87.78	90.17	85.92	87.98	87.60	87.74	84.76	86.06
October	77.51	81.03	86.42	75.40	80.26	71.11	82.12	80.67	79.06	79.14	81.64	83.96	50.82	89.06	89.06	89.73	89.40	87.99	75.64	89.45	86.98
November	79.89	82.19	79.91	80.91	81.51	75.41	81.58	79.14	78.98	82.32	79.84	85.14	56.03	90.14	89.77	83.21	89.01	89.44	79.64	88.69	88.23
December	86.72	82.21	83.02	86.64	85.24	81.91	88.16			82.65	83.82	81.66	35.35	88.23	86.08	87.39	90.25	89.37	80.63	86.91	85.67
January	80.85	80.76	73.45	73.63	78.33	77.66	82.37			80.23	89.55	82.44		86.49	83.62	83.93	87.94	86.25	79.24	87.96	87.31
February	81.25	80.65	80.97	81.71	79.38	78.05	79.00			77.57	85.97	82.27	41.11	88.40	90.37	90.04	90.05	91.75	87.29	89.91	88.90
March	82.41	81.73	78.26	79.18	79.33	76.35	89.61			87.03	83.36	81.87	32.85	88.67	86.72	87.15	90.62	87.15	89.33	86.42	85.04
Station code	2654	2653	1094	1093	2162	1461	1092	2712	2709	2707	2706	2696	2168	2714	2676	202	2164	2713	201	203	204
Sub Basin	West Flowing Rivers (1 of 2)																				
Basin	Coastal																				

Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

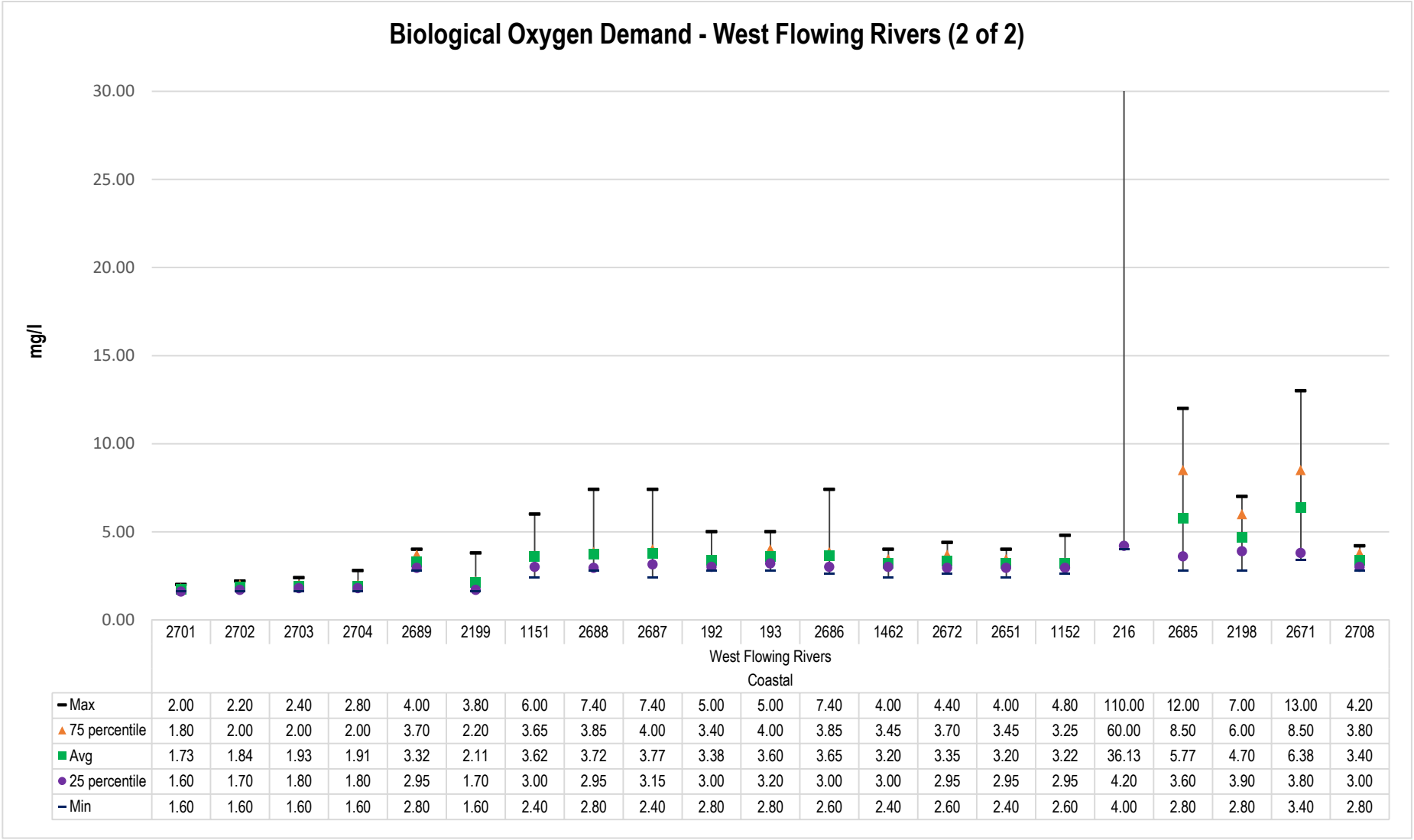
Table No. 23: Surface water monitoring stations at West Flowing Rivers (1 of 2)

Program	Station ID	River	Station Name	Village	Taluka	District
NWMP	2654	Bhatsa	Bhatsa at D/s of Liberty Oil Mills	Satne	Shahapur	Thane
NWMP	2653	Bhatsa	Bhatsa at D/s of Liberty Oil Mills	Satne	Shahapur	Thane
NWMP	1094	Ulhas	Ulhas at U/s of Badlapur water works	Kulgaon	Ambernath	Thane
NWMP	1093	Ulhas	Ulhas at U/s of NRC Bund	Mohane	Kalyan	Thane
NWMP	2162	Ulhas	Ulhas at Jambhul water works	Jambhul	Ambernath	Thane
NWMP	1461	Bhatsa	Bhatsa at D/s of Pise Dam	Pise	Bhiwandi	Thane
NWMP	1092	Kalu	Kalu at Atale village	Atale	Kalyan	Thane
NWMP	2712	Vaitarna	Vaitarna near Road Bridge	Gandhare	Wada	Thane
NWMP	2709	Tansa	Tansa near road bridge	Dakewali	Wada	Thane
NWMP	2707	Surya	Surya at MIDC pumping station	Garvashet	Palghar	Thane
NWMP	2706	Surya	Surya U/s of Surya Dam	Dhamni	Vikramgad	Thane
NWMP	2696	Pelhar	Pelhar dam	Pelhar	Vasai	Palghar
NWMP	2168	Mithi	Mithi at near bridge	Mahim	Bandra	Mumbai
NWMP	2714	Vashishti	Vashishti at U/s of Pophali near Konphansawane Bridge	Pophali	Chiplun	Ratnagiri
NWMP	2676	Muchkundi	Muchkundi at Waked Ratnagiri near M/s Asahi India Glass	Waked	Lanja	Ratnagiri
SWMP	202	Vashisti	Vashisti At Khadpoli, Taluka Chiplun, District - Ratnagiri	Khadpoli	Chiplun	Ratnagiri
NWMP	2164	Vashishti	Vashishti at U/s of Three M Paper Mills near M/s Multifilms Plastic Pvt Ltd	Kherdi	Chiplun	Ratnagiri
NWMP	2713	Vashishti	Vashishti at D/s of Three M Paper Mills near Chiplun water intake Jackwell	Kherdi	Chiplun	Ratnagiri
SWMP	201	Sonpatra	Sonpatra At Kotwali Village, Taluka - Khed, District - Ratnagiri	Kotwali	Khed	Ratnagiri
SWMP	203	Jagbudi	Jagbudi , D/S of Khed City, Taluka - Khed, District Ratnagiri	Khed City	Khed	Ratnagiri
SWMP	204	Jog	Jog at Dapoli, Taluka Dapoli, District - Rantnagiri	Dapoli	Dapoli	Ratnagiri



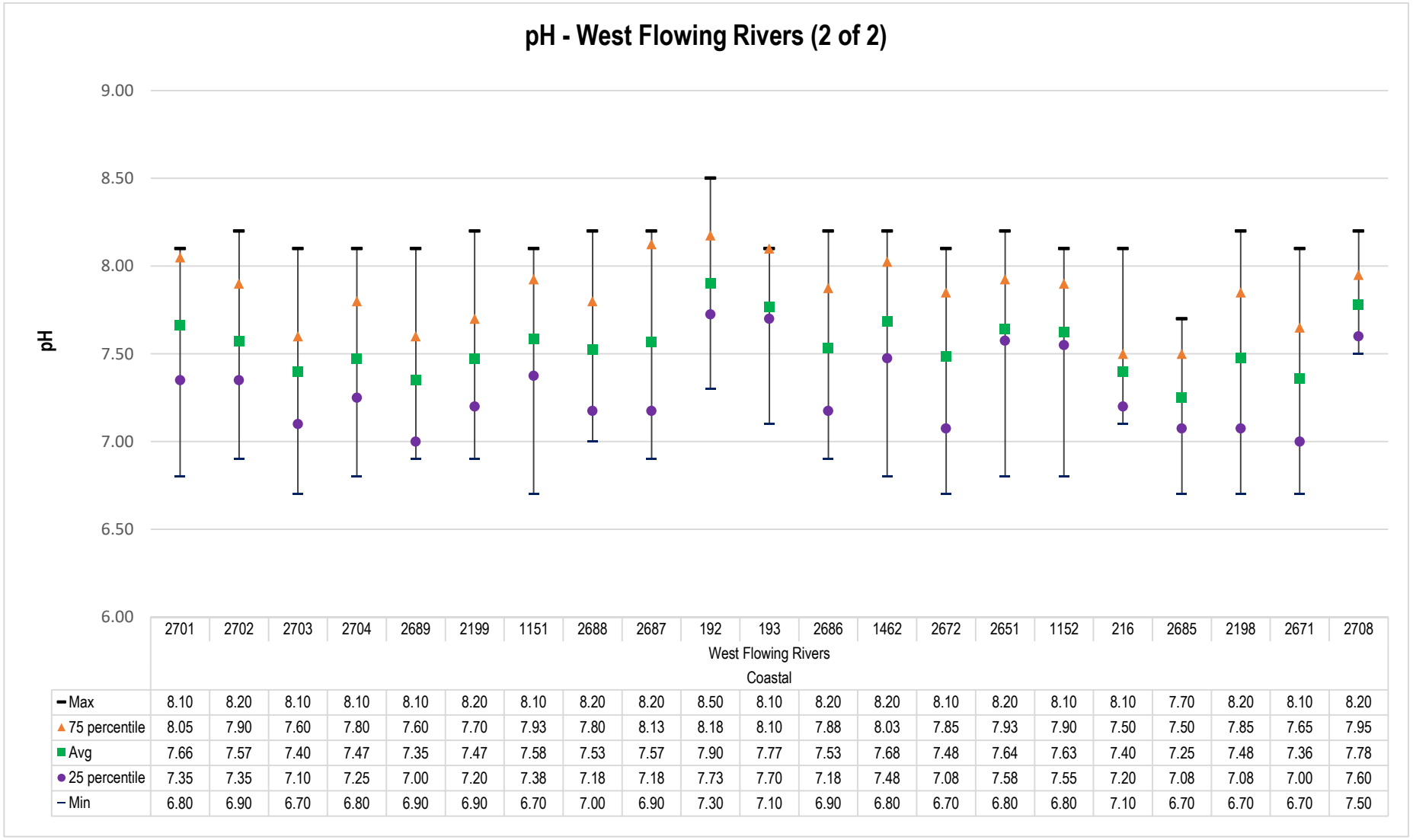
	2701	2702	2703	2704	2689	2199	1151	2688	2687	192	193	2686	1462	2672	2651	1152	216	2685	2198	2671	2708
Max	7.60	7.50	7.60	7.40	7.40	7.40	7.30	7.40	7.40	7.40	7.50	7.60	7.40	7.40	7.40	7.40	6.80	7.30	6.90	7.00	7.40
75 percentile	7.40	7.05	7.05	7.20	7.23	7.20	7.20	7.13	7.20	7.18	7.00	7.15	7.20	7.05	7.10	7.23	6.28	6.98	6.70	6.83	7.15
Avg	7.07	6.76	6.77	6.82	6.90	6.59	6.71	6.70	6.68	6.82	6.79	6.80	6.97	6.88	6.93	6.96	4.78	6.02	6.09	5.74	6.92
25 percentile	6.90	6.65	6.40	6.60	6.80	6.35	6.58	6.50	6.45	6.83	6.70	6.60	6.78	6.70	6.88	6.80	3.70	5.08	5.60	4.93	6.85
Min	6.20	5.30	6.00	6.00	5.90	4.30	4.90	5.00	5.00	5.40	5.50	5.10	6.20	6.30	6.20	6.30	1.00	4.00	4.30	3.50	6.10

Figure No. 45: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at West flowing rivers (Coastal basin) (2 of 2)



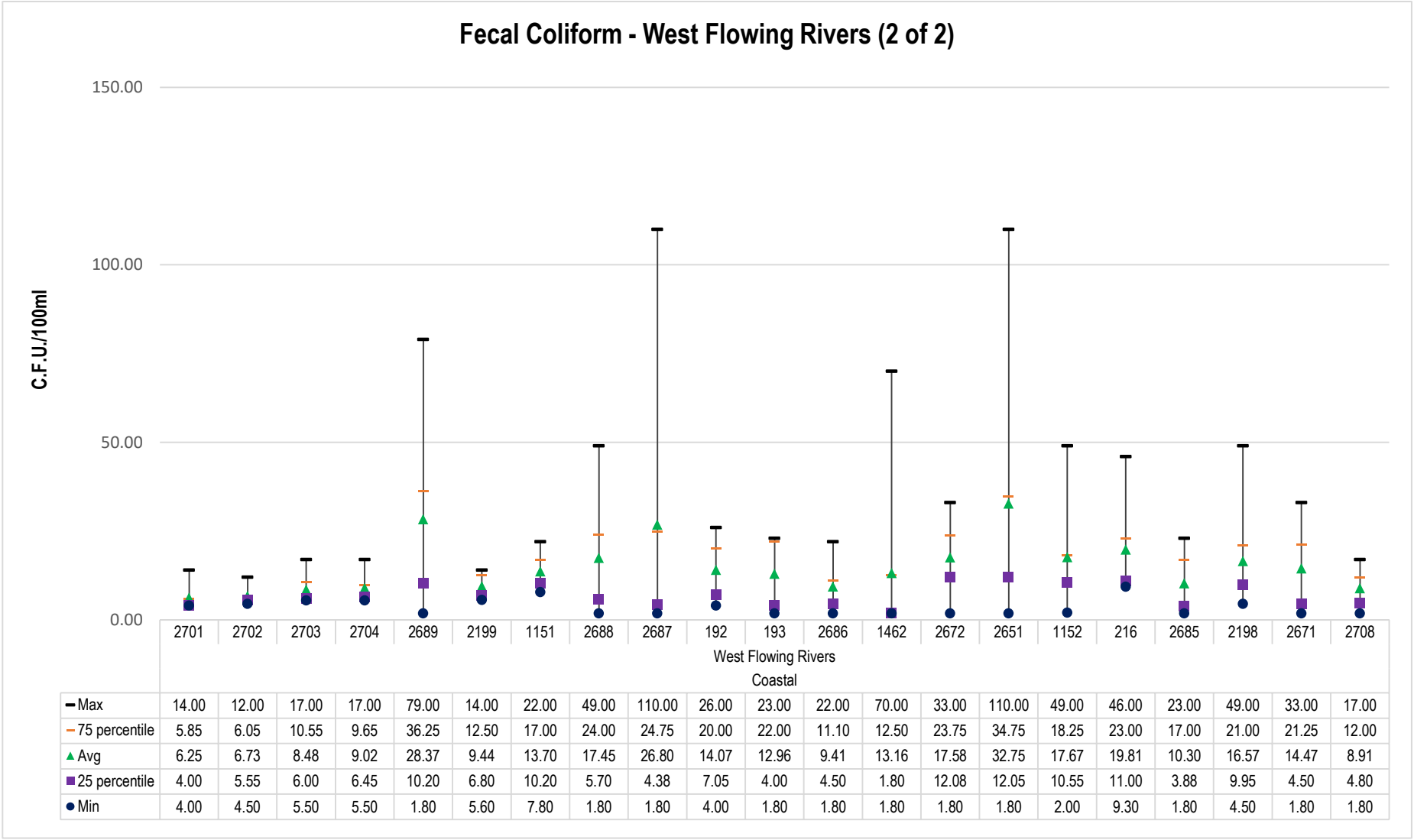
	2701	2702	2703	2704	2689	2199	1151	2688	2687	192	193	2686	1462	2672	2651	1152	216	2685	2198	2671	2708
Max	2.00	2.20	2.40	2.80	4.00	3.80	6.00	7.40	7.40	5.00	5.00	7.40	4.00	4.40	4.00	4.80	110.00	12.00	7.00	13.00	4.20
75 percentile	1.80	2.00	2.00	2.00	3.70	2.20	3.65	3.85	4.00	3.40	4.00	3.85	3.45	3.70	3.45	3.25	60.00	8.50	6.00	8.50	3.80
Avg	1.73	1.84	1.93	1.91	3.32	2.11	3.62	3.72	3.77	3.38	3.60	3.65	3.20	3.35	3.20	3.22	36.13	5.77	4.70	6.38	3.40
25 percentile	1.60	1.70	1.80	1.80	2.95	1.70	3.00	2.95	3.15	3.00	3.20	3.00	3.00	2.95	2.95	2.95	4.20	3.60	3.90	3.80	3.00
Min	1.60	1.60	1.60	1.60	2.80	1.60	2.40	2.80	2.40	2.80	2.80	2.60	2.40	2.60	2.40	2.60	4.00	2.80	2.80	3.40	2.80

Figure No. 46: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at West flowing rivers (Coastal basin) (2 of 2)



	2701	2702	2703	2704	2689	2199	1151	2688	2687	192	193	2686	1462	2672	2651	1152	216	2685	2198	2671	2708
Max	8.10	8.20	8.10	8.10	8.10	8.20	8.10	8.20	8.20	8.50	8.10	8.20	8.20	8.10	8.20	8.10	8.10	7.70	8.20	8.10	8.20
75 percentile	8.05	7.90	7.60	7.80	7.60	7.70	7.93	7.80	8.13	8.18	8.10	7.88	8.03	7.85	7.93	7.90	7.50	7.50	7.85	7.65	7.95
Avg	7.66	7.57	7.40	7.47	7.35	7.47	7.58	7.53	7.57	7.90	7.77	7.53	7.68	7.48	7.64	7.63	7.40	7.25	7.48	7.36	7.78
25 percentile	7.35	7.35	7.10	7.25	7.00	7.20	7.38	7.18	7.18	7.73	7.70	7.18	7.48	7.08	7.58	7.55	7.20	7.08	7.08	7.00	7.60
Min	6.80	6.90	6.70	6.80	6.90	6.90	6.70	7.00	6.90	7.30	7.10	6.90	6.80	6.70	6.80	6.80	7.10	6.70	6.70	6.70	7.50

Figure No. 47: Trend of pH levels recorded at WQMS at West flowing rivers (Coastal basin) (2 of 2)



	2701	2702	2703	2704	2689	2199	1151	2688	2687	192	193	2686	1462	2672	2651	1152	216	2685	2198	2671	2708
Max	14.00	12.00	17.00	17.00	79.00	14.00	22.00	49.00	110.00	26.00	23.00	22.00	70.00	33.00	110.00	49.00	46.00	23.00	49.00	33.00	17.00
75 percentile	5.85	6.05	10.55	9.65	36.25	12.50	17.00	24.00	24.75	20.00	22.00	11.10	12.50	23.75	34.75	18.25	23.00	17.00	21.00	21.25	12.00
Avg	6.25	6.73	8.48	9.02	28.37	9.44	13.70	17.45	26.80	14.07	12.96	9.41	13.16	17.58	32.75	17.67	19.81	10.30	16.57	14.47	8.91
25 percentile	4.00	5.55	6.00	6.45	10.20	6.80	10.20	5.70	4.38	7.05	4.00	4.50	1.80	12.08	12.05	10.55	11.00	3.88	9.95	4.50	4.80
Min	4.00	4.50	5.50	5.50	1.80	5.60	7.80	1.80	1.80	4.00	1.80	1.80	1.80	1.80	1.80	2.00	9.30	1.80	4.50	1.80	1.80

Figure No. 48: Trend of Fecal Coliform recorded at WQMS at West flowing rivers (Coastal basin) (2 of 2)

Water Quality Index for WQMS on West Flowing rivers (Coastal basin) (2 of 2)

April	82.35	83.83	84.74	87.64	91.29	86.53	80.29	90.54	86.37			86.93	78.45	91.25	89.99	89.58		70.47	83.27	65.35	
May					81.43		85.59	79.74	81.52			83.14	86.09	81.21	82.01	81.99		66.11	72.89	69.68	89.35
June	82.09	80.80	83.73	81.55	79.20	80.53	81.37	80.70	83.03	76.87		79.92	86.79	77.72	77.59	80.54		87.56	77.06	79.84	81.74
July	87.99	88.08	84.09	83.35	89.36	86.77	84.62	83.57	90.27	79.76	78.78	91.75	92.63	85.68	90.06	84.09	53.55	69.68	78.68	81.70	89.72
August	88.21	88.20	88.84	88.78	86.18	88.00	81.32	93.10	84.60	81.79	81.53	88.19	90.99	81.62	80.21	79.65	76.93	84.57	77.40	82.03	82.13
September	87.25	84.85	86.55	84.90	85.36	86.39	72.91	87.92	89.88	81.56	81.92	87.27	83.30	79.19	78.94	81.56	84.60	83.62	81.62	79.89	79.67
October	87.12	85.73	88.46	87.43	76.18	86.68	81.16	76.86	71.47	81.43	77.48	83.64	82.71	76.94	75.09	81.29	84.43	84.24	82.53	84.50	79.06
November	89.16	89.70	88.27	90.21	80.64	87.14	83.37	81.45	77.64	84.70	88.90	86.91	84.90	80.37	77.39	82.60	75.32	87.18	86.60	86.27	82.59
December	84.29	88.50	85.59	88.16	79.39	86.46	80.12	84.11	85.45	86.17	90.45	83.82	84.36	82.27	80.91	82.92	41.44	83.36	80.57	73.10	84.03
January	85.60	85.89	84.76	85.95	76.55	85.48	78.53	68.98	69.06	77.33	78.16	70.20	75.79	79.27	71.38	76.92	38.85	81.98	61.99	64.71	88.66
February	90.29	88.66	86.71	86.38	78.92	85.72	80.96	80.47	77.94	75.42	79.96	78.77	79.52	80.15	82.79	80.77	38.05	70.57	82.18	81.84	80.92
March	84.39	78.06	84.60	83.28	79.17	69.40	78.65	78.65	81.24	78.85	79.03	80.65	79.49	83.11	79.09	76.33	40.48	78.87	77.32	65.18	79.45
Station code	2701	2702	2703	2704	2689	2199	1151	2688	2687	192	193	2686	1462	2672	2651	1152	216	2685	2198	2671	2708
Sub Basin	West Flowing Rivers (2 of 2)																				
Basin	Coastal																				

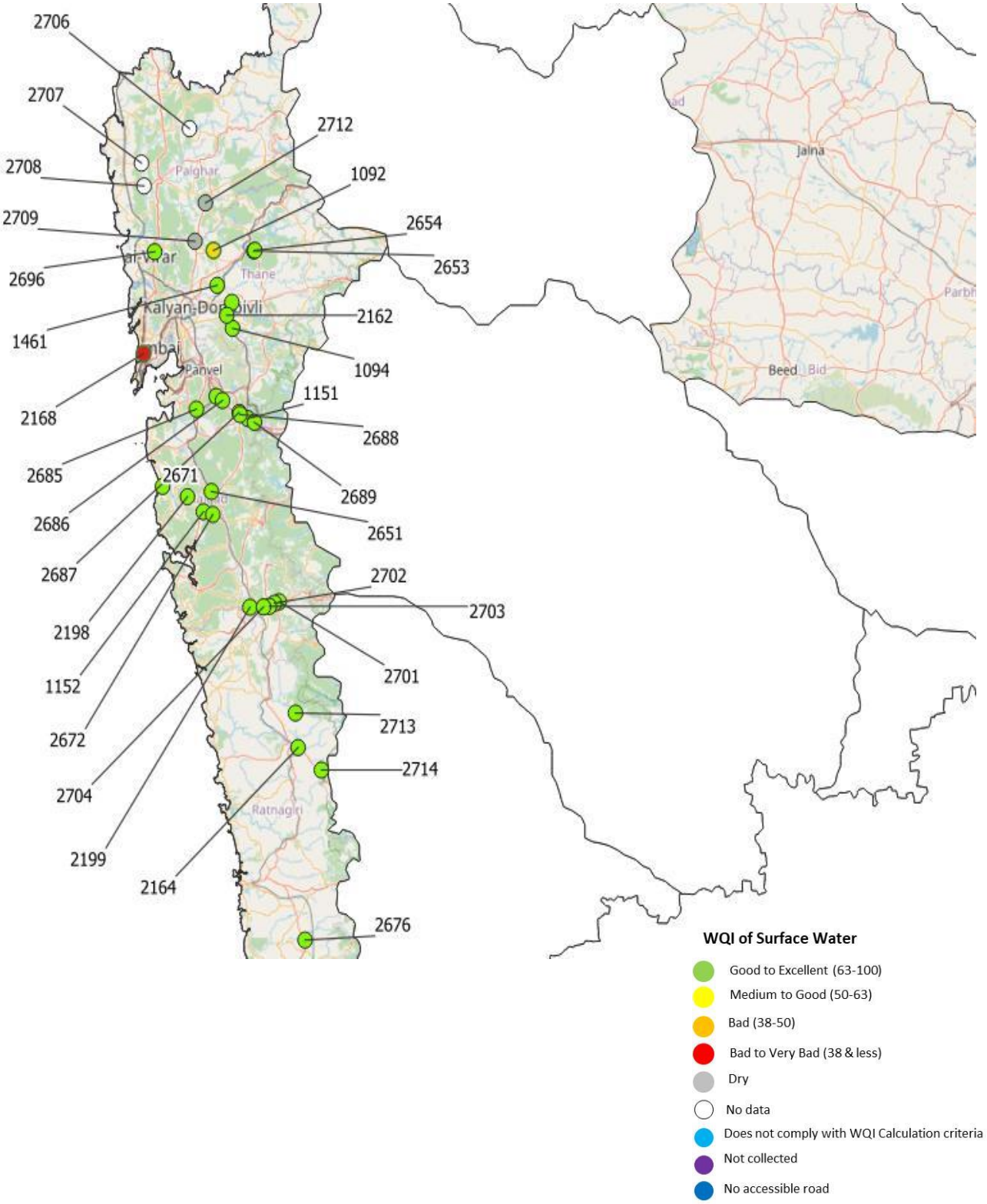
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

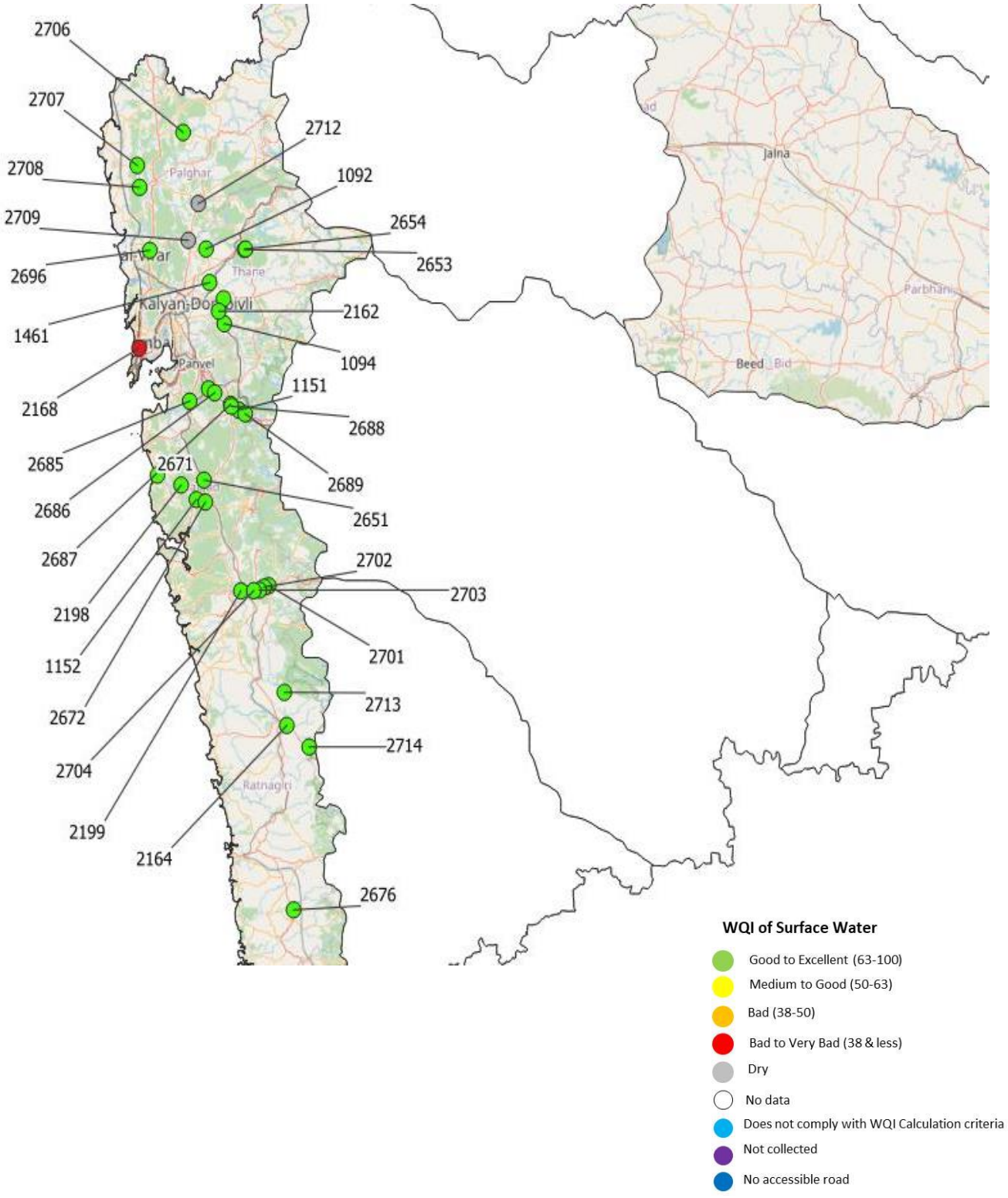
Table No. 24: Surface water quality monitoring stations on West flowing rivers (2 of 2)

Program	Station ID	River	Station Name	Village	Taluka	District
NWMP	2701	Savitri	Savitri Jackwell at Upsa kendra	Nangalwadi	Mahad	Raigad
NWMP	2702	Savitri	Savitri at Shedav Doh	Shedav Dov	Mahad	Raigad
NWMP	2703	Savitri	Savitri at Dadli Bridge	Dadli	Mahad	Raigad
NWMP	2704	Savitri	Savitri at Muthavali village	Muthavali	Mahad	Raigad
NWMP	2689	Patalganga	Patalganga at Gagangiri Maharaj Temple	Khopoli	Khalapur	Raigad
NWMP	2199	Savitri	Savitri at Ovale village	Ovale	Mahad	Raigad
NWMP	1151	Patalganga	Patalganga at Shilphata Bridge	Khopoli	Khalapur	Raigad
NWMP	2688	Patalganga	Patalganga at Savroli Bridge	Savroli	Khalapur	Raigad
NWMP	2687	Patalganga	Patalganga at Khalapur pumping house	Khalapur	Khalapur	Raigad
SWMP	192	Dam	Morbe Dam, Taluka - Khalapur, District - Raigad	Khalapur	Khalapur	Raigad
SWMP	193	Balganga	Balganga , Village Ransai, Taluka - Khalapur, District - Raigad	Ransai	Khalapur	Raigad
NWMP	2686	Patalganga	Patalganga at Vyal pump house	Vyal	Khalapur	Raigad
NWMP	1462	Patalganga	Patalganga near intake of MIDC water works(Turade w/w)	Turade	Khalapur	Raigad
NWMP	2672	Kundalika	Kundalika at Dhatav at Jackwell	Dhatav	Roha	Raigad
NWMP	2651	Amba	Amba at D/s of Waken Bridge	Waken Phata	Roha	Raigad
NWMP	1152	Kundalika	Kundalika at Roha Bridge	Roha	Roha	Raigad
SWMP	216	Kasardi	Near Ganesh Ghat	Taloja	Panvel	Raigad
NWMP	2708	Surya	Surya at Intake of Vasai-Virar water scheme	Masvan	Palghar	Thane
NWMP	2685	Patalganga	Patalganga at D/s of Kharpada Bridge	Kharpada	Khalapur	Raigad
NWMP	2198	Kundalika	Kundalika at Are Khurd (Saline Zone)	Are Khurd	Roha	Raigad
NWMP	2671	Kundalik	Kundalika near Salav Bridge (Saline Zone)	Salav	Roha	Raigad

Spatial map of Surface WQI of West Flowing rivers (April 2020)

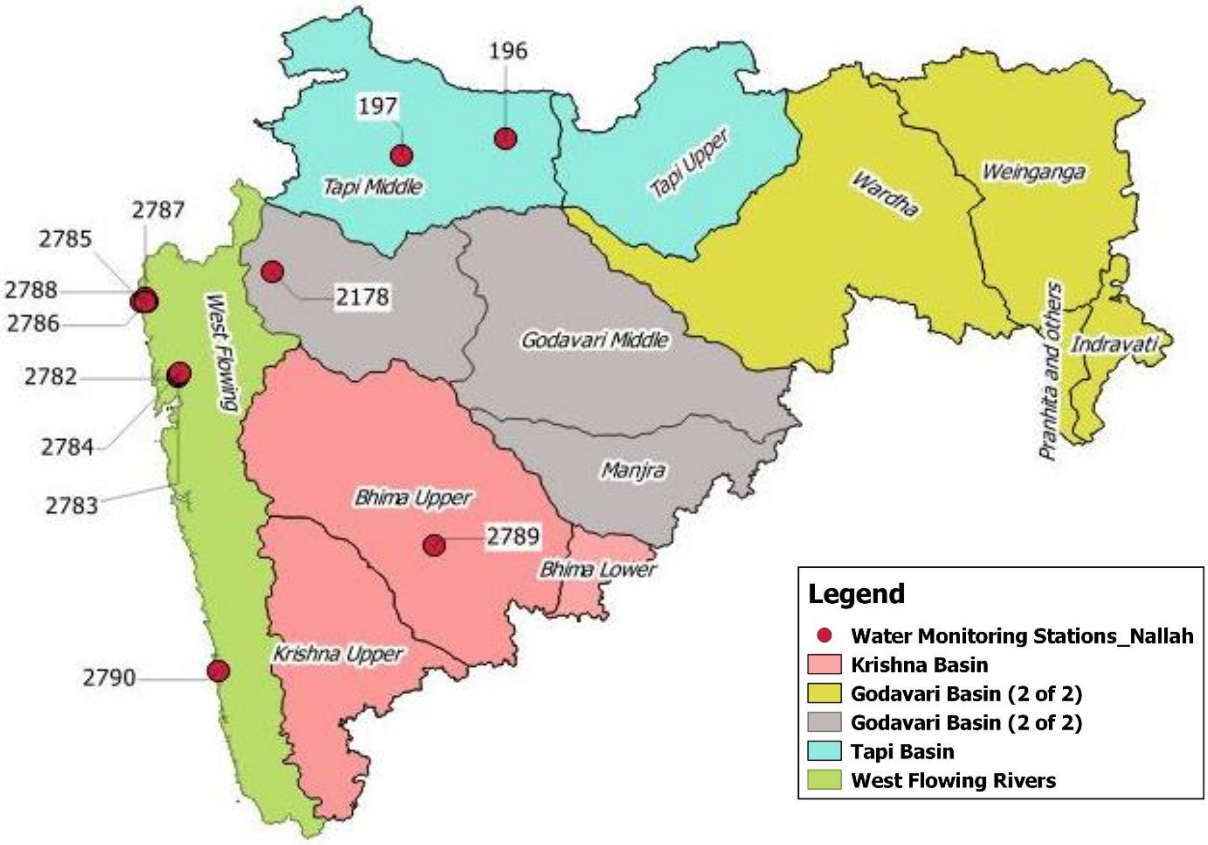


Spatial map of Surface WQI of West Flowing rivers (December 2020)

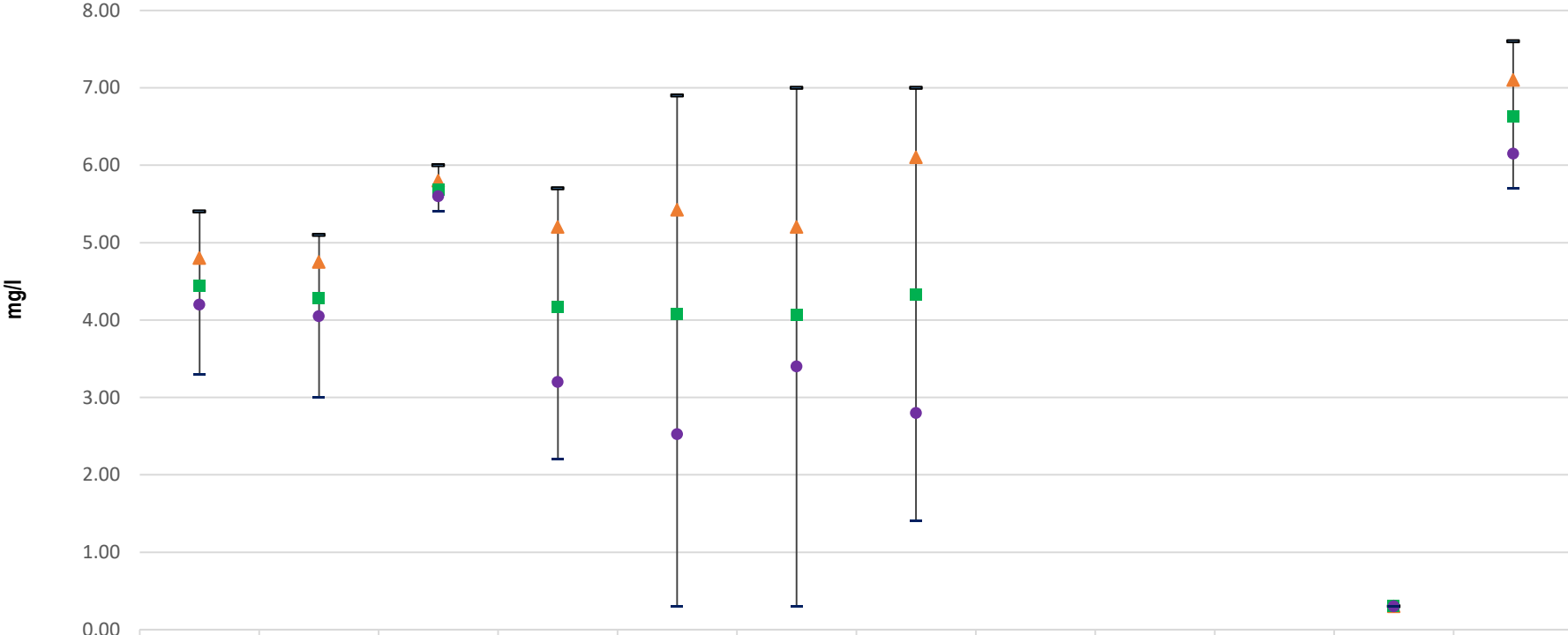


Nallahs

Total 12 WQMS are set up across Nallahs in the state of Maharashtra. The majority of these nallahs are set up in the vicinity of the coastal belt concentrated majorly in the Thane district. Out of these 12 nallahs, BPT Navapur nallah, Rabodi nallah and Sandoz nallah are major nallahs that are of major importance from a pollution level point of view. This is because these nallahs remain polluted throughout the year due to the high rate of pollutants released from the nearby settlements; both industrial and residential.

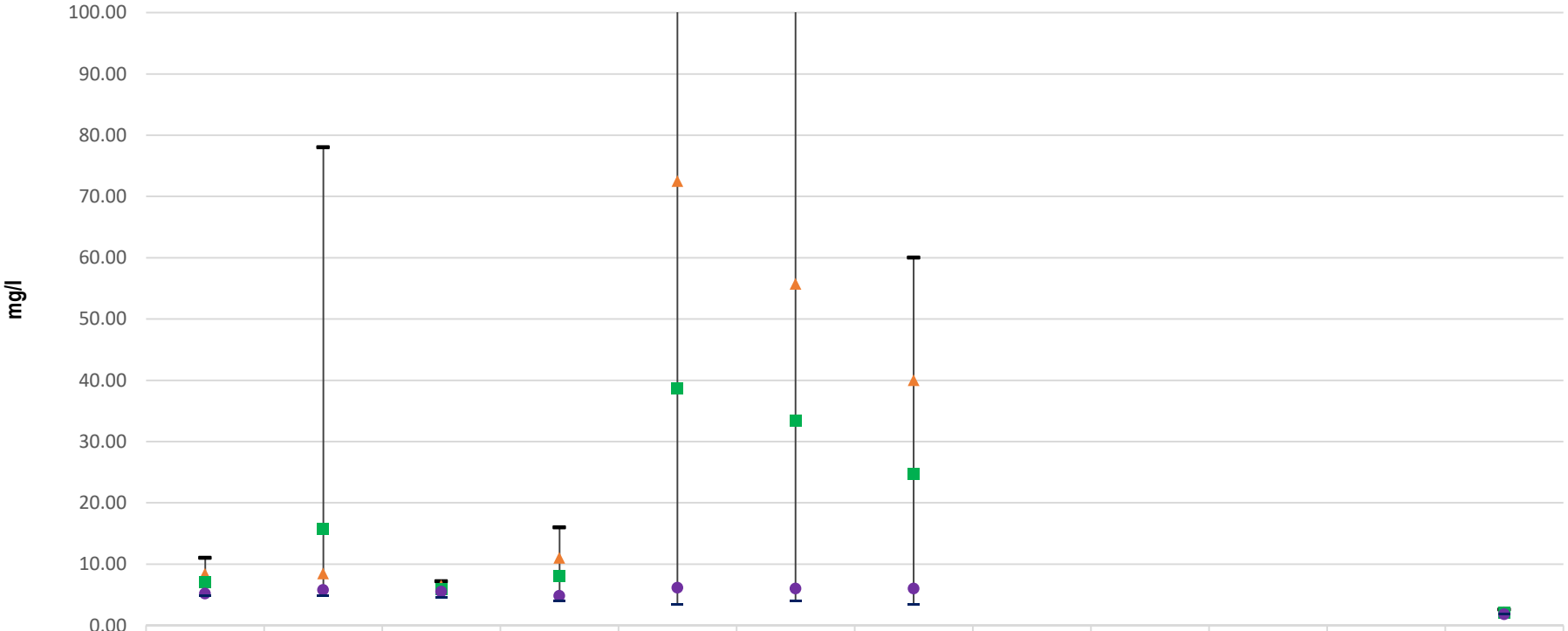


Map No. 9: Network of surface water quality monitoring stations on Nallahs



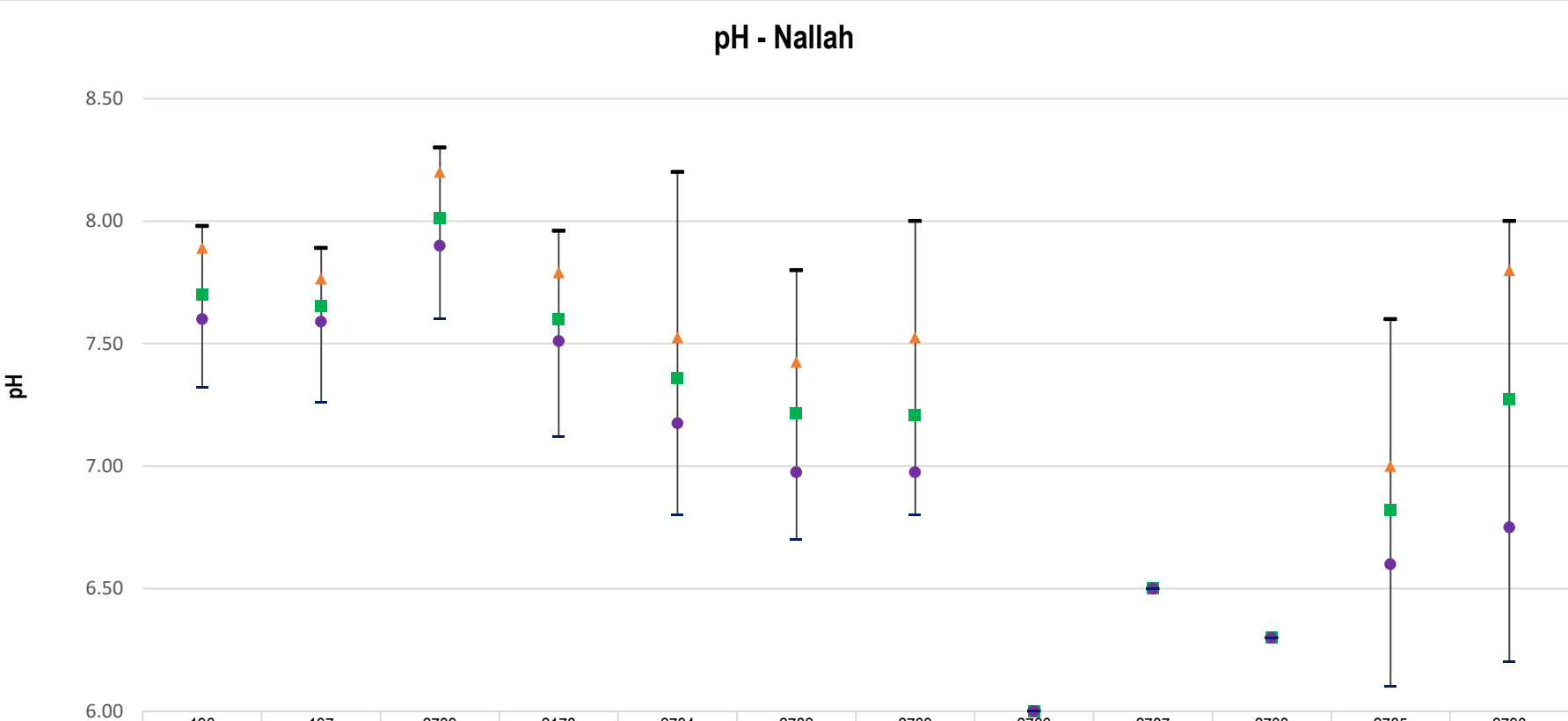
	196	197	2789	2178	2784	2782	2783	2786	2787	2788	2785	2790
Max	5.40	5.10	6.00	5.70	6.90	7.00	7.00				0.30	7.60
75 percentile	4.80	4.75	5.80	5.20	5.43	5.20	6.10				0.30	7.10
Avg	4.44	4.29	5.68	4.17	4.08	4.07	4.32				0.30	6.63
25 percentile	4.20	4.05	5.60	3.20	2.53	3.40	2.80				0.30	6.15
Min	3.30	3.00	5.40	2.20	0.30	0.30	1.40				0.30	5.70

Figure No. 49: Trend of Dissolved Oxygen (DO) levels recorded at WQMS at Nallah (Coastal basin)



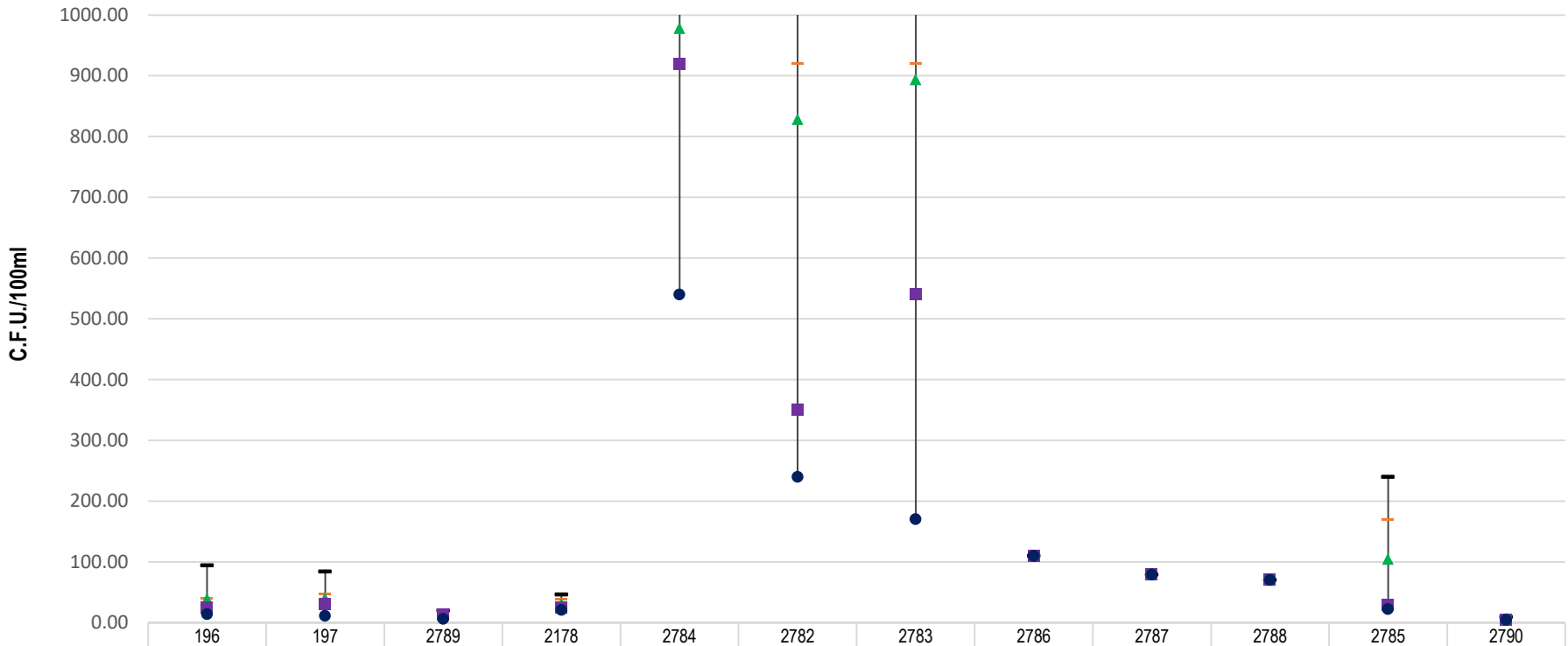
	196	197	2789	2178	2784	2782	2783	2786	2787	2788	2785	2790
Max	11.00	78.00	7.20	16.00	110.00	110.00	60.00	400.00	850.00	1750.00	2200.00	2.60
75 percentile	8.40	8.45	6.50	11.00	72.50	55.75	40.00	400.00	850.00	1750.00	875.00	2.20
Avg	7.07	15.75	5.98	8.09	38.67	33.33	24.63	400.00	850.00	1750.00	854.09	2.03
25 percentile	5.20	5.80	5.50	4.80	6.15	6.00	6.00	400.00	850.00	1750.00	580.00	1.80
Min	4.80	4.80	4.60	4.00	3.40	4.00	3.40	400.00	850.00	1750.00	360.00	1.80

Figure No. 50: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS at Nallah (Coastal basin)



	196	197	2789	2178	2784	2782	2783	2786	2787	2788	2785	2790
Max	7.98	7.89	8.30	7.96	8.20	7.80	8.00	6.00	6.50	6.30	7.60	8.00
75 percentile	7.89	7.77	8.20	7.79	7.53	7.43	7.53	6.00	6.50	6.30	7.00	7.80
Avg	7.70	7.65	8.01	7.60	7.36	7.22	7.21	6.00	6.50	6.30	6.82	7.27
25 percentile	7.60	7.59	7.90	7.51	7.18	6.98	6.98	6.00	6.50	6.30	6.60	6.75
Min	7.32	7.26	7.60	7.12	6.80	6.70	6.80	6.00	6.50	6.30	6.10	6.20

Figure No. 51: Trend of pH levels recorded at WQMS at Nallah (Coastal basin)



	196	197	2789	2178	2784	2782	2783	2786	2787	2788	2785	2790
Max	94.00	84.00	20.00	46.00	1700.00	2400.00	2200.00	110.00	79.00	70.00	240.00	9.30
75 percentile	40.00	47.00	15.00	39.00	920.00	920.00	920.00	110.00	79.00	70.00	170.00	7.65
Avg	39.22	40.00	13.67	30.88	978.33	828.33	894.17	110.00	79.00	70.00	104.73	6.47
25 percentile	25.00	30.00	13.00	25.00	920.00	350.00	540.00	110.00	79.00	70.00	29.00	5.05
Min	14.00	11.00	6.00	21.00	540.00	240.00	170.00	110.00	79.00	70.00	22.00	4.50

Figure No. 52: Trend of Fecal Coliform levels recorded at WQMS at Nallah (Coastal basin)

Water Quality Index for WQMS at Nallah (Coastal basin)

April	21.22	27.43	25.30									
May	33.27	36.72	24.56						78.80			
June	25.46	50.35	33.16					27.54	81.25			
July	58.69	59.17	59.27	75.32						70.45	53.73	
August	71.63	61.51	72.70	75.84				36.07		71.10	71.81	64.57
September	58.23	65.16	70.65	75.88				35.53		67.37	66.05	54.26
October	60.95	59.81	61.84	74.73	25.34	30.10	29.01	35.17		76.55	68.15	67.92
November	70.30	70.05	68.06	73.14				29.45	86.78	77.48	70.94	71.97
December	39.27	46.60	41.41	75.17				28.36	82.70	51.91	61.97	62.17
January	25.10	28.71	31.17	72.18				31.30	85.79	38.17	63.33	64.03
February	28.30	28.50	26.58	68.66				28.40	87.44	58.30	63.46	64.30
March	28.20	26.72	36.41	74.33				32.67	87.52	47.65	63.34	35.78
Station code	2784	2782	2783	2789	2786	2787	2788	2785	2790	2178	196	197
Sub Basin	Nallah											
Basin	Coastal											

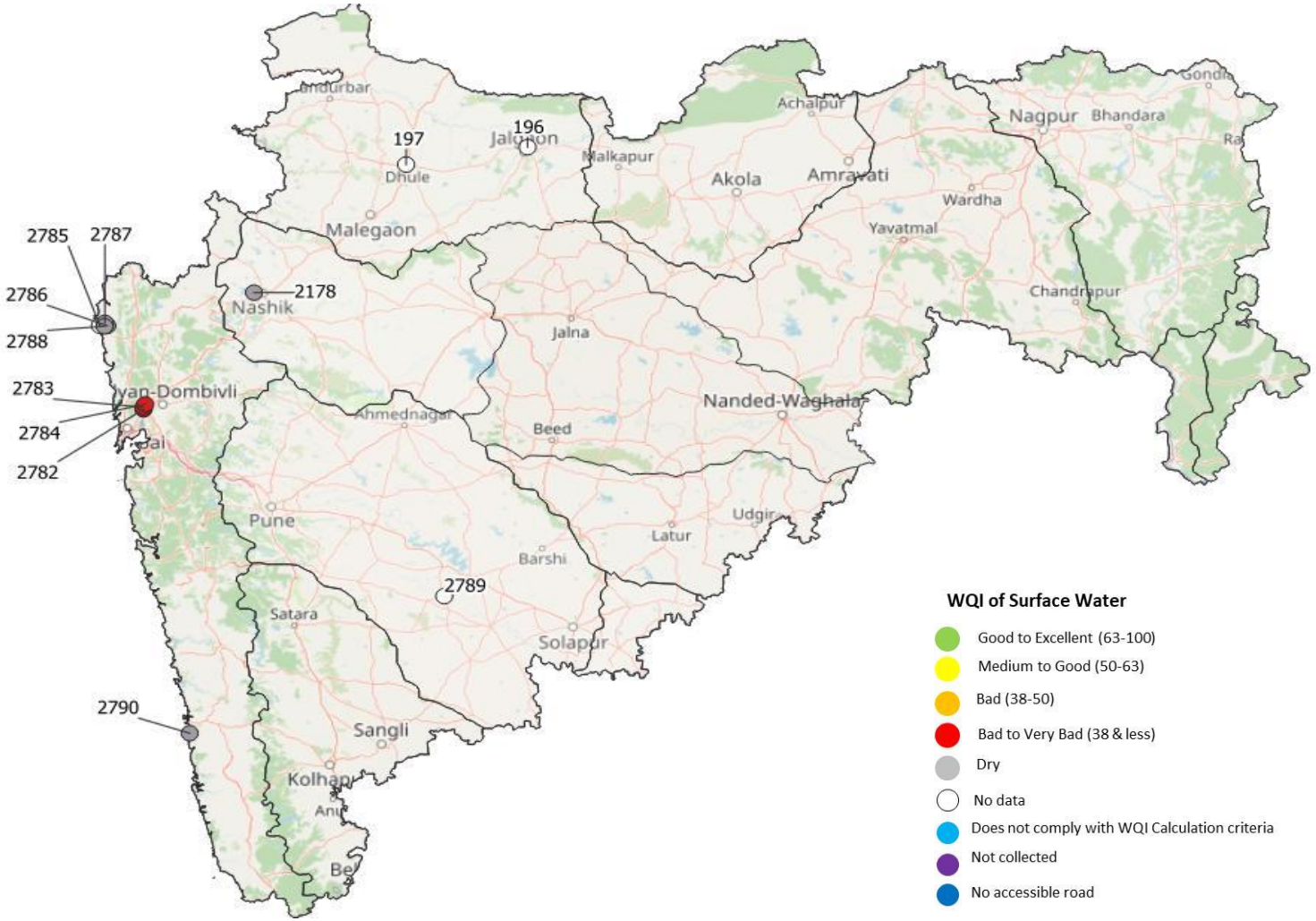
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

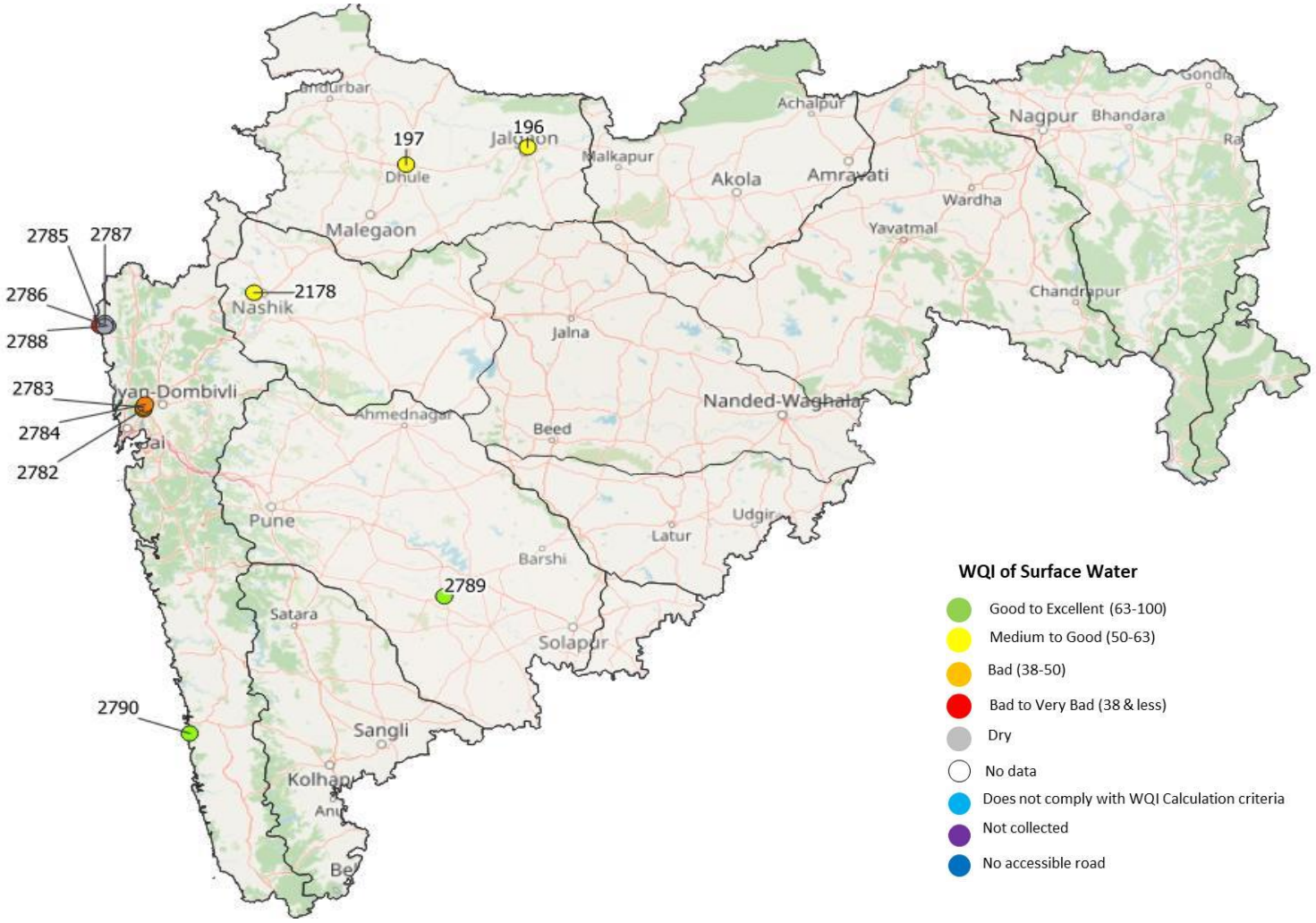
Table No. 25: Surface water monitoring stations at Nallahs

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
SWMP	196	Lowki Nalla	Lowki Nalla At Khedi, Taluka & District - Jalgaon	Khedi	Khedi	Jalgaon
SWMP	197	Moti Nalla	Moti Nalla before Confluence with Panjara Dhule, Taluka & District - Dhule	Dhule	Dhule	Dhule
NWMP	2178	Chikhali nalla	Chikhali Nalla Meets Godavari	Chikhali	Nashik	Nashik
NWMP	2789	Nalla	Nalla at D/s of Alkai Mandir, Solapur	Aklai	Malshiras	Solapur
NWMP	2784	Sandoz nalla	Sandoz Nalla	Sandozbaug	Thane	Thane
NWMP	2782	Rabodi nalla	Rabodi Nalla	Rabodi	Thane	Thane
NWMP	2783	Colour Chem nalla	Colour Chem Nalla	Majiwada	Thane	Thane
NWMP	2786	Tarapur MIDC nalla	Tarapur MIDC Nalla, near sump No1	MIDC Tarapur	Palghar	Palghar
NWMP	2787	Tarapur MIDC nalla	Tarapur MIDC Nalla	MIDC Tarapur	Palghar	Palghar
NWMP	2788	Tarapur MIDC nalla	Tarapur MIDC Nalla near sump-III	MIDC Tarapur	Palghar	Palghar
NWMP	2785	BPT Navapur	BPT Navapur	Navapur	Palghar	Palghar
NWMP	2790	Pimpal-Paneri nalla	Pimpal-Paneri Nalla at Ratnagiri near Finolex Industries	Yahganigaon	Ratnagiri	Ratnagiri

Spatial map of Surface WQI of Nallahs (April 2020)



Spatial map of Surface WQI of Nallahs (December 2020)



Saline (Sea and Creek) Water Quality

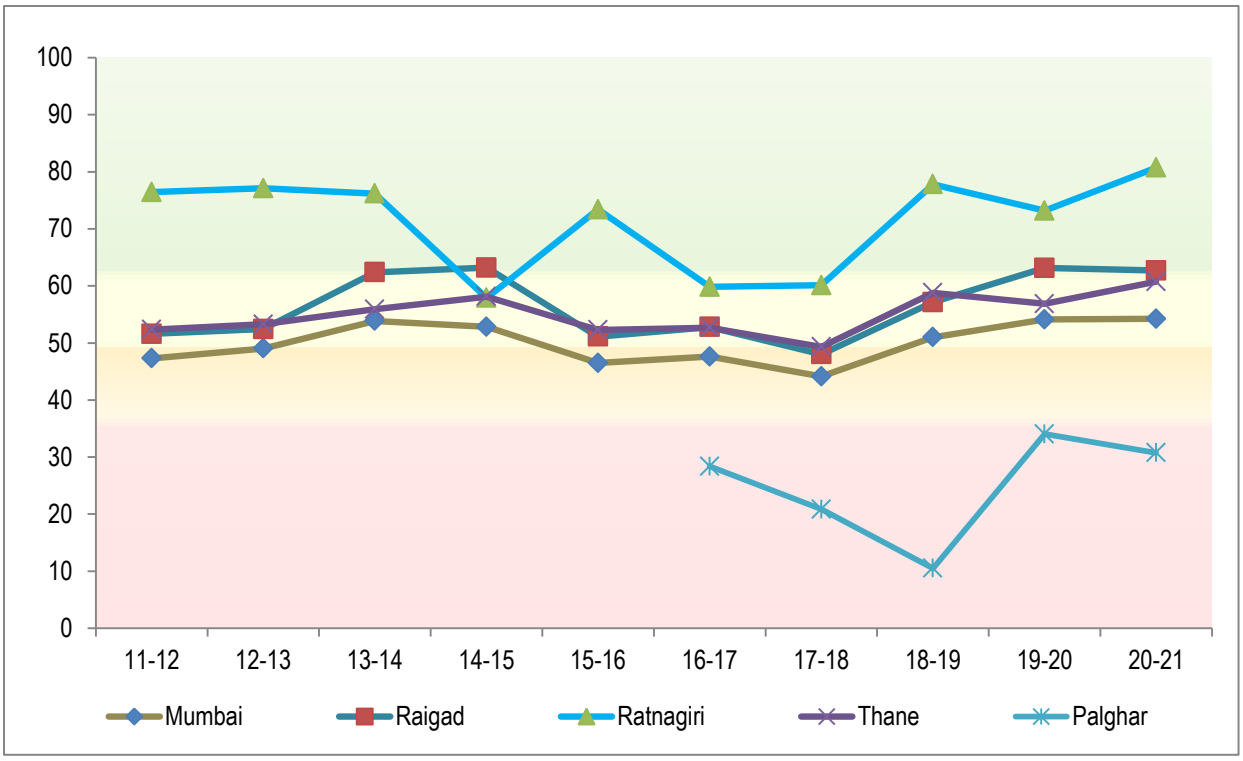
The Coastal zone acts as an interface between the land and the sea. The elements under the coastal zone include coastal land, intertidal area, a network of rivers, estuaries, islands, salt pans/marshes, mangroves, wetlands and beaches. The coastal zone is very important as the majority of the world's population resides in this zone. The coastal zone also harbors a great diversity of organisms that are solely dependent on it for their existence.

India has a coastal zone that spans over 7,517 km which is the 7th largest in the world lengthwise. Out of this, about 720 km length of coastal zone comes in the jurisdiction of the state of Maharashtra. This coastal zone runs along the Arabian Sea in the west and the Western Ghats in the east. The coastal stretch in the state constitutes 7 districts- Mumbai city, Mumbai suburban, Thane, Palghar, Raigad, Ratnagiri and Sindhudurg. This coastline has diverse landforms such as rocky coasts, sandy shores Muddy and Mangrove shores are some of the coastal types found prevalently along with a few patches of corals in some places like Malvan. With a presence of about 53 ports, the coastal area contributes considerably to the state's economy by providing opportunities for tourism, fisheries, salt production and other livelihood opportunities for the coastal communities.

Like any other coastal zones around the world, India's coastal zone including that of Maharashtra is under tremendous anthropogenic pressure owing to the unplanned development of the coastal belt. The release of effluents from industries, disposal of municipal solid waste from nearby human settlements and tourists, and disposal of construction and demolition wastes into these ecosystems results in water pollution and causes detrimental impacts on coastal and marine biodiversity. Thus, it is essential to continuously monitor water quality in coastal zone/areas to understand the level of pollution and to take strong mitigative measures in a timely manner.

For monitoring purposes, MPCB has installed 48 monitoring stations (36 along sea/creek especially along the sensitive and pollution prone areas of the state's coastline and 12 along the nallahs). Regular monitoring is conducted at these monitoring stations for parameters like DO, FC, pH and BOD. The following section presents an illustrative account of these parameters recorded at the sea and creek WQMS.

Coastal Basin (Sea/Creek water sample)



WQI	Category	Class by CPCB	Remarks
63-100	Good to Excellent	A	Non polluted
50-63	Medium to Good	B	Non polluted
38-50	Bad	C	Polluted
38 & less	Bad to Very Bad	D, E	Heavily polluted

Figure No. 53: Trend of annual average WQI across districts of Coastal basin

Note: This graph considers the average WQI for all the monitoring stations in that particular district and hence may include some bias. This graph is only for an overview and monitoring station wise data maybe analyzed to pin point the most affected and polluted patches of bodies in that district.

The illustration of the intra basin performance of west flowing rivers across 5 districts of the state has been done in Figure No. 53. Out of 5 districts, WQMS installed only at Ratnagiri recorded annual average WQI in the 'Good to Excellent' category (73.1 in 2019-20 to 80.7 in 2020-21). The WQMS installed in Mumbai (54.1 to 54.2) and Thane (56.8 to 60.7) recorded a slight increase in WQI; still, the WQI remained in the same category i.e 'Medium to Good'.

On the other hand, WQMS installed at Raigad (63.1 in 2019-20 to 62.7 in 2020-21) and Palghar (34.0 to 30.7) recorded a slight decrease in annual average WQI levels for the year 2020-21. This indicates that the water quality in the coastal basin of the Palghar district is heavily polluted and needs immediate mitigative measures in place.

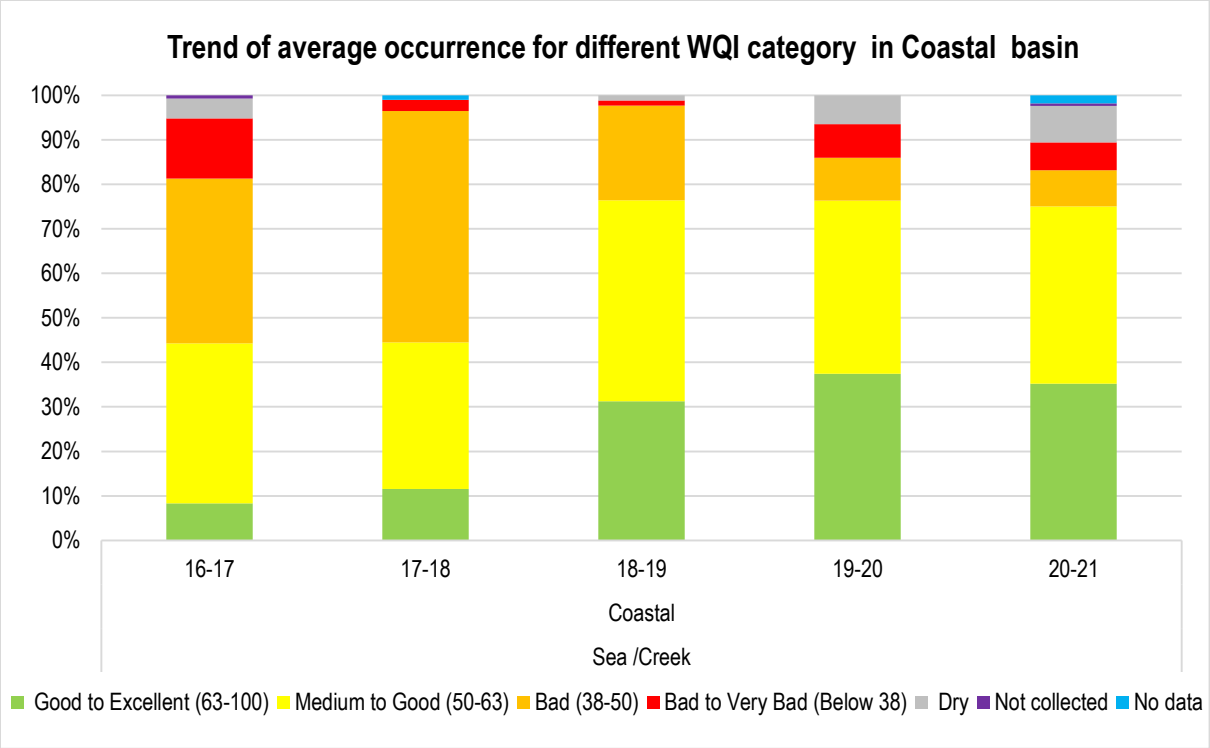
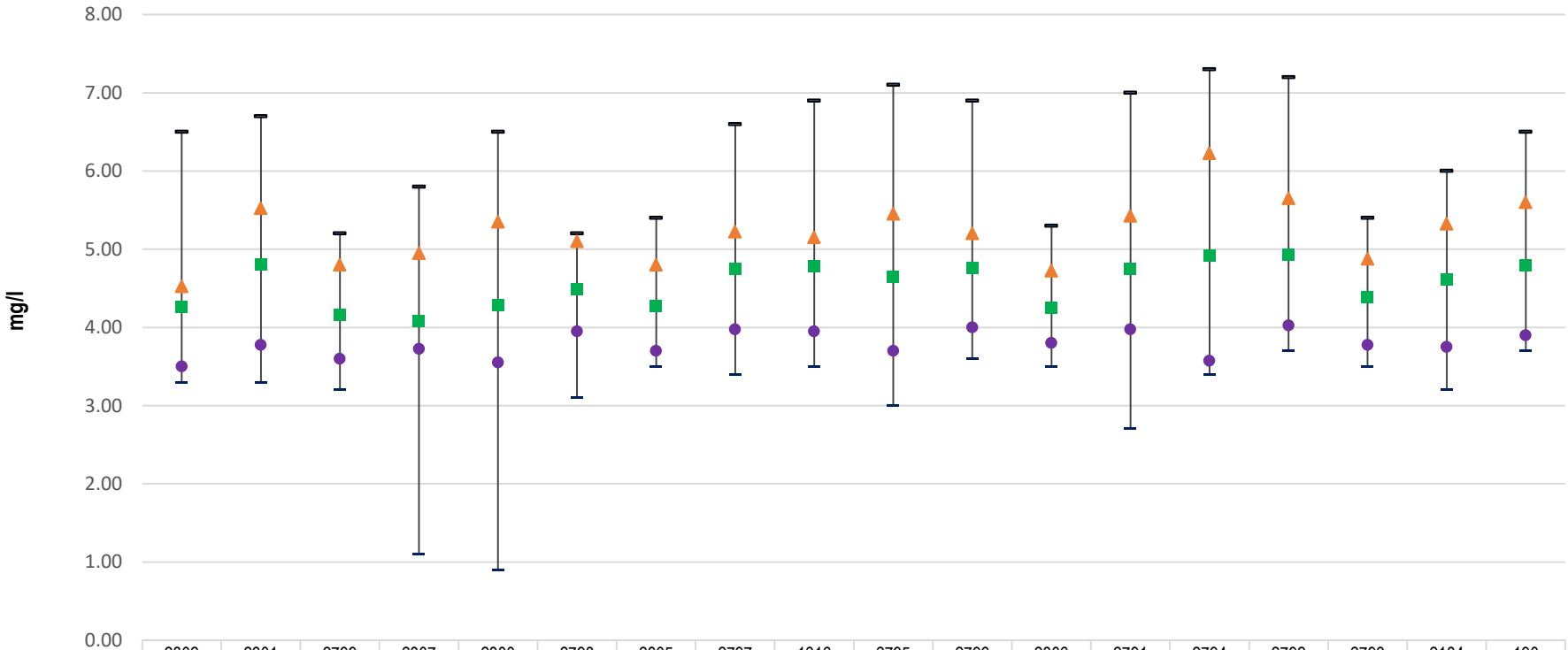


Figure No. 54: Trend of average occurrence for different category of WQI Coastal basin

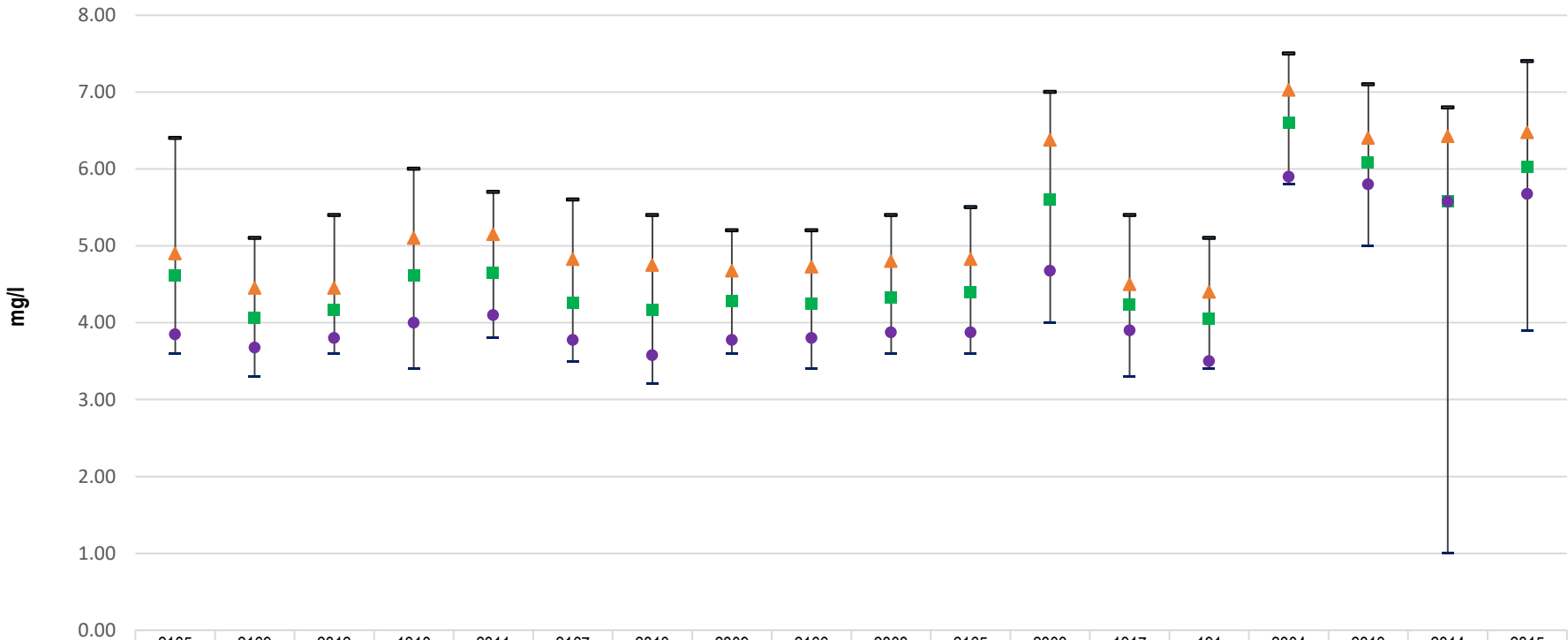
The interbasin performance for the coastal basin is provided in Figure No. 54. From the figure, it can be observed that the total percentage share of observations coming under the category of Good to Excellent have slightly reduced from about 37.4% (2019-20) to about 35.2% in 2020-21 whereas the observations of Medium to Good category observations have increased from about 38.9% (2019-20) to about 39.8% in 2020-21.

A slight percentage decrease in observations coming under the categories of Bad (~9.6% to 8.15%) and Bad to Very Bad (7.6% to 6.3%) was recorded. On the other hand, about 8.1% observations were recorded under the Dry category followed by 1.85% and0.55% under the categories of No Data and Not Collected respectively.



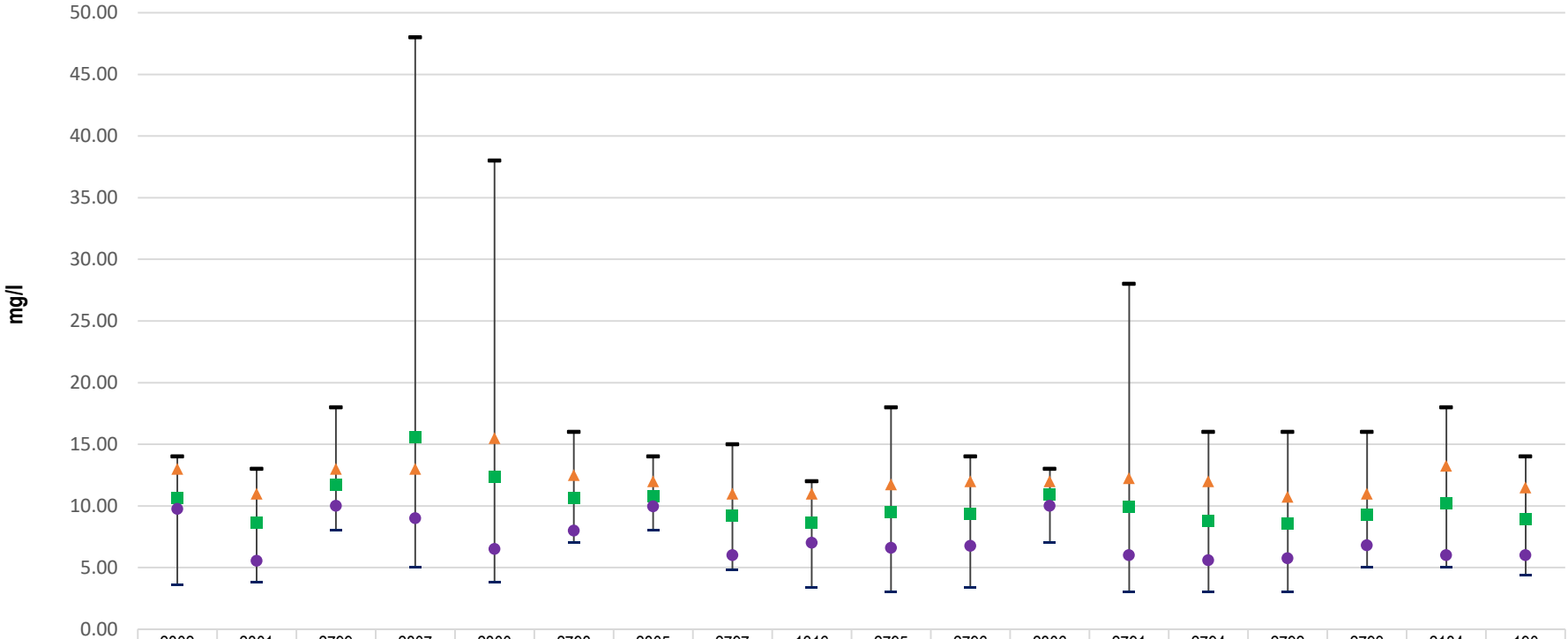
	2802	2801	2799	2807	2800	2798	2805	2797	1316	2795	2796	2806	2791	2794	2792	2793	2184	190
	Sea/Creek																	
	Coastal																	
Max	6.50	6.70	5.20	5.80	6.50	5.20	5.40	6.60	6.90	7.10	6.90	5.30	7.00	7.30	7.20	5.40	6.00	6.50
75 percentile	4.53	5.53	4.80	4.95	5.35	5.10	4.80	5.23	5.15	5.45	5.20	4.73	5.43	6.23	5.65	4.88	5.33	5.60
Avg	4.26	4.80	4.16	4.08	4.28	4.48	4.27	4.74	4.78	4.64	4.76	4.25	4.75	4.92	4.93	4.38	4.61	4.79
25 percentile	3.50	3.78	3.60	3.73	3.55	3.95	3.70	3.98	3.95	3.70	4.00	3.80	3.98	3.58	4.03	3.78	3.75	3.90
Min	3.30	3.30	3.20	1.10	0.90	3.10	3.50	3.40	3.50	3.00	3.60	3.50	2.70	3.40	3.70	3.50	3.20	3.70

Figure No. 55: Trend of Dissolved Oxygen (DO) levels recorded at WQMS monitoring sea and creek water (1 of 2)



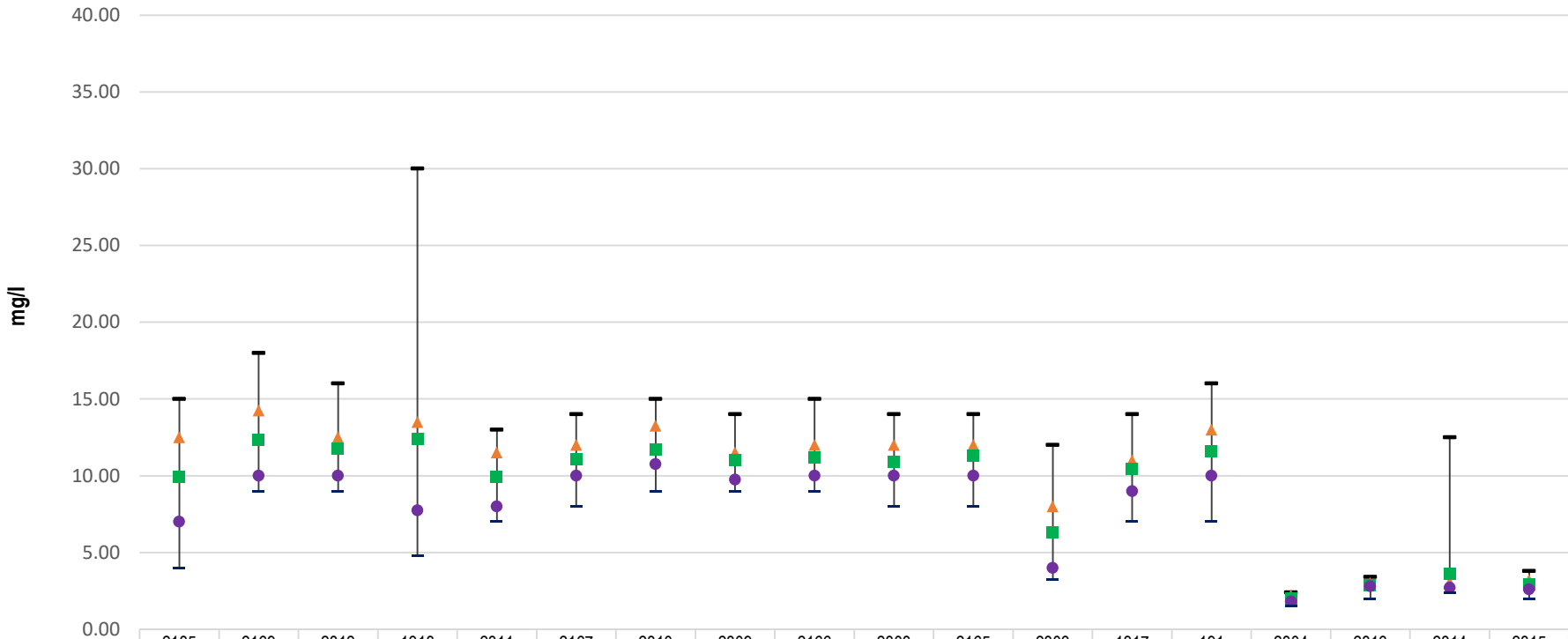
	2185	2169	2812	1318	2811	2167	2810	2809	2166	2808	2165	2803	1317	191	2804	2813	2814	2815
	Sea/Creek																	
	Coastal																	
Max	6.40	5.10	5.40	6.00	5.70	5.60	5.40	5.20	5.20	5.40	5.50	7.00	5.40	5.10	7.50	7.10	6.80	7.40
75 percentile	4.90	4.45	4.45	5.10	5.15	4.83	4.75	4.68	4.73	4.80	4.83	6.38	4.50	4.40	7.03	6.40	6.43	6.48
Avg	4.61	4.06	4.17	4.61	4.65	4.26	4.17	4.28	4.24	4.33	4.39	5.60	4.23	4.06	6.60	6.08	5.58	6.03
25 percentile	3.85	3.68	3.80	4.00	4.10	3.78	3.58	3.78	3.80	3.88	3.88	4.68	3.90	3.50	5.90	5.80	5.58	5.68
Min	3.60	3.30	3.60	3.40	3.80	3.50	3.20	3.60	3.40	3.60	3.60	4.00	3.30	3.40	5.80	5.00	1.00	3.90

Figure No. 56: Trend of Dissolved Oxygen (DO) levels recorded at WQMS monitoring sea and creek water (2 of 2)



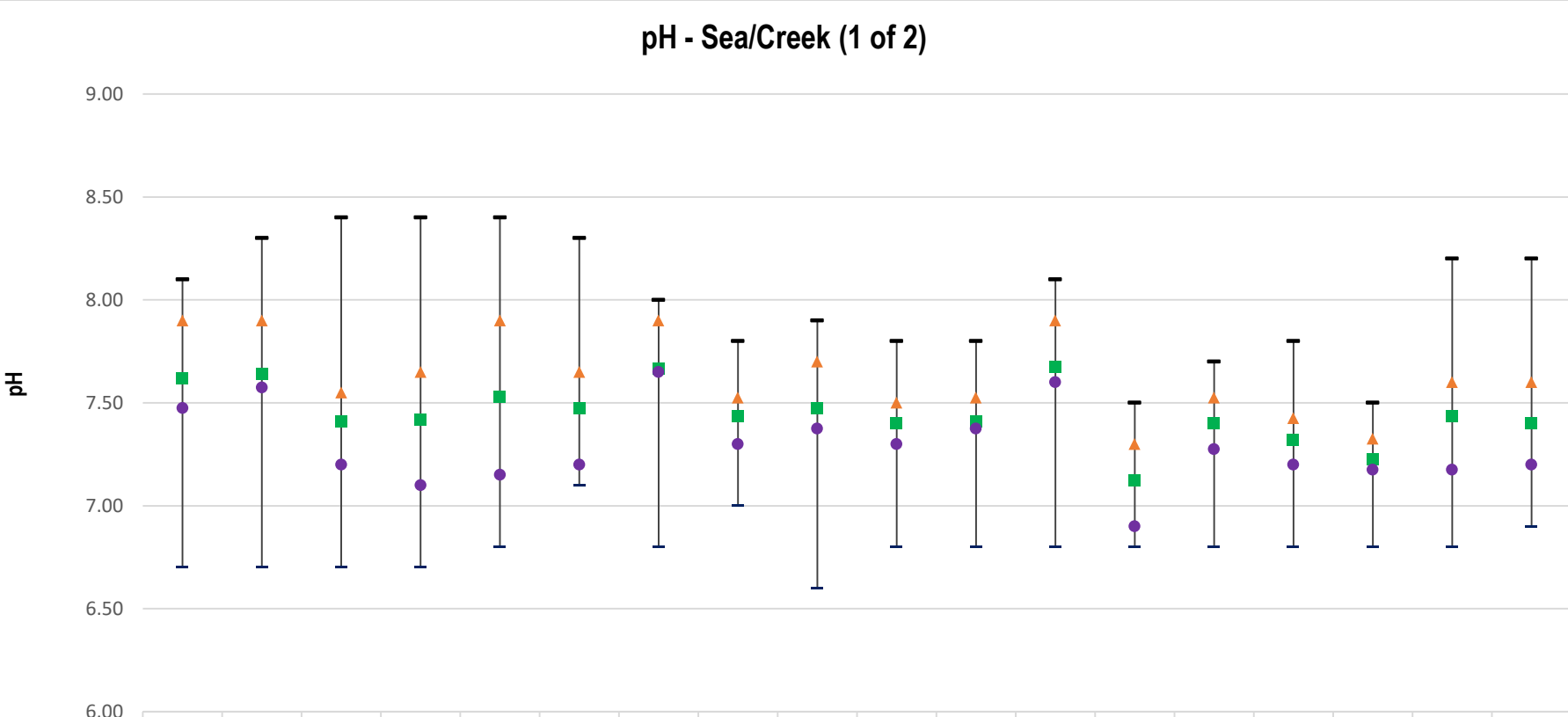
	2802	2801	2799	2807	2800	2798	2805	2797	1316	2795	2796	2806	2791	2794	2792	2793	2184	190
Max	14.00	13.00	18.00	48.00	38.00	16.00	14.00	15.00	12.00	18.00	14.00	13.00	28.00	16.00	16.00	16.00	18.00	14.00
75 percentile	13.00	11.00	13.00	13.00	15.50	12.50	12.00	11.00	11.00	11.75	12.00	12.00	12.25	12.00	10.75	11.00	13.25	11.50
Avg	10.63	8.65	11.73	15.55	12.35	10.64	10.82	9.23	8.62	9.50	9.33	10.92	9.93	8.80	8.58	9.30	10.18	8.95
25 percentile	9.75	5.55	10.00	9.00	6.50	8.00	9.95	6.00	7.00	6.60	6.75	10.00	6.00	5.60	5.75	6.80	6.00	6.00
Min	3.60	3.80	8.00	5.00	3.80	7.00	8.00	4.80	3.40	3.00	3.40	7.00	3.00	3.00	3.00	5.00	5.00	4.40

Figure No. 57: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS monitoring sea and creek water (1 of 2)



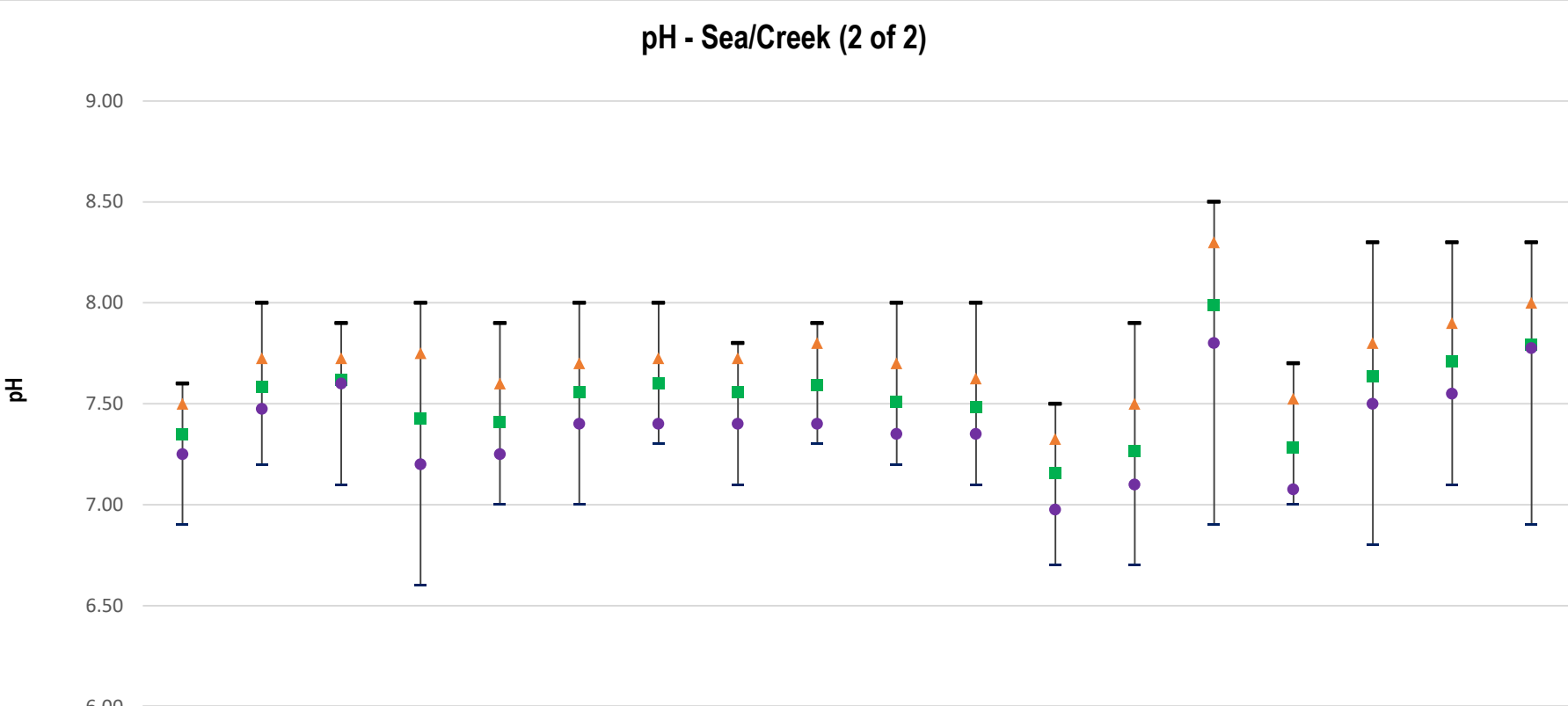
	2185	2169	2812	1318	2811	2167	2810	2809	2166	2808	2165	2803	1317	191	2804	2813	2814	2815
Max	15.00	18.00	16.00	30.00	13.00	14.00	15.00	14.00	15.00	14.00	14.00	12.00	14.00	16.00	2.40	3.40	12.50	3.80
75 percentile	12.50	14.25	12.50	13.50	11.50	12.00	13.25	11.50	12.00	12.00	12.00	8.00	11.00	13.00	2.20	3.00	3.05	3.20
Avg	9.91	12.33	11.75	12.38	9.91	11.08	11.67	11.00	11.17	10.92	11.33	6.30	10.44	11.56	1.99	2.87	3.63	2.92
25 percentile	7.00	10.00	10.00	7.75	8.00	10.00	10.75	9.75	10.00	10.00	10.00	4.00	9.00	10.00	1.80	2.80	2.70	2.60
Min	4.00	9.00	9.00	4.80	7.00	8.00	9.00	9.00	9.00	8.00	8.00	3.20	7.00	7.00	1.50	2.00	2.40	2.00

Figure No. 58: Trend of Biological Oxygen Demand (BOD) levels recorded at WQMS monitoring sea and creek water (2 of 2)



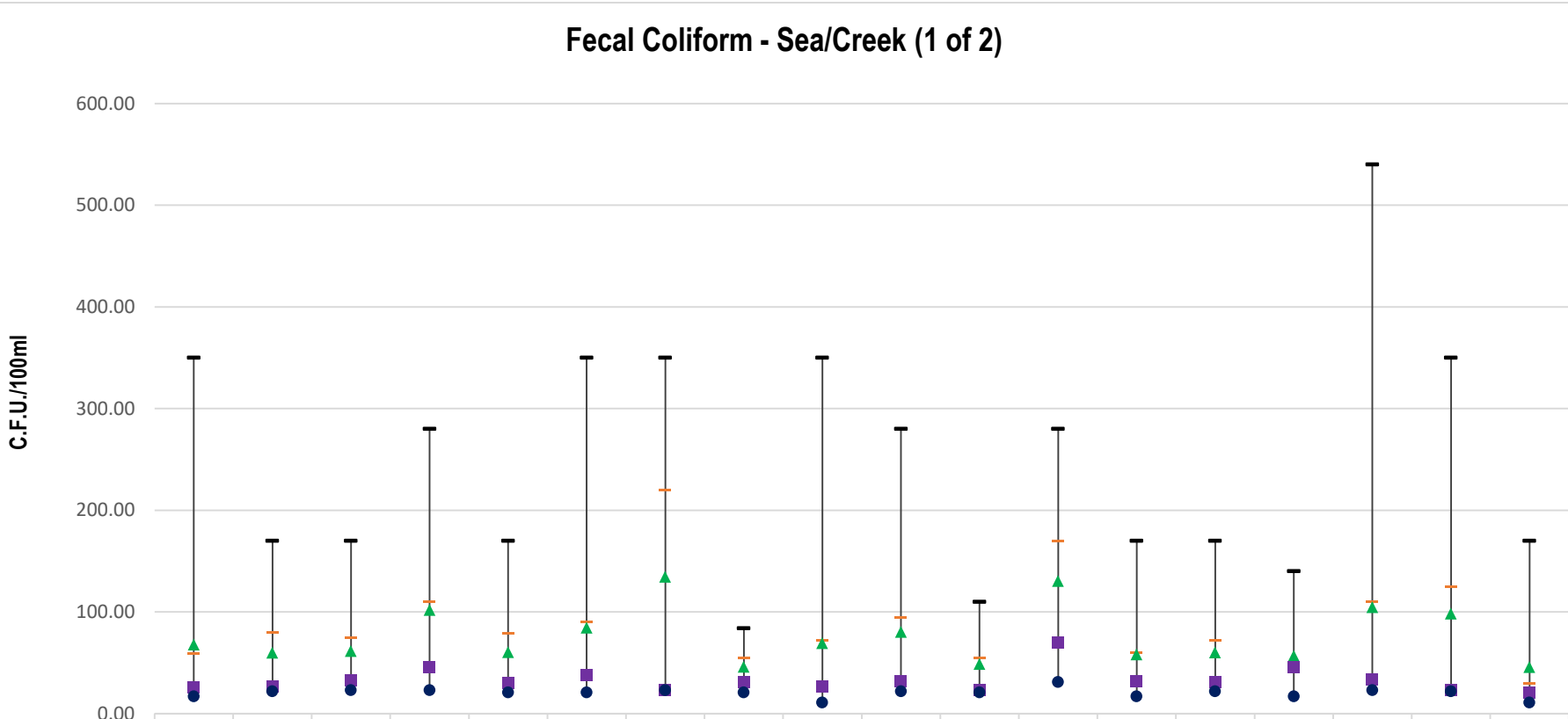
	2802	2801	2799	2807	2800	2798	2805	2797	1316	2795	2796	2806	2791	2794	2792	2793	2184	190
	Sea/Creek																	
	Coastal																	
Max	8.10	8.30	8.40	8.40	8.40	8.30	8.00	7.80	7.90	7.80	7.80	8.10	7.50	7.70	7.80	7.50	8.20	8.20
75 percentile	7.90	7.90	7.55	7.65	7.90	7.65	7.90	7.53	7.70	7.50	7.53	7.90	7.30	7.53	7.43	7.33	7.60	7.60
Avg	7.62	7.64	7.41	7.42	7.53	7.47	7.67	7.43	7.48	7.40	7.41	7.68	7.13	7.40	7.32	7.23	7.43	7.40
25 percentile	7.48	7.58	7.20	7.10	7.15	7.20	7.65	7.30	7.38	7.30	7.38	7.60	6.90	7.28	7.20	7.18	7.18	7.20
Min	6.70	6.70	6.70	6.70	6.80	7.10	6.80	7.00	6.60	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.90

Figure No. 59: Trend of pH levels recorded at WQMS monitoring sea and creek water (1 of 2)



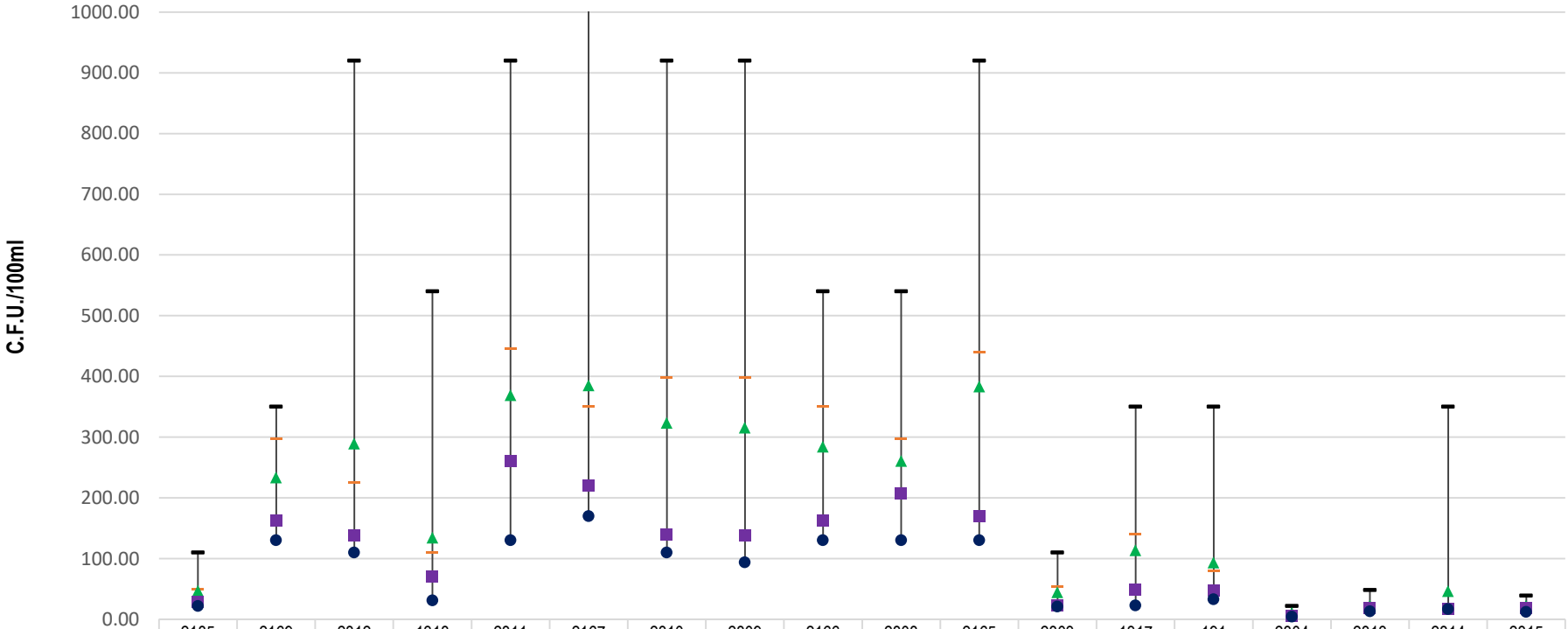
	2185	2169	2812	1318	2811	2167	2810	2809	2166	2808	2165	2803	1317	191	2804	2813	2814	2815
Max	7.60	8.00	7.90	8.00	7.90	8.00	8.00	7.80	7.90	8.00	8.00	7.50	7.90	8.50	7.70	8.30	8.30	8.30
75 percentile	7.50	7.73	7.73	7.75	7.60	7.70	7.73	7.73	7.80	7.70	7.63	7.33	7.50	8.30	7.53	7.80	7.90	8.00
Avg	7.35	7.58	7.62	7.43	7.41	7.56	7.60	7.56	7.59	7.51	7.48	7.16	7.27	7.99	7.28	7.63	7.71	7.79
25 percentile	7.25	7.48	7.60	7.20	7.25	7.40	7.40	7.40	7.40	7.35	7.35	6.98	7.10	7.80	7.08	7.50	7.55	7.78
Min	6.90	7.20	7.10	6.60	7.00	7.00	7.30	7.10	7.30	7.20	7.10	6.70	6.70	6.90	7.00	6.80	7.10	6.90

Figure No. 60: Trend of pH levels recorded at WQMS monitoring sea and creek water (2 of 2)



	2802	2801	2799	2807	2800	2798	2805	2797	1316	2795	2796	2806	2791	2794	2792	2793	2184	190
Max	350.00	170.00	170.00	280.00	170.00	350.00	350.00	84.00	350.00	280.00	110.00	280.00	170.00	170.00	140.00	540.00	350.00	170.00
75 percentile	58.75	80.00	74.50	110.00	79.00	90.00	220.00	54.25	72.25	94.25	54.25	170.00	60.25	72.25	49.00	110.00	125.00	29.50
Avg	67.83	59.83	61.64	102.00	60.55	84.36	134.50	46.17	69.33	80.25	48.75	130.33	58.08	60.17	56.92	104.75	98.42	45.82
25 percentile	25.75	26.75	33.00	46.00	30.00	38.00	23.00	30.50	27.00	31.50	23.00	70.00	32.25	30.75	46.00	33.75	23.00	20.50
Min	17.00	22.00	23.00	23.00	21.00	21.00	23.00	21.00	11.00	22.00	21.00	31.00	17.00	22.00	17.00	23.00	22.00	11.00

Figure No. 61: Trend of Fecal coliform levels recorded at WQMS monitoring sea and creek water (1 of 2)



	2185	2169	2812	1318	2811	2167	2810	2809	2166	2808	2165	2803	1317	191	2804	2813	2814	2815
Max	110.00	350.00	920.00	540.00	920.00	1600.00	920.00	920.00	540.00	540.00	920.00	110.00	350.00	350.00	22.00	48.00	350.00	39.00
75 percentile	49.00	297.50	225.00	110.00	445.00	350.00	397.50	397.50	350.00	297.50	440.00	54.25	140.00	79.00	13.50	22.75	21.25	25.25
Avg	46.73	233.33	289.17	134.18	369.09	385.00	323.33	315.33	284.17	260.83	383.33	44.58	113.78	93.56	10.45	22.42	46.25	22.42
25 percentile	28.00	162.50	137.50	70.00	260.00	220.00	140.00	137.50	162.50	207.50	170.00	22.75	49.00	47.00	5.60	19.25	17.00	18.75
Min	22.00	130.00	110.00	31.00	130.00	170.00	110.00	94.00	130.00	130.00	130.00	21.00	23.00	33.00	4.50	13.00	17.00	12.00

Figure No. 62: Trend of Fecal coliform levels recorded at WQMS monitoring sea and creek water (2 of 2)

Water quality Index for WQMS monitoring Sea and Creek water (1 of 2)

April	60.49	59.54					55.50	61.23	61.45	58.56	64.10	55.50	58.15	57.88	62.76	58.55	53.40	
May	60.29	67.83	49.66	30.50	50.54	60.51	64.91	65.71	65.73	51.01	65.51	59.81	63.07	53.62	53.45	53.62	59.39	57.96
June	52.75	58.77	66.66	54.50	57.74	67.17	57.97	66.89	67.64	64.61	62.02	55.81	66.33	64.13	65.07	69.23	54.29	63.92
July	58.02	81.83	63.76	57.74	80.59	66.78	67.02	66.46	75.92	79.40	65.95	63.49	75.75	77.42	77.18	62.63	76.02	74.85
August	80.71	79.34	66.37	68.17	77.83	69.02	61.07	78.40	79.18	80.40	82.29	57.86	64.56	80.46	80.11	68.95	76.46	82.94
September	70.16	68.37	66.78	75.19	68.77	70.18	64.68	71.07	70.19	77.17	70.16	55.37	82.01	80.84	72.11	73.95	70.90	76.90
October	71.11	75.68	53.71	58.34	64.74	64.59	50.68	71.62	66.42	64.56	74.81	51.47	75.20	72.34	64.86	62.35	66.46	62.73
November	48.53	49.09	63.74	65.67	68.64	66.23	50.42	78.54	61.86	62.67	68.07	64.41	70.65	75.89	78.38	66.36	64.88	78.73
December	50.32	49.87	50.86	31.62	32.60	47.16	46.59	52.30	51.64	58.31	52.87	46.99	65.94	62.21	67.04	61.25	59.91	68.61
January	51.45	52.84	58.63	57.37	59.58	54.00	57.10	56.25	57.43	55.17	56.72	56.03	54.43	57.91	60.99	59.56	49.75	59.24
February	55.51	57.59	55.81	50.80	56.20	51.00	47.53	58.50	52.92	51.65	56.34	49.70	48.02	52.68	56.89	55.08	57.37	53.99
March	58.40	54.88	46.93	48.44	48.45	51.96	50.38	54.53	57.59	57.39	56.88	49.21	59.72	57.37	58.37	58.37	58.13	51.19
Station code	2802	2801	2799	2807	2800	2798	2805	2797	1316	2795	2796	2806	2791	2794	2792	2793	2184	190
Sub Basin	Sea/Creek (1 of 2)																	
Basin	Coastal																	

Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

Table No. 26: Surface water quality monitoring stations monitoring Sea/Creek water (1 of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	2802	Dahanu creek	Dahanu Creek at Dahanu Fort	Danugaon	Dahanu	Thane
NWMP	2801	Savta creek	Savta Creek	Savta	Dahanu	Thane
NWMP	2799	Dandi creek	Dandi Creek	Dandi	Palghar	Thane
NWMP	2807	Navapur sea	Navapur Sea	Navapur	Palghar	Thane
NWMP	2800	Sarwali creek	Sarwali Creek	Sarwali	Palghar	Thane
NWMP	2798	Kharekuran Murbe creek	Kharekuran Murbe Creek	Kharekuran	Palghar	Thane
NWMP	2805	Arnala sea	Arnala Sea	Arnala	Vasai	Thane
NWMP	2797	Bhayander creek	Bhayander Creek at D/s of Railway Bridge at Jasal Park Chowpatty	Navghar	Bhayander	Thane
NWMP	1316	Bassein creek	Bassein creek at Vasai Fort, Thane	Bassein	Vasai	Thane
NWMP	2795	Ulhas creek	Ulhas Creek at Gaimukh at Nagla Bunder on Ghod Bunder Road	Nagla	Thane	Thane
NWMP	2796	Ulhas creek	Ulhas Creek at Versova Bridge	Versova	Vasai	Thane
NWMP	2806	Uttan sea	Uttan Sea at Bhayander	Uttan	Bhayander	Thane
NWMP	2791	Ulhas creek	Ulhas Creek at Reti Bunder, D/s of Kalyan-Bhiwandi Bridge	Kalyan	Kalyan	Thane
NWMP	2794	Ulhas creek	Ulhas Creek at Kolshet Reti Bunder	Kolshet	Thane	Thane
NWMP	2792	Ulhas creek	Ulhas Creek at Mumbra Reti Bunder	Mumbra	Thane	Thane
NWMP	2793	Thane creek	Thane Creek at Kalwa Road Bridge	Kalwa	Thane	Thane
NWMP	2184	Vashi creek	Vashi Creek at Airoli Bridge	Airoli	Thane	Thane
SWMP	190	Creek water	TTC Creek At Ghansoli Jetty	Ghansoli	Thane	Thane

Water quality Index for WQMS monitoring Sea and Creek water (2 of 2)

April	62.27	55.28	57.14	37.55	51.50	55.64	55.50	56.36	57.42	54.90	58.08	63.83	Dry		86.53	81.92	81.79	81.20
May	54.63	50.17	53.78		57.54	50.89	51.66	51.48	50.92	53.72	52.66	70.70		50.97	84.29	77.56	76.58	76.48
June	65.54	51.26	53.61	51.25	61.23	57.43	60.89	54.09	60.74	59.93	61.05	78.45			81.18	80.50	82.16	77.51
July	No availablity of field staff	60.23	58.08	71.93	62.02	60.15	57.95	56.18	57.23	61.73	59.16	60.46	71.82		88.02	79.06	80.68	70.32
August	77.42	58.07	54.65	63.38	61.95	57.78	51.35	63.40	63.40	60.77	55.43	82.64	57.56	64.56	88.25	80.94	81.37	77.26
September	80.09	57.43	49.18	53.23	55.53	57.65	51.09	56.32	52.08	60.98	62.32	82.52	54.30	65.34	81.98	79.37	81.81	79.86
October	69.09	52.96	52.88	60.21	50.66	53.51	59.39	51.56	51.80	51.32	55.82	76.66	66.61	56.72	86.34	80.46	80.78	79.72
November	59.63	52.98	53.00	70.58	62.85	50.68	52.09	54.22	49.91	51.36	46.65	78.66	57.49	47.09	87.15	81.77	83.58	81.50
December	65.89	48.62	51.11	60.89	61.95	49.32	49.81	52.66	47.59	48.96	47.87	74.15	56.03	48.46	89.38	83.59	80.65	80.93
January	60.36	51.97	53.87			46.69	54.26	53.17	49.32	52.78	51.08	66.71	51.56	52.52	87.10	81.04	37.08	75.99
February	56.93	48.07	50.90	45.38	46.31	48.55	44.22	51.59	47.98	47.25	47.81	66.69	50.38	48.04	86.14	80.95	78.19	79.76
March	57.28	45.96	49.58	57.37	52.76	50.49	48.01	48.01	55.31	53.05	55.55	71.61	56.96	51.56	86.28	72.49	74.41	77.48
Station code	2185	2169	2812	1318	2811	2167	2810	2809	2166	2808	2165	2803	1317	191	2804	2813	2814	2815
Sub Basin	Sea/Creek (2 of 2)																	
Basin	Coastal																	

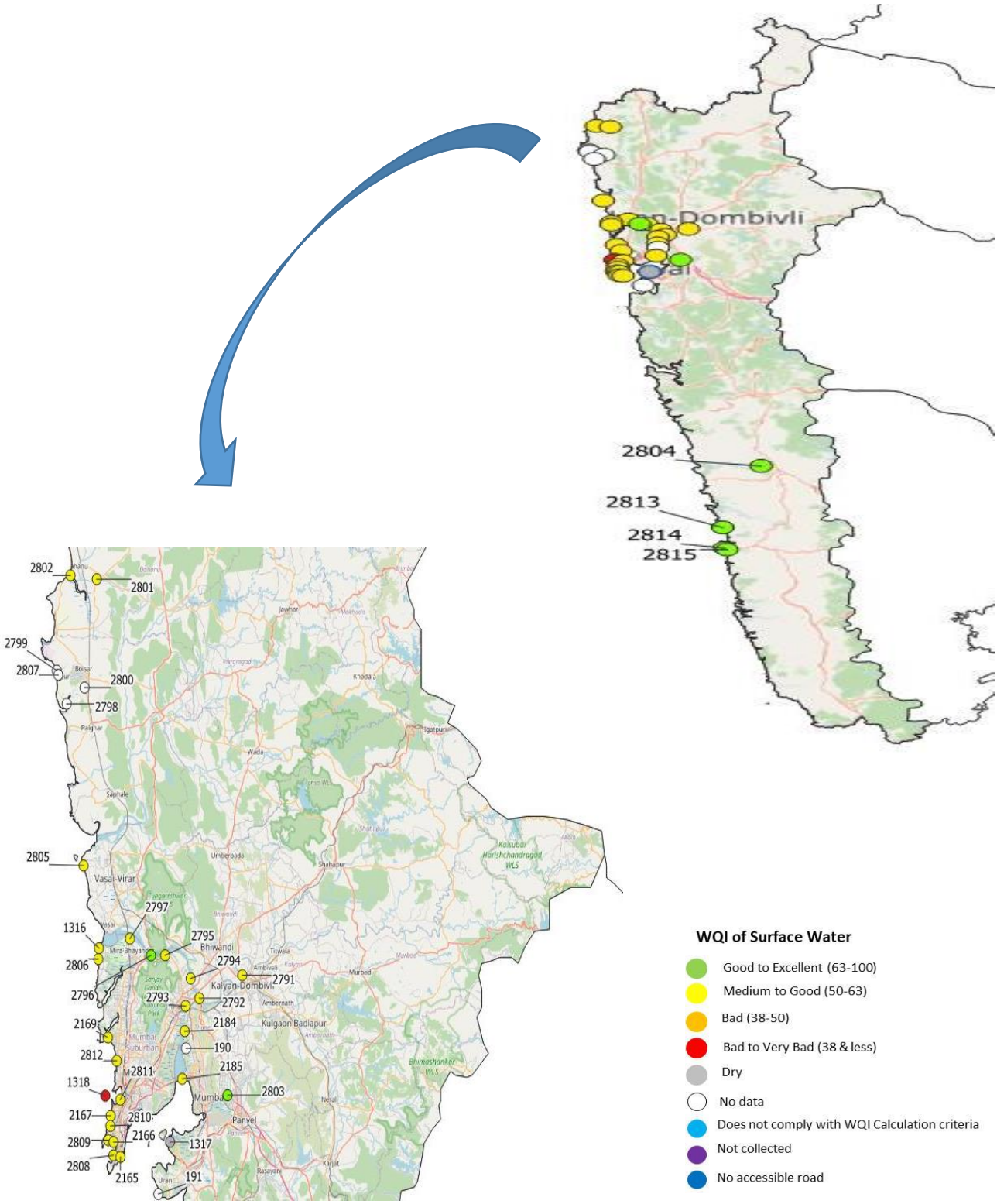
Legend

Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)

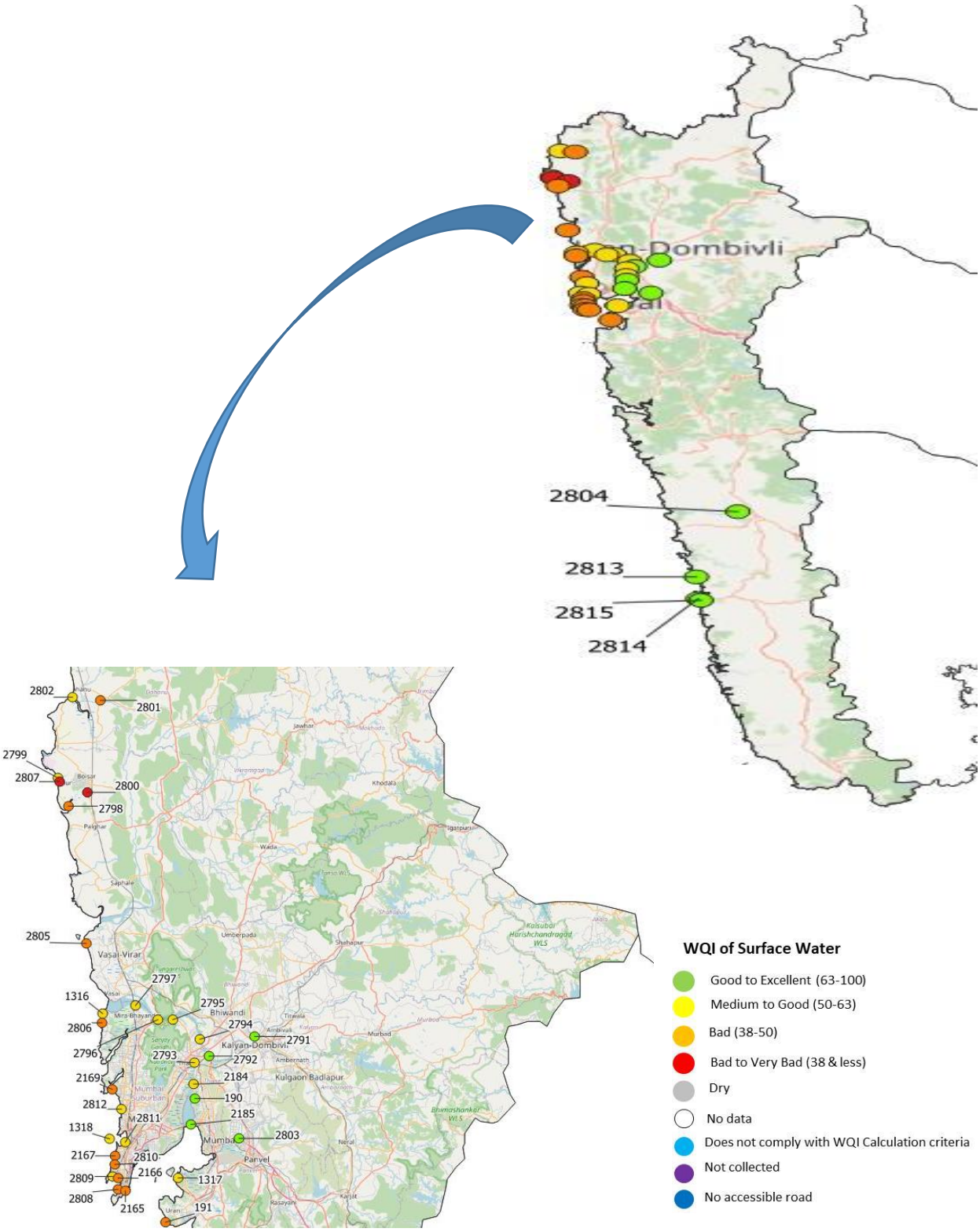
Table No. 27: Surface water quality monitoring stations monitoring Sea/Creek water (2 of 2)

Program	Station ID	River/Nalla	Station Name	Village	Taluka	District
NWMP	2185	Vashi creek	Vashi Creek at Vashi Bridge	Vashi	Thane	Thane
NWMP	2169	Sea	Sea Water at Varsova Beach	Versova	Andheri	Mumbai
NWMP	2812	Sea	Sea Water at Juhu Beach	Juhugaon	Santacruz	Mumbai
NWMP	1318	Mahim creek	Mahim creek at Mahim Bay	Mahim	Bandra	Mumbai
NWMP	2811	Sea	Sea Water at Shivaji Park (Dadar Chowpatty)	Dadar	Dadar	Mumbai
NWMP	2167	Sea	Sea Water at Worli Seaface	Worli	Worli	Mumbai
NWMP	2810	Sea	Sea Water at Haj Ali	Worli	Worli	Mumbai
NWMP	2809	Sea	Sea Water at Malabar Hill	Walkeshwar	Mumbai	Mumbai
NWMP	2166	Sea	Sea Water at Charni Road Chowpatty	Girgaon	Mumbai	Mumbai
NWMP	2808	Sea	Sea Water at Nariman Point	Colaba	Colaba	Mumbai
NWMP	2165	Sea	Sea Water at Gateway of India	Colaba	Colaba	Mumbai
NWMP	2803	Panvel creek	Panvel Creek at Kopra Bridge	Kopra	Panvel	Raigad
NWMP	1317	Thane creek	Thane creek at Elephanta Island	Gharapuri, Elephanta Island	Uran	Raigad
SWMP	191	Sea Water	Arabian Sea behind ONGC Uran	Uran	Uran	Raigad
NWMP	2804	Karambavane creek	Karambavane Creek at Chiplun	Karambavane	Chiplun	Ratnagiri
NWMP	2813	Sea	Sea Water at Ganapatipule	Ganapatipule	Ratnagiri	Ratnagiri
NWMP	2814	Sea	Sea Water at Bhagwati Bunder, Ratnagiri near Ultra Tech Cement Jetty	Mirkarwada	Ratnagiri	Ratnagiri
NWMP	2815	Madvi sea	Madvi Sea Water at Ratnagiri near Jodhale Maruti Temple	Madvigaon	Ratnagiri	Ratnagiri

Spatial map of WQI of Sea and Creek Water (April 2020)



Spatial map of WQI of Sea and Creek Water (December 2020)



Ground Water Quality

Water that fills cracks and other openings in the bed of rocks and sands can be termed Groundwater. Groundwater (present beneath the land surface) provides almost half of the drinking water worldwide; about 70% of the groundwater withdrawn gets utilized in the agricultural sectors[26]. Thus it makes it one of the most critical resources on this earth. Groundwater can be found in usable quantities in underground systems/reserves called aquifers. Aquifers are nothing but storehouses of groundwater. In terms of application, India is one of the largest users of groundwater in the World. As per the report titled National Compilation of Dynamic Ground Water Resources of India, 2017 (prepared by the Ministry of Jal Shakti, Central Ground Water Board), the total groundwater recharge and total natural discharges works out for India has been assessed as about 432 billion cubic meters (bcm) and 39 bcm respectively. Thus, the annual extractable groundwater resources for the country is about 393 bcm[27].

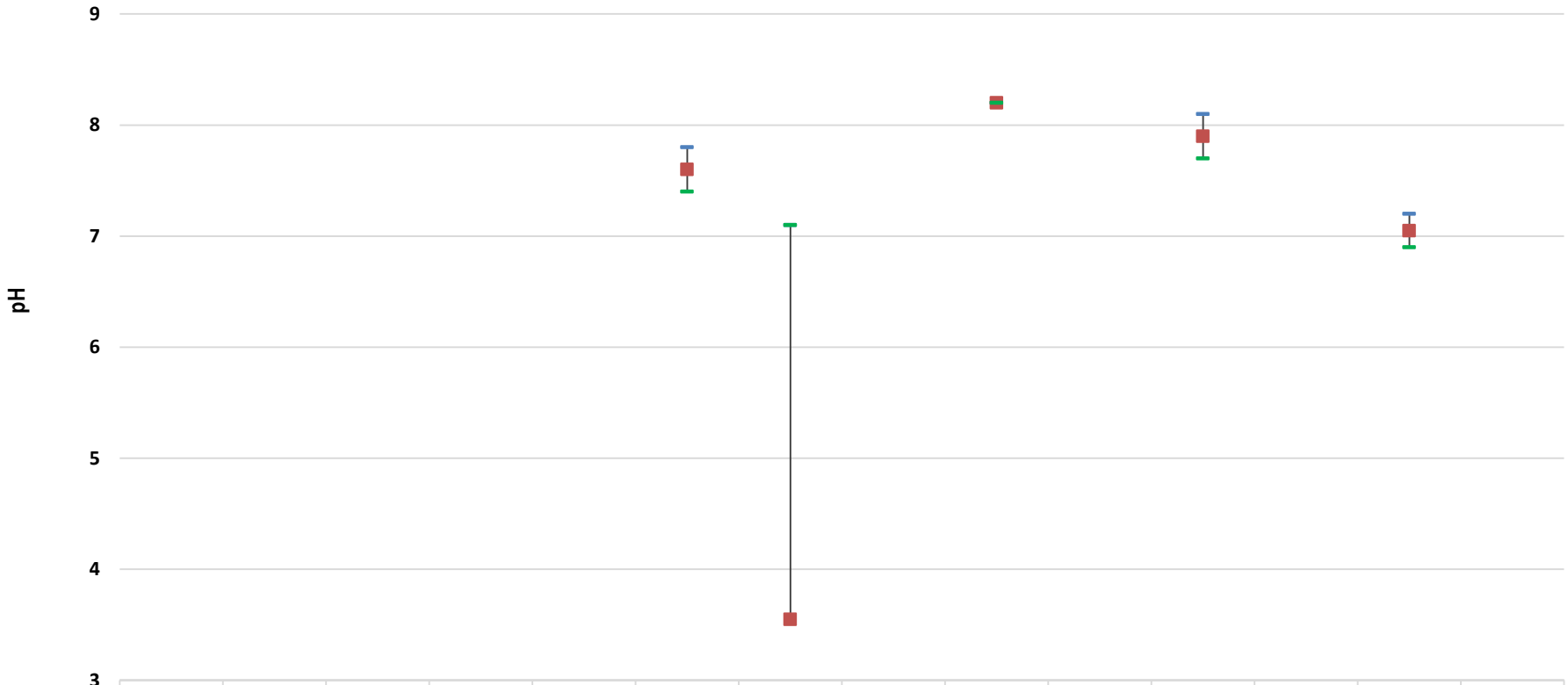
In India, monsoon rainfall is the major source of groundwater which is about 58% (252 bcm) of the total annual groundwater recharge. As per the report, the total annual groundwater recharge in the state of Maharashtra is about 31.64 bcm. After deducting the total natural discharges (1.74 bcm), the annual extractable groundwater resource remains about 29.90 bcm. Out of 29.90 bcm, the rate of annual groundwater extraction (for the year 2017) was found to be about 16.33 bcm out of which 15.10 bcm groundwater was extracted for irrigation followed by industrial (0.003 bcm) and domestic applications (1.22 bcm). With the continuous growth in population and industrialization, the rate of utilization of groundwater is bound to get an increase in the near future which would definitely put extensive pressure on this valuable resource which is already under immense pressure due to overexploitation. For monitoring the level of groundwater and to monitor its quality, Central Ground Water Board (CGWB), Ground water Survey and Development Agency (GSDA) and MPCB monitor the ground water quality across various districts of the state. For this purpose, MPCB has installed 66 ground water monitoring stations that monitor water quality twice a year for parameters like pH, Nitrate, TDS, Hardness, Fluoride, microbial content, sulphates and so on. The total WQMS for year 2020-21 are represented in the Table No. 28.

Table No. 28: List of Groundwater Quality Monitoring stations

Water Quality monitoring stations	
Water Bodies	**2020-21**
Bore well	29
Dug well	35
Tube well	1
Hand pump	1
Total	**66**

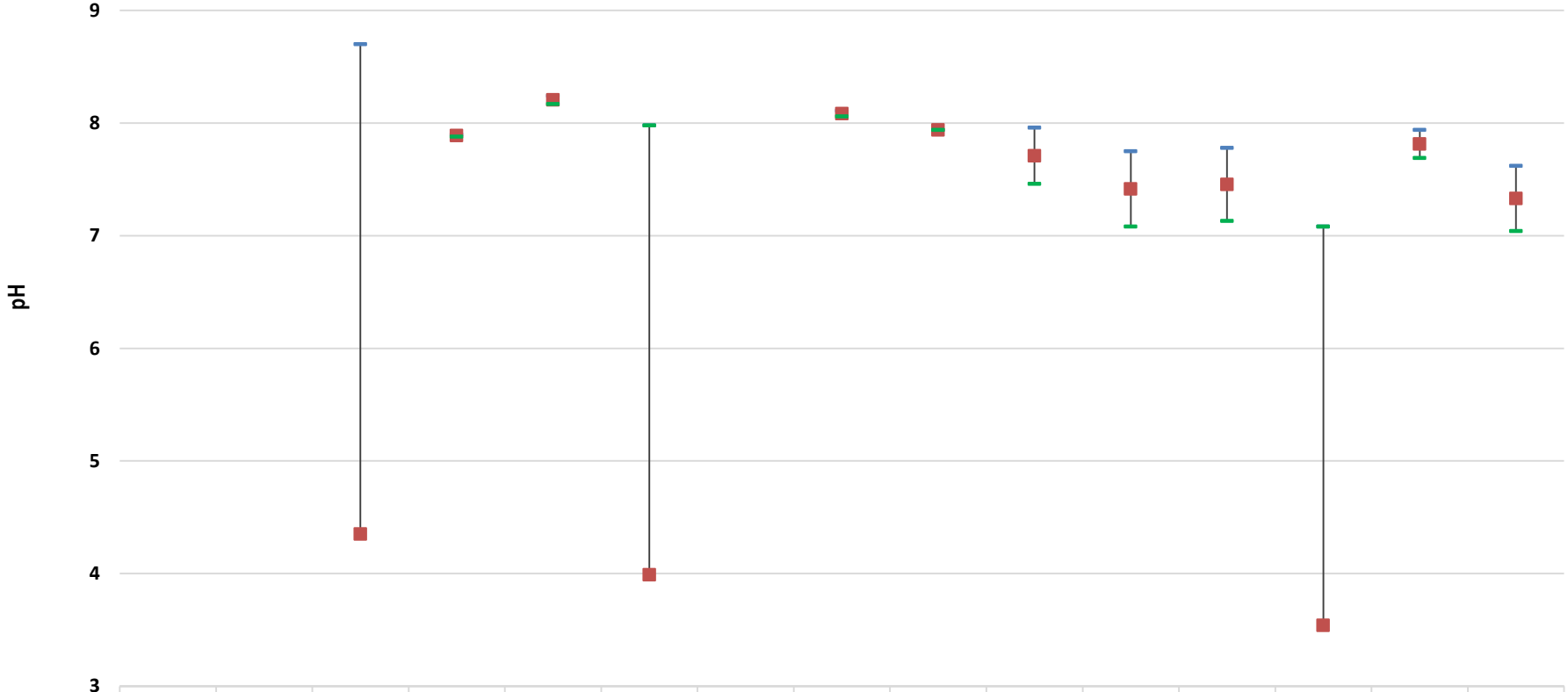
[26] https://www.ngwa.org/what-is-groundwater/About-groundwater/facts-about-global-groundwater-usage

[27] http://cgwb.gov.in/Ground-Water/GW%20YEAR%20BOOK%202019-20%20ALL%20INDIA%20FINAL%20752021%20(1).pdf



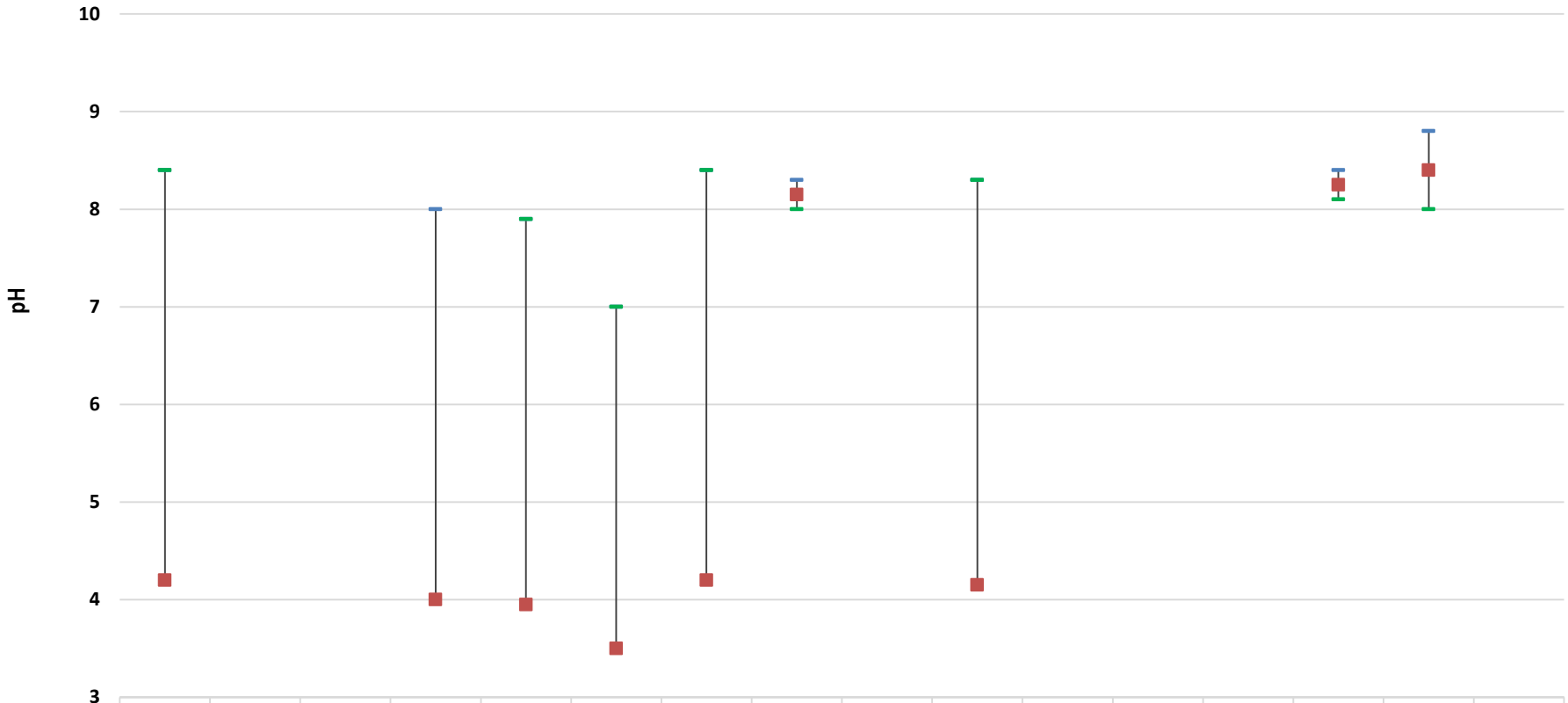
	205	206	207	208	214	215	217	218	1989	1984	1985	1986	1987	1988
	Kalyan				Navi Mumbai		Raigad			Thane				
Max						7.8	7.1		8.2		8.1		7.2	
Avg						7.6	3.55		8.2		7.9		7.05	
Min						7.4	7.1		8.2		7.7		6.9	

Figure No. 63: Parametric values of pH recorded at WQMS monitoring ground water at Kalyan, Navi Mumbai, Raigad and Thane.



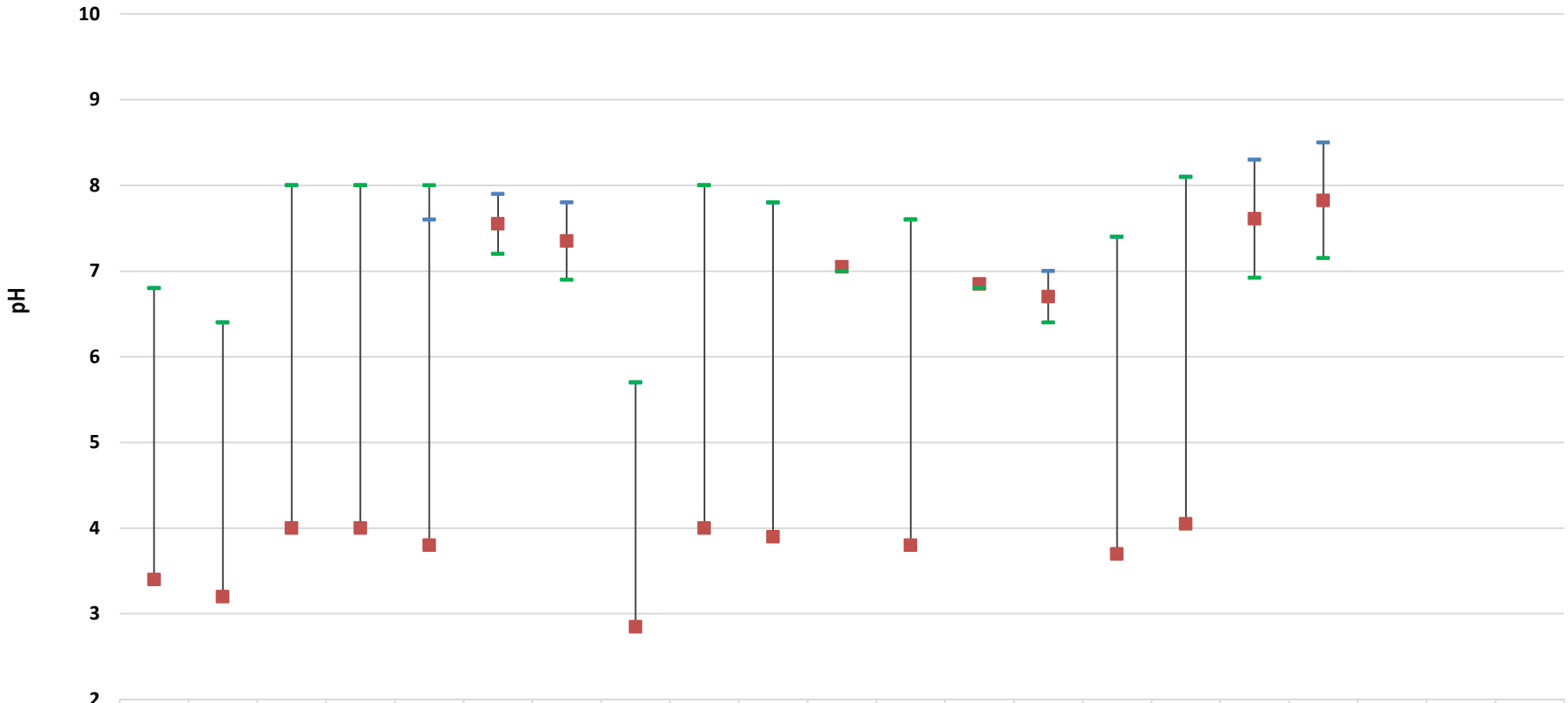
	2001	2002	2003	1993	2200	2201	2824	2825	221	1990	1991	2204	2816	2817	2818
	Amravati			Aurangabad					Nashik						
Max			8.7	7.9	8.24	7.98		8.11	7.94	7.96	7.75	7.78	7.08	7.94	7.62
Avg			4.35	7.89	8.205	3.99		8.085	7.94	7.71	7.415	7.455	3.54	7.815	7.33
Min				7.88	8.17	7.98		8.06	7.94	7.46	7.08	7.13	7.08	7.69	7.04

Figure No. 64: Parametric values of pH recorded at WQMS monitoring ground water at Amravati, Aurangabad and Nashik.



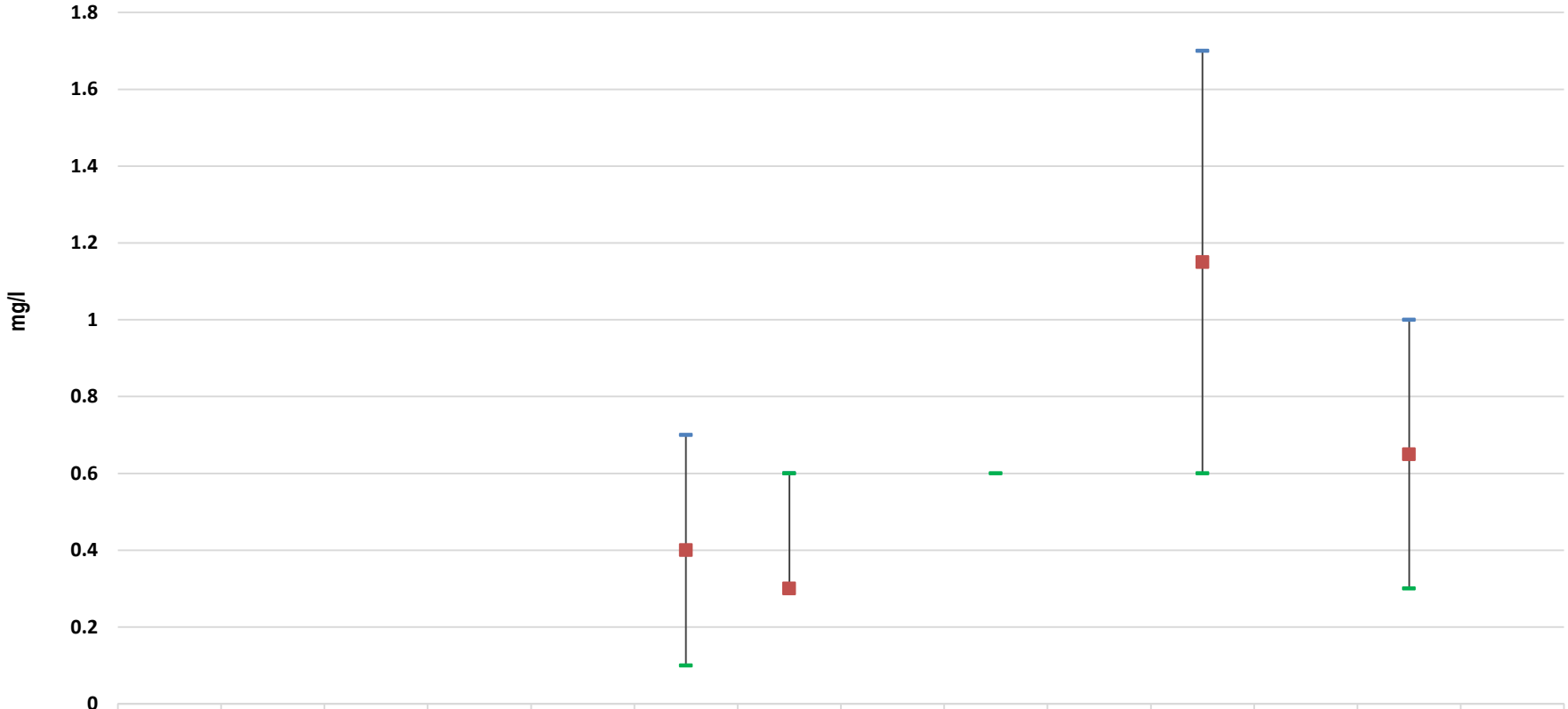
	2828	209	210	211	212	213	1994	1995	1996	1997	1998	1999	2000	2203	2826	2827
	Chandrapur								Nagpur							
Max	8.4			8	7.9	7	8.4	8.3		8.3				8.4	8.8	
Avg	4.2			4	3.95	3.5	4.2	8.15		4.15				8.25	8.4	
Min	8.4				7.9	7	8.4	8		8.3				8.1	8	

Figure No. 65: Parametric values of pH recorded at WQMS monitoring ground water at Chandrapur and Nagpur.



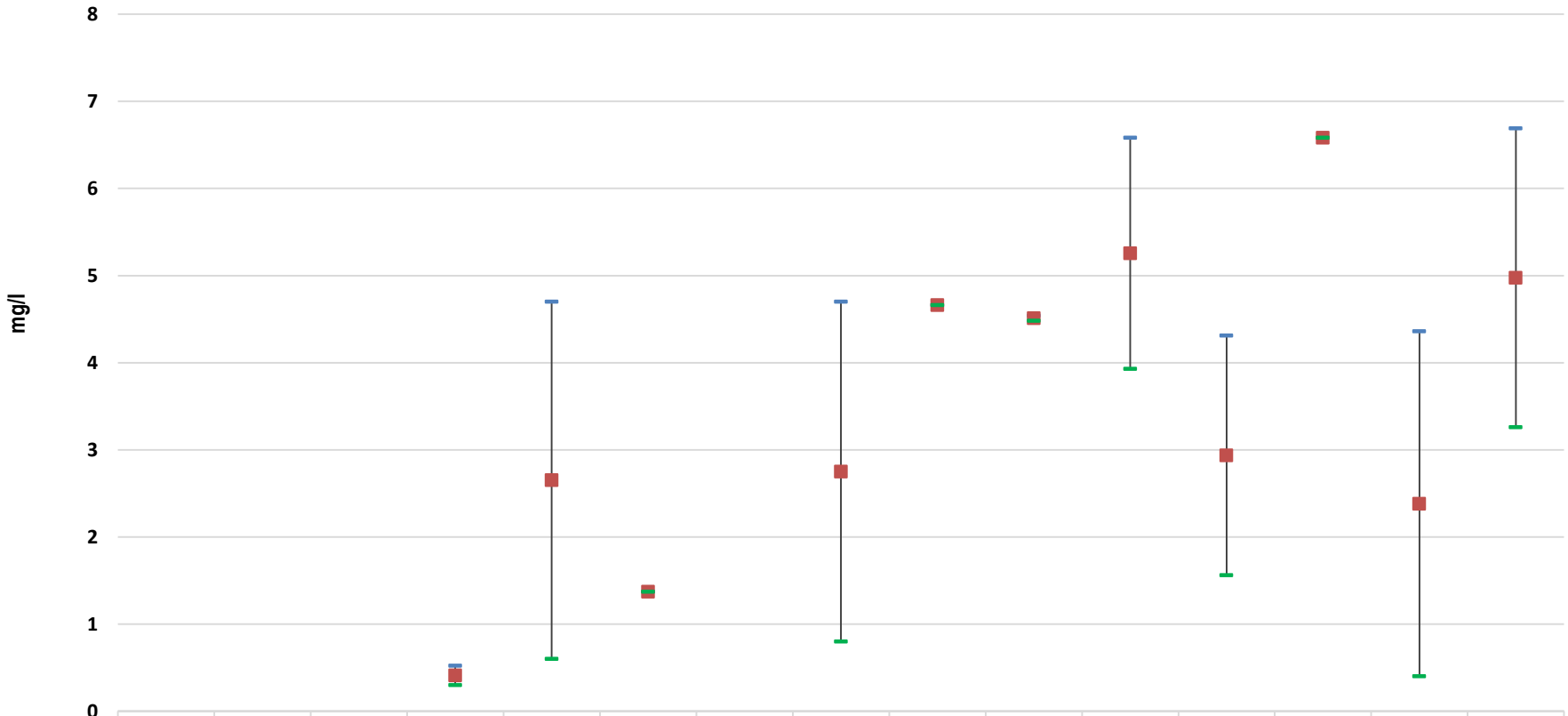
	219	220	2004	2005	2006	2007	2008	2202	2829	2830	2831	2832	2833	2834	2835	1992	2819	2820	2821	2822	2823
	Kolhapur															Pune					
Max	6.8	6.4	8	8	7.6	7.9	7.8	5.7	8	7.8	7.1	7.6	6.9	7	7.4	8.1	8.3	8.5			
Avg	3.4	3.2	4	4	3.8	7.55	7.35	2.85	4	3.9	7.05	3.8	6.85	6.7	3.7	4.05	7.61	7.825			
Min	6.8	6.4	8	8	8	7.2	6.9	5.7	8	7.8	7	7.6	6.8	6.4	7.4	8.1	6.92	7.15			

Figure No. 66: Parametric values of pH recorded at WQMS monitoring ground water at Kolhapur and Pune.



	205	206	207	208	214	215	217	218	1989	1984	1985	1986	1987	1988
	Kalyan				Navi Mumbai		Raigad			Thane				
Max						0.7	0.6				1.7		1	
Avg						0.4	0.3				1.15		0.65	
Min						0.1	0.6		0.6		0.6		0.3	

Figure No. 67: Parametric values of Nitrate recorded at WQMS monitoring ground water at Kalyan, Navi Mumbai, Raigad and Thane.

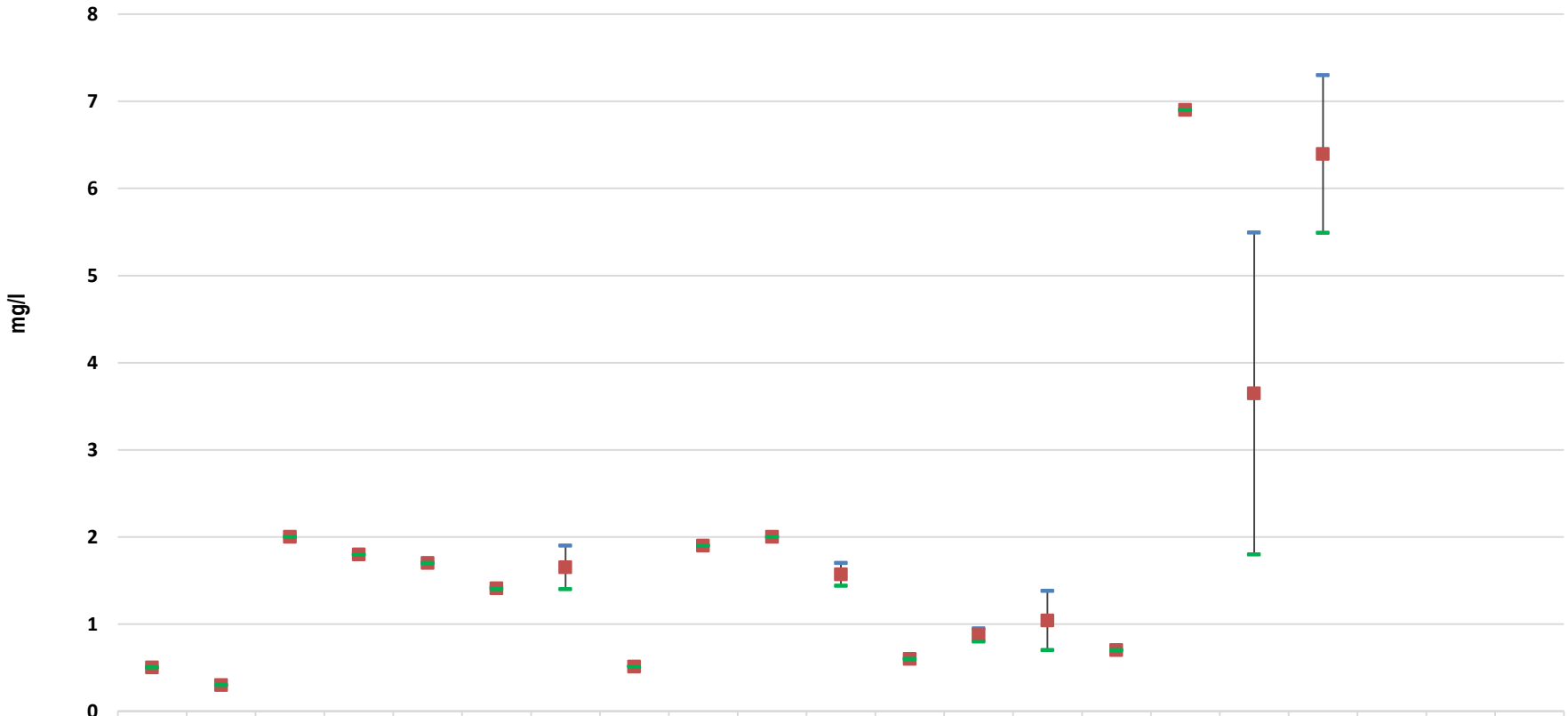


	2001	2002	2003	1993	2200	2201	2824	2825	221	1990	1991	2204	2816	2817	2818
	Amravati			Aurangabad					Nashik						
Max				0.52	4.7	1.37		4.7	4.66	4.54	6.58	4.31	6.58	4.36	6.69
Avg				0.41	2.65	1.37		2.75	4.66	4.51	5.255	2.935	6.58	2.38	4.975
Min				0.3	0.6	1.37		0.8	4.66	4.48	3.93	1.56	6.58	0.4	3.26

Figure No. 68: Parametric values of Nitrate recorded at WQMS monitoring ground water at Amravati, Aurangabad and Nashik.

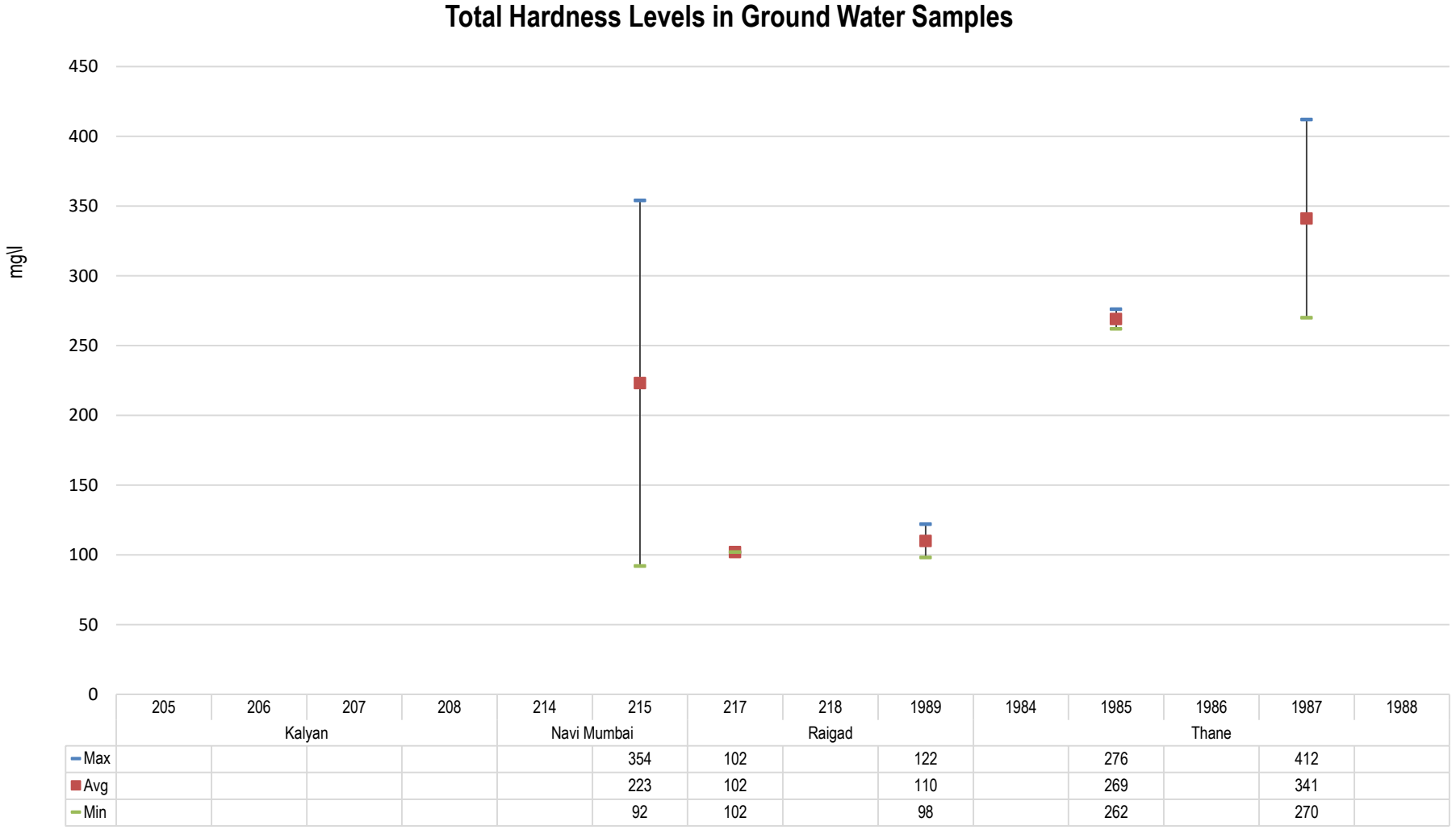
	2828 Chandrapur	209	210	211	212	213	1994	1995	1996 Nagpur	1997	1998	1999	2000	2203	2826	2827
Max				2.51	7.15	2.07		4.95						0.79	0.94	
Avg				2.51	7.15	2.07		4.95						0.79	0.94	
Min				2.51	7.15	2.07		4.95						0.79	0.94	

Figure No. 69: Parametric values of Nitrate recorded at WQMS monitoring ground water at Chandrapur and Nagpur.



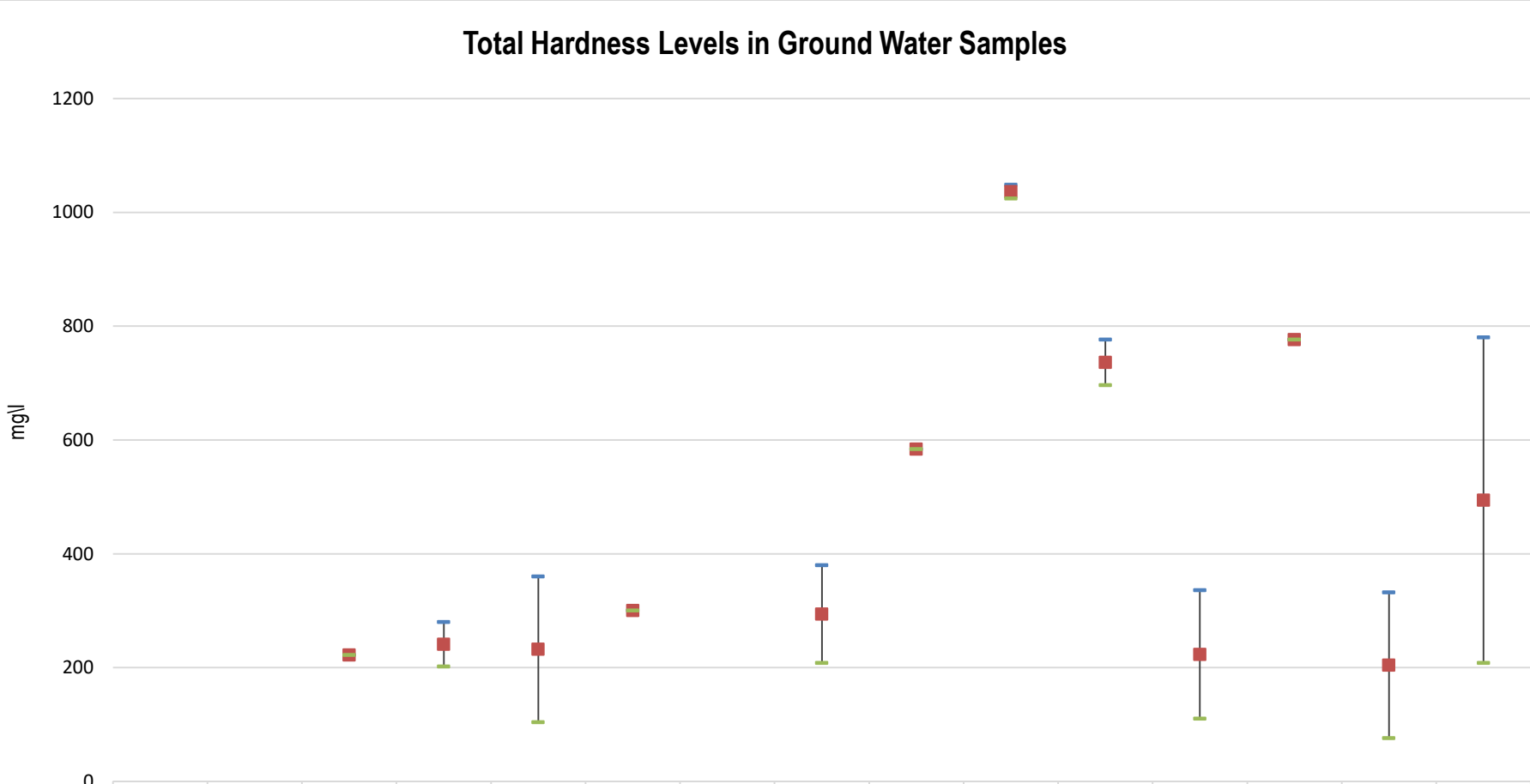
	219	220	2004	2005	2006	2007	2008	2202	2829	2830	2831	2832	2833	2834	2835	1992	2819	2820	2821	2822	2823
	Kolhapur															Pune					
Max	0.5	0.3	2	1.8	1.7	1.42	1.9	0.51	1.9	2	1.7	0.6	0.95	1.38	0.7	6.9	5.494	7.3			
Avg	0.5	0.3	2	1.8	1.7	1.41	1.65	0.51	1.9	2	1.57	0.6	0.875	1.04	0.7	6.9	3.647	6.395			
Min	0.5	0.3	2	1.8	1.7	1.4	1.4	0.51	1.9	2	1.44	0.6	0.8	0.7	0.7	6.9	1.8	5.49			

Figure No. 70: Parametric values of Nitrate recorded at WQMS monitoring ground water at Kolhapur and Pune.



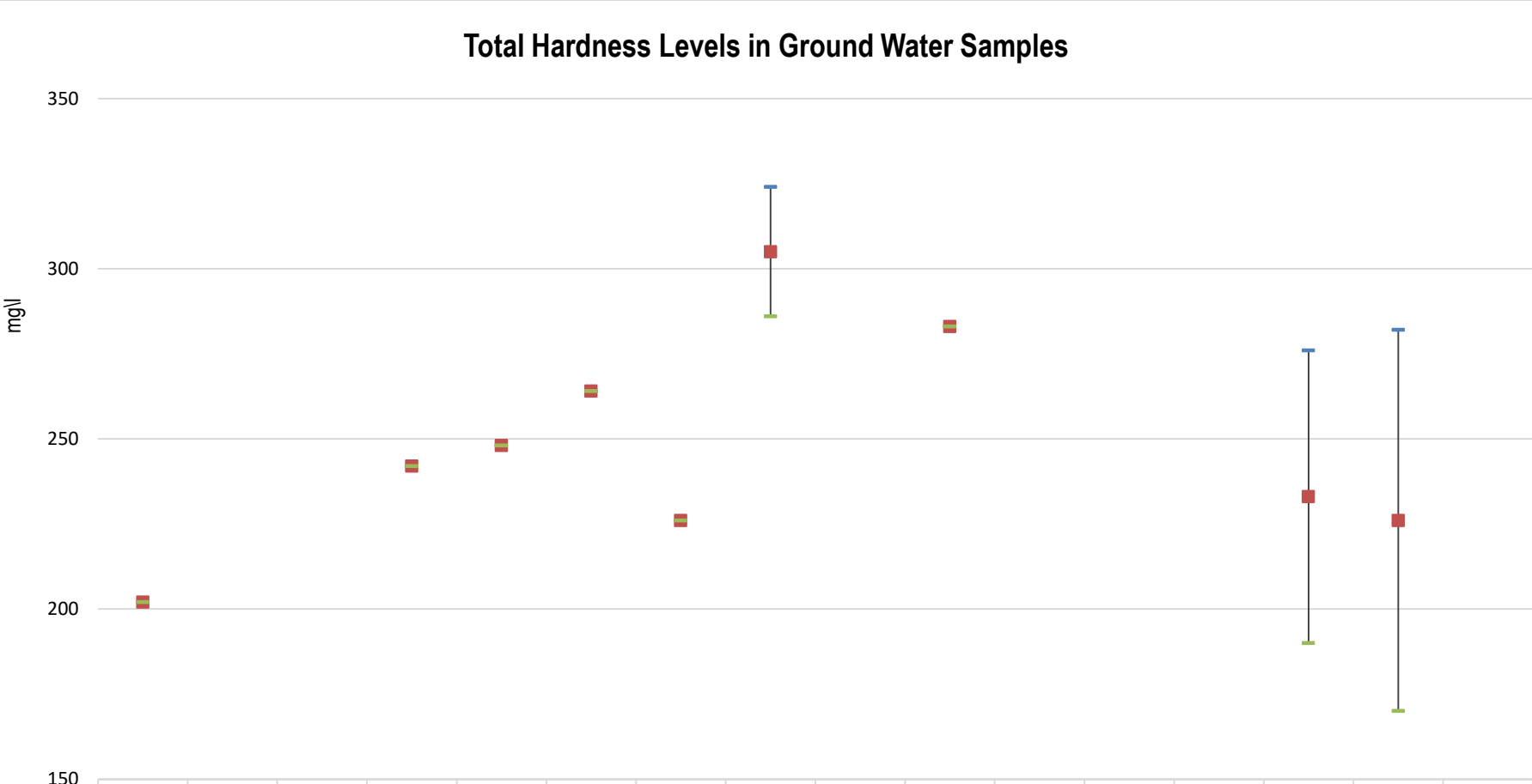
	205	206	207	208	214	215	217	218	1989	1984	1985	1986	1987	1988
	Kalyan				Navi Mumbai		Raigad			Thane				
Max						354	102		122		276		412	
Avg						223	102		110		269		341	
Min						92	102		98		262		270	

Figure No. 71: Parametric values of Hardness $CaCO_3$ recorded at WQMS monitoring ground water at Kalyan, Navi Mumbai, Raigad and Thane.



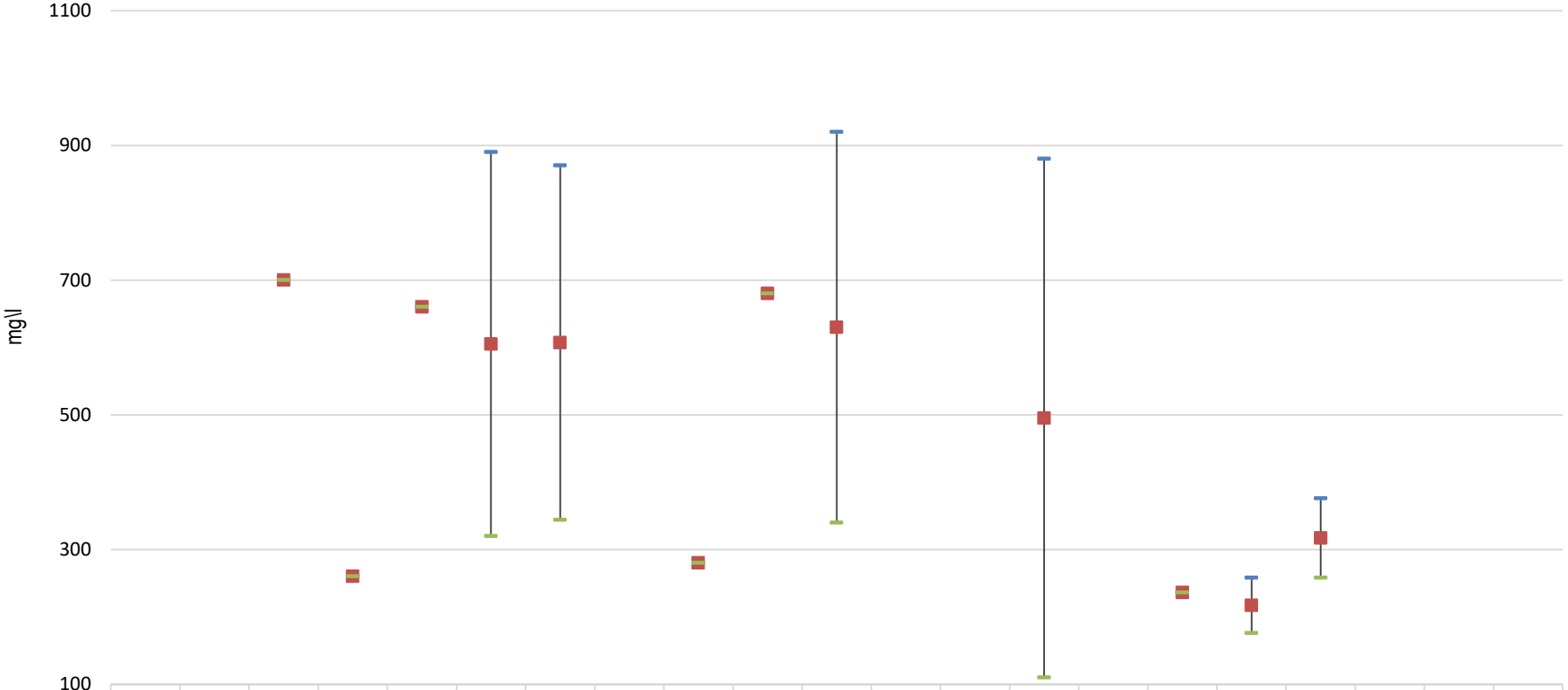
	2001	2002	2003	1993	2200	2201	2824	2825	221	1990	1991	2204	2816	2817	2818
	Amravati			Aurangabad					Nashik						
Max			222	280	360	300		380	584	1048	776	336	776	332	780
Avg			222	241	232	300		294	584	1036	736	223	776	204	494
Min			222	202	104	300		208	584	1024	696	110	776	76	208

Figure No. 72: Parametric values of Hardness $CaCO_3$ recorded at WQMS monitoring ground water at Amravati, Aurangabad and Nashik.



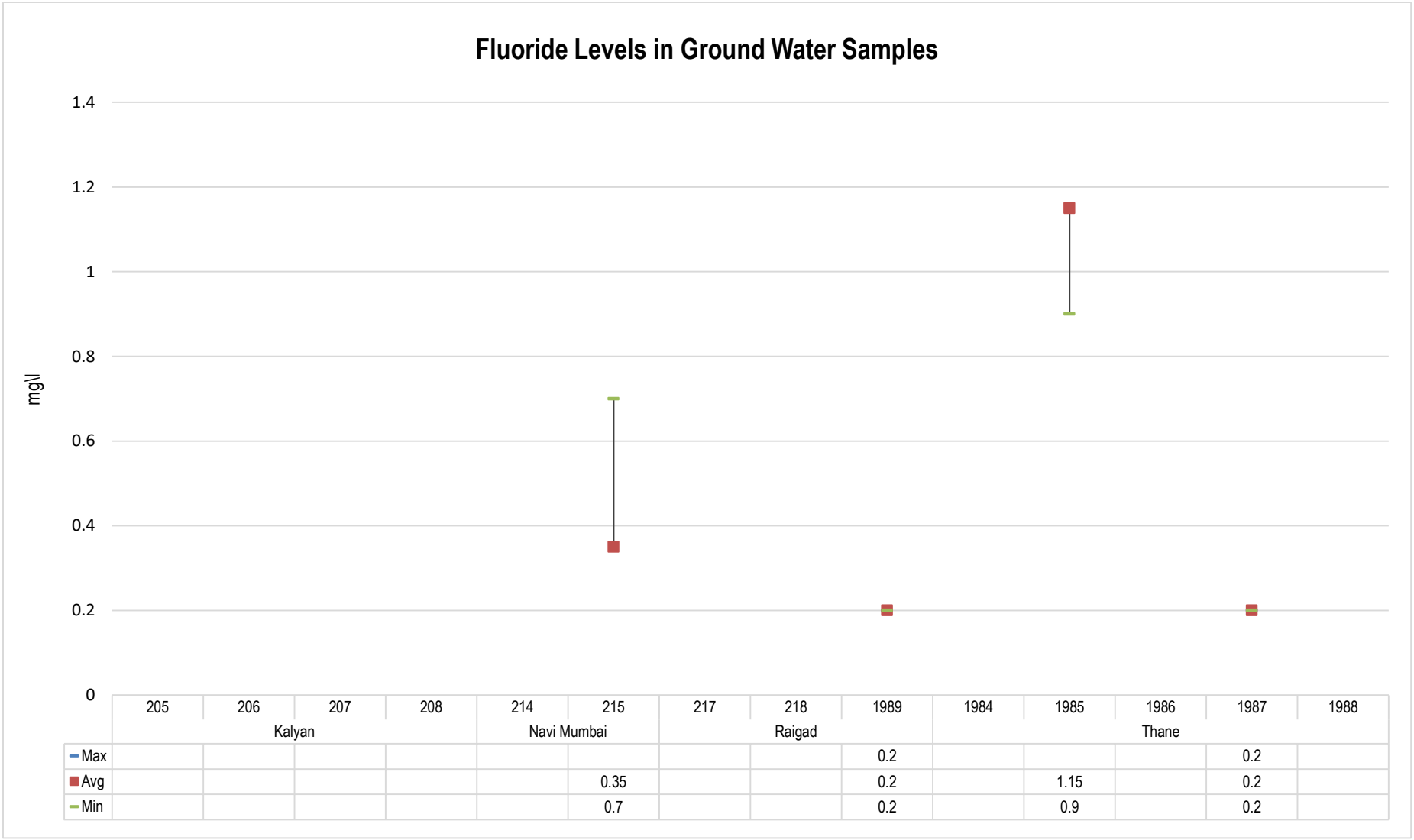
	2828 Chandrapur	209	210	211	212	213	1994	1995	1996 Nagpur	1997	1998	1999	2000	2203	2826	2827
Max	202			242	248	264	226	324		283				276	282	
Avg	202			242	248	264	226	305		283				233	226	
Min	202			242	248	264	226	286		283				190	170	

Figure No. 73: Parametric values of Hardness $CaCO_3$ recorded at WQMS monitoring ground water at Chandrapur and Nagpur



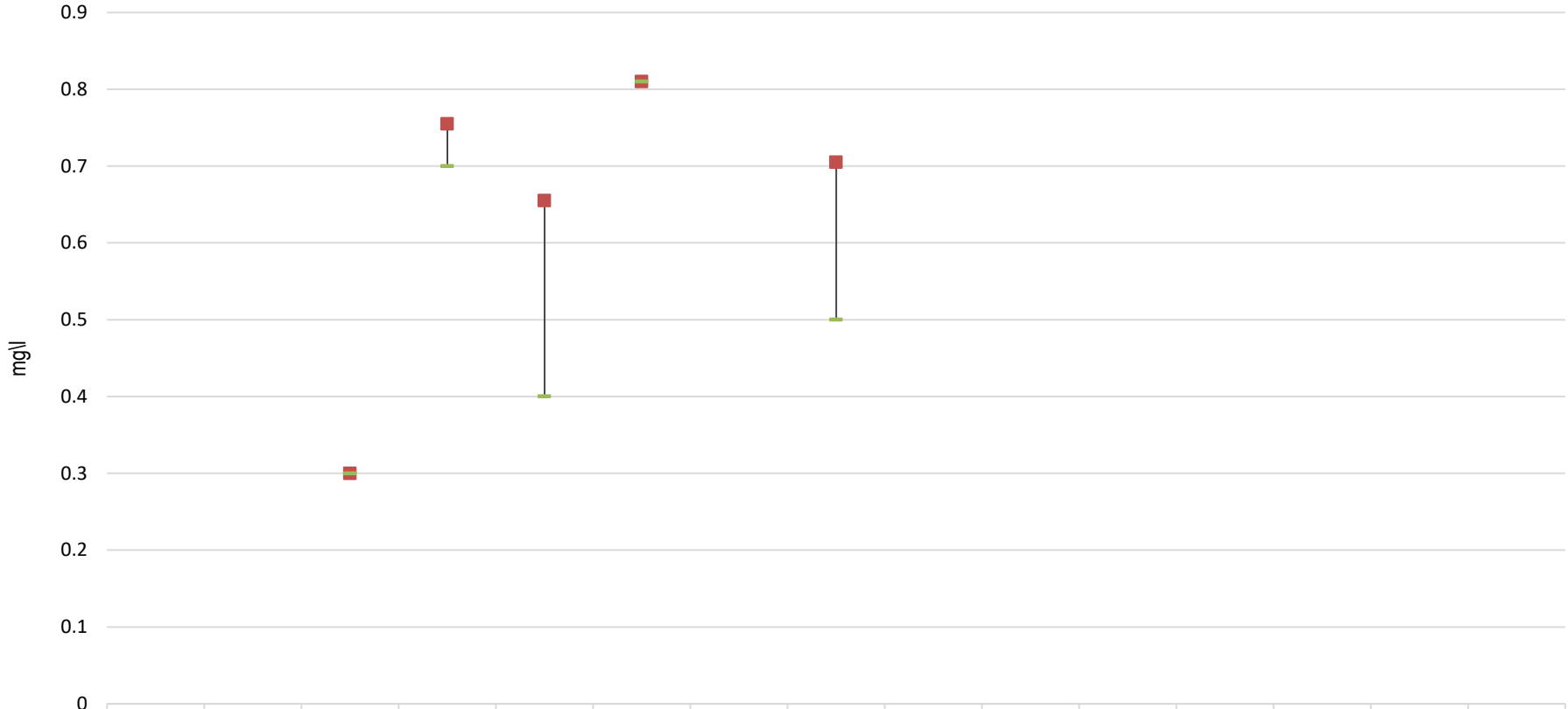
	219	220	2004	2005	2006	2007	2008	2202	2829	2830	2831	2832	2833	2834	2835	1992	2819	2820	2821	2822	2823
	Kolhapur															Pune					
Max	38	30	700	260	660	890	870	82	280	680	920	38	84	880	40	236	258	376			
Avg	38	30	700	260	660	605	607	82	280	680	630	38	71	495	40	236	217	317			
Min	38	30	700	260	660	320	344	82	280	680	340	38	58	110	40	236	176	258			

Figure No. 74: Parametric values of Hardness $CaCO_3$ recorded at WQMS monitoring ground water at Kolhapur and Pune



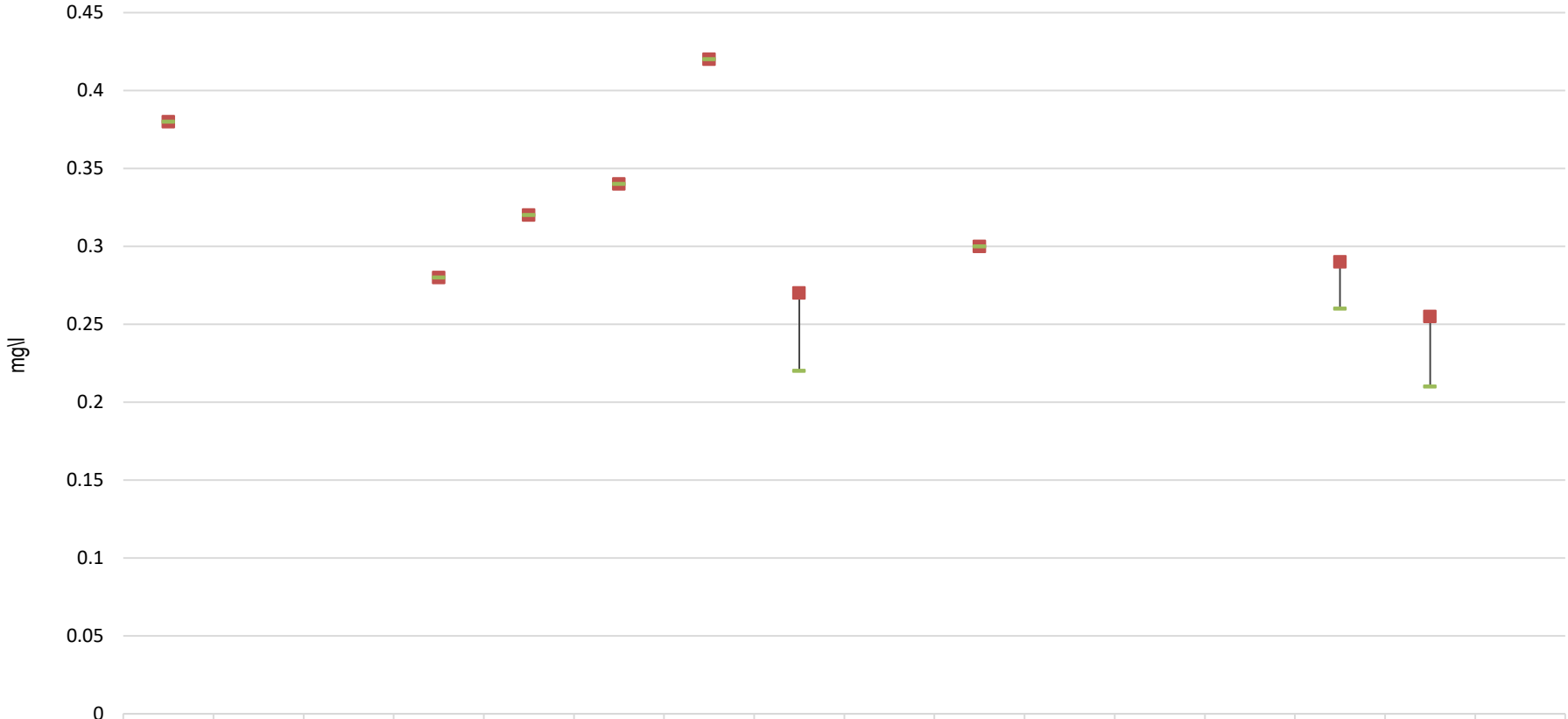
	205	206	207	208	214	215	217	218	1989	1984	1985	1986	1987	1988
	Kalyan				Navi Mumbai		Raigad			Thane				
Max									0.2				0.2	
Avg						0.35			0.2		1.15		0.2	
Min						0.7			0.2		0.9		0.2	

Figure No. 75: Parametric values of Fluoride recorded at WQMS monitoring ground water at Kalyan, Navi Mumbai, Raigad and Thane



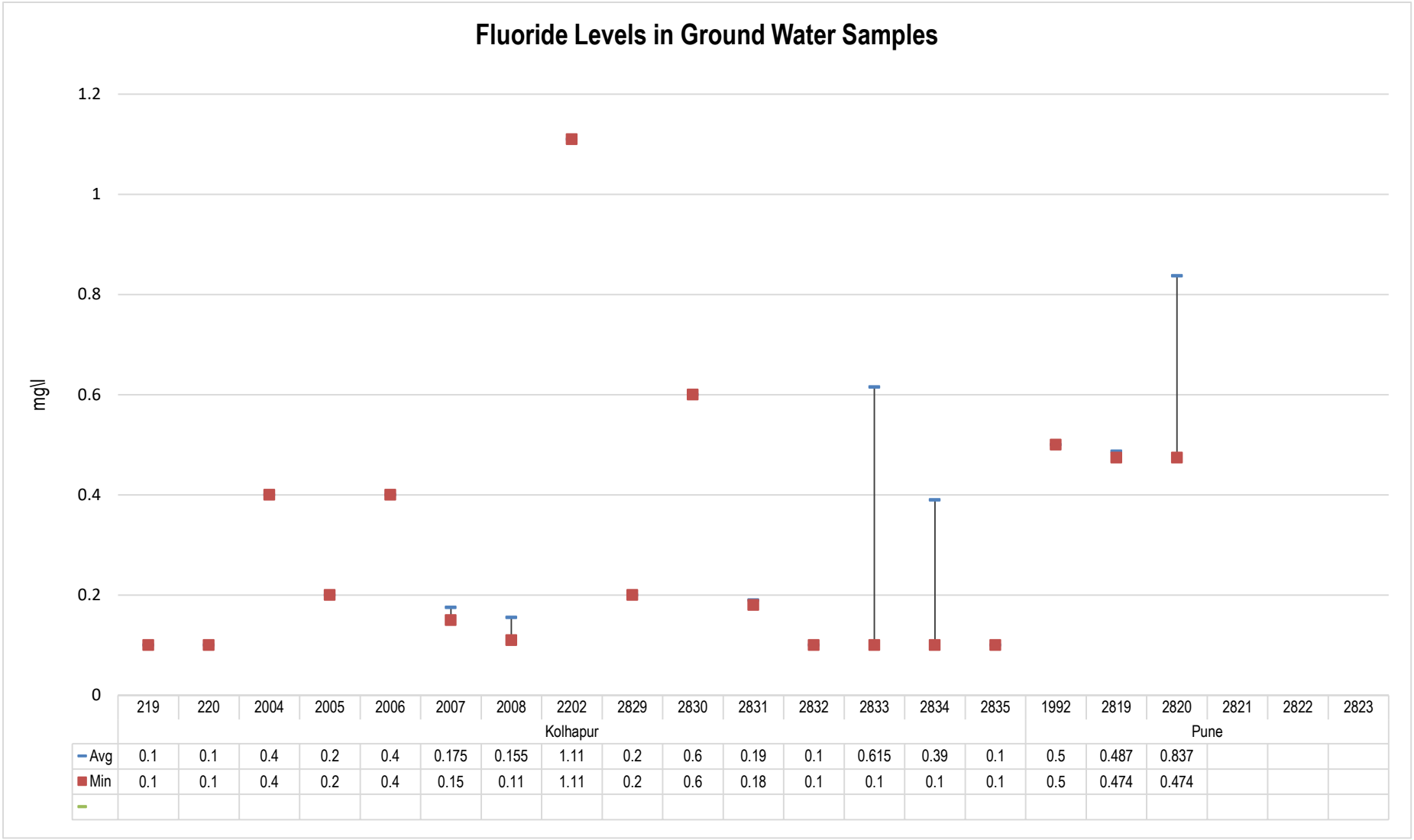
	2001	2002	2003	1993	2200	2201	2824	2825	221	1990	1991	2204	2816	2817	2818
	Amravati			Aurangabad					Nashik						
Max															
Avg			0.3	0.755	0.655	0.81		0.705							
Min			0.3	0.7	0.4	0.81		0.5							

Figure No. 76: Parametric values of Fluoride recorded at WQMS monitoring ground water at Amravati, Aurangabad and Nashik



	2828 Chandrapur	209	210	211	212	213	1994	1995	1996 Nagpur	1997	1998	1999	2000	2203	2826	2827
Max																
Avg	0.38			0.28	0.32	0.34	0.42	0.27		0.3				0.29	0.255	
Min	0.38			0.28	0.32	0.34	0.42	0.22		0.3				0.26	0.21	

Figure No. 77: Parametric values of Fluoride recorded at WQMS monitoring ground water at Chandrapur and Nagpur.



	219	220	2004	2005	2006	2007	2008	2202	2829	2830	2831	2832	2833	2834	2835	1992	2819	2820	2821	2822	2823
	Kolhapur															Pune					
Avg	0.1	0.1	0.4	0.2	0.4	0.175	0.155	1.11	0.2	0.6	0.19	0.1	0.615	0.39	0.1	0.5	0.487	0.837			
Min	0.1	0.1	0.4	0.2	0.4	0.15	0.11	1.11	0.2	0.6	0.18	0.1	0.1	0.1	0.1	0.5	0.474	0.474			

Figure No. 78: Parametric values of Fluoride recorded at WQMS monitoring ground water at Kolhapur and Pune.

Water Quality Index for ground water at Kalyan, Navi Mumbai, Raigad and Thane.

Apr	Dry	Dry	Dry	Dry	Dry	126.05	Dry	Dry	46.13	Dry	99.57	Dry	127.17	Dry
Oct	Dry	Dry	Dry	Dry	Dry	43.52	39.66	Dry	41.07	Dry	186.73	Dry	79.00	Dry
Station code	**205**	**206**	**207**	**208**	**214**	**215**	**217**	**218**	**1989**	**1984**	**1985**	**1986**	**1987**	**1988**
RO	**Kalyan**				**Navi Mumbai**		**Raigad**			**Thane**				

Legend

Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data

Table No. 29: Ground water quality monitoring stations at Kalyan, Navi Mumbai, Raigad and Thane.

Programme	Regional Office	Station ID	Station Name	District	Taluka	Type of well	Village
SWMP	Kalyan	205	Dug well opp. KAMA office, MIDC Ph-I, Dombivali	Kalyan	Dombivali	Dug well	MIDC,Dombivali
SWMP	Kalyan	206	Dug well near Mamta Hospital, Milap Nagar, Dombivali	Kalyan	Dombivali	Dug well	MIDC,Dombivali
SWMP	Kalyan	207	Dug well at pimpleshwar Temple, MIDC Ph-II, Dombivali	Kalyan	Dombivali	Dug well	MIDC,Dombivali
SWMP	Kalyan	208	Dug well addjusent to M/S. Altra pure chem., Sr. No. 45, Hissa No. 3, MIDC Ph-II, Dombivali.	Kalyan	Dombivali	Dug well	MIDC,Dombivali
SWMP	Navi Mumbai	214	Borewell at TTCWMA, Mahape	Thane	Thane	Borewell	TTCWMA,Mahape
SWMP	Navi	215	Well water at Turbhe Store, Turbhe	Thane	Thane	Well	Turbhe

Programme	Regional Office	Station ID	Station Name	District	Taluka	Type of well	Village
	Mumbai						
SWMP	Raigad	217	Borewell water at village Milgaon, Taluka - Khalapur, District - Raigad.	Raigad	Khalapur	Borewell	Milgaon
SWMP	Raigad	218	Borewell water near MSW site, Murud - Janjira.			Borewell	Murud Janjira
NWMP	Raigad	1989	Bore well at MWML Site at Taloja	Raigad	Panvel	Bore well	Karawla- Taloja
NWMP	Thane	1984	Bore well at M/s Tata Iron {} Steel Co. Ltd, S-76	Thane	Palghar	Bore well	MIDCTarapur, Industrial Estate, Tarapur
NWMP	Thane	1985	Dug well at 5 Star Industrial Estate	Thane	Mira-Bhayander	Dug well	Kashimira
NWMP	Thane	1986	Bore well at Motapada	Thane	Dahanu	Bore well	Motapada
NWMP	Thane	1987	Bore well at Vasai	Thane	Vasai	Bore well	Gokhiware
NWMP	Thane	1988	Bore well at Gharatwadi, Palghar	Thane	Palghar	Bore well	Aliyali

Water Quality Index for ground water at Amravati, Aurangabad and Nashik.

Apr	Dry	Dry	Dry	134.65	133.88	139.81	Dry	134.66	Dry	368.97	279.53	48.31	279.53	39.48	264.99
Oct	Dry	Dry	71.64	101.77	56.19	Dry	Dry	98.11	181.32	324.98	194.21	100.90		105.67	79.75
Station Code	2001	2002	2003	1993	2200	2201	2824	2825	221	1990	1991	2204	2816	2817	2818
RO	Amravati			Aurangabad					Nashik						

Legend

Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data

Table No. 30: Ground waterquality monitoring stations at Amravati, Aurangabad and Nashik.

Programme	Regional Office	Station ID	Station Name	District	Taluka		Village
NWMP	Amravati	2001	Tube well at water treatment plant of M.C.Achalpur near Post Office.	Amravati	Achalpur	Tube well	Paratwada
NWMP	Amravati	2002	Bore well Opp. Gajanan Maharaj Temple at Anjangaon road.	Akola	Akot	Bore well	Anjangaon
NWMP	Amravati	2003	Dug well at Plot No- 4, Street No. 49-C, at Nehru Bal Udyan Azad Maidan, owned by Yavatmal M.C.	Yavatmal	Yavatmal	Dug well	Nehru Bal Udyan Azad Maidan
NWMP	Aurangabad	1993	Dug well at Pandarpur, Gangapur, Aurangabad	Aurangabad	Gangapur	Dug well	Pandharpur
NWMP	Aurangabad	2200	Bore Well at Katpur, Near Z.P.School	Aurangabad	Paithan	Bore well	Katpur
NWMP	Aurangabad	2201	Dug Well at Ranjangaon	Aurangabad	Gangapur	Dug well	Ranjangaon

Programme	Regional Office	Station ID	Station Name	District	Taluka		Village
NWMP	Aurangabad	2824	Dug Well at Naregaon	Aurangabad	Aurangabad	Dug well	Naregaon
NWMP	Aurangabad	2825	Bore Well at Wahegaon, near Zilla Parishet School	Aurangabad	Paithan	Bore well	Wahegaon
SWMP	Nashik	221	well water of Bappaji, Akolner, Ahmadnagar, Nashik	Nashik	Ahmadnagar	well	Akolner
NWMP	Nashik	1990	Bore well at BMW Site , Burudgaon	Ahmadnagar	Ahmednagar	Bore well	Burudgaon
NWMP	Nashik	1991	Bore well at MSW Site, Pathardi, Nashik	Nashik	Nashik	Bore well	Pathardi
NWMP	Nashik	2204	Dug well at Gunjalwadi, Sangamner near Primary Health Care Center.	Ahmadnagar	Sangamner	Dug well	Gunjalwadi
NWMP	Nashik	2816	Dug Well of Mr. Sampat Walunj, near M/s. Mahajeet Clayton	Nashik	Nashik	Dug well	Shinde village
NWMP	Nashik	2817	Bore Well at Chitali near Wagh vasthi	Ahmadnagar	Rahata	Bore well	Chitali
NWMP	Nashik	2818	Bore Well at M/s. Spectron Ethers Rasegaon near Siddeshwar Mahadev Mandir	Nashik	Dindori	Bore well	Rasegaon

Water Quality Index for ground water at Chandrapur and Nagpur.

Apr	Dry	Dry	Dry	Dry	Dry	Dry	Dry	116.16	Dry	Dry	Dry	Dry	Dry	73.63	69.77	Dry
Oct	75.29	Dry	Dry	64.35	69.60	76.77	76.75	68.31	Dry	Dry	Dry	Dry	Dry	67.43	68.11	Dry
Station Code	**2828**	**209**	**210**	**211**	**212**	**213**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2203**	**2826**	**2827**
RO	**Chandrapur**	**Nagpur**														

Legend

Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data

Table No. 31: Ground water quality monitoring stations at Chandrapur and Nagpur.

Programme	Regional Office	Station ID	Station Name	District	Taluka		Village
NWMP	Chandrapur	2828	Dug Well near Jilla Parishad Primary School Visapur	Chandrapur	Ballarpur	Dug well	Visapur
SWMP	Nagpur	209	Bore well near Pardhi House, Bhandewadi, Nagpur	Nagpur	Bhandewadi	Borewell	Bhandewadi
SWMP	Nagpur	210	Bore well near Dearao Kale House, Bhandewadi, Nagpur	Nagpur	Bhandewadi	Bore well	Bhandewadi
SWMP	Nagpur	212	Grampanchayat Mhasala, Dugwell On Nalla At Mhasala, Taluka - Kamptee, District - Nagpur	Nagpur	Kamptee	Dug well	Mhasala
SWMP	Nagpur	213	Grampanchayat Kawtha, Dugwell At Kawtha, Taluka - Kamptee, District - Nagpur	Nagpur	Kamptee	Dug well	Kawtha

Programme	Regional Office	Station ID	Station Name	District	Taluka		Village
NWMP	Nagpur	1994	Dug well At TPS Durgapur near Naseeb Kirana {} general Store.	Chandrapur	Chandrapur	Dug well	Durgapur
NWMP	Nagpur	1995	Gram Panchayath Dug well , Near Balaji Gajbhiye House, Khaperkheda	Nagpur	Saoner	Dug well	Khaperkheda(Ward No.4)
NWMP	Nagpur	1996	Gram Panchayath Dug well , Near Jagadamba G M S Mandir Sahakari Sanstha	Nagpur	Kamptee	Dug well	Koradi
NWMP	Nagpur	1997	Bore well near Primary Health Centre, Raipur(Hingna)	Nagpur	Hingna	Bore well	Raipur
NWMP	Nagpur	1998	Gram Panchayat Dug well near Gram Panchayat Office, Brahmni	Nagpur	Kalmeshwar	Dug well	Brahmni
NWMP	Nagpur	1999	Bore well Near Gram Panchayat, Changera.	Gondia	Gondia	Bore well	Changera
NWMP	Nagpur	2000	Dug well near Sarode Kirana Store, Bhandewadi, Nagpur	Nagpur	Nagpur	Dug well	Bhandewadi
NWMP	Nagpur	2203	Hand Pump in the premises of Z.P.Primary School	Wardha	wardha	Hand pump	Bhugaon
NWMP	Nagpur	2826	Dug Well near Railway Station, Cottaon Market	Wardha	wardha	Dug well	Wardha
NWMP	Nagpur	2827	Bore Well near Railway crossing at Dongi Buzurg	Bandara	Tumsar	Bore well	Dongri-Buzurg

Water Quality Index for ground water at Kolhapur and Pune.

Apr	Dry	Dry	Dry	Dry	Dry	426.09	410.12	52.47	Dry	Dry	433.87	Dry	55.51	459.00	Dry	Dry	89.86	90.27	Dry	Dry	Dry
Oct	22.79	19.48	191.28	84.23	186.14	98.59	105.38	Dry	91.04	194.23	99.71	23.66	27.10	37.35	23.86	101.02	78.34	140.84	Dry	Dry	Dry
Station Code	219	220	2004	2005	2006	2007	2008	2202	2829	2830	2831	2832	2833	2834	2835	1992	2819	2820	2821	2822	2823
RO	Kolhapur															Pune					

Legend

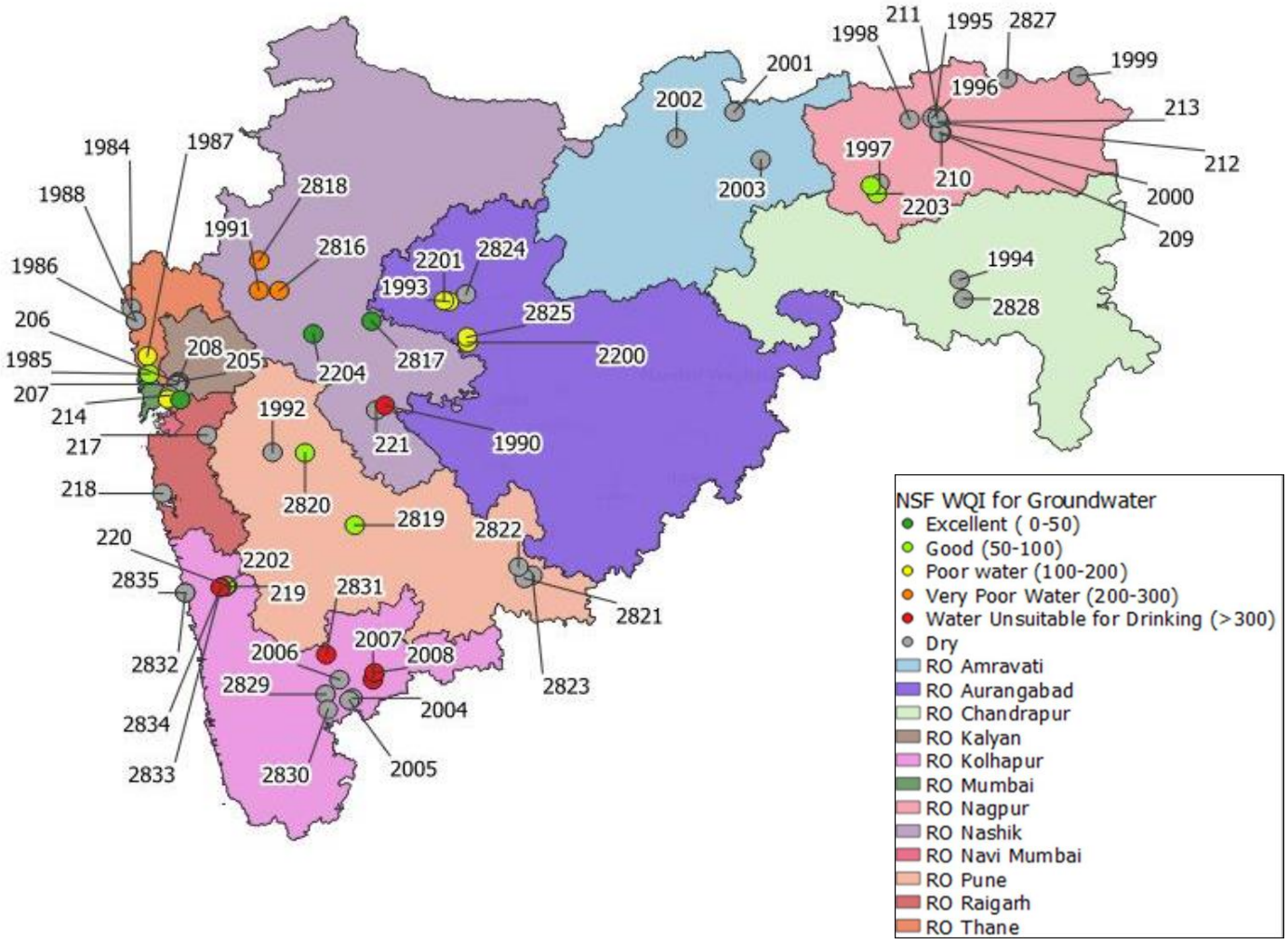
Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data

Table No. 32: Ground water quality monitoring stations at Kolhapur and Pune.

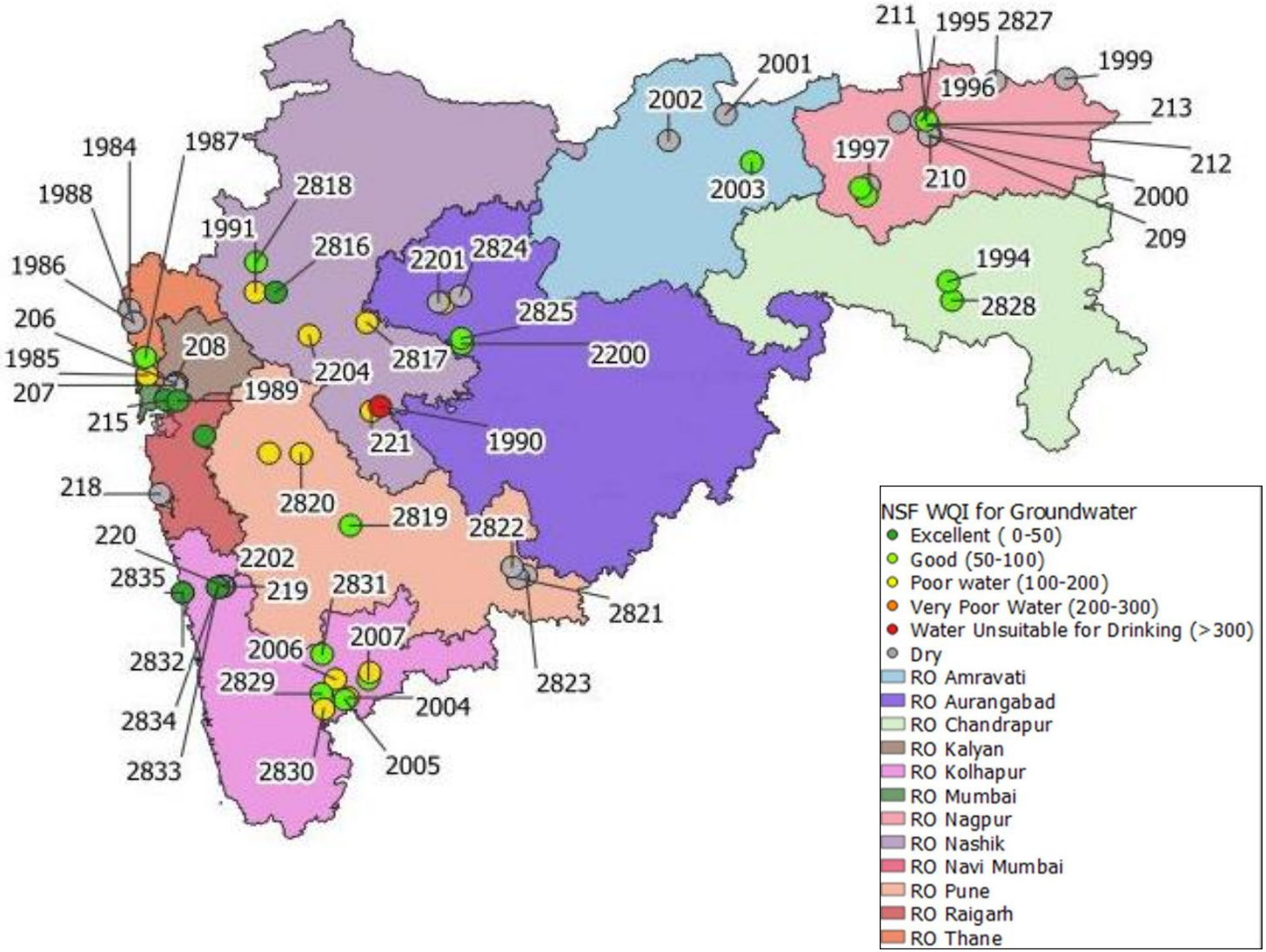
Programme	Regional Office	Station ID	Station Name	District	Taluka		Village
SWMP	Kolhapur	219	Commen well Water At Patwardhan, Lote, Taluka - Khed, District – Rantnagiri	Ratnagiri	Khed	Well	Lote
SWMP	Kolhapur	220	Dugwell backside Excel India At Chalkewadi, Taluka - Khed, District - Ratnagiri.	Ratnagiri	Khed	Dug well	Chalkewadi
NWMP	Kolhapur	2004	Bore well at Parvati Industrial Estate, Yadrav, Kolhapur	Kolhapur	Shirol	Bore well	Yadrav
NWMP	Kolhapur	2005	Bore well at Khanjirenagar, Kolhapur	Kolhapur	Hatkanangale	Bore well	Khanjirenagar
NWMP	Kolhapur	2006	Bore well at Shinoli near M/s Aqua Alloy Steel.	Kolhapur	Chandgad	Bore well	Shinoli
NWMP	Kolhapur	2007	Bore well at Savali, near Gram Panchayat office.	Sangli	Miraj	Bore well	Savali
NWMP	Kolhapur	2008	Dug well at Sambarwadi, owned by Shri. Kishan Hali Rajput.	Sangli	Miraj	Dug well	Sambarwadi

Programme	Regional Office	Station ID	Station Name	District	Taluka		Village
NWMP	Kolhapur	2202	Dug Well at Ghane Kunt, near Awashi, onwed by shri Rajendra Amre	Ratnagiri	Khed	Dug well	Ghane Kunt
NWMP	Kolhapur	2829	Bore Well at MIDC Shiroli near M/s. Pratibha Enterprises	Kolhapur	Hatkanangale	Bore well	Shiroli
NWMP	Kolhapur	2830	Bore Well at MIDC Gokul Shirgaon	Kolhapur	Karvir	Bore well	Gokul-Shirgaon
NWMP	Kolhapur	2831	Dug Well at Sakharali near MIDC Islampur near Krishna Milk Industry	Sangli	Walwa	Dug well	Sakharali
NWMP	Kolhapur	2832	Dug Well No.1 at Brahmanwadi-Anjanwel, owned by Shri Vaidya	Ratnagiri	Guhagar	Dug well	Anjanwel
NWMP	Kolhapur	2833	Dug Well No.1 at Group Gram Panchayat at Arketwadi, near Masjid	Ratnagiri	Khed	Dug well	Arketwadi
NWMP	Kolhapur	2834	Dug Well No.2 at Arketwadi	Ratnagiri	Khed	Dug well	Arketwadi
NWMP	Kolhapur	2835	Dug Well No.2 at owned by Group Gram Panchayat, Brahmanwadi-Anjanwel	Ratnagiri	Guhagar	Dug well	Anjanwel
NWMP	Pune	1992	Dug well at MSW Site, owned by Shri.Dattu Kondiba Borate at Borate Vasthi.	Pune	Haveli	Dug well	Moshi
NWMP	Pune	2819	Dug Well Owned by Shri Deshmukh	Pune	Baramati	Dug well	Malegaon
NWMP	Pune	2820	Dug Well Owned by Shri Shivaji Baban Darekar	Pune	Shirur	Dug well	Sanaswadi
NWMP	Pune	2821	Bore Well at Bale Railway Station premises Owned by Shri Digambar Joshi	Solapur	North Solapur	Bore well	Dahegaon
NWMP	Pune	2822	Bore Well near Chincholi	Solapur	Mohol	Bore well	Chincholi
NWMP	Pune	2823	Bore Well at Shete Vasti near old Tuljapur Road	Solapur	Solapur	Dug well	Shete vasthi, Tuljapur Naka

Spatial map of Ground WQI in Maharashtra (April 2020)



Spatial map of Ground WQI in Maharashtra (October 2020)



Conclusion

In 2020-21, there was a slight increase in WQMS (surface water) having an annual average WQI recorded as 'Non-Polluted' as compared to 2019-20. It includes about 214 WQMS (93.85%) as compared to 205 (89.9%) in the previous year (2019-20). Out of 214 WQMS, 172 WQMS (75.43%) recorded their annual average WQI under the 'Good to Excellent' whereas 42 WQMS (18.42%) recorded WQI under the 'Medium to Good' category. Out of the 'Polluted' category, 8 WQMS (3.5%) and 4 WQMS (1.75%) recorded annual average WQI under the 'Bad' and 'Bad to Very bad' categories. Only 2 WQMS (as compared to 1 in 2019-20) were placed in the category of 'Dry'.

In the case of Priority ranking, the Mithi River is placed in Priority I while the Pawna River is placed in Priority II. Priority III and IV include 11 and 14 rivers respectively. Category V observed the inclusion of 24 rivers in 2020-21 as compared to 21 in the previous year (2019-20). 2 rivers namely the Panchganga and the Vashishti (as compared to 1 river namely the Panchganga in 2019-20) were found to be non-polluted (BOD less than 3mg/l).

In the case of WQMS (Groundwater), the highest number of WQMS recording 'Excellent' WQI was found to be in Kolhapur district (5) followed by Raigad district (2). Similarly, the highest number of WQMS recording annual average WQI under the 'Good Water' category was found to be in Nagpur district (7) followed by Kolhapur (3) and Nashik (2). The 'Poor Water' WQI was recorded at Aurangabad, Kolhapur and Nashik district (3 each) followed by Pune and Thane district (2 each). 4 WQMS from Kolhapur district and 1 WQMS from Nashik district recorded annual average WQI in the 'Very Poor' WQI category. Only 1 WQMS (compared to 3 WQMS in 2019-20) recorded WQI under the category of 'Water Unsuitable for Drinking'. It includes Bore well at BMW site, Burudgaon, District Ahmednagar with an average WQI of about 347. Out of 66 WQMS, 23 were recorded as 'Dry' throughout the monitoring period.

Annex I – RO wise summary of WQI in 2020-2021

The Maharashtra State government in 1981 adopted the Water (Prevention and Control of Pollution) Act 1974 and under this, Maharashtra Pollution Control Board (MPCB) was established in the year 1981.

The main functions of MPCB are:

- To plan a comprehensive program for the prevention, control or abatement of pollution and secure executions thereof,
- To collect and disseminate information relating to pollution and the prevention, control or abatement thereof,
- To inspect sewage or trade effluent treatment and disposal facilities, and air pollution control systems and to review plans, specification or any other data relating to the treatment plants, disposal systems and air pollution control systems in connection with the consent granted,
- Supporting and encouraging the developments in the fields of pollution control, waste recycle reuse, eco-friendly practices etc.
- To educate and guide the entrepreneurs in improving environment by suggesting appropriate pollution control technologies and techniques
- To create public awareness about clean and healthy environment and attending the public complaints regarding pollution.

Being a highly industrialized, populated and urbanized state, Maharashtra has numerous sources which lead to water pollution, which have deteriorated the water quality of many, seas, creeks, drains ground water and so on. Release of sewage, industrial waste water, and dumping of solid waste are the three major causes of water pollution.

Hence, to keep a constant vigilance MPCB has established 12 Regional Offices (ROs) across the state to check and regulate the pollution levels with necessary control measures. MPCB implements a range of environmental legislation in the state and functions under the administrative control of Environment Department, Government of Maharashtra.

The following section presents the RO wise highlights on the status of the water quality monitoring network for the year 2020-21 and presents the gist of the water quality index for the respective stations for months of April and December/October.

RO – Amravati

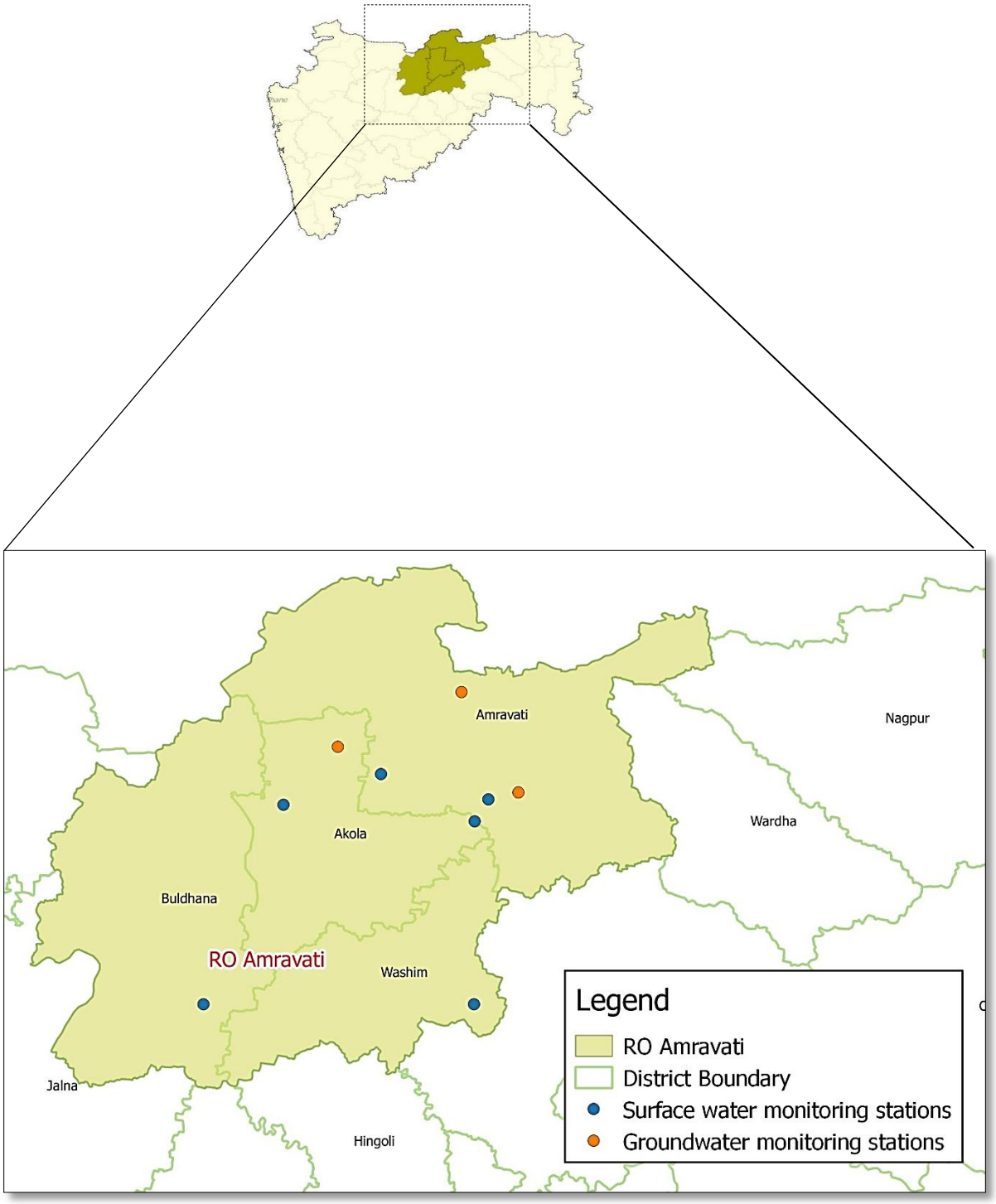

Amravati
Nagpur
Akola
Wardha
Buldhana
RO Amravati
Washim
Jalna
Hingoli
Legend
RO Amravati
District Boundary
Surface water monitoring stations
Groundwater monitoring stations

Table No. 33: Water quality Index for surface and ground water monitoring at Amravati-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2700	Purna River near Achalpur-Amravati Road Bridge, Asegaon	Dry	Dry	72.62	Amravati	Chandur bazaar	Asegaon
	2695	Pedhi River near Road Bridge at Dadhi-Pedhi village	Dry	Dry	71.60	Amravati	Chandur Bazar	Asegaon
	1913	Purna River at Dhupeshwar at U/s of Malkapur Water works	Dry	Dry	70.09	Akola	Akola	Malkapur
	2155	Purna River at D/s of confluence of Morna & Purna at Andhura village	Dry	Dry	67.53	Akola	Balapur	Andura
	2699	Penganga River at Mehkar-Buldana Road Bridge	Dry	Dry	70.98	Buldana	Mehkar	Mehkar
	2675	Morna River at D/s of Railway Bridge	Dry	Dry	71.68	Akola	Akola	Akola
	2697	Penganga River near water supply scheme of Umarkhed MC	74.76	73.96	74.11	Yavatmal	Umarkhed	Belkhed
	2698	Penganga River D/s of Isapur Dam	73.82	73.82	73.43	Yavatmal	Pusad	Isapur
GW	2001	Tube well at water treatment plant of M.C.Achalpur near Post Office.	Dry	Dry	Dry	Amravati	Achalpur	Paratwada
	2002	Bore well Opp. Gajanan Maharaj Temple at Anjangaon road.	Dry	Dry	Dry	Akola	Akot	Anjangaon
	2003	Dug well at Plot No- 4, Street No. 49-C, at Nehru Bal Udyan Azad Maidan, owned by Yavatmal M.C.	Dry	71.6	71.6	Yavatmal	Yavatmal	Nehru Bal Udyan Azad Maidan

Surface Water		Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)
Ground Water	Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No data			

RO – Aurangabad

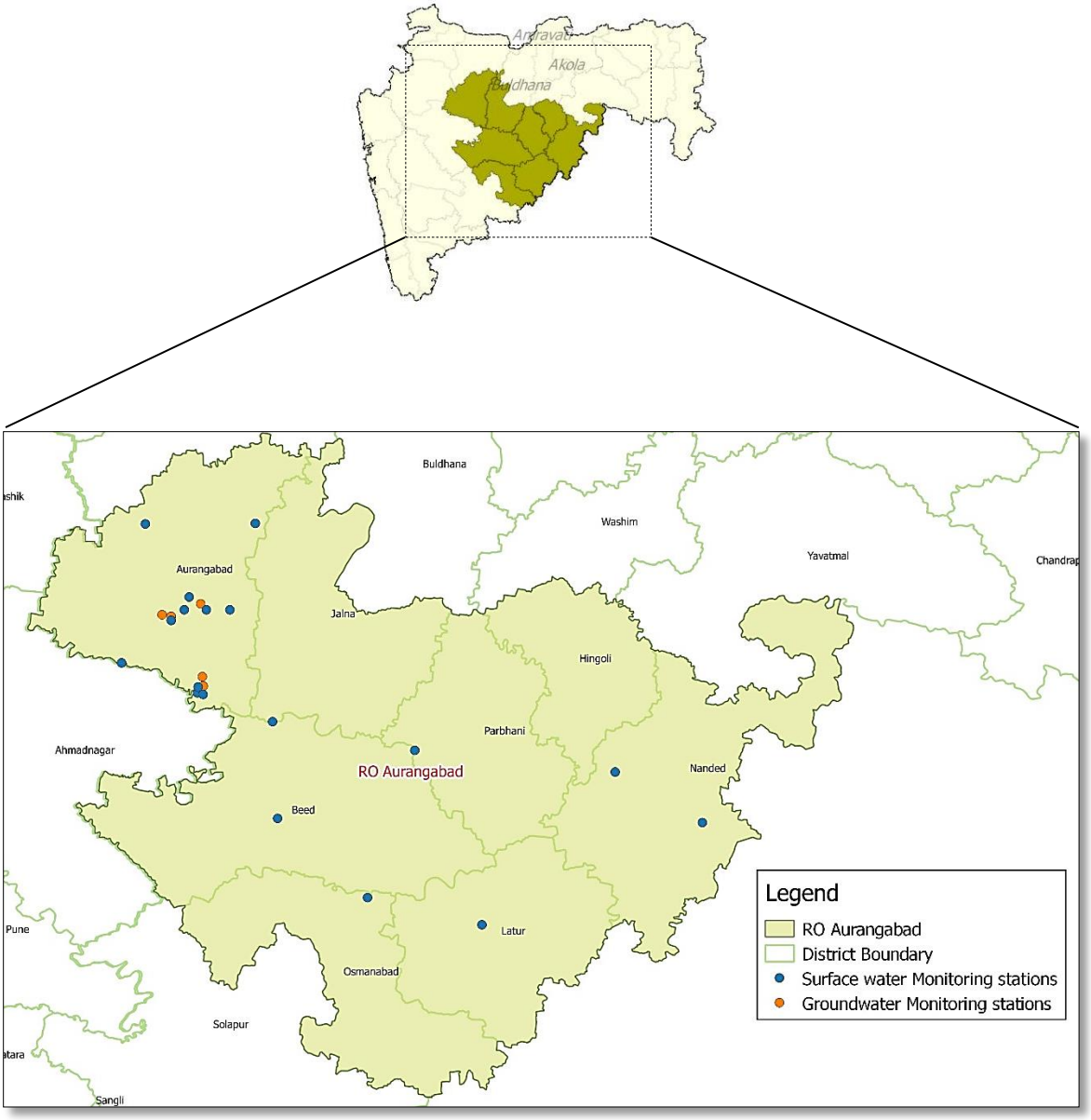


Table No. 34: Water quality Index for surface and ground water monitoring at Aurangabad-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2160	Godavari River at U/s of Aurangabad Reservoir Kaigaon Tokka near, Kaigaon Bridge	86.83	NA	87.14	Aurangabad	Gangapur	Kaigaon
	178	Kannad - D/S of Kannad near Bridge	No Data	NA	81.68	Aurangabad	Kannad	Kannad
	181	Aurangabad - Near Patoda Village	No Data	NA	69.20	Aurangabad	Aurangabad	Aurangabad
	180	Aurangabad - Near Holly cross bridge	No Data	NA	72.52	Aurangabad	Aurangabad	Aurangabad
	184	Aurangabad - Harsool Dam	No Data	NA	81.27	Aurangabad	Aurangabad	Aurangabad
	1312	Godavari river at Jaikwadi Dam, Paithan	87.45	NA	87.15	Aurangabad	Paithan	Paithan
	2158	Godavari River at Paithan U/s of Paithan Intake pump house	87.35	NA	86.91	Aurangabad	Paithan	Jayakwadi
	2159	Godavari River at D/s of Paithan at Pathegaon bridge	87.49	NA	86.58	Aurangabad	Paithan	Pathegaon
	182	Aurangabad - Near Chikhalthana Bridge	No Data	No Data	62.07	Aurangabad	Aurangabad	Aurangabad
	183	Aurangabad - At Sukhna Dam	No Data	NA	81.19	Aurangabad	Aurangabad	Aurangabad
	179	Sillod - D/S of Sillod near bridge at bhavan	No Data	NA	79.63	Aurangabad	Sillod	Sillod
	2161	Godavari River at Jalna Intake water pump house Shahagad	Dry	NA	76.29	Jalna	Ambad	Shahabad
	2657	Bindusara River at Beed, near Intake water pump house at Dam	87.37	NA	82.06	Beed	Beed	Paligaon
	12	Godavari River at Dhalegaon	86.79	NA	83.20	Parbhani	Pathari	Dhalegaon
	1210	Godavari River at Intake of pump house	90.43	NA	81.19	Nanded	Nanded	Vishnupuri
	1209	Godavari River at Raher	87.92	NA	84.86	Nanded	Nayagaon	Raher
	2157	Godavari River at Latur Water intake near pump house	87.11	NA	86.65	Osmanabad	Kalumb	Dhamegaon
	2673	Manjra River at D/s of Latur, near Latur-Nanded Bridge	Dry	NA	Dry	Latur	Latur	Bhatkheda
GW	1993	Dug well at Pandarpur, Gangapur, Aurangabad	134.6	101.8	118.2	Aurangabad	Gangapur	Pandharpur
	2200	Bore Well at Katpur, Near Z.P.School	133.9	56.2	95.0	Aurangabad	Paithan	Katpur
	2201	Dug Well at Ranjangaon	139.8	Dry	139.8	Aurangabad	Gangapur	Ranjangaon
	2824	Dug Well at Naregaon	Dry	Dry	Dry	Aurangabad	Aurangabad	Naregaon
	2825	Bore Well at Wahegaon, near Zilla Parishet School	134.7	98.1	116.4	Aurangabad	Paithan	Wahegaon

Surface Water		Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No Data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)
Ground Water	Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data			

RO – Chandrapur

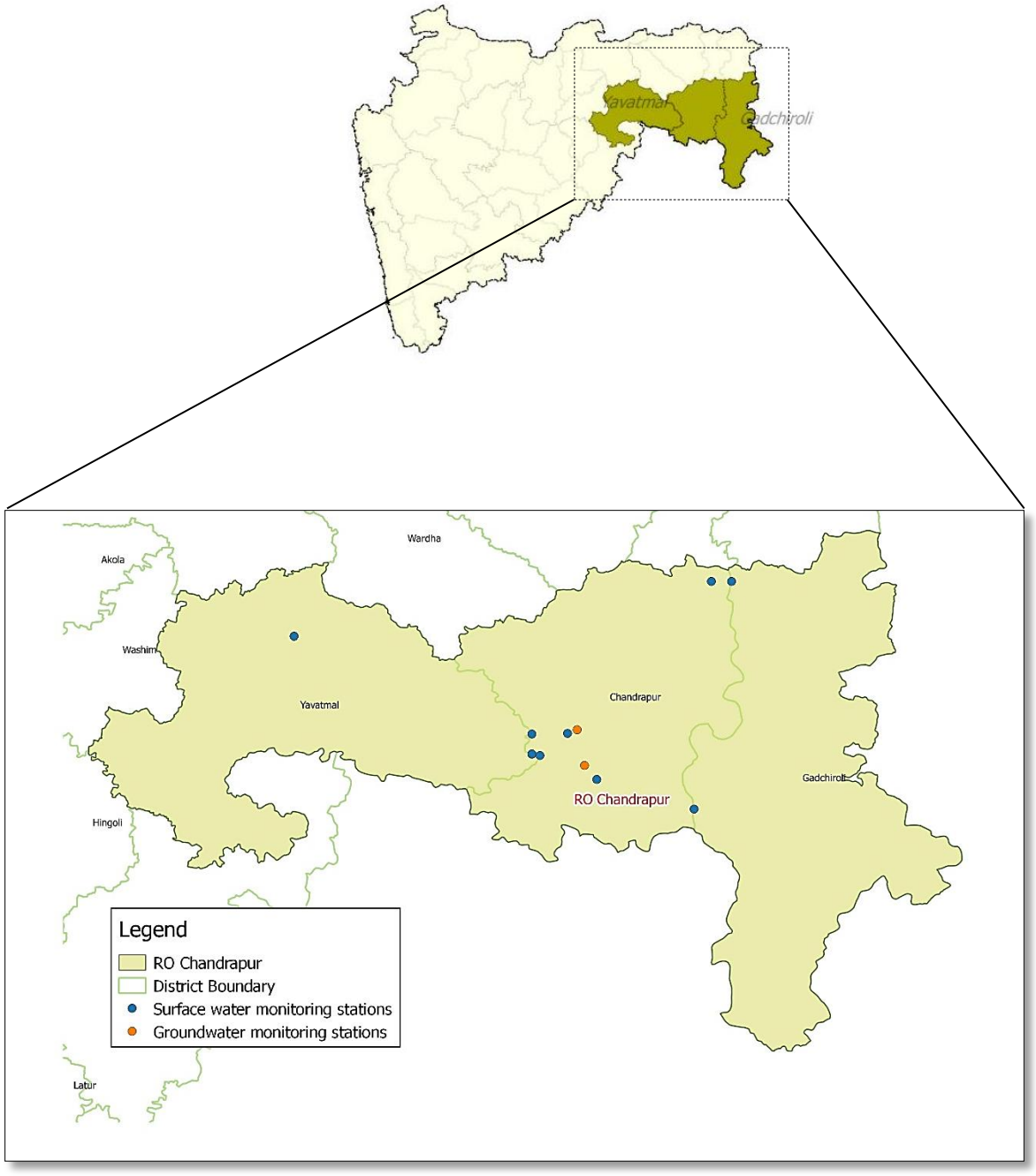


Table No. 35: Water quality Index for surface and ground water monitoring at Chandrapur RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2174	Wardha River at D/s of ACC Ghuggus	74.39	72.94	73.13	Chandrapur	Chandrapur	Ghuggus
	2721	Wardha River at U/s of ACC Ghuggus	76.15	73.50	74.99	Chandrapur	Chandrapur	Ghuggus
	2720	Wardha River at U/s of Erai River	74.83	75.24	74.23	Chandrapur	Chandrapur	Hadasti
	2156	Wardha River at confluence point of Penganga & Wardha	75.38	75.08	72.32	Yavatmal	Wani	Jugad
	2719	Wardha River at D/s of Erai River	No Data	74.68	72.66	Chandrapur	Chandrapur	Hadasti
	1212	Wardha river at Rajura bridge	No Data	73.20	74.91	Chandrapur	Chandrapur	Rajura
	2175	Wainganga at U/s of Gaurav Paper Mills near Jack Well	No Data	71.96	75.20	Chandrapur	Chandrapur	Bramhpuri
	2176	Wainganga River at D/s of Gaurav Paper Mills Near Jackwell	No Data	74.85	74.03	Chandrapur	Chandrapur	Bramhpuri
	11	Wainganga River at Ashti	No Data	70.87	71.47	Chandrapur	Gondpipri	Ashti
GW	1994	Dug well at TPS Durgapur near Naseeb Kirana {} general Store.	Dry	76.7	76.7	Chandrapur	Chandrapur	Durgapur
	2828	Dug Well near Jilla Parishad Primary School Visapur	Dry	75.3	75.3	Chandrapur	Ballarpur	Visapur

Surface Water		**Good to Excellent**	**Medium to Good**	**Bad**	**Bad to Very Bad**	**Dry**	**No Data**	**Does not comply with WQI Calculation criteria (NA)**	**Not collected (NC)**	**No accessible road (NAp)**
Ground Water	**Excellent**	**Good**	**Poor**	**Very Poor**	**Not suitable for drinking**	**Dry**	**No Data**			

RO – Kalyan

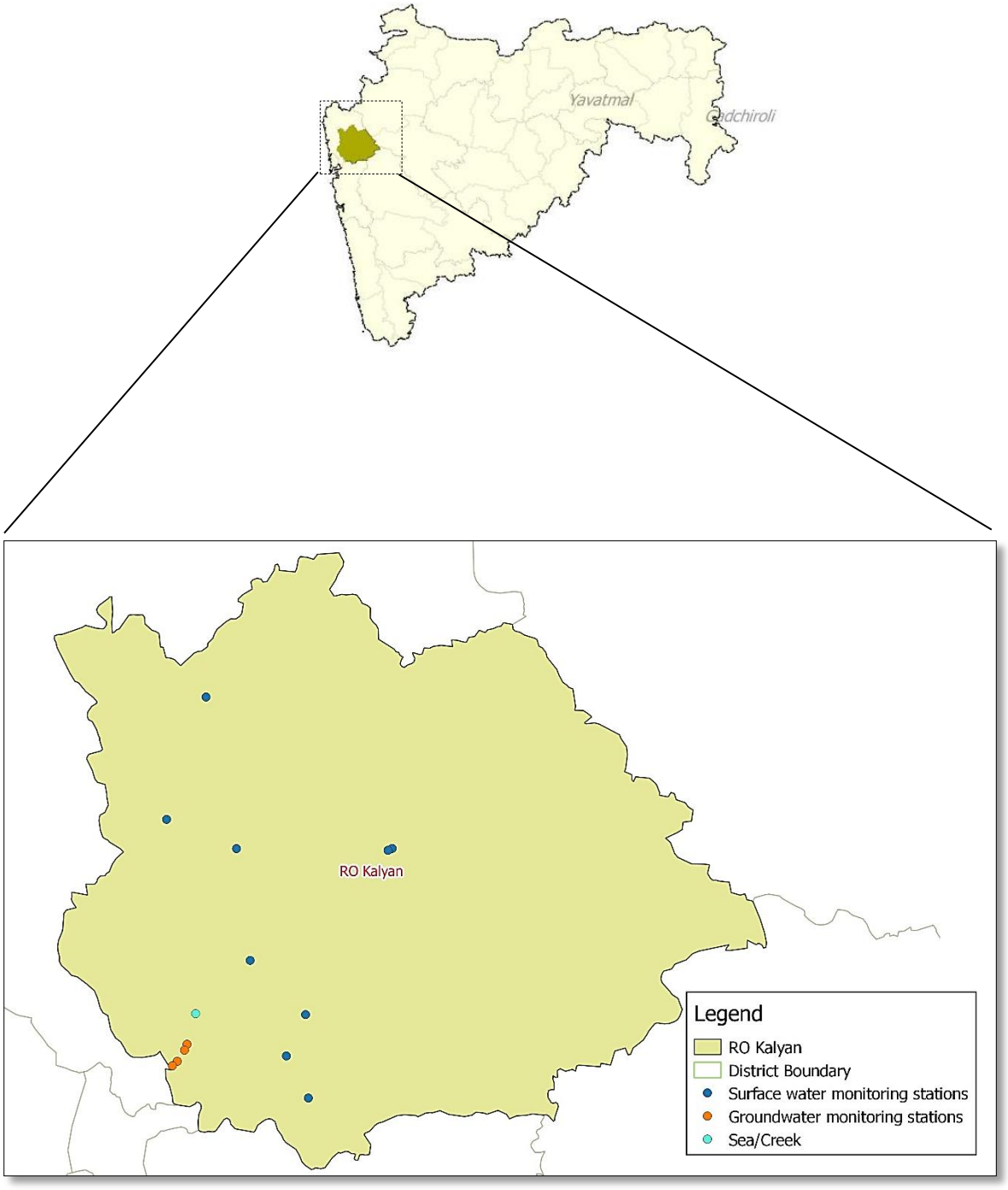

Yavatmal
RO Kalyan
Legend
RO Kalyan
District Boundary
Surface water monitoring stations
Groundwater monitoring stations
Sea/Creek

Table No. 36: Water quality Index for surface and ground water monitoring at Kalyan-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2791	Ulhas Creek at Reti Bunder, D/s of Kalyan-Bhiwandi Bridge	58.15	65.94	65.32	Thane	Kalyan	Kalyan
	2654	Bhatsa River at D/s of Liberty Oil Mills	88.89	86.72	81.56	Thane	Shahapur	Satne
	2653	Bhatsa River at D/s of Liberty Oil Mills	87.60	82.21	82.14	Thane	Shahapur	Satne
	1094	Ulhas River at U/s of Badlapur water works	87.57	83.02	83.14	Thane	Ambernath	Kulgaon
	1093	Ulhas river at U/s of NRC Bund	84.62	86.64	82.58	Thane	Kalyan	Mohane
	2162	Ulhas River at Jambhul water works	89.22	85.24	83.18	Thane	Ambernath	Jambhul
	1461	Bhatsa river at D/s of Pise Dam	87.57	81.91	78.71	Thane	Bhiwandi	Pise
	1092	Kalu River at Atale village	55.45	88.16	80.17	Thane	Kalyan	Atale
	2712	Vaitarna River near Road Bridge	Dry	Dry	80.07	Thane	Wada	Gandhare
	2709	Tansa River near road bridge	Dry	Dry	80.07	Thane	Wada	Dakewali
GW	205	Dug well opp. KAMA office, MIDC Ph-I, Dombivali	Dry	Dry	Dry	Kalyan	Dombivali	MIDC, Dombivali
	206	Dug well near Mamta Hospital, Milap Nagar, Dombivali	Dry	Dry	Dry	Kalyan	Dombivali	MIDC, Dombivali
	207	Dug well at pimpleshwar Temple, MIDC Ph-II, Dombivali	Dry	Dry	Dry	Kalyan	Dombivali	MIDC, Dombivali
	208	Dug well addjusent to M/S. Altra pure chem., Sr. No. 45, Hissa No. 3, MIDC Ph-II, Dombivali.	Dry	Dry	Dry	Kalyan	Dombivali	MIDC, Dombivali

Surface Water		Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No Data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)
Ground Water	Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data			

RO – Kolhapur

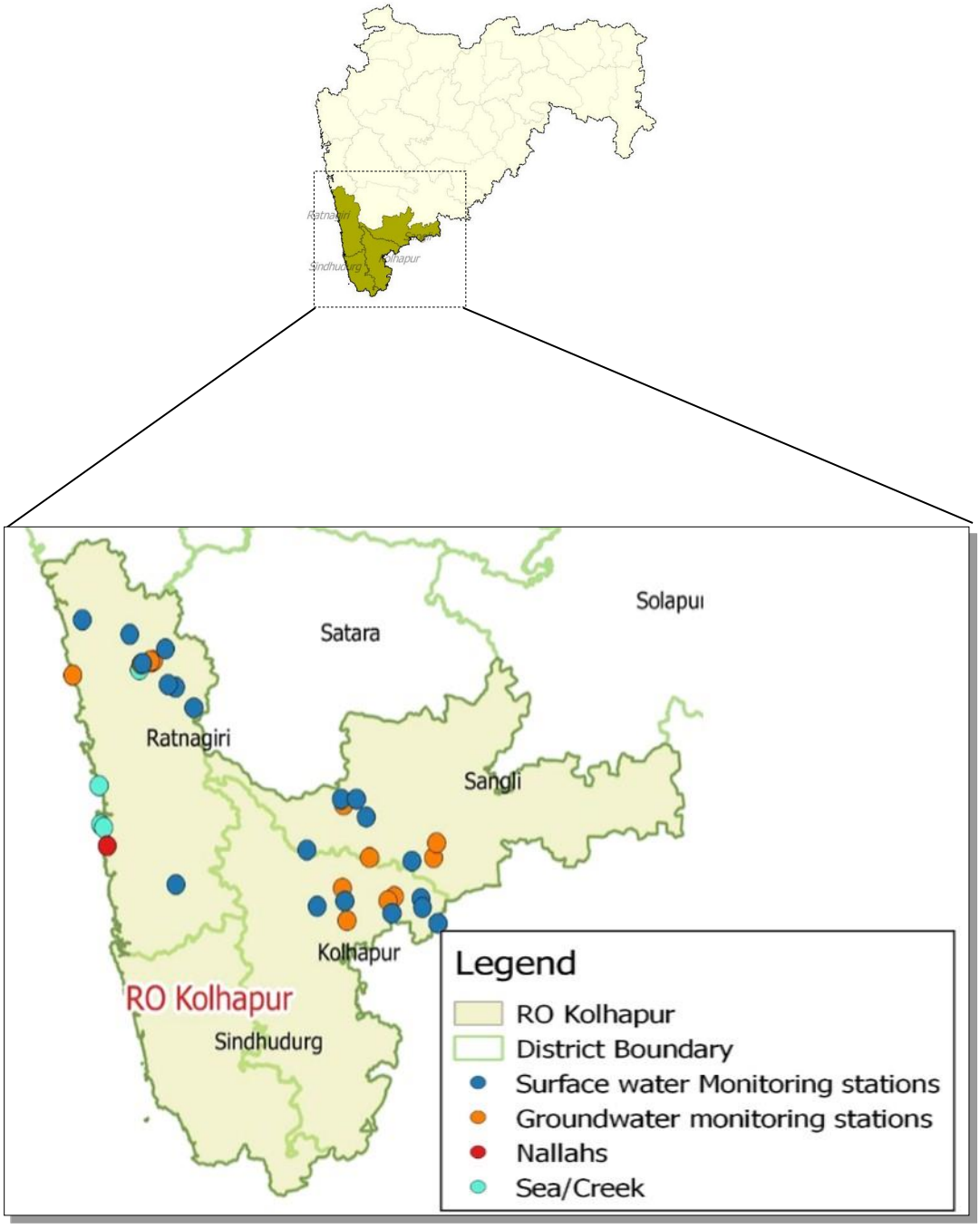

Satara
Solapur
Ratnagiri
Sangli
Kolhapur
RO Kolhapur
Sindhudurg
Legend
RO Kolhapur
District Boundary
Surface water Monitoring stations
Groundwater monitoring stations
Nallahs
Sea/Creek

Table No. 37: Water quality Index for surface and ground water monitoring at Kolhapur-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	200	Mangle Bridge, Mangle, Taluka - Shirala, District - Sangli	No Data	85.88	85.38	Sangli	Shirala	Mangle
	1904	Panchganga River at U/s of Kolhapur town near Balinga Pumping Station	86.50	84.66	86.94	Kolhapur	Karvir	Balinga
	198	Bahe KT Weir, Bahe, Taluka - Walwa, District - Sangli	No Data	87.97	85.25	Sangli	Walwa	Bahe
	1905	Panchaganga river at D/s of Kolhapur town at Gandhi nagar near NH-4 bridge and MIDC intake well	88.62	83.63	86.90	Kolhapur	Kolhapur	Uchegaon
	199	Borgaon KT Weir, Borgaon, Taluka - Walwa, District - Sangli	No Data	84.61	85.16	Sangli	Walwa	Borgaon
	1906	Krishna river at Walwa, D/s of Islampur near Vithal Temple	83.38	84.82	84.54	Sangli	Walwa	Walwa
	1311	Panchganga River at Ichalkaranji near MIDC intake well	85.15	86.73	86.85	Kolhapur	Hatkanangale	Shiradhwad (Ichalkaranji ghat)
	37	Krishna River at Maighat, Sangli	86.72	85.66	84.93	Sangli	Miraj	Gawali gally
	2163	Panchganga River at Shirol near Shirol intake well	85.44	86.25	86.00	Kolhapur	Shirol	Shirol
	1310	Krishna River at Kurundwad	83.89	88.21	86.48	Kolhapur	Shirol	Narshingwadi , Kurundwad
	1153	Krishna River at Rajapur Weir	83.92	87.35	86.01	Kolhapur	Shirol	Rajapur
	2804	Karambavane Creek at Chiplun	86.53	89.38	86.05	Ratnagiri	Chiplun	Karambavane
	2813	Sea Water at Ganapatipule	81.92	83.59	79.97	Ratnagiri	Ratnagiri	Ganapatipule
	2814	Sea Water at Bhagwati Bunder, Ratnagiri near Ultra Tech Cement Jetty	81.79	80.65	76.59	Ratnagiri	Ratnagiri	Mirkarwada
	2815	Madvi Sea Water at Ratnagiri near Jodhale Maruti Temple	81.20	80.93	78.17	Ratnagiri	Ratnagiri	Madvigaon
	2714	Vashishti River at U/s of Pophali near Konphansawane Bridge	84.95	88.23	88.32	Ratnagiri	Chiplun	Pophali
	2676	Muchkundi River at Waked Ratnagiri near M/s Asahi India Glass	88.28	86.08	87.87	Ratnagiri	Lanja	Waked
	202	Vashisti River At Khadpoli, Taluka Chiplun, District - Ratnagiri	No Data	87.39	86.68	Ratnagiri	Chiplun	Khadpoli
	2164	Vashishti River at U/s of Three M Paper Mills near M/s Multifilms Plastic Pvt Ltd	87.20	90.25	88.30	Ratnagiri	Chiplun	Kherdi
	2713	Vashishti River at D/s of Three M Paper Mills near Chiplun water intake Jackwell	86.33	89.37	87.86	Ratnagiri	Chiplun	Kherdi
	201	Sonpatra River At Kotwali Village, Taluka - Khed, District - Ratnagiri	No Data	80.63	83.45	Ratnagiri	Khed	Kotwali
	203	Jagbudi River, D/S of Khed City, Taluka - Khed, District Ratnagiri	No Data	86.91	87.87	Ratnagiri	Khed	Khed City
	204	Jog river at Dapoli, Taluka Dapoli, District - Rantnagiri	No Data	85.67	87.11	Ratnagiri	Dapoli	Dapoli

	2790	Pimpal-Paneri Nalla at Ratnagiri near Finolex Industries	Dry	82.70	84.32	Ratnagiri	Ratnagiri	Yahganigaon
GW	219	Commen well Water At Patwardhan, Lote, Taluka - Khed, District - Rantnagiri	Dry	22.8	22.8	Ratnagiri	Khed	Lote
	220	Dugwell backside Excel India At Chalkewadi, Taluka - Khed, District - Ratnagiri.	Dry	19.5	19.5	Ratnagiri	Khed	Chalkewadi
	2004	Bore well at Parvati Industrial Estate, Yadrav, Kolhapur	Dry	191.3	191.3	Kolhapur	Shirol	Yadrav
	2005	Bore well at Khanjirenagar, Kolhapur	Dry	84.2	84.2	Kolhapur	Hatkanangale	Khanjirenagar
	2006	Bore well at Shinoli near M/s Aqua Alloy Steel.	Dry	186.1	186.1	Kolhapur	Chandgad	Shinoli
	2007	Bore well at Savali, near Gram Panchayat office.	426.1	98.6	262.3	Sangli	Miraj	Savali
	2008	Dug well at Sambarwadi, owned by Shri. Kishan Hali Rajput.	410.1	105.4	257.8	Sangli	Miraj	Sambarwadi
	2202	Dug Well at Ghane Kunt, near Awashi, onwed by shri Rajendra Amre	52.5	Dry	52.5	Ratnagiri	Khed	Ghane Kunt
	2829	Bore Well at MIDC Shiroli near M/s. Pratibha Enterprises	Dry	91.0	91.0	Kolhapur	Hatkanangale	Shiroli
	2830	Bore Well at MIDC Gokul Shirgaon	Dry	194.2	194.2	Kolhapur	Karvir	Gokul-Shirgaon
	2831	Dug Well at Sakharali near MIDC Islampur near Krishna Milk Industry	433.9	99.7	266.8	Sangli	Walwa	Sakharali
	2832	Dug Well No.1 at Brahmanwadi-Anjanwel, owned by Shri Vaidya	Dry	23.7	23.7	Ratnagiri	Guhagar	Anjanwel
	2833	Dug Well No.1 at Group Gram Panchayat at Arketwadi, near Masjid	55.5	27.1	41.3	Ratnagiri	Khed	Arketwadi
	2834	Dug Well No.2 at Arketwadi	459.0	37.4	248.2	Ratnagiri	Khed	Arketwadi
	2835	Dug Well No.2 at owned by Group Gram Panchayat, Brahmanwadi-Anjanwel	Dry	23.9	23.9	Ratnagiri	Guhagar	Anjanwel

Surface Water		Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No Data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)
Ground Water	Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data			

RO – Mumbai

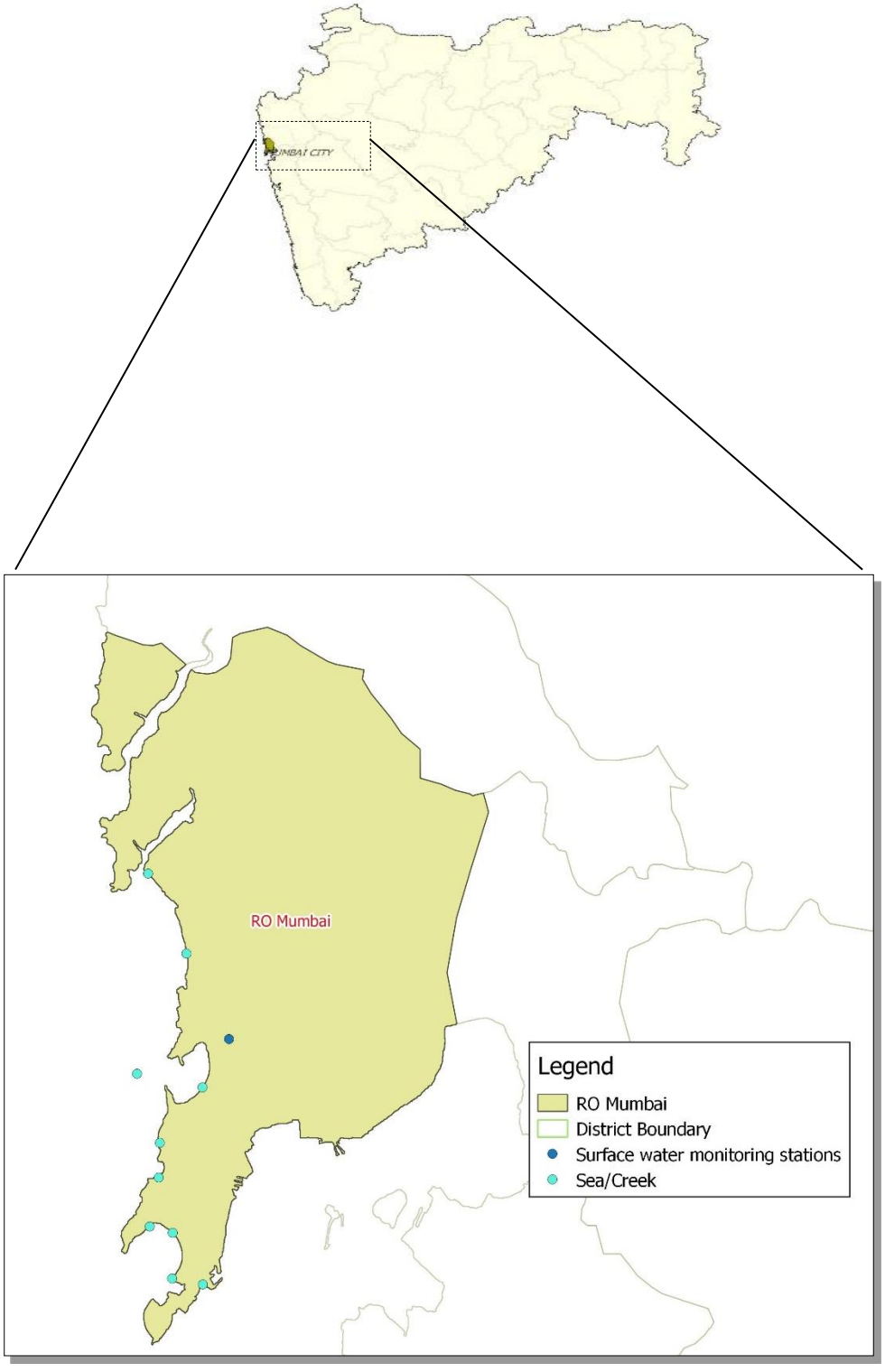

MUMBAI CITY
RO Mumbai
Legend
RO Mumbai
District Boundary
Surface water monitoring stations
Sea/Creek

Table No. 38: Water quality Index for surface and ground water monitoring at Mumbai-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2169	Sea Water at Varsova Beach	55.28	48.62	52.75	Mumbai	Andheri	Versova
	2812	Sea Water at Juhu Beach	57.14	51.11	53.15	Mumbai	Santacruz	Juhugaon
	1318	Mahim creek at Mahim Bay	37.55	60.89	57.18	Mumbai	Bandra	Mahim
	2811	Sea Water at Shivaji Park (Dadar Choupathy)	51.50	61.95	56.75	Mumbai	Dadar	Dadar
	2167	Sea Water at Worli Seaface	55.64	49.32	53.23	Mumbai	Worli	Worli
	2810	Sea Water at Haj Ali	55.50	49.81	53.02	Mumbai	Worli	Worli
	2809	Sea Water at Malabar Hill	56.36	52.66	54.09	Mumbai	Mumbai	Walkeshwar
	2166	Sea Water at Charni Road Choupathy	57.42	47.59	53.64	Mumbai	Mumbai	Girgaon
	2808	Sea Water at Nariman Point	54.90	48.96	54.73	Mumbai	Colaba	Colaba
	2165	Sea Water at Gateway of India	58.08	47.87	54.46	Mumbai	Colaba	Colaba
	2168	Mithi River at near bridge	25.84	35.35	44.30	Mumbai	Bandra	Mahim

Surface Water		Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No Data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)
Ground Water	Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data			

RO – Nagpur

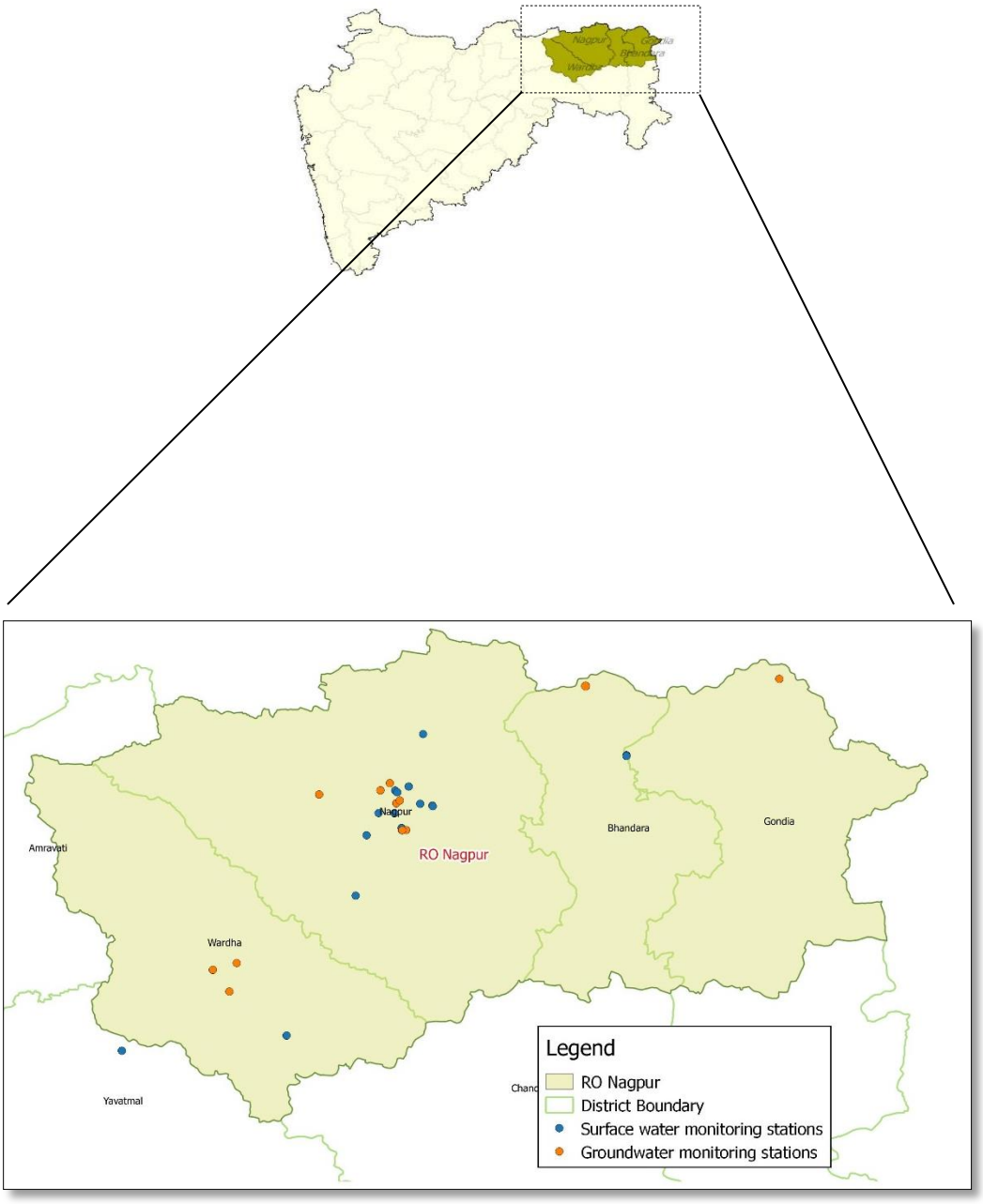

Nagpur
Gondia
Bhandara
Wardha
Nagpur
RO Nagpur
Amravati
Bhandara
Gondia
Wardha
Yavatmal
Legend
RO Nagpur
District Boundary
Surface water monitoring stations
Groundwater monitoring stations

Table No. 39: Water quality Index for surface and ground water monitoring at Nagpur-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	1315	Wardha River at Pulgaon Railway Bridge	Dry	72.62	71.91	Wardha	wardha	Pulgaon
	2723	Wena River at D/s of Mohata Mills, near Bridge on Hinganghat-Wadner Road	74.30	74.81	73.45	Wardha	Hinganghat	Hinganghat
	2722	Wena River at U/s of Mohata Mills, nearby Brigde on Hinganghat Wadner Road	73.78	73.84	74.43	Wardha	Hinganghat	Hinganghat
	185	Nag River Near, Ambazari Lake, Nagpur	No Data	73.92	72.47	Nagpur	Nagpur	Nagpur
	189	Pill River Near, Mankapur on Koradi Road, Nagpur	No Data	48.56	48.41	Nagpur	Nagpur	Nagpur
	188	Pill River Near, Wanjra Layout Kamptee Road, Nagpur	No Data	45.91	47.90	Nagpur	Nagpur	Nagpur
	1909	Kanhan river at D/s of Nagpur	67.78	73.85	70.95	Nagpur	Kuhi	Agargaon
	186	Nag River Near, Bhandewadi Bridge, Nagpur	No Data	35.40	46.49	Nagpur	Nagpur	Nagpur
	1910	Wainganga river after confluence with Kanhan river	68.67	72.02	72.42	Nagpur	Kuhi	Ambhora
	1908	Kolar river before confluence with Kanhan river at Waregaon Bridge	71.94	72.03	71.67	Nagpur	Kamptee	Waregaon
	187	Nag River Near, Asoli Bridge, Bhandara Road, Nagpur	No Data	38.09	45.87	Nagpur	Nagpur	Nagpur
	2170	Kanhan River (Wainganga basin) at U/s of M/s Vidharba Paper Mill	73.40	73.70	73.21	Nagpur	Parseoni	Sinora
	2171	Kanhan River (Wainganga basin) at D/s of M/s Vidharbha Paper Mills	71.97	73.36	72.64	Nagpur	Parseoni	Sinora
	2173	Wainganga River at U/s of Ellora Paper Mills	69.63	72.39	72.64	Bandara	Tumsar	Tumsar
	2172	Wainganga River at D/s of Ellora Paper Mill	70.16	74.78	72.71	Bandara	Tumsar	Tumsar
GW	209	Bore well near Pardhi House, Bhandewadi, Nagpur	Dry	Dry	Dry	Nagpur	Nagpur	Bhandewadi
	210	Bore well near Dearao Kale House, Bhandewadi, Nagpur	Dry	Dry	Dry	Nagpur	Nagpur	Bhandewadi
	211	Grampanchayat Suradevi Intake well On Kolar River At Suradevi, Taluka - Kamptee, District -Nagpur	Dry	64.4	64.4	Nagpur	Kamptee	Suradevi
	212	Grampanchayat Mhasala, Dugwell On Nalla At Mhasala, Taluka - Kamptee, District - Nagpur	Dry	69.6	69.6	Nagpur	Kamptee	Mhasala

	213	Grampanchayat Kawtha, Dugwell At Kawtha, Taluka - Kamptee, District - Nagpur	Dry	76.8	76.8	Nagpur	Kamptee	Kawtha
	1995	Gram Panchayath Dug well , Near Balaji Gajbhiye House, Khaperkheda	116.2	68.3	92.2	Nagpur	Saoner	Khaperkheda(Ward No.4)
	1996	Gram Panchayath Dug well , Near Jagadamba G M S Mandir Sahakari Sanstha	Dry	Dry	Dry	Nagpur	Kamptee	Koradi
	1997	Bore well near Primary Health Centre, Raipur(Hingna)	Dry	Dry	Dry	Nagpur	Hingna	Raipur
	1998	Gram Panchayat Dug well near Gram Panchayat Office, Brahmni	Dry	Dry	Dry	Nagpur	Kalmeshwar	Brahmni
	1999	Bore well Near Gram Panchayat, Changera.	Dry	Dry	Dry	Gondia	Gondia	Changera
	2000	Dug well near Sarode Kirana Store, Bhandewadi, Nagpur	Dry	Dry	Dry	Nagpur	Nagpur	Bhandewadi
	2203	Hand Pump in the premises of Z.P.Primary School	73.6	67.4	70.5	Wardha	wardha	Bhugaon
	2826	Dug Well near Railway Station, Cottaon Market	69.8	68.1	68.9	Wardha	wardha	Wardha
	2827	Bore Well near Railway crossing at Dongi Buzurg	Dry	Dry	Dry	Bandara	Tumsar	Dongri-Buzurg

Surface Water		**Good to Excellent**	**Medium to Good**	**Bad**	**Bad to Very Bad**	**Dry**	**No Data**	**Does not comply with WQI Calculation criteria (NA)**	**Not collected (NC)**	**No accessible road (NAp)**
Ground Water	**Excellent**	**Good**	**Poor**	**Very Poor**	**Not suitable for drinking**	**Dry**	**No Data**			

RO – Nashik

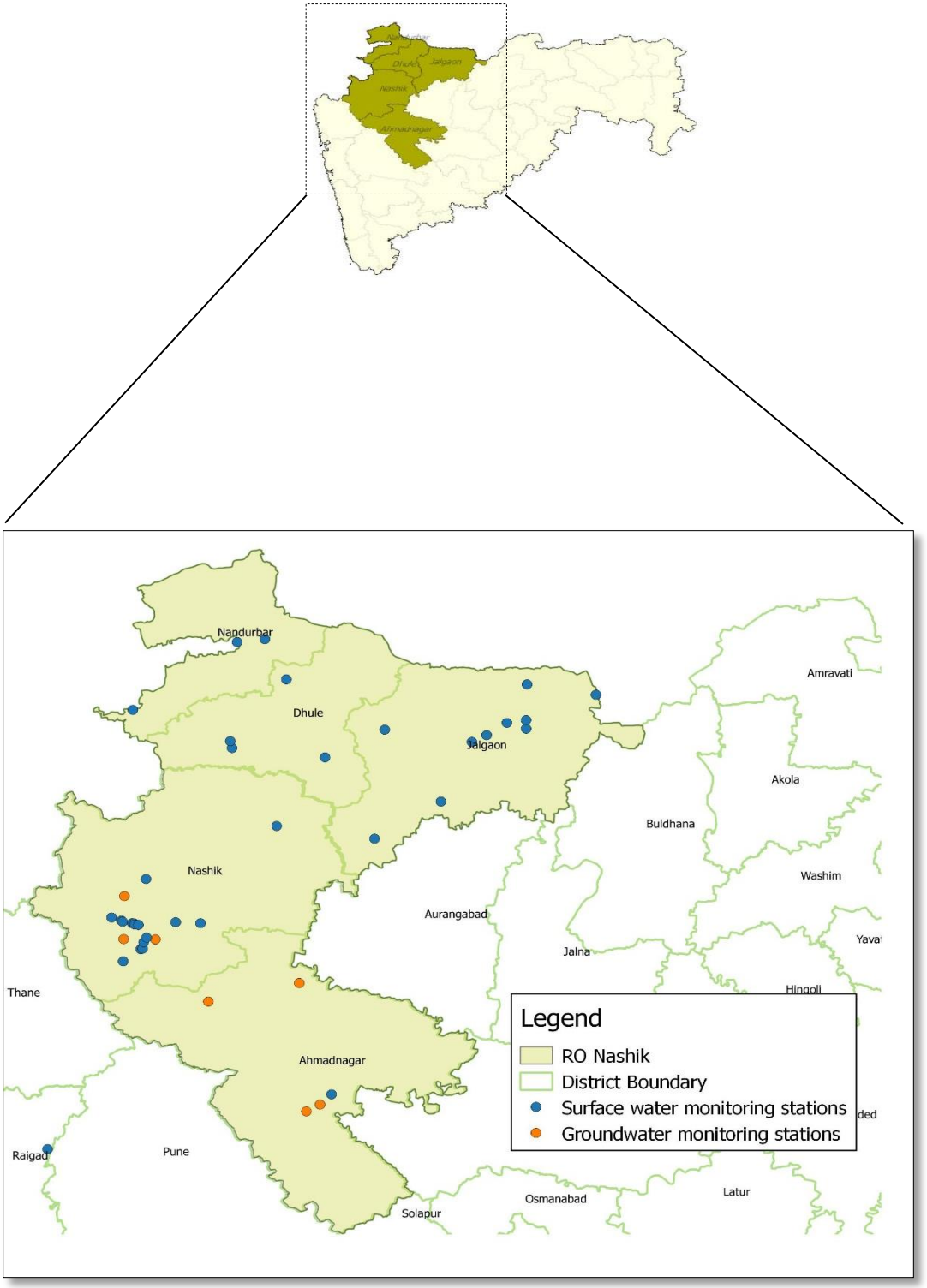

Dhule
Jalgaon
Nashik
Ahmadnagar
Nandurbar
Amravati
Akola
Buldhana
Washim
Aurangabad
Jalna
Yava
Hingoli
Thane
Raigad
Pune
Solapur
Osmanabad
Latur
Legend
RO Nashik
District Boundary
Surface water monitoring stations
Groundwater monitoring stations

Table No. 40: Water quality Index for surface and ground water monitoring at Nashik -RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	1313	Tapi River at Ajnad	83.96	86.74	83.84	Jalgaon	Raver	Ajnad
	2659	Burai River before confluece to Tapi River	Dry	Dry	77.17	Dhule	Dhule	Mukudas
	1251	Tapi River at Bhusawal	80.87	81.70	84.03	Jalgaon	Bhusawal	Bhusawal Railway Colony
	2674	Mor River near Padalshe	Dry	Dry	81.53	Jalgaon	Jalgaon	Padalashe
	2718	Waghur River at Sakegaon before Confluence with Tapi River	Dry	81.27	81.06	Jalgaon	Jalgaon	Sakegaon
	1252	Girna river at Jalgaon at intake of Girna pump house	Dry	80.25	82.68	Jalgaon	Jalgaon	Girna pump house area
	2667	Hiwara River D/s of Pachora	Dry	Dry	82.27	Jalgaon	Jalgaon	Pachora
	2658	Bori River D/s of Amalner	Dry	Dry	80.42	Jalgaon	Jalgaon	Amalner
	2710	Titur River D/s of Chalisgaon	Dry	Dry	83.17	Jalgaon	Jalgaon	Chalisgaon
	2652	Amravati River D/s of Dondaicha	Dry	Dry	Dry	Dhule	Dhule	Dondaicha
	1253	Girna river at Malegaon at Malegaon road bridge	Dry	60.68	59.97	Nashik	Malegaon	Malegaon
	2666	Gomai River D/s of Shahada	Dry	69.65	78.60	Dhule	Dhule	Shahada
	1314	Tapi river at Ubad village near Gujrat border	Dry	74.90	82.14	Nandurbar	Shahada	Ubad
	2684	Panzara River near Panzarakan SSK Ltd	Dry	86.74	82.17	Dhule	Dhule	Panzare
	2670	Kan River near Sakri water works	Dry	Dry	81.78	Dhule	Dhule	Sakri
	1907	Rangavali river at D/s of Navapur near Rangavali bridge	Dry	84.47	80.74	Nandurbar	Navapur	Navapur
	195	Sina River Bridge At Burudgaon Road, A/P Ahmednagar, Taluka & District Ahmednagar	No Data	61.85	61.81	Ahmednagar	Ahmednagar	Burudgaon
	1095	Godavari River at U/s of Gangapur Dam	89.97	85.62	84.92	Nashik	Nashik	Gangapur
	2177	Godavari River near Someshwar Temple	67.24	80.39	78.63	Nashik	Nashik	Someshwar
	2661	Darna River at Aswali (Darna Dam)	67.41	65.60	69.26	Nashik	Igatpuri	Aswali
	2179	Godavari River at Hanuman Ghat	Dry	61.07	63.55	Nashik	Nashik	Nashik city
	1096	Godavari River at Panchavati at Ramkund	Dry	61.87	66.22	Nashik	Nashik	Panchavati
	1211	Godavari River at Nashik D/s of near Amardham	64.12	56.57	64.97	Nashik	Nashik	Gadgebaba Maharaj Nagar
	2180	Godavari River at near Tapovan	66.83	51.32	57.13	Nashik	Nashik	Tapovan
	2181	Godavari River at Kapila -Godavari confluence point	Dry	54.37	55.52	Nashik	Nashik	Tapovan
	2662	Darna River at MES site Pumping station	63.12	65.61	64.14	Nashik	Nashik	Bhagur
	2663	Darna River at Bhagur Pumping station near Pandhurli Bridge	65.12	61.41	65.91	Nashik	Nashik	Bhagur
	2664	Darna River at Sansari	63.86	60.45	66.24	Nashik	Nashik	Sansari

	194	Kadwa River at Awankhed Village, Taluka - Dindori, District - Nashik	No Data	No Data	72.53	Nashik	Dindori	Awankhed Village
	2660	Darna River at Chehedi pumping station	68.04	59.69	68.43	Nashik	Nashik	Chehedi
	2182	Godavari River at Saikheda	66.30	57.66	66.11	Nashik	Niphad	Saikheda
	2183	Godavari River at Nandur-Madhameshwar Dam	68.34	67.35	68.70	Nashik	Niphad	Nandur
	2689	Patalganga River at Gagangiri Maharaj Temple	91.29	79.39	81.97	Raigad	Khalapur	Khopoli
	2178	Chikhali Nalla Meets Godavari River	Dry	51.91	62.11	Nashik	Nashik	Chikhali
	196	Lowki Nalla At Khedi, Taluka & District - Jalgaon	No Data	61.97	64.75	Jalgaon	Khedi	Khedi
	197	Moti Nalla before Confluence with Panjara river Dhule, Taluka & District - Dhule	No Data	62.17	60.62	Dhule	Dhule	Dhule
GW	221	well water of Bappaji, Akolner, Ahmadnagar, Nashik	Dry	181.3	181.3	Nashik	Ahmadnagar	Akolner
	1990	Bore well at BMW Site , Burudgaon	369.0	325.0	347.0	Ahmadnagar	Ahmednagar	Burudgaon
	1991	Bore well at MSW Site, Pathardi, Nashik	279.5	194.2	236.9	Nashik	Nashik	Pathardi
	2204	Dug well at Gunjalwadi, Sangamner near Primary Health Care Center.	48.3	100.9	74.6	Ahmadnagar	Sangamner	Gunjalwadi
	2816	Dug Well of Mr. Sampat Walunj, near M/s. Mahajeet Clayton	279.5	0.0	139.8	Nashik	Nashik	Shinde village
	2817	Bore Well at Chitali near Wagh vasthi	39.5	105.7	72.6	Ahmadnagar	Rahata	Chitali
	2818	Bore Well at M/s. Spectron Ethers Rasegaon near Siddeshwar Mahadev Mandir	265.0	79.7	172.4	Nashik	Dindori	Rasegaon

Surface Water		**Good to Excellent**	**Medium to Good**	**Bad**	**Bad to Very Bad**	**Dry**	**No Data**	**Does not comply with WQI Calculation criteria (NA)**	**Not collected (NC)**	**No accessible road (NAp)**
Ground Water	**Excellent**	**Good**	**Poor**	**Very Poor**	**Not suitable for drinking**	**Dry**	**No Data**			

RO – Navi Mumbai

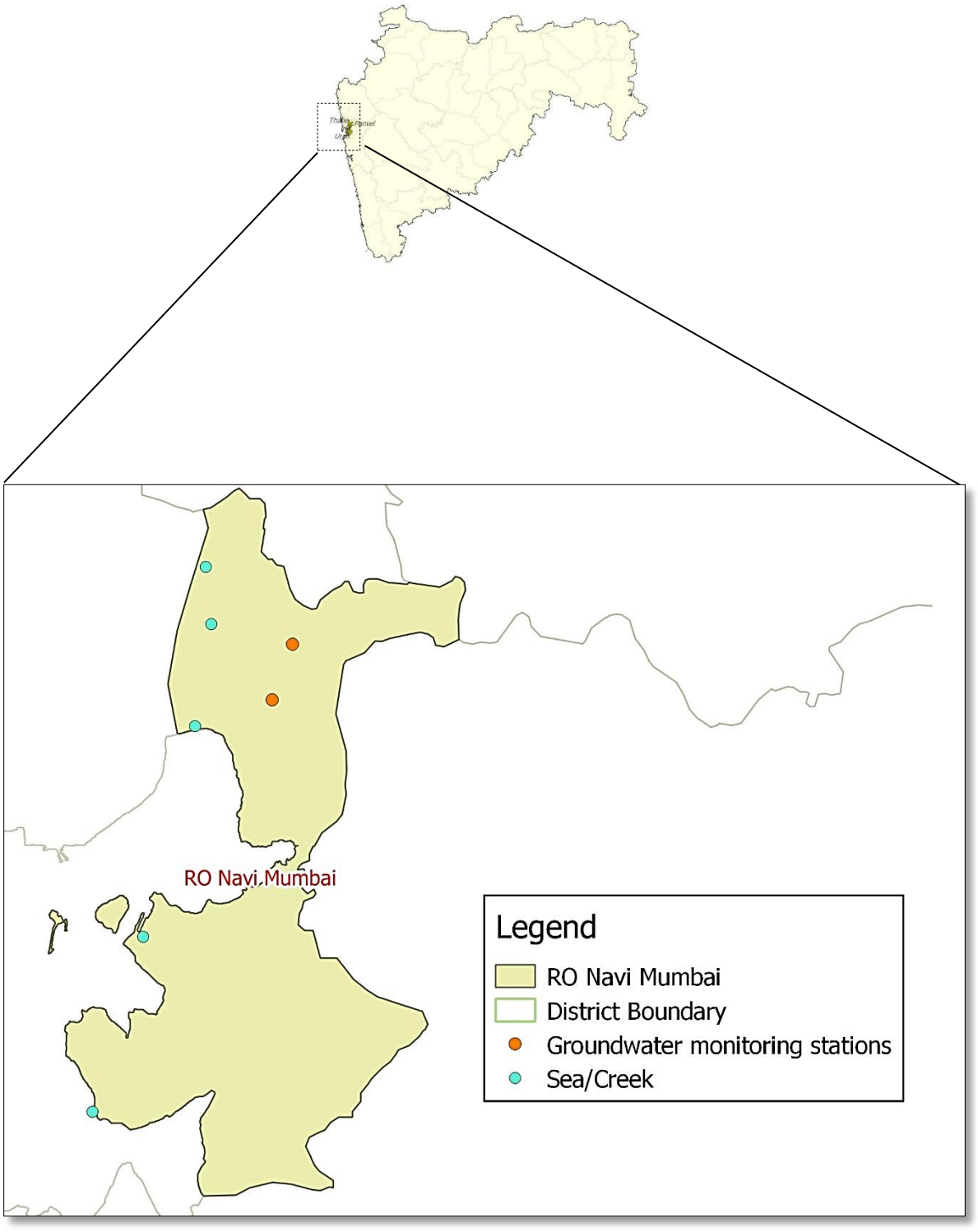


Table No. 41: Water quality Index for surface and ground water monitoring at Navi Mumbai-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2184	Vashi Creek at Airoli Bridge	53.40	59.91	62.25	Thane	Thane	Airoli
	190	TTC Creek At Ghansoli Jetty	No Data	68.61	66.46	Thane	Thane	Ghansoli
	2185	Vashi Creek at Vashi Bridge	62.27	65.89	64.47	Thane	Thane	Vashi
	1317	Thane creek at Elephanta Island	Dry	56.03	58.08	Raigad	Uran	Gharapuri, Elephanta Island
	191	Arabian Sea behind ONGC Uran	No Data	48.46	53.92	Raigad	Uran	Uran
	216	Kasardi River near Ganesh Ghat	No Data	41.44	59.29	Raigad	Panvel	Taloja
GW	214	Borewell at TTCWMA, Mahape	Dry	Dry	Dry	Thane	Thane	TTCWMA,Mahape
	215	Well water at Turbhe Store, Turbhe	126.1	43.5	84.8	Thane	Thane	Turbhe

Surface Water		**Good to Excellent**	**Medium to Good**	**Bad**	**Bad to Very Bad**	**Dry**	**No Data**	**Does not comply with WQI Calculation criteria (NA)**	**Not collected (NC)**	**No accessible road (NAp)**
Ground Water	**Excellent**	**Good**	**Poor**	**Very Poor**	**Not suitable for drinking**	**Dry**	**No Data**			

RO – Pune

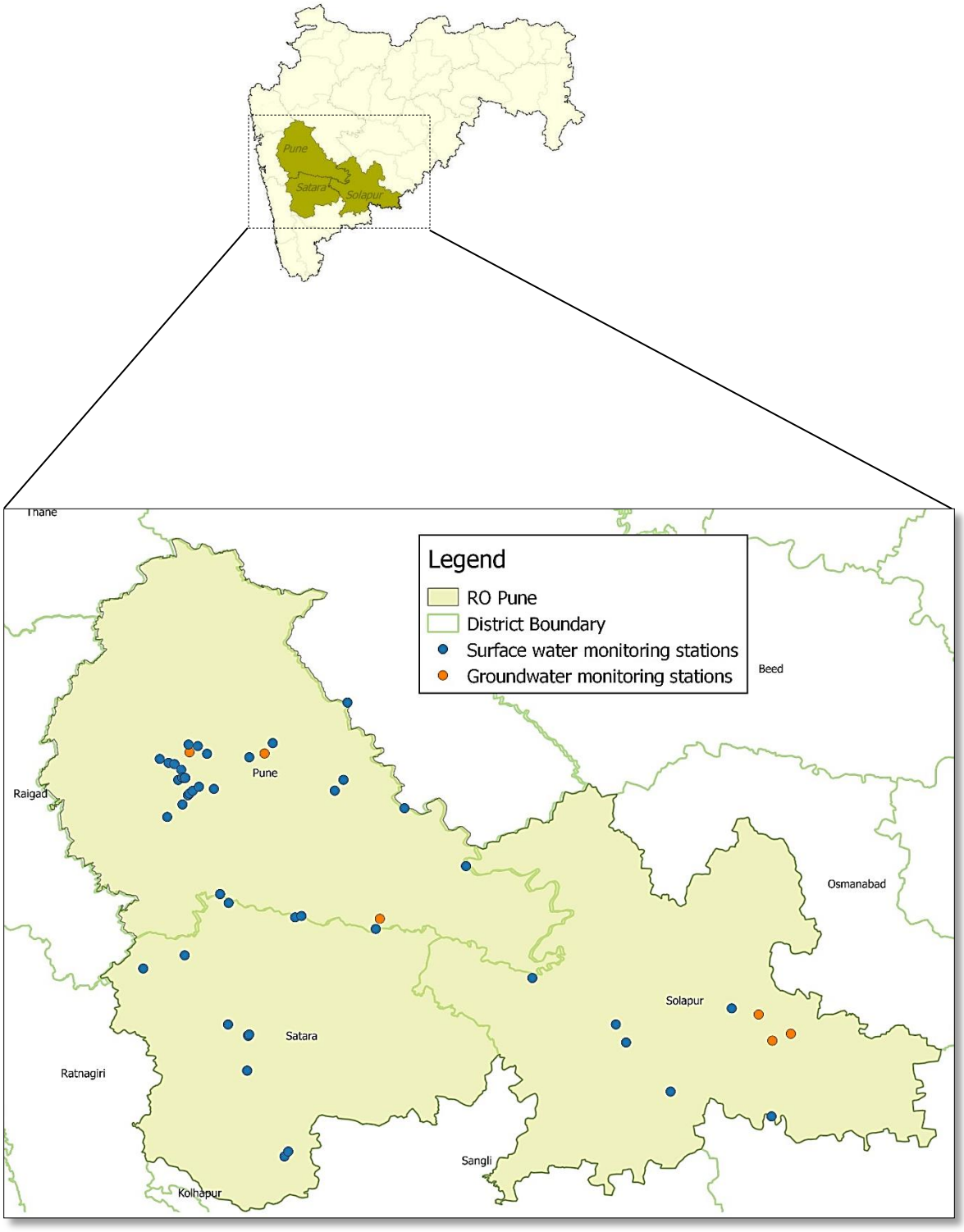

Pune
Satara
Solapur
Thane
Legend
RO Pune
District Boundary
Surface water monitoring stations
Groundwater monitoring stations
Beed
Raigad
Pune
Osmanabad
Solapur
Satara
Ratnagiri
Sangli
Kolhapur

Table No. 42: Water quality Index for surface and ground water monitoring at Pune-RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2692	Pawana River at Ravet Weir, Pune	NA	90.98	85.57	Pune	Haweli	Ravet
	2680	Mutha River at Khadakvasla Dam Pune	NA	86.02	86.13	Pune	Haweli	Kadakvasla
	2693	Pawana River at Chinchwadgaon, Pune	NA	64.40	64.37	Pune	Haweli	Chinchwadgaon
	2694	Pawana River at Pimprigaon, Pune	NA	62.22	61.16	Pune	Haweli	Pimprigaon
	2193	Mula River at Aundh Bridge -Aundgaon	NA	56.69	58.32	Pune	Haweli	Aundhgaon
	2690	Pawana River at Kasarwadi Pune	NA	59.88	61.53	Pune	Haweli	Kasarwadi
	2196	Pawana River at Sangavigaon, Pune	NA	68.91	66.24	Pune	Haweli	Sangavigaon
	1189	Bhima river at Pune(Mutha river) at U/s of Vithalwadi near Sankar Mandir	NA	61.21	61.34	Pune	Haweli	Vithalwadi
	2691	Pawana River at Dapodi Bridge at Pawana-Mulla Sangan Pune	NA	62.87	60.41	Pune	Haweli	Dapodi
	2194	Mula River at Harrison Bridge near Mula -Pawana Sangam	NA	42.53	56.73	Pune	Haweli	Bopodi
	2679	Mutha River at Deccan Bridge, Pune	NA	49.62	56.78	Pune	Pune	Deccan
	2669	Indrayani River at U/s of Moshigaon, Pune	NA	77.17	68.32	Pune	Haweli	Moshigaon
	2678	Mutha River near Veer Savarkar Bhavan	NA	48.43	57.26	Pune	Pune	Pune M.C
	2191	Mutha River at Sangam Bridge Near Ganpathi Ghat	NA	62.00	62.67	Pune	Pune	Shivaji Nagar
	2668	Indrayani River at D/s of Moshi village	Dry	72.81	64.80	Pune	Haveli	Moshi
	1190	Bhima river at D/s of Bundgarden, Pune	NA	48.34	57.76	Pune	Haweli	Yerwada
	2197	Indrayani River at D/s of Alandigaon, Pune	NA	74.35	65.62	Pune	Haweli	Alandigaon
	2192	Mula-Mutha River at Mundhwa Bridge	NA	49.63	56.85	Pune	Haweli	Mundhawa
	1463	Nira river at Sarola bridge	NA	77.64	74.04	Pune	Bhor	Sarola

	2683	Nira River at Shindewadi	Dry	81.14	77.62	Satara	Khandala	Shindewadi, Shirwal
	2655	Bhima River at Koregaon near Koregaon Bridge, Pune	NA	74.18	73.34	Pune	Shirur	Koregaon
	2715	Vel River at Shikrapur, Pune	Dry	Dry	77.20	Pune	Shirur	Shikrapur
	2682	Nira River at U/s of Jubilant Organosis Pune	NA	71.50	69.34	Pune	Baramati	Nira(Datta ghat)
	2195	Nira River at D/s of Jubilant Organosis Pune	NA	46.30	60.09	Pune	Baramati	Nimbut
	2677	Mula-Mutha River at D/s of Theur, Pune	NA	86.31	77.39	Pune	Haweli	Theur
	1191	Bhima river after confluence with Mula-Mutha at Pargaon near Vasant Bandara	NA	64.87	75.77	Pune	Daund	Pargaon
	2665	Ghod River at Shirur, Pune	Dry	81.53	76.00	Pune	Shirur	Shirur
	2681	Nira River at Sangavi	Dry	79.06	74.29	Satara	Phaltan	Sangavi
	1192	Bhima river at Daund near Mahadev temple	NA	61.16	70.44	Pune	Daund	Daund
	2656	Bhima River Backwater of Ujani Dam near raw water pump house	NA	61.16	75.17	Pune	Indapur	Kumbargaon
	1911	Chandrabhaga river at U/s of Pandharpur town	NA	70.15	66.48	Solapur	Pandarpur	Gursale
	1912	Chandrabhaga river at D/s of Pandharpur town near Vishnupant Mandir	NA	67.80	65.16	Solapur	Pandarpur	Gopalpur
	1188	Bhima River at Narshingpur near Sangam Bridge after confluence with Nira	NA	74.85	74.20	Solapur	Malshiros	Narsingpur
	2705	Sina River near Laboti till naka Solapur	NA	77.64	76.22	Solapur	Mohal	Laboti
	28	Bhima River at Takli	NA	77.10	75.59	Solapur	South Solapur	Takali
	2716	Venna River at Mahabaleshwar	Dry	84.20	81.95	Satara	Mahabaleshwar	Mahabaleshwar
	1194	Krishna river at Dhom Dam	Dry	86.35	87.01	Satara	Mahabaleshwar	Wai
	2186	Venna River at Varya, Satara	Dry	86.73	83.75	Satara	Satara	Varye
	2190	Krishna River at Wai	Dry	82.47	76.70	Satara	Wai	Wai

	2711	Urmodi River at Nagthane Satara	Dry	84.33	79.12	Satara	Satara	Nagthane
	2717	Venna River at Mahuli	Dry	84.71	81.20	Satara	Satara	Mahuli
	2188	Krishna River at Krishna-Venna Sangam, Mahuli	Dry	80.11	77.22	Satara	Mahuli	Mahuli
	2187	Krishna River at Kshetra Mahuli Satara	Dry	80.62	75.76	Satara	Mahuli	Kshetra Mahuli
	2189	Koyna River at Karad	Dry	79.95	76.73	Satara	Karad	Karad
	36	Krishna River at Krishna Bridge, Karad	Dry	78.04	75.20	Satara	Karad	Karad
	2789	Nalla at D/s of Alkai Mandir, Solapur	No data	75.17	73.92	Solapur	Malshiras	Aklai
GW	1992	Dug well at MSW Site, owned by Shri.Dattu Kondiba Borate at Borate Vasthi.	Dry	101.0	101.0	Pune	Haveli	Moshi
	2819	Dug Well Owned by Shri Deshmukh	89.9	78.3	84.1	Pune	Baramati	Malegaon
	2820	Dug Well Owned by Shri Shivaji Baban Darekar	90.3	140.8	115.6	Pune	Shirur	Sanaswadi
	2821	Bore Well at Bale Railway Station premises Owned by Shri Digambar Joshi	Dry	Dry	Dry	Solapur	North Solapur	Dahegaon
	2822	Bore Well near Chincholi	Dry	Dry	Dry	Solapur	Mohol	Chincholi
	2823	Bore Well at Shete Vasti near old Tuljapur Road	Dry	Dry	Dry	Solapur	Solapur	Shete vasthi, Tuljapur Naka

Surface Water		**Good to Excellent**	**Medium to Good**	**Bad**	**Bad to Very Bad**	**Dry**	**No Data**	**Does not comply with WQI Calculation criteria (NA)**	**Not collected (NC)**	**No accessible road (NAp)**
Ground Water	**Excellent**	**Good**	**Poor**	**Very Poor**	**Not suitable for drinking**	**Dry**	**No Data**			

RO – Raigad

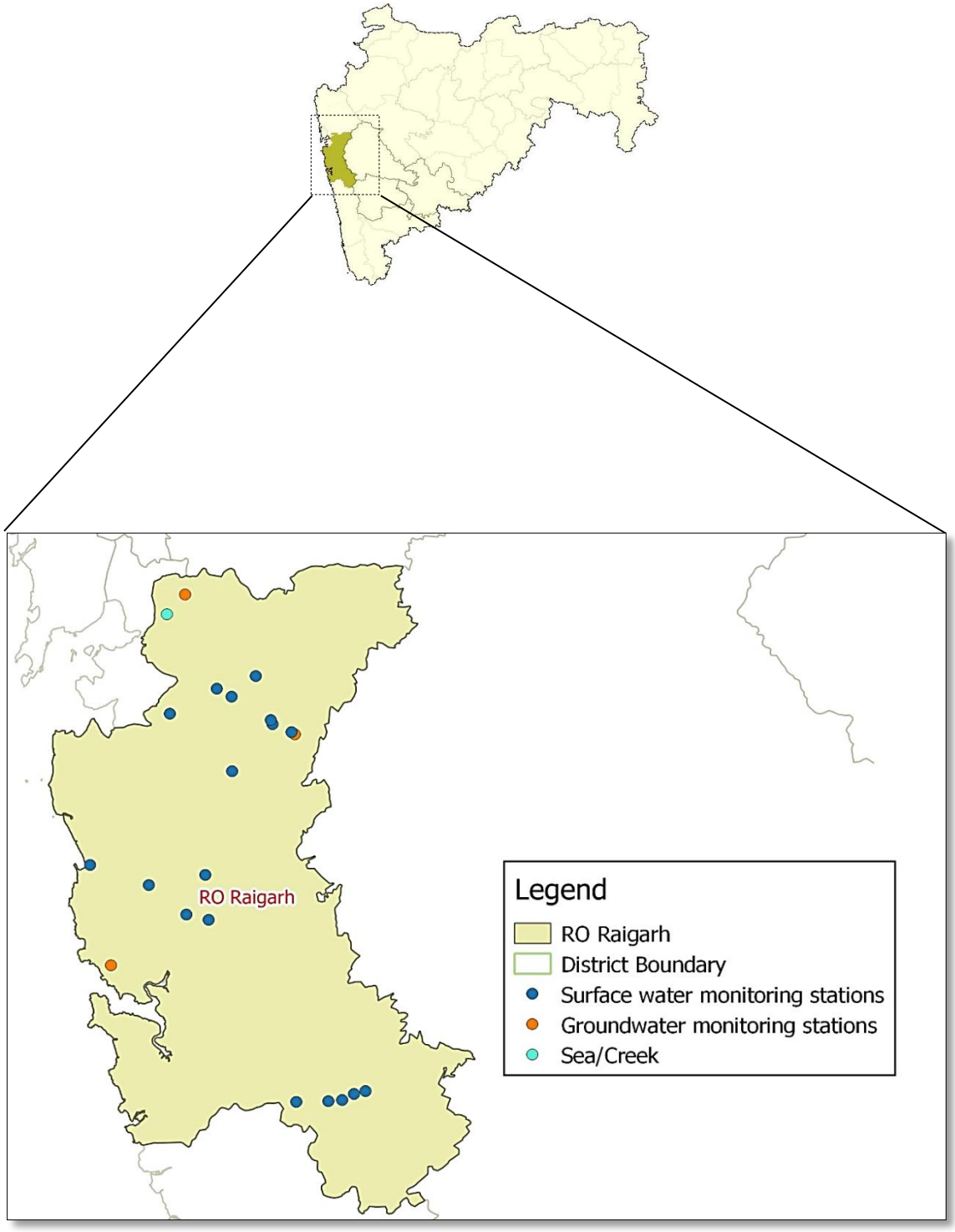

RO Raigarh
Legend
RO Raigarh
District Boundary
Surface water monitoring stations
Groundwater monitoring stations
Sea/Creek

Table No. 43: Water quality Index for surface and ground water monitoring at Raigad RO – 2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2803	Panvel Creek at Kopra Bridge	63.83	74.15	72.76	Raigad	Panvel	Kopra
	2701	Savitri River Jackwell at Upsa kendra	82.35	84.29	86.25	Raigad	Mahad	Nangalwadi
	2702	Savitri River at Shedav Doh	83.83	88.50	85.66	Raigad	Mahad	Shedav Dov
	2703	Savitri River at Dadli Bridge	84.74	85.59	86.03	Raigad	Mahad	Dadli
	2704	Savitri River at Muthavali village	87.64	88.16	86.15	Raigad	Mahad	Muthavali
	2199	Savitri River at Ovale village	86.53	86.46	84.46	Raigad	Mahad	Ovale
	1151	Patalganga River at Shilphata Bridge	80.29	80.12	80.74	Raigad	Khalapur	Khopoli
	2688	Patalganga River at Savroli Bridge	90.54	84.11	82.17	Raigad	Khalapur	Savroli
	2687	Patalganga River at Khalapur pumping house	86.37	85.45	81.54	Raigad	Khalapur	Khalapur
	192	Morbe Dam, Taluka - Khalapur, District - Raigad	No Data	86.17	80.39	Raigad	Khalapur	Khalapur
	193	Balganga River, Village Ransai, Taluka - Khalapur, District - Raigad	No Data	90.45	81.80	Raigad	Khalapur	Ransai
	2686	Patalganga River at Vyal pump house	86.93	83.82	83.43	Raigad	Khalapur	Vyal
	1462	Patalganga near intake of MIDC water works(Turade w/w)	78.45	84.36	83.75	Raigad	Khalapur	Turade
	2672	Kundalika River at Dhatav at Jackwell	91.25	82.27	81.56	Raigad	Roha	Dhatav
	2651	Amba River at D/s of Waken Bridge	89.99	80.91	80.46	Raigad	Roha	Waken Phata
	1152	Kundalika River at Roha Bridge	89.58	82.92	81.52	Raigad	Roha	Roha
	2685	Patalganga River at D/s of Kharpada Bridge	70.47	83.36	79.02	Raigad	Khalapur	Kharpada
	2198	Kundalika River at Are Khurd (Saline Zone)	83.27	80.57	78.51	Raigad	Roha	Are Khurd
	2671	Kundalik River near Salav Bridge (Saline Zone)	65.35	73.10	76.17	Raigad	Roha	Salav
GW	217	Borewell water at village Milgaon, Taluka - Khalapur, District - Raigad.	Dry	39.7	39.7	Raigad	Khalapur	Milgaon
	218	Borewell water near MSW site, Murud - Janjira.	Dry	Dry	Dry	Murud	Murud	Murud Janjira
	1989	Bore well at MWML Site at Taloja	46.1	41.1	43.6	Raigad	Panvel	Karawla-Taloja

Surface Water		Good to Excellent	Medium to Good	Bad	Bad to Very Bad	Dry	No Data	Does not comply with WQI Calculation criteria (NA)	Not collected (NC)	No accessible road (NAp)
Ground Water	Excellent	Good	Poor	Very Poor	Not suitable for drinking	Dry	No Data			

RO – Thane

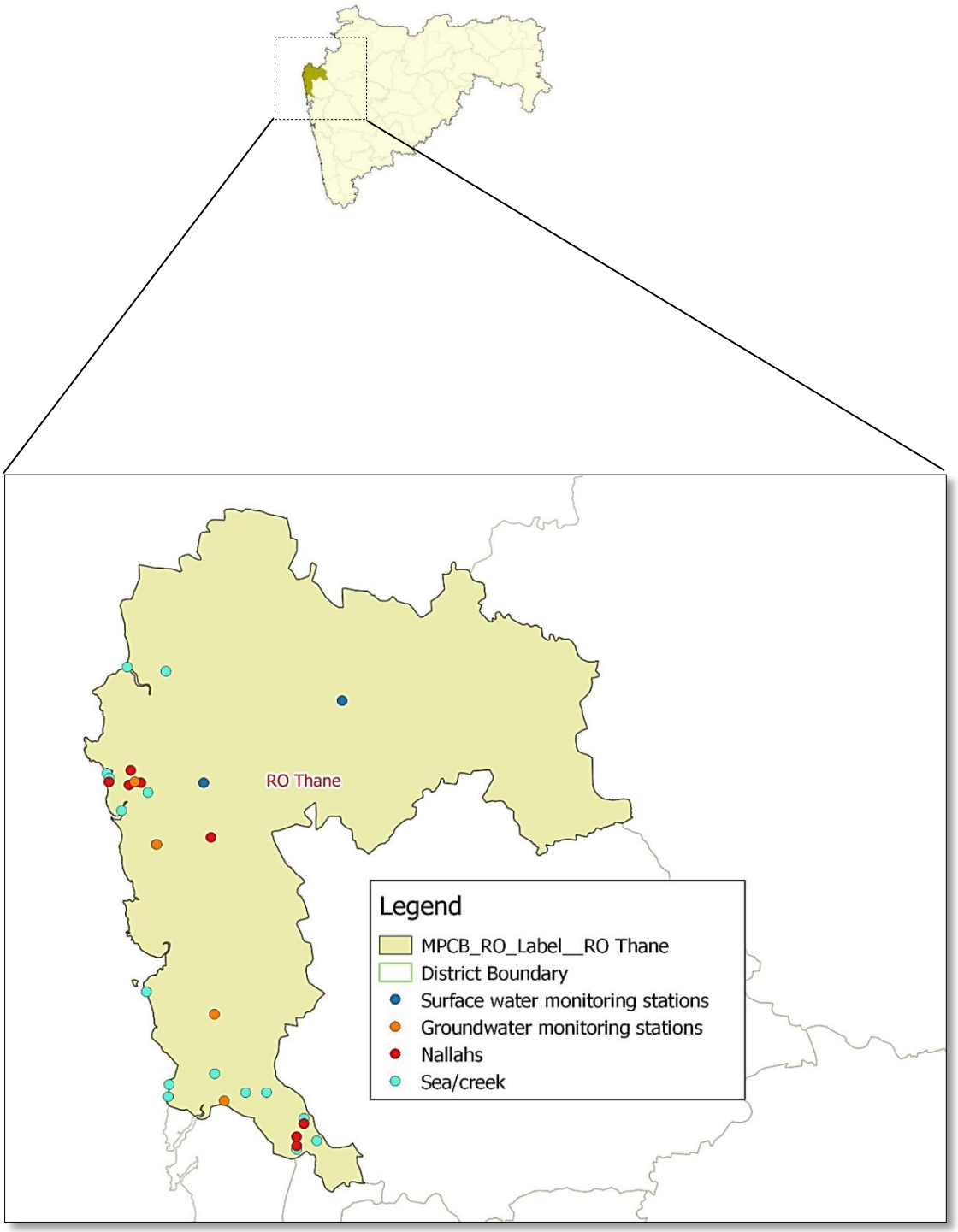

RO Thane
Legend
MPCB_RO_Label__RO Thane
District Boundary
Surface water monitoring stations
Groundwater monitoring stations
Nallahs
Sea/creek

Table No. 44: Water quality index for surface and ground water monitoring at Thane RO -2020-21

Type	Station code	Station Name	Apr	Oct/Dec	Avg WQI	District	Taluka	Village
SW	2802	Dahanu Creek at Dahanu Fort	60.49	50.32	59.81	Thane	Dahanu	Danugaon
	2801	Savta Creek	59.54	49.87	62.97	Thane	Dahanu	Savta
	2799	Dandi Creek	No Data	50.86	58.45	Thane	Palghar	Dandi
	2807	Navapur Sea	No Data	31.62	54.40	Thane	Palghar	Navapur
	2800	Sarwali Creek	No Data	32.60	60.52	Thane	Palghar	Sarwali
	2798	Kharekuran Murbe Creek	No Data	47.16	60.78	Thane	Palghar	Kharekuran
	2805	Arnala Sea	55.50	46.59	56.15	Thane	Vasai	Arnala
	2797	Bhayander Creek at D/s of Railway Bridge at Jasal Park Choupathy	61.23	52.30	65.13	Thane	Bhayander	Navghar
	1316	Bassein creek at Vasai Fort, Thane	61.45	51.64	64.00	Thane	Vasai	Bassein
	2795	Ulhas Creek at Gaimukh at Nagla Bunder on Ghod Bunder Road	58.56	58.31	63.41	Thane	Thane	Nagla
	2796	Ulhas Creek at Versova Bridge	64.10	52.87	64.64	Thane	Vasai	Versova
	2806	Uttan Sea at Bhayander	55.50	46.99	55.47	Thane	Bhayander	Uttan
	2794	Ulhas Creek at Kolshet Reti Bunder	57.88	62.21	66.06	Thane	Thane	Kolshet
	2792	Ulhas Creek at Mumbra Reti Bunder	62.76	67.04	66.43	Thane	Thane	Mumbra
	2793	Thane Creek at Kalwa Road Bridge	58.55	61.25	62.49	Thane	Thane	Kalwa
	2707	Surya River at MIDC pumping station	No Data	82.65	82.90	Thane	Palghar	Garvashet
	2706	Surya River U/s of Surya Dam	No Data	83.82	85.61	Thane	Vikramgad	Dhamni
	2696	Pelhar dam	89.22	81.66	83.43	Palghar	Vasai	Pelhar
	2708	Surya River at Intake of Vasai-Virar water scheme	No Data	84.03	83.39	Thane	Palghar	Masvan

	2784	Sandoz Nalla	21.22	39.27	43.39	Thane	Thane	Sandozbaug
	2782	Rabodi Nalla	27.43	46.60	46.73	Thane	Thane	Rabodi
	2783	Colour Chem Nalla	25.30	41.41	45.93	Thane	Thane	Majiwada
	2786	Tarapur MIDC Nalla, near sump No1	Dry	Dry	25.34	Palghar	Palghar	MIDC Tarapur
	2787	Tarapur MIDC Nalla	Dry	Dry	30.10	Palghar	Palghar	MIDC Tarapur
	2788	Tarapur MIDC Nalla near sump-III	Dry	Dry	29.01	Palghar	Palghar	MIDC Tarapur
	2785	BPT Navapur	No Data	28.36	31.61	Palghar	Palghar	Navapur
GW	1984	Bore well at M/s Tata Iron {} Steel Co. Ltd, S-76	Dry	Dry	Dry	Thane	Palghar	MIDCTarapur, Industrial Estate, Tarapur
	1985	Dug well at 5 Star Industrial Estate	99.6	186.7	143.1	Thane	Mira-Bhayander	Kashimira
	1986	Bore well at Motapada	Dry	Dry	Dry	Thane	Dahanu	Motapada
	1987	Bore well at Vasai	127.2	79.0	103.1	Thane	Vasai	Gokhiware
	1988	Bore well at Gharatwadi, Palghar	Dry	Dry	Dry	Thane	Palghar	Aliyali

Surface Water		**Good to Excellent**	**Medium to Good**	**Bad**	**Bad to Very Bad**	**Dry**	**No Data**	**Does not comply with WQI Calculation criteria (NA)**	**Not collected (NC)**	**No accessible road (NAp)**
Ground Water	**Excellent**	**Good**	**Poor**	**Very Poor**	**Not suitable for drinking**	**Dry**	**No Data**			

Annex II – List of Pending Writ petitions

List of the Applications/Appeals pending before the Hon'ble National Green Tribunal, Principal Bench, New Delhi / Western Zone, Pune regd. river pollution, for the year 2020-2021

Sr. No.	Name of the Parties	Application /Appeal No.	Region	Subject matter	Status
1	News Item Published In 'The Hindu' Authored By Shri. Jacob Koshy Titled "More river stretches are now critically polluted: CPCB"	Original Application No. 673/2018	NA	"More river stretches are now critically polluted: CPCB"	Disposed
2	Paryavaran Suraksha Samiti & Anr. V/s Union of India & Ors.	Original Application No. 593/2017	NA	Establishment and functioning of ETPs/CETPs/STPs to prevent untreated sewage/effluents being discharged in water bodies, including rivers and canals meeting such rivers or otherwise.	Disposed
3	Sarang Yadwadkar & Ors V/s. Pune Municipal corporation & Ors	Original Application No. 49/2019	Pune	Dumping of construction material on the flood plains of the river flowing through Pune and Pimpri Chinchwad Cities	Pending
4	Dr. Kiran Ramdas Kamble & anr V/s. The State of Maharashtra & Ors	Original application no. 544/2019	Nashik	Disposal of sewage into river Godavari at Trimbkeshwar	Pending
5	Devraj Bhatia v/s Pune Municipal Corporation	Original Application No.3/2020	Pune	Concrete road construction in river area causing obstruction to flow of river water.	Pending
6	Sarang Yadwadkar & Ors. v/s Pune Municipal Corporation & Ors.	Original Application No.28/2020	Pune	Pillars construction in Pune Metro Project in the riverbed, which creates increase in flood possibility in Pune region.	Pending

Annex III – List of Polluted Stretches across Maharashtra

The Hon'ble NGT Principal Bench issued order on 20th September 2018 in Original Application No. 673/2018 mentioning report of CPCB "More River Stretches are now critically polluted: CPCB". The report comprises 351 polluted river stretches in India out of those 53 polluted river stretches are in Maharashtra.

- Maharashtra has 9 polluted stretches in priority I, 6 in Priority II, 14 in Priority III, 10 in Priority IV and 14 in Priority V. CPCB has considered BOD as a major driving parameter to decide the river polluted stretches.

Priority wise Polluted River Stretches as per CPCB Report September 2018 based on data of the analysis reports of calendar year 2016 and 2017.				
Priority I (9)	Priority II (6)	Priority III (14)	Priority IV (10)	Priority V (14)
BOD >30mg/l	BOD (20-30mg/l)	BOD (10-20mg/l)	BOD (06-10mg/l)	BOD (03-06mg/l)
Godavari	Bhima	Ghod	Bindusar	Amba
Kalu	Indrayani	Kanhan	Bori	Bhatsa
Kundalika	Mula-Mutha	Kolar	Chandrabhaga	Gomai
Mithi	Pawana	Krishna	Darna	Kan
Morna	Wainganga	Mor	Girna	Manjra
Mula	Wardha	Patalganga	Hiwara	Panchganga
Mutha		Pedhi	Koyna	Panzara
Nira		Penganga	Pelhar	Rangavali
Vel		Purna	Sina	Savitri
		Tapi	Titur	Surya
		Urmodi		Tansa
		Venna		Ulhas
		Waghur		Vaitarna
		Wena		Vashisti

- Environment Dept., Maharashtra Government constituted River Rejuvenation Committee (RRC) vide G.R. vide No. NGT 2018/PC-2/TC-3 dtd.13.12.2018.
- RRC functions under supervision of Principal Secretary, Environment Deptt., GoM. Committee shall prepare Action Plan includes source of pollution and its mitigation. Total seven meetings of the RRC have been held till date.
- Action Plans all 53 rivers prepared with the goal of achieving water quality of polluted rivers to bathing standards (i.e BOD < 3 mg/L and FC < 500 MPN/100 ml) and verified by RRC and submitted to CPCB. CPCB Task team approved the action plans and forwarded to H'ble NGT
- Action Plans prepared comprising of all the points enlisted in the Hon'ble NGT Order. Action Plan comprises of-
  - Industrial & domestic pollution Source control,
  - Channelization, treatment, utilization of disposal of treated sewage,
  - River catchment / basin management, controlled ground water extraction and periodic quality assessment, restoration of water quality
  - Regulation of Flood plain zone activities,

- Maintaining of Ecological flow
- Budget Estimates & Pooling of Resources for implementation of Action Plan with Timelines

- The Chief Secretary of Maharashtra appeared before H'ble NGT on 08.04.2019. On same day The Hon'ble NGT passed the impugned interim order in which the scale of performance guarantee prescribed in Rs.15 crores and the timeline for execution of action plans extended up to 2 years from 01.04.2019.
- Total ten meetings were held under the chairmanship of Hon'ble Chief Secretary to take review of the compliance status in the matter.
- District Special Environment Surveillance Task Force is constituted in the polluted river stretches at District level.
- RRC has already communicated to Water Resource Department and Urban Development department to take work on action points in their purview.
- Gap Assessment in Sewage Treatment in Urban Local Bodies Along Polluted River Stretches
  - Total sewage generation in PRS – 2728.65 MLD
  - No. of STPs-64
  - Sewage treatment existing in PRS – 2024.16 MLD
  - Gap in Treatment Capacity-745.75
  - Capacity Utilization – 1676.07 MLD
  - STPs proposed/ ongoing – 1279.70 MLD
- Central Monitoring Committee
  - H'ble NGT vide order dtd. 06.12.2019, directed to constitute a Central Monitoring Committee for preparation and enforcement of a national plan to make river stretches pollution free committee was formed under chairman ship of Secretary, Ministry of Jal Shakti.
  - CMC takes review of compliance of H'ble NGT order with all stake holder states in each month. Till date eight meetings of CMC held till date.
  - Monthly progress reports have been submitted for Maharashtra State to Ministry of Jal Shakti and CPCB for the Month of January-20 to August-21.

- Present Status of Polluted River Stretches: After reviewing the water quality data of the designated locations in the rivers of Maharashtra for the period 2019, 2020 and 2021, it is found that the water quality of the rivers in Maharashtra has improved.

Priority	No. of stretches declared in 2018	No. of stretches in 2019	No. of stretches in 2020	No. of stretches in 2021
Priority I	9	1	1	1
Priority II	6	6	3	1
Priority III	14	10	12	11
Priority IV	10	14	13	14
Priority V	14	21	21	24
Less Polluted	-	1	3	2
Total	53	53	53	53

Source: Maharashtra Pollution Control Board.

Polluted River stretches in 2021

Priority wise Polluted River Stretches as per data of the MPCB Analysis reports for the Calendar year April 2020- March 2021				
Priority I (1)	Priority II (1)	Priority III (11)	Priority IV (14)	Priority V (24)
BOD >30mg/l	BOD (20-30mg/l)	BOD (10-20mg/l)	BOD (06-10mg/l)	BOD (03-06mg/l)
Mithi	Pawana	Bhima	Bindusara	Amba
		Indrayani	Chandrabhaga	Bhatsa
		Kalu	Darna	Bori
		Kundalika	Ghod	Girna
		Mula-Mutha	Godavari	Gomai
		Mula	Kanhan	Hiwara
		Mutha	Kolar	Kan
		Patalganga	Koyna	Mor
		Sina	Krishna	Panzara
		Wainganga	Manjra	Pedhi
		Wardha	Morna	Penganga
			Nira	Rangavali
			Purna	Savitri
			Venna	Surya
				Tansa
				Tapi
				Titur
				Ulhas
				Urmodi
				Vaitarna
				Vel
				Waghur
Less Polluted (2) : Panchganga, Vashishthi				

Source: Maharashtra Pollution Control Board.

- Disposal of the applications: H'ble NGT vide order dtd. 22.01.2021 disposed off the applications with following terms
  - MoJS may devise an appropriate mechanism for more effective monitoring of steps for control of pollution and rejuvenation of all polluted river stretches in the country. The said mechanism may be called "National River Rejuvenation Mechanism" (NRRM) or given any other suitable name. NRRM may also consider the observations with regard to setting up of National/State/District Environment Data Grid at appropriate levels as an effective monitoring strategy.
  - Chief Secretaries of all States/UTs and PCBs/PCCs must work in mission mode for strict compliance of timelines for commencing new projects, completing ongoing projects and adopting interim phyto/bio-remediation measures, failing which compensation in terms of earlier orders be deposited with the MoJS, to be utilised in the respective States as per action plan to be approved by the NRRM.
  - Other steps in terms of action plans for abatement of pollution and rejuvenation of rivers, including preventing discharge or dumping of liquid and solid waste, maintaining eflow, protecting floodplains, using treated sewage for secondary purposes, developing biodiversity parks, protecting water bodies, regulating ground water extraction, water conservation, maintaining water quality etc. be taken effectively. The process of rejuvenation of rivers need not be confined to only 351 stretches but may be applicable to all small, medium and big polluted rivers, including those dried up.
  - The Chief Secretaries of all States/UTs may personally monitor progress at least once every month and the NRRM every quarter.accountability for failure to comply with the direction for payment of compensation will be of the concerned Chief Secretaries under Sections 25, 26, 28 and 30 of the NGT Act, 2010.

Actions taken by Maharashtra Pollution Control Board

i. The Board issued directions to 15 Municipal Corporations, 29 Municipal Councils and one Cantonment Board to provide adequate sewage treatment plant and to achieve the consented standards prescribed by MoEFCC, GoI. The Board has also directed the above-mentioned local bodies to implement short term and long term measures for treatment of sewage and restrict the discharge of untreated/partially treated sewage to the rivers.

ii. MPC Board has issued directions to 17 Municipal Corporations to penalize to the tune of 1paisa/litre of sewage generation under 'Polluter pays principle'. MPC Board has also issued directions to 05 non-complying CETPs to penalize to the tune of 2 paisa/litre for remediation & upgradation to comply with the consented standards.

iii. Thereafter, the Hon'ble NGT issued an order on 28.08.2019 in the matter of OA No. 593/2017 Paryavaran Suraksha Samiti v Union of India and directed to levy Environmental Compensation to the defaulters. Accordingly, the Board has issued directions to 01 Mega city, 09 Million plus cities, 254 Class I cities/towns and 122

Nagar Panchayats as to why Environmental Compensation shall not be levied after the stipulated timeline.

iv. MPC Board has issued Direction to the local bodies to make 25% budgetary provision for scientific treatment and disposal of Sewage and Solid Waste. Accordingly, Municipal Corporations have passed resolution in their General Body meeting and reserved the funds.

v. The Consented standards to the STPs are stipulated as per the Standards as per H'ble NGT order dtd. 30.04.2019 in the matter of O.A. No. 1069/2018, Nitin Shankar Deshpande Versus Union of India & Ors.

vi. All Urban Local Bodies in the state have been mandated to reserve 25% of budgetary provision to utilise for preparation of DPR, establishing treatment facility, O & M of treatment facility etc. The review of the same is taken from time to time by the Board.

vii. MPCB has submitted Action plan for Utilization of Treated Sewage to CPCB, in which it is mandated to utilize treated sewage for different class of users like Thermal Power Plants, Industrial Units, Construction activities, non-potable municipal uses, Agriculture-Irrigation, etc. depending on its availability.

viii. The Infrastructure Projects are mandated by MPCB to recycle 60% of treated sewage for secondary use by providing duel pipeline.

ix. The Local Bodies will be encouraged to reuse treated sewage for various purposes including to Thermal Power Plants wherever possible. e.g. Koradi TPS is receiving 100 MLD of treated sewage from Nagpur city.

x. In the matter of OA No. 673 of 2018 and OA no 593/2017 The Hon'ble NGT has fixed the time frame for compliance. The Major part of compliance is towards Local Bodies. To create awareness among the local bodies/authorities MPC Board had arranged Consultation/ Awareness Programme for CEO of Local Bodies, District Collectors at regional level under the Chairmanship of Member Secretary, MPCB at four locations namely, Nagpur, Mumbai, Aurangabad and Pune in the Month of December-2019 and January-2020.

Annex IV – Status of Sewage Treatment of Maharashtra

Municipal Corporations

Sr. No.	Name of Municipal Corporation	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
1	Ahmednagar Municipal Corporation	B	Ahmednagar	60	0	0.0	0.0
2	Akola Municipal Corporation	D	Akola	30	0	0.0	0.0
3	Amravati Municipal Corporation	D	Amravati	93	74.5	74.5	80.1
4	Aurangabad Municipal Corporation	C	Aurangabad	102	211	84.0	82.4
5	Bhiwandi Municipal Corporation	A	Thane	90	30	13.0	14.4
6	Chandrapur Municipal Corporation	D	Chandrapur	36	70.5	36.0	100.0
7	Dhule Municipal Corporation	D	Dhule	36	0.0	0.0	0.0
8	Jalgaon Municipal Corporation	D	Jalgaon	48	0	0.0	0.0
9	Kalyan Dombivli Municipal Corporation	C	Thane	216	123	53.5	24.8
10	Kolhapur Municipal Corporation	D	Kolhapur	96	93	91.0	94.8
11	Latur Municipal Corporation	D	Latur	32	0	0.0	0.0
12	Malegaon Municipal Corporation	D	Malegaon	50	0.0	0.0	0.0
13	Mira Bhaindar Municipal corporation	D	Thane	108	85.5	85.5	79.2
14	Mumbai Municipal Corporation	A	Mumbai	2190	2717	1285.0	58.7

Sr. No.	Name of Municipal Corporation	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
15	Nagpur Municipal Corporation	A	Nagpur	505	370.3	345.3	68.4
16	Nanded Municipal Corporation	D	Nanded	70	132	57.0	81.4
17	Nashik Municipal Corporation	B	Nashik	360.5	361.5	358.5	99.4
18	Navi Mumbai Municipal Corporation	C	Thane	210	454	200.0	95.2
19	Panvel Municipal Corporation	D	Raigad	266.7	306	266.7	100.0
20	Parbhani Municipal Corporation	D	Parbhani	38	0	0.0	0.0
21	Pimpri Chinchwad Municipal Corporation	B	Pune	312	353	280.9	90.0
22	Pune Municipal Corporation	A	Pune	750	567	410.0	54.7
23	Sangli Municipal Corporation	D	Sangli	68	59.7	49.2	72.4
24	Solapur Municipal Corporation	D	Solapur	90	102.5	62.7	69.7
25	Thane Municipal Corporation	B	Thane	325	319.14	109.5	33.7
26	Ulhasnagar Municipal Corporation	D	Thane	67	20.7	20.7	30.9
27	Vasai Virar Municipal Corporation	C	Palghar	105	30	19.0	18.1

Municipal Council

Status of Sewage Treatment in Class A Municipal Coucil in Maharashtra							
Sr. No.	Name of Municipal Council	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
1	Achalpur Municipal Council	A	Amravati	8.5	0	0	0.0
2	Beed Municipal Council	A	Beed	22	0	0	0.0
3	Gondia Municipal Council	A	Gondia	11	0	0	0.0
4	Hingoli Municipal Council	A	Hingoli	7.2	0	0	0.0
5	Bhusawal Municipal Council	A	Jalgaon	11.4	0	0	0.0
6	Jalna Municipal Council	A	Jalna	15	0	0	0.0
7	Ichalkaranji Municipal Council	A	Kolhapur	38	20	16	42.1
8	Udgir Municipal Council	A	Latur	5.4	0	0	0.0
9	Nandurbar Municipal Council	A	Nandurbar	12	17.5	9.3	77.5
10	Osmanabad Municipal Council	A	Osmanabad	5.3	0	0	0.0
11	Baramati Municipal Council	A	Pune	11.5	11.5	11.5	100.0
12	Satara Municipal Council	A	Satara	12.8	0	0	0.0
13	Barshi Municipal Council	A	Solapur	12.82	0	0	0.0
14	Ambarnath Municipal Council	A	Thane	28	54	28	100.0
15	Kulgaon-Badalapur Municipal Council	A	Thane	26	22	20	76.9
16	Hingan Ghat Municipal Council	A	Wardha	10	0	0	0.0

Status of Sewage Treatment in Class A Municipal Coucil in Maharashtra							
17	Wardha Municipal Council	A	Wardha	11	0	0	0.0
18	Yavatmal Municipal Council	A	Yavatmal	8.69	0	0	0.0

Status of Sewage Treatment in Class B Municipal Coucil in Maharashtra							
Sr. No.	**Name of Municipal Council**	**Class**	**District**	**Sewage Generation (MLD)**	**Sewage Treatment Plant (STP) Installed Capacity**	**Sewage Treatment (MLD)**	**% of Sewage Treatment**
1	Kopargaon Municipal Council	B	Ahmednagar	7	0	0	0.0
2	Sangamner Municipal Council	B	Ahmednagar	5.5	0	0	0.0
3	Shrirampur Municipal Council	B	Ahmednagar	10	0	0	0.0
4	Murtizapur Municipal Council	B	Akola	2.4	0	0	0.0
5	Balapur Municipal Council	B	Akola	2	0	0	0.0
6	Akot Municipal Council	B	Akola	7	0	0	0.0
7	Warud Municipal Council	B	Amravati	2.4	0	0	0.0
8	Anjangaon Surji Municipal Council	B	Amravati	2.85	0	0	0.0

Status of Sewage Treatment in Class B Municipal Coucil in Maharashtra							
9	Paithan Municipal Council	B	Aurangabad	2.4	0	0	0.0
10	Kannada Municipal Council	B	Aurangabad	2.4	0	0	0.0
11	Vaijapur Municipal Council	B	Aurangabad	2.6	0	0	0.0
12	Sillod Municipal Council	B	Aurangabad	3	0	0	0.0
13	Majalgaon Municipal Council	B	Beed	4	0	0	0.0
14	Ambejogai Municipal Council	B	Beed	9	0	0	0.0
15	Parli Vaijinath Municipal Council	B	Beed	3.75	0	0	0.0
16	Tumsar Municipal Council	B	Bhandara	3.5	0	0	0.0
17	Bhandara Municipal Council	B	Bhandara	10	0	0	0.0
18	Malkapur - Buldhana Municipal Council	B	Buldhana	2.75	0	0	0.0
19	Shegaon Municipal Council	B	Buldhana	3.5	7	3.5	100.0
20	Chikhli Municipal Council	B	Buldhana	2.4	0	0	0.0
21	Mehkar Municipal Council	B	Buldhana	2	0	0	0.0

Status of Sewage Treatment in Class B Municipal Coucil in Maharashtra							
22	Khamgaon Municipal Council	B	Buldhana	4	0	0	0.0
23	Nandura Municipal Council	B	Buldhana	1.6	0	0	0.0
24	Buldhana Municipal Council	B	Buldhana	5	0	0	0.0
25	Bhadravati Municipal Council	B	Chandrapur	2.1	0	0	0.0
26	Ballarpur Municipal Council	B	Chandrapur	12.83	0	0	0.0
27	Warora Municipal Council	B	Chandrapur	4.5	0	0	0.0
28	Dondaicha-Varwade Municipal Council	B	Dhule	6	0	0	0.0
29	Shirpur-Varwade Municipal Council	B	Dhule	5	12.5	5	100.0
30	Gadchiroli Municipal Council	B	Gadchiroli	4.8	0	0	0.0
31	Pachora Municipal Council	B	Jalgaon	32	0	0	0.0
32	Chalisgaon Municipal Council	B	Jalgaon	7.21	0	0	0.0
33	Chopda Municipal Council	B	Jalgaon	3.2	0	0	0.0
34	Amalner Municipal Council	B	Jalgaon	3.15	0	0	0.0

Status of Sewage Treatment in Class B Municipal Coucil in Maharashtra							
35	Jamner Municipal Council	B	Jalgaon	11	0	0	0.0
36	Jaysingpur Municipal Council	B	Kolhapur	4.64	0	0	0.0
37	Ahmedpur Municipal Council	B	Latur	1.8	0	0	0.0
38	Kamptee Municipal Council	B	Nagpur	7	0	0	0.0
39	Katol Municipal Council	B	Nagpur	6	0	0	0.0
40	Umred Municipal Council	B	Nagpur	4.5	0	0	0.0
41	Wadi Municipal Council	B	Nagpur	6.5	0	0	0.0
42	Deglur Municipal Council	B	Nanded	4.8	0	0	0.0
43	Shahada Municipal Council	B	Nandurbar	3.43	0.0	0.0	0.0
44	Sinnar Municipal Council	B	Nashik	4.3	0	0	0.0
45	Manmad Municipal Council	B	Nashik	6	0	0	0.0
46	Yeola Municipal Council	B	Nashik	2.8	0	0	0.0
47	Dahanu Municipal Council	B	Palghar	4	0	0	0.0
48	Palghar Municipal Council	B	Palghar	11	0	0	0.0

Status of Sewage Treatment in Class B Municipal Coucil in Maharashtra							
49	Jintur Municipal Council	B	Parbhani	2.1	0	0	0.0
50	Gangakhed Municipal Council	B	Parbhani	3	0	0	0.0
51	Sailu Municipal Council	B	Parbhani	2	0	0	0.0
52	Talegaon Dhabade Municipal Council	B	Pune	8.5	0	0	0.0
53	Daund Municipal Council	B	Pune	4.2	4.2	0	0.0
54	Lonavala Municipal Council	B	Pune	16.5	3.6	0	0.0
55	Khopoli Municipal Council	B	Raigad	11	0	0	0.0
56	Ratnagiri Municipal Council	B	Ratnagiri	8.8	0	0	0.0
57	Chiplun Municipal Council	B	Ratnagiri	7	0	0	0.0
58	Islampur Municipal Council	B	Sangli	9	0	0	0.0
59	Vita Municipal Council	B	Sangli	4.87	0	0	0.0
60	Karad Municipal Council	B	Satara	9.5	12.5	9.5	100.0
61	Phaltan Municipal Council	B	Satara	5	0	0	0.0

Status of Sewage Treatment in Class B Municipal Coucil in Maharashtra							
62	Pandharpur Municipal Council	B	Solapur	18.5	18	12.5	67.6
63	Akkalkot Municipal Council	B	Solapur	4	0	0	0.0
64	Arvi Municipal Council	B	Wardha	2.4	0	0	0.0
65	Karanja Municipal Council	B	Washim	4	0	0	0.0
66	Washim Municipal Council	B	Washim	6.5	8	4	61.5
67	Wani Municipal Council	B	Yavatmal	4.11	0	0	0.0
68	Umarkhed Municipal Council	B	Yavatmal	2.04	0	0	0.0
69	Digras Municipal Council	B	Yavatmal	2.02	0	0	0.0
70	Pusad Municipal Council	B	Yavatmal	4.02	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
Sr. No.	Name of Municipal Council	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
1	Pathardi Municipal Council	C	Ahmednagar	2.5	0	0	0.0
2	Rahata Pimplas Municipal Council	C	Ahmednagar	2.5	0	0	0.0
3	Jamkhed Municipal Council	C	Ahmednagar	3	0	0	0.0
4	Devlali Pravara Municipal Council	C	Ahmednagar	2	0	0	0.0
5	Srigonda Municipal Council	C	Ahmednagar	2.6	0	0	0.0
6	Rahuri Municipal Council	C	Ahmednagar	2.5	0	0	0.0
7	Shevgaon Municipal Council	C	Ahmednagar	2.7	0	0	0.0
8	Patur Municipal Council	C	Akola	1.1	0	0	0.0
9	Telhara Municipal Council	C	Akola	1	0	0	0.0
10	ChandurRailway Municipal Council	C	Amravati	1.8	0	0	0.0
11	Daryapur Municipal Council	C	Amravati	2	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
12	Shendurjana Ghat Municipal Council	C	Amravati	1.6	0	0	0.0
13	Chikhaldara Hill Station Municipal Council	C	Amravati	0.4	0	0	0.0
14	Dhamangaon Municipal Council	C	Amravati	1.8	0	0	0.0
15	ChandurBazaar Municipal Council	C	Amravati	1.2	0	0	0.0
16	Morshi Municipal Council	C	Amravati	3.2	0	0	0.0
17	Gangapur Municipal Council	C	Aurangabad	1.5	0	0	0.0
18	Khuldabad Municipal Council	C	Aurangabad	0.9	0	0	0.0
19	Gevrai Municipal Council	C	Beed	3.6	0	0	0.0
20	Dharur Municipal Council	C	Beed	0.36	0	0	0.0
21	Pavani Municipal Council	C	Bhandara	1.6	0	0	0.0
22	Sakoli Municipal Council	C	Bhandara	1.1	0	0	0.0
23	Lonar Municipal Council	C	Buldhana	1	0	0	0.0
24	Jalgaon Jamod Municipal Council	C	Buldhana	0.63	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
25	Deulgaon Raja Municipal Council	C	Buldhana	1.1	0	0	0.0
26	Sindkhed Raja Municipal Council	C	Buldhana	0.6	0	0	0.0
27	Gadchandur Municipal Council	C	Chandrapur	1.44	0	0	0.0
28	Mool Municipal Council	C	Chandrapur	1.4	0	0	0.0
29	Chimur Municipal Council	C	Chandrapur	2.05	0	0	0.0
30	Rajura Municipal Council	C	Chandrapur	3.2	0	0	0.0
31	Bramhapuri Municipal Council	C	Chandrapur	0.88	0	0	0.0
32	Nagbhid Municipal Council	C	Chandrapur	2.01	0	0	0.0
33	Desaiganj (Wadsa) Municipal Council	C	Gadchiroli	1.84	0	0	0.0
34	Tirora Municipal Council	C	Gondia	2	0	0	0.0
35	Amgaon Municipal Council	C	Gondia	0.65	0	0	0.0
36	Basmat Municipal Council	C	Hingoli	2.9	0	0	0.0
37	Kalamnuri Municipal Council	C	Hingoli	1.8	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
38	Raver Municipal Council	C	Jalgaon	11	0	0	0.0
39	Yawal Municipal Council	C	Jalgaon	0.3	0	0	0.0
40	Varangaon Municipal Council	C	Jalgaon	3.8	0	0	0.0
41	Dharangaon Municipal Council	C	Jalgaon	8.4	0	0	0.0
42	Faizpur Municipal Council	C	Jalgaon	1	0	0	0.0
43	Erandol Municipal Council	C	Jalgaon	9.1	0	0	0.0
44	Bhadgaon Municipal Council	C	Jalgaon	9.5	0	0	0.0
45	Parola Municipal Council	C	Jalgaon	3.49	0	0	0.0
46	Savda Municipal Council	C	Jalgaon	0.57	0	0	0.0
47	Partur Municipal Council	C	Jalna	1.5	0	0	0.0
48	Bhokardan Municipal Council	C	Jalna	1.2	0	0	0.0
49	Ambad Municipal Council	C	Jalna	2.4	0	0	0.0
50	Kagal Municipal Council	C	Kolhapur	2.4	0	0	0.0
51	Gadhinglaj Municipal Council	C	Kolhapur	2.4	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
52	Kurundwad Municipal Council	C	Kolhapur	0.8	0	0	0.0
53	Murgud Municipal Council	C	Kolhapur	0.64	0	0	0.0
54	Malkapur Municipal Council	C	Kolhapur	0.2	0	0	0.0
55	Panhala Municipal Council	C	Kolhapur	0.45	0	0	0.0
56	Vadgaon Municipal Council	C	Kolhapur	0.9	0	0	0.0
57	Hupari Municipal Council	C	Kolhapur	2.25	0		0.0
58	Shirol Municipal Council	C	Kolhapur	2.5	0		0.0
59	Nilanga Municipal Council	C	Latur	1.7	0	0	0.0
60	Ausa Municipal Council	C	Latur	3.6	0	0	0.0
61	Mowad Municipal Council	C	Nagpur	7.4	0	0	0.0
62	Narkhed Municipal Council	C	Nagpur	0.9	0	0	0.0
63	Ramtek Municipal Council	C	Nagpur	1.44	0	0	0.0
64	Kanhann Pimpari Municipal Council	C	Nagpur	1.56	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
65	Kalmeshwar Municipal Council	C	Nagpur	4.5	0	0	0.0
66	Savner Municipal Council	C	Nagpur	2	0	0	0.0
67	Khapa Municipal Council	C	Nagpur	1.05	0	0	0.0
68	Mohapa Municipal Council	C	Nagpur	0.68	0	0	0.0
69	Butibori Municipal council	C	Nagpur	1	0	0	0.0
70	Wanadongari Municipal Council	C	Nagpur	4	0	0	0.0
71	Mudkhed Municipal Council	C	Nanded	0.92	0	0	0.0
72	Kinwat Municipal Council	C	Nanded	2.4	0	0	0.0
73	Kundalwadi Municipal Council	C	Nanded	0.8	0	0	0.0
74	Kandhar Municipal Council	C	Nanded	2.2	0	0	0.0
75	Biloli Municipal Council	C	Nanded	0.8	0	0	0.0
76	Loha Municipal Council	C	Nanded	1.2	0	0	0.0
77	Mukhed Municipal Council	C	Nanded	1.54	0	0	0.0
78	Bhokar Municipal Council	C	Nanded	2	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
79	Hadgaon Municipal Council	C	Nanded	0.96	0	0	0.0
80	Dharmabad Municipal Council	C	Nanded	2	0	0	0.0
81	Umri Municipal Council	C	Nanded	0.96	0	0	0.0
82	Taloda Municipal Council	C	Nandurbar	2	0	0	0.0
83	Navapur Municipal Council	C	Nandurbar	12	0	0	0.0
84	Trimbak Municipal Council	C	Nashik	4	1	1	25.0
85	Bhagur Municipal Council	C	Nashik	0.87	0	0	0.0
86	Nandgaon Municipal Council	C	Nashik	1.2	0	0	0.0
87	Chandwad Municipal Council	C	Nashik	0.8	0	0	0.0
88	Satana Municipal Council	C	Nashik	1.47	0	0	0.0
89	Igatpuri Municipal Council	C	Nashik	4.2	0	0	0.0
90	Kalamb Municipal Council	C	Osmanabad	1.25	0	0	0.0
91	Paranda Municipal Council	C	Osmanabad	1	0	0	0.0
92	Bhoom Municipal Council	C	Osmanabad	1.3	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
93	Tuljapur Municipal Council	C	Osmanabad	1.9	0	0	0.0
94	Naldurg Municipal Council	C	Osmanabad	1.2	0	0	0.0
95	Omerga Municipal Council	C	Osmanabad	2.4	0	0	0.0
96	Murum Municipal Council	C	Osmanabad	1.25	0	0	0.0
97	Jawhar Municipal Council	C	Palghar	1.5	0	0	0.0
98	Purna Municipal Council	C	Parbhani	1.75	0	0	0.0
99	Sonpeth Municipal Council	C	Parbhani	3.5	0	0	0.0
100	Pathri Municipal Council	C	Parbhani	1.5	0	0	0.0
101	Manwath Municipal Council	C	Parbhani	1.8	0	0	0.0
102	Junnar Municipal Council	C	Pune	2.2	0	0	0.0
103	Indapur Municipal Council	C	Pune	2.4	0	0	0.0
104	Shirur Municipal Council	C	Pune	5	6	2.5	50.0
105	Jejuri Municipal Council	C	Pune	2.4	0	0	0.0
106	Alandi Municipal Council	C	Pune	2.5	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
107	Saswad Municipal Council	C	Pune	3.4	2	2	58.8
108	Rajgurunagar Municipal Council	C	Pune	4	0	0	0.0
109	Bhor Municipal Council	C	Pune	0.9	0	0	0.0
110	Chakan Municipal Council	C	Pune	4	0	0	0.0
111	Murud-Janjira Municipal Council	C	Raigad	2	0	0	0.0
112	Matheran Municipal Council	C	Raigad	0.47	0	0	0.0
113	Shrivardhan Municipal Council	C	Raigad	1.8	0	0	0.0
114	Karjat Municipal Council	C	Raigad	5.07	0	0	0.0
115	Roha Municipal Council	C	Raigad	3.64	0	0	0.0
116	Mahad Municipal Council	C	Raigad	3.7	0	0	0.0
117	Pen Municipal Council	C	Raigad	9.2	0	0	0.0
118	Uran Municipal Council	C	Raigad	3.9	0	0	0.0
119	Alibag Municipal Council	C	Raigad	3.5	0	0	0.0
120	Rajapur Municipal Council	C	Ratnagiri	2	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
121	Khed Municipal Council	C	Ratnagiri	2.5	0	0	0.0
122	Palus Municipal Council	C	Sangli	2.5	0	0	0.0
123	Jat Municipal Council	C	Sangli	1.5	0	0	0.0
124	Ashta Municipal Council	C	Sangli	2.1	0	0	0.0
125	Tasgaon Municipal Council	C	Sangli	2.63	0	0	0.0
126	Wai Municipal Council	C	Satara	4.8	0	0	0.0
127	Mahabaleshwar Municipal Council	C	Satara	2.5	5	2.5	100.0
128	Rahimatpur Municipal Council	C	Satara	0.8	0	0	0.0
129	Mhaswad Municipal Council	C	Satara	2.1	0	0	0.0
130	Panchgani Municipal Council	C	Satara	2.5	2.5	2.5	100.0
131	Malvan Municipal Council	C	Sindhudurg	1.5	0	0	0.0
132	Vengurla Municipal Council	C	Sindhudurg	2.5	0	0	0.0
133	Sawantvadi Municipal Council	C	Sindhudurg	2.5	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
134	Kurduvadi Municipal Council	C	Solapur	3.5	0	0	0.0
135	Maindargi Municipal Council	C	Solapur	0.69	0	0	0.0
136	Karmala Municipal Council	C	Solapur	2	0	0	0.0
137	Dudhani Municipal Council	C	Solapur	0.69	0	0	0.0
138	Sangola Municipal Council	C	Solapur	4	0	0	0.0
139	Mangalwedha Municipal Council	C	Solapur	2.4	0	0	0.0
140	Mohol Municipal Council	C	Solapur				
141	Sindi Municipal Council	C	Wardha	1	0	0	0.0
142	Deoli Municipal Council	C	Wardha	1.6	0	0	0.0
143	Pulgaon Municipal Council	C	Wardha	1.8	0	0	0.0
144	Mangrulpir Municipal Council	C	Washim	2.4	0	0	0.0
145	Risod Municipal Council	C	Washim	1.6	0	0	0.0
146	Darwha Municipal Council	C	Yavatmal	1.82	0	0	0.0
147	Pandharkawada Municipal	C	Yavatmal	1.99	0	0	0.0

Status of Sewage Treatment in Class C Municipal Coucil in Maharashtra							
	Council						
148	Arni Municipal Council	C	Yavatmal	4.69	0	0	0.0
149	Ghatanji Municipal Council	C	Yavatmal	1.16	0	0	0.0

Nagar Panchayat

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
1	Barshi Takali Nagar Panchayat	NP	Akola	0.2	0	0	0.0
2	Nandgaon Khandeshwar Nagar Panchayat	NP	Amravati	3.5	0	0	0.0
3	Bhatkuli Nagar Panchayat	NP	Amravati	2.5	0	0	0.0
4	Dharani Nagar Panchayat	NP	Amravati	0.94	0	0	0.0
5	Tiwasa Nagar Panchayat	NP	Amravati	0.5	0	0	0.0
6	Motala Nagar Panchayat	NP	Buldhana	0.5	0	0	0.0
7	Sangrampur Nagar Panchayat	NP	Buldhana	0.2	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
8	Manora Nagar Panchayat	NP	Washim	0.7	0	0	0.0
9	Malegaon Nagar Panchayat	NP	Washim	1.5	0	0	0.0
10	Maregaon Nagar Panchayat	NP	Yavatmal	0.68	0	0	0.0
11	Ralegaon Nagar Panchayat	NP	Yavatmal	1.25	0	0	0.0
12	Kalamb Nagar Panchayat	NP	Yavatmal	1.39	0	0	0.0
13	Babhulgaon Nagar Panchayat	NP	Yavatmal	0.93	0	0	0.0
14	Mahagaon Nagar Panchayat	NP	Yavatmal	0.65	0	0	0.0
15	Zari Jamni Nagar Panchayat	NP	Yavatmal	0.12	0	0	0.0
16	Dhanki Nagar Panchayat	NP	Yavatmal	1.38	0	0	0.0
17	Phulambri Nagar Panchayat	NP	Aurangabad				
18	Soyagaon Nagar Panchayat	NP	Aurangabad				
19	Shirur Kasar Nagar Panchayat	NP	Beed	0.3	0	0	0.0
20	Kej Nagar Panchayat	NP	Beed	0.7	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
21	Ashti Nagar Panchayat	NP	Beed	0.4	0	0	0.0
22	Patoda Nagar Panchayat	NP	Beed	0.8	0	0	0.0
23	Wadwani Nagar Panchayat	NP	Beed	0.094	0	0	0.0
24	Aundha Nagnath Nagar Panchayat	NP	Hingoli	0.8	0	0	0.0
25	Sengaon Nagar Panchayat	NP	Hingoli	0.15	0	0	0.0
26	Ghansawangi Nagar Panchayat	NP	Jalna	0.24	0	0	0.0
27	Japharabad Nagar Panchayat	NP	Jalna	1	0	0	0.0
28	Badnapur Nagar Panchayat	NP	Jalna	0.4	0	0	0.0
29	Mantha Nagar Panchayat	NP	Jalna	0.9	0	0	0.0
30	Devani Nagar Panchayat	NP	Latur	0.3	0	0	0.0
31	Chakur Nagar Panchayat	NP	Latur	0.4	0	0	0.0
32	Jalkot Nagar Panchayat	NP	Latur	0.3	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
33	Shirur Anantpal Nagar Panchayat	NP	Latur	0.4	0	0	0.0
34	Renapur Nagar Panchayat	NP	Latur	0.3	0	0	0.0
35	Ardhapur Nagar Panchayat	NP	Nanded	0.8	0	0	0.0
36	Himayatnagar Nagar Panchayat	NP	Nanded	1.2	0	0	0.0
37	Naygaon Nagar Panchayat	NP	Nanded	1.2	0	0	0.0
38	Mahur Nagar Panchayat	NP	Nanded	0.8	0	0	0.0
39	Lohara Bu Nagar Panchayat	NP	Osmanabad	0.45	0	0	0.0
40	Washi Nagar Panchayat	NP	Osmanabad	0.8	0	0	0.0
41	Palam Nagar Panchayat	NP	Parbhani	0.5	0	0	0.0
42	Vikramgad Nagar Panchayat	NP	Palghar	1.4	0	0	0.0
43	Mokhada Nagar Panchayat	NP	Palghar			0	
44	Talasari Nagar Panchayat	NP	Palghar			0	

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
45	Wada Nagar Panchayat	NP	Palghar	2	0	0	0.0
46	Mangaon Nagar Panchayat	NP	Raigad	2.8	0	0	0.0
47	Poladpur Nagar Panchayat	NP	Raigad	0.64	0	0	0.0
48	Tala Nagar Panchayat	NP	Raigad	0.75	0	0	0.0
49	Khalapur Nagar Panchayat	NP	Raigad	1.6	0	0	0.0
50	Mhasala Nagar Panchayat	NP	Raigad	1.2	0	0	0.0
51	Lanja Nagar Panchayat	NP	Ratnagiri	1.5	0	0	0.0
52	Devrukh Nagar Panchayat	NP	Ratnagiri	1.3	0	0	0.0
53	Guhagar Nagar Panchayat	NP	Ratnagiri	0.6	0	0	0.0
54	Mandangad Nagar Panchayat	NP	Ratnagiri	0.33	0	0	0.0
55	Dapoli Nagar Panchayat	NP	Ratnagiri	3	0	0	0.0
56	Vaibhavwadi Nagar Panchayat	NP	Sindhudurg	0.25	0	0	0.0
57	Kasai-Dodamarg Nagar	NP	Sindhudurg	0.35	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
	Panchayat						
58	Kudal Nagar Panchayat	NP	Sindhudurg	1.8	0	0	0.0
59	Devgadjamsande Nagar Panchayat	NP	Sindhudurg	1.5	0	0	0.0
60	Kankavli Nagar Panchayat	NP	Sindhudurg	1.2	0	0	0.0
61	Shahapur Nagar Panchayat	NP	Thane	0.5	0	0	0.0
62	Murbad Nagar Panchayat	NP	Thane	2	0	0	0.0
63	Lakhani Nagar Panchayat	NP	Bhandara	0.9	0	0	0.0
64	Lakhandur Nagar Panchayat	NP	Bhandara	0.9	0	0	0.0
65	Mohadi Nagar Panchayat	NP	Bhandara	0.6	0	0	0.0
66	Sawali Nagar Panchayat	NP	Chandrapur	0.3	0	0	0.0
67	Pombhurna Nagar Panchayat	NP	Chandrapur	0.72	0	0	0.0
68	Gondpimpri Nagar Panchayat	NP	Chandrapur	0.52	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
69	Korpana Nagar Panchayat	NP	Chandrapur	0.36	0	0	0.0
70	Jiwati Nagar Panchayat	NP	Chandrapur	1.19	0	0	0.0
71	Sindewahi Nagar Panchayat	NP	Chandrapur	0.4	0	0	0.0
72	Kurkheda Nagar Panchayat	NP	Gadchiroli	0.35	0	0	0.0
73	Mulchera Nagar Panchayat	NP	Gadchiroli	0.08	0	0	0.0
74	Sironcha Nagar Panchayat	NP	Gadchiroli	0.8	0	0	0.0
75	Etapalli Nagar Panchayat	NP	Gadchiroli	0.8	0	0	0.0
76	Aheri Nagar Panchayat	NP	Gadchiroli	0.8	0	0	0.0
77	Bhamragad Nagar Panchayat	NP	Gadchiroli	0.37	0	0	0.0
78	Chamoshi Nagar Panchayat	NP	Gadchiroli	1.2	0	0	0.0
79	Dhanora Nagar Panchayat	NP	Gadchiroli	0.48	0	0	0.0
80	Korchi Nagar Panchayat	NP	Gadchiroli	0.25	0	0	0.0
81	Sadak-Arjuni Nagar Panchayat	NP	Gondia	0.96	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
82	Salekasa Nagar Panchayat	NP	Gondia	0.96	0	0	0.0
83	Daveri Nagar Panchayat	NP	Gondia	1.6	0	0	0.0
84	Goregaon Nagar Panchayat	NP	Gondia	0.4	0	0	0.0
85	Arjuni Nagar Panchayat	NP	Gondia	0.65	0	0	0.0
86	Hingana Nagar Panchayat	NP	Nagpur	0.6	0	0	0.0
87	Bhiwapur Nagar Panchayat	NP	Nagpur	1.2	0	0	0.0
88	Kuhi Nagar Panchayat	NP	Nagpur	0.7	0	0	0.0
89	Mahadula Nagar Panchayat	NP	Nagpur	1.28	0	0	0.0
90	Parshiwani Nagar Panchayat	NP	Nagpur	0.4	0	0	0.0
91	Mouda Nagar Panchayat	NP	Nagpur	1.1	0	0	0.0
92	Ashti Nagar Panchayat	NP	Wardha	0.85	0	0	0.0
93	Karanja Nagar Panchayat	NP	Wardha	0.9	0	0	0.0
94	Samudrapur Nagar Panchayat	NP	Wardha	0.5	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
95	Selu Nagar Panchayat	NP	Wardha	0.8	0	0	0.0
96	Parner Nagar Panchayat	NP	Ahmednagar	2.5	0	0	0.0
97	Karjat Nagar Panchayat	NP	Ahmednagar	3	0	0	0.0
98	Akole Nagar Panchayat	NP	Ahmednagar	2.6	0	0	0.0
99	Nevasa Nagar Panchayat	NP	Ahmednagar	2.7	0	0	0.0
100	Shirdi Nagar Panchayat	NP	Ahmednagar	10	16	9	90.0
101	Sakri Nagar Panchayat	NP	Dhule	1.4	0	0	0.0
102	Sindkheda Nagar Panchayat	NP	Dhule	1.6	0	0	0.0
103	Bodvad Nagar Panchayat	NP	Jalgaon	0.5	0	0	0.0
104	Dhadgaon Wadphalya-Roshmal Bu Nagar Panchayat	NP	Nandurbar	1.2	0.0	0.0	0.0
105	Surgana Nagar Panchayat	NP	Nashik	0.8	0	0	0.0
106	Peth Nagar Panchayat	NP	Nashik	2.4	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
107	Niphad Nagar Panchayat	NP	Nashik	1.6	0	0	0.0
108	Devala Nagar Panchayat	NP	Nashik	0.5	0	0	0.0
109	Kalawan Nagar Panchayat	NP	Nashik	2.4	0	0	0.0
110	Dindori Nagar Panchayat	NP	Nashik	2.4	0	0	0.0
111	Kadegaon Nagar Panchayat	NP	Sangli	1.5	0	0	0.0
112	Khanapur Nagar Panchayat	NP	Sangli	1	0	0	0.0
113	Kavathemahankal Nagar Panchayat	NP	Sangli	0.75	0	0	0.0
114	Shirala Nagar Panchayat	NP	Sangli	1.8	0	0	0.0
115	Dahivadi Nagar Panchayat	NP	Satara	1.9	0	0	0.0
116	Lonand Nagar Panchayat	NP	Satara	0.7	0	0	0.0
117	Medha Nagar Panchayat	NP	Satara	0.44	0	0	0.0
118	Patan Nagar Panchayat	NP	Satara	1	0	0	0.0

Sr. No.	Name of Nagar Panchayat	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
119	Vaduj Nagar Panchayat	NP	Satara	2.1	0	0	0.0
120	Khandala Nagar Panchayat	NP	Satara	0.8	0	0	0.0
121	Koregaon Nagar Panchayat	NP	Satara	2.5	0	0	0.0
122	Madha Nagar Panchayat	NP	Solapur				0.0
123	Malshiras Nagar Panchayat	NP	Solapur				0

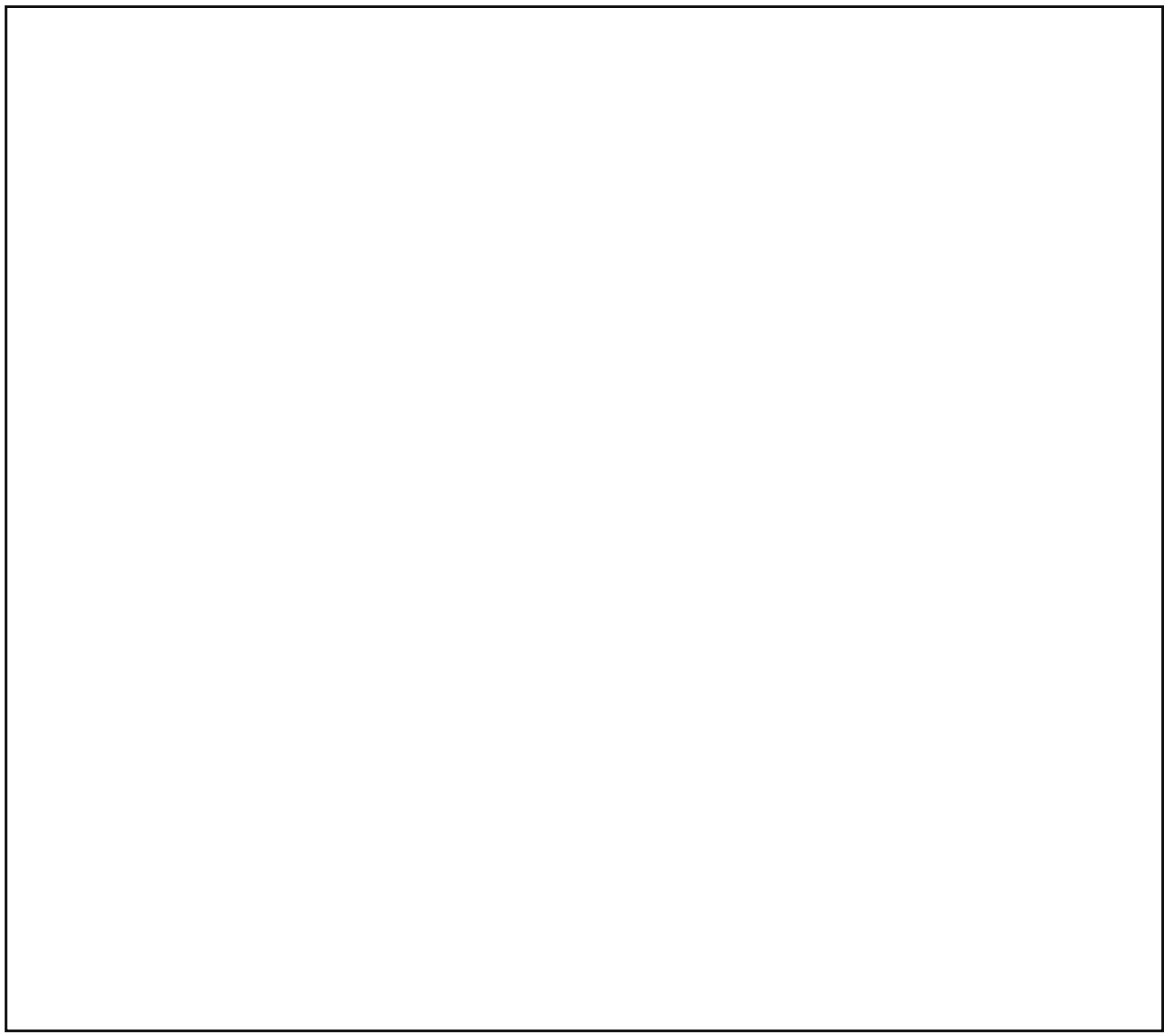
Cantonment

Sr. No.	Name of Cantonment	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
397	Bhinagar Cantonment	Cant.	Ahmednagar	2	0	0	0.0
398	Aurangabad Cantonment	Cant.	Aurangabad	1.5	0	0	0.0
399	Devalali Cantonment	Cant.	Nashik	0.74	0	0	0.0

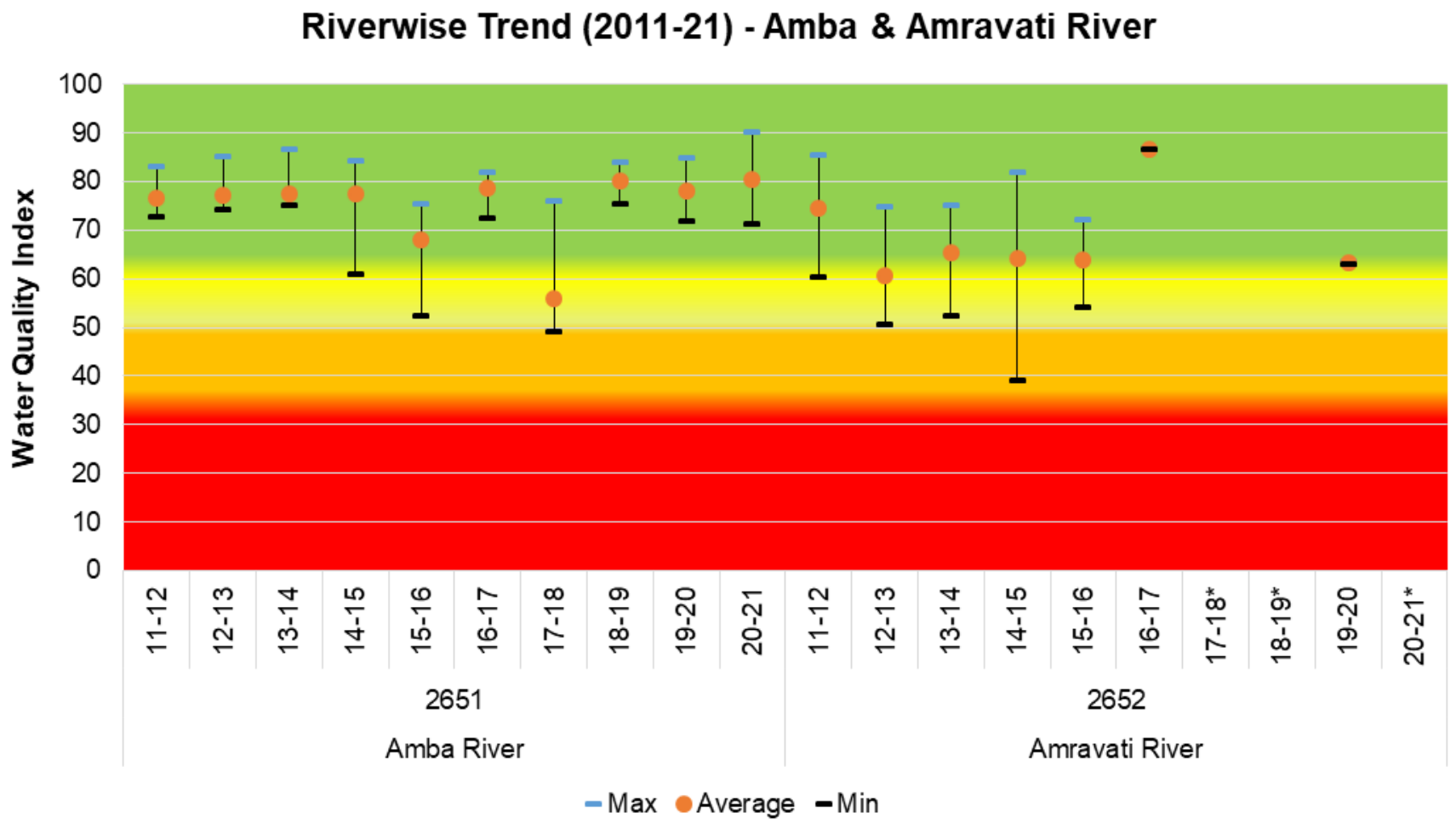
Sr. No.	Name of Cantonment	Class	District	Sewage Generation (MLD)	Sewage Treatment Plant (STP) Installed Capacity	Sewage Treatment (MLD)	% of Sewage Treatment
400	Dehu Cantonment	Cant.	Pune	6	0	0	0.0
401	Pune Cantonment	Cant.	Pune	22.8	20	9	39.5
402	Khadki Cantonment	Cant.	Pune	9	9.2	7.2	80.0
403	Kamptee Cantonment	Cant.	Nagpur				0

Source: Maharashtra Pollution Control Board

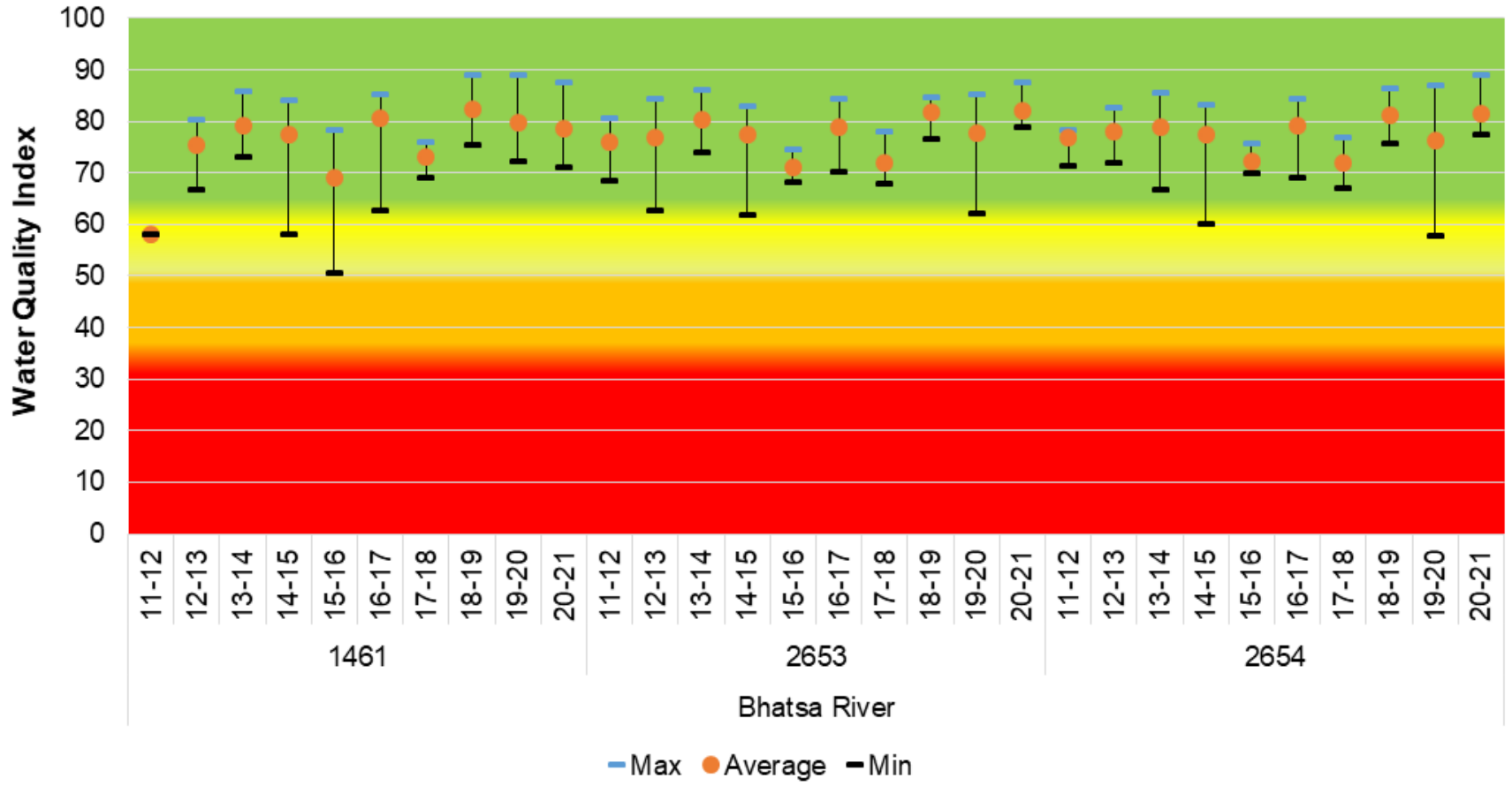
Annex V – Data Sets of Water Quality Monitored in 2020-2021



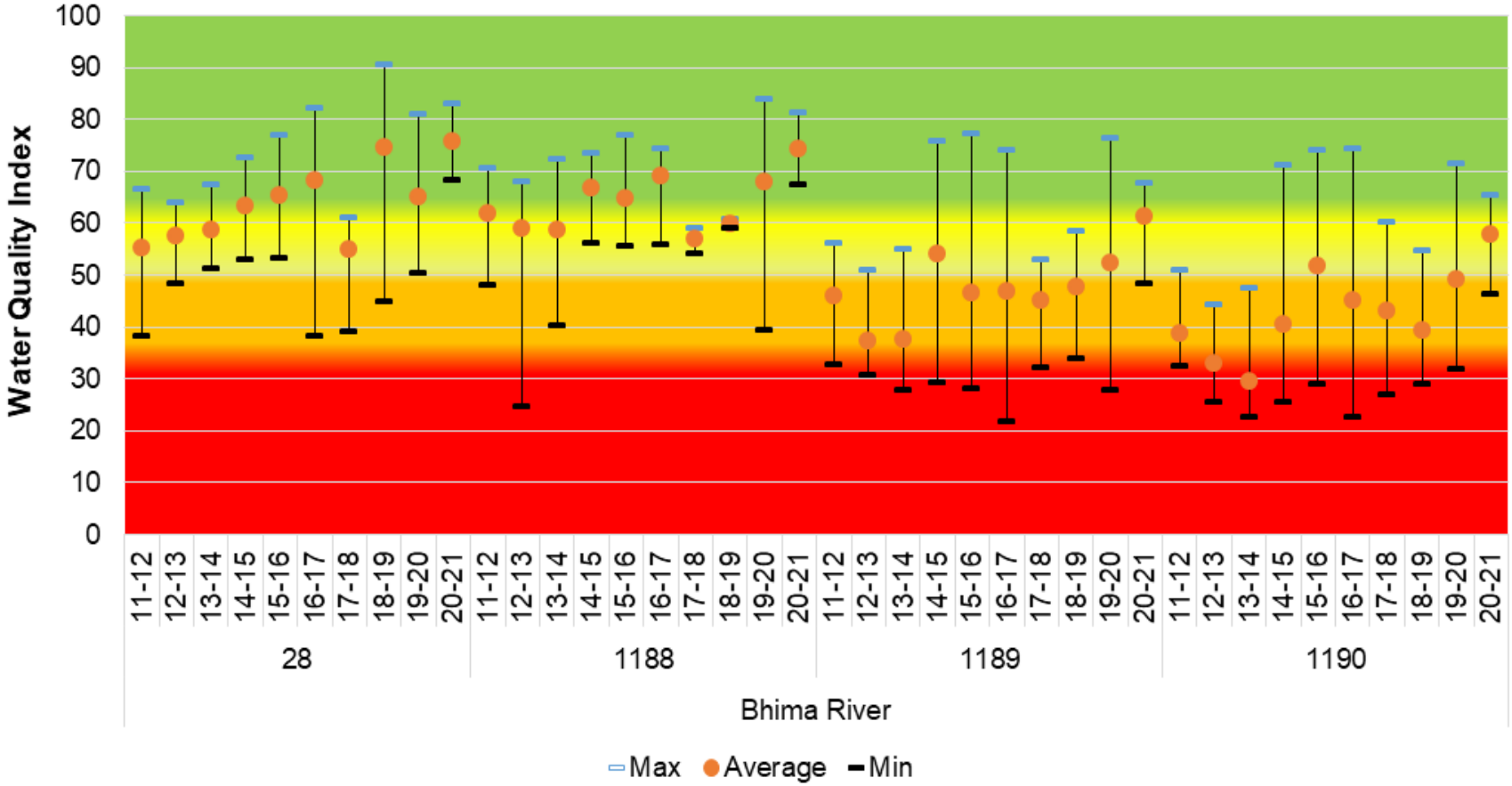
Riverwise Trend in WQI (2011-21)



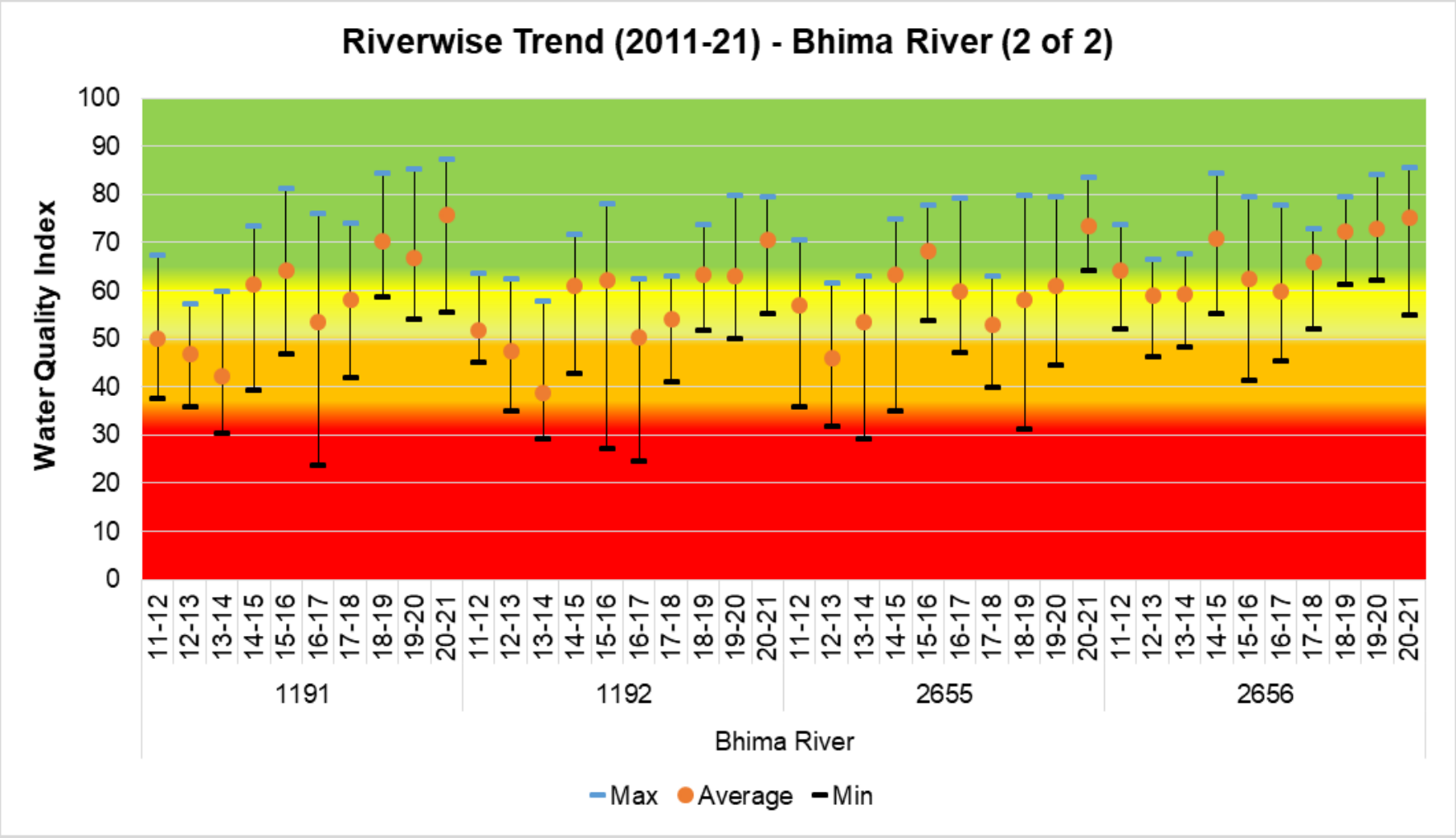
Note: * Stations are Dry/ No data available for respective year



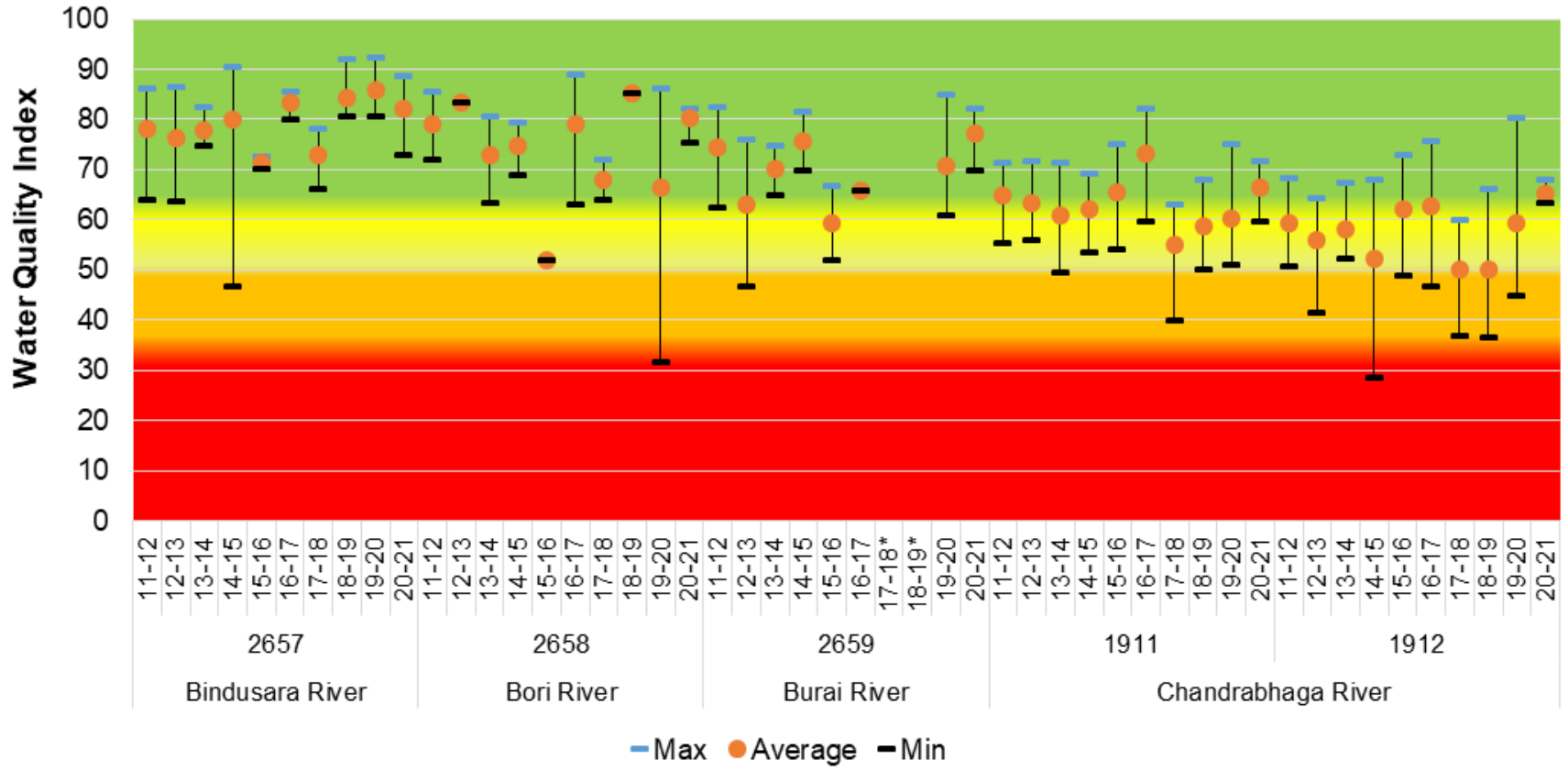
Note: * Stations are Dry/ No data available for respective year



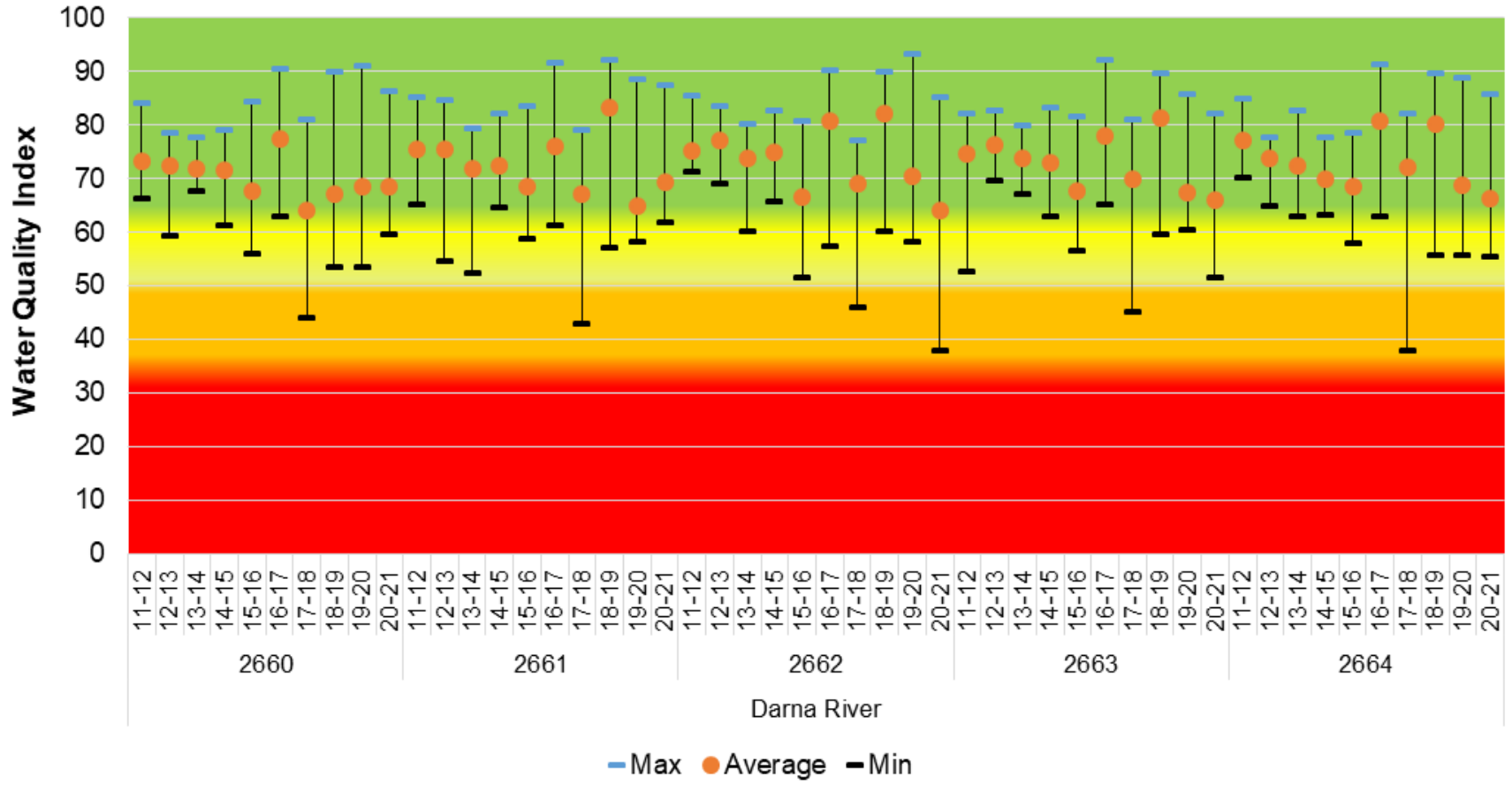
Note: * Stations are Dry/ No data available for respective year



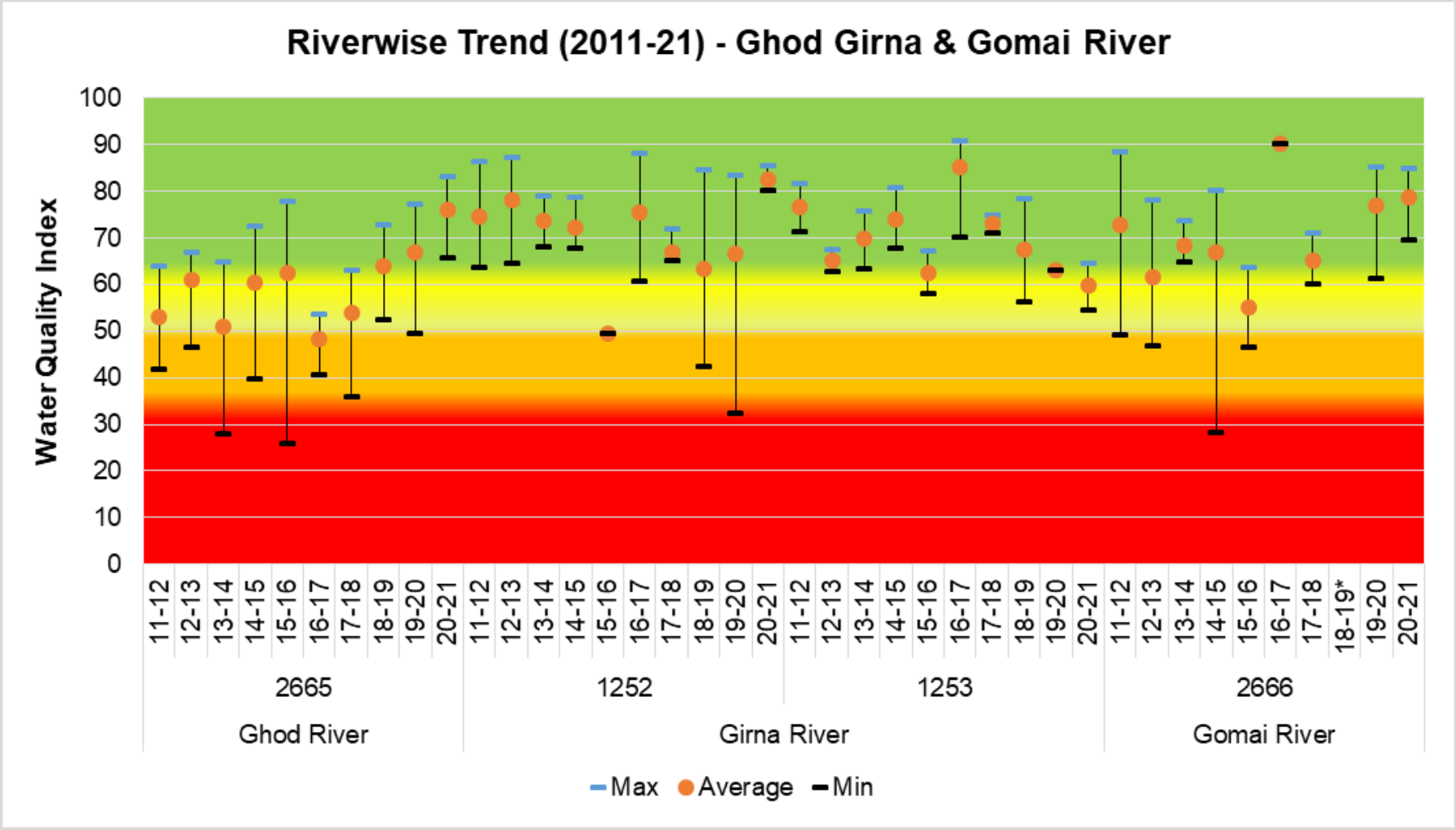
Note: * Stations are Dry/ No data available for respective year



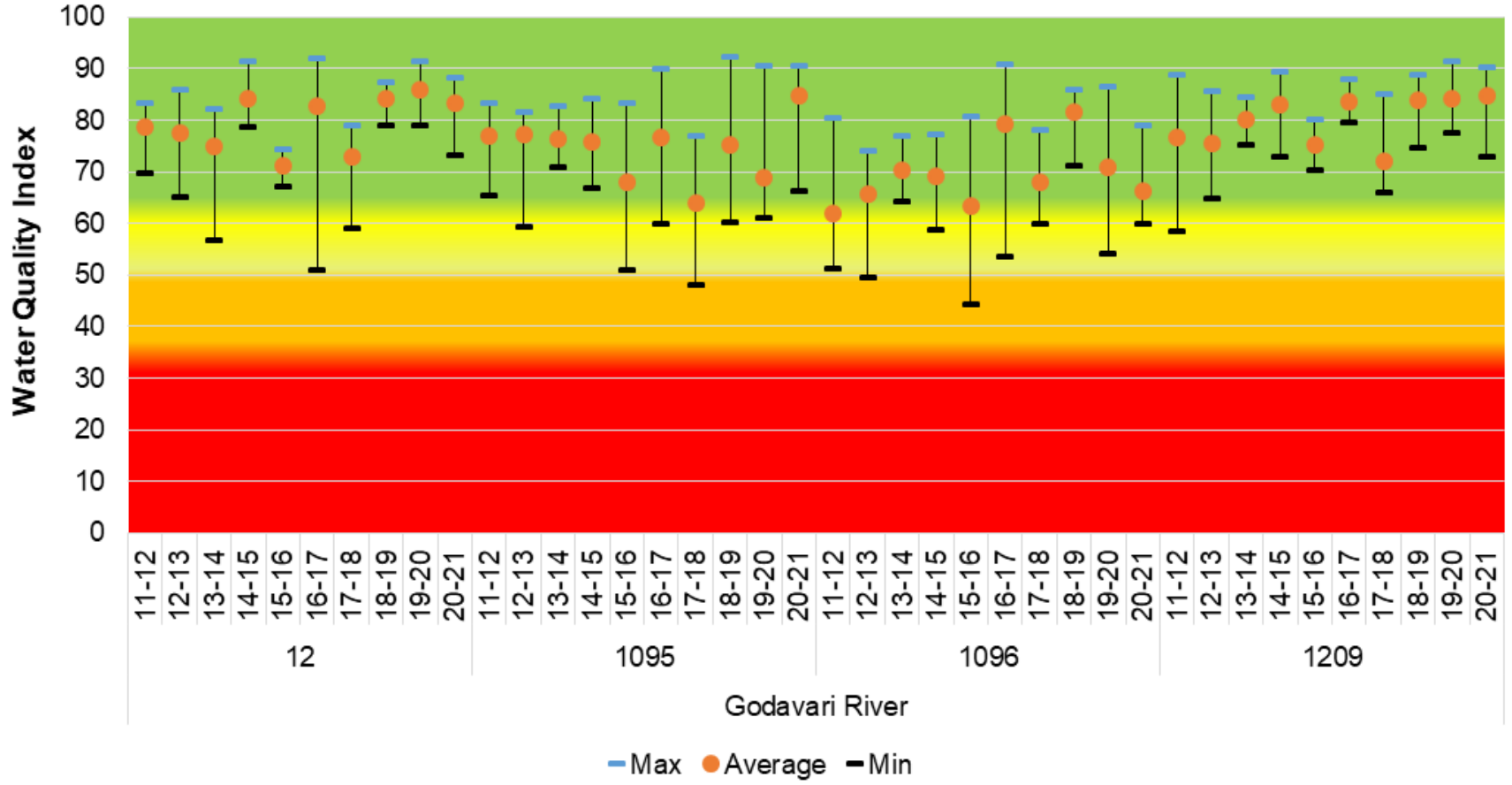
Note: * Stations are Dry/ No data available for respective year



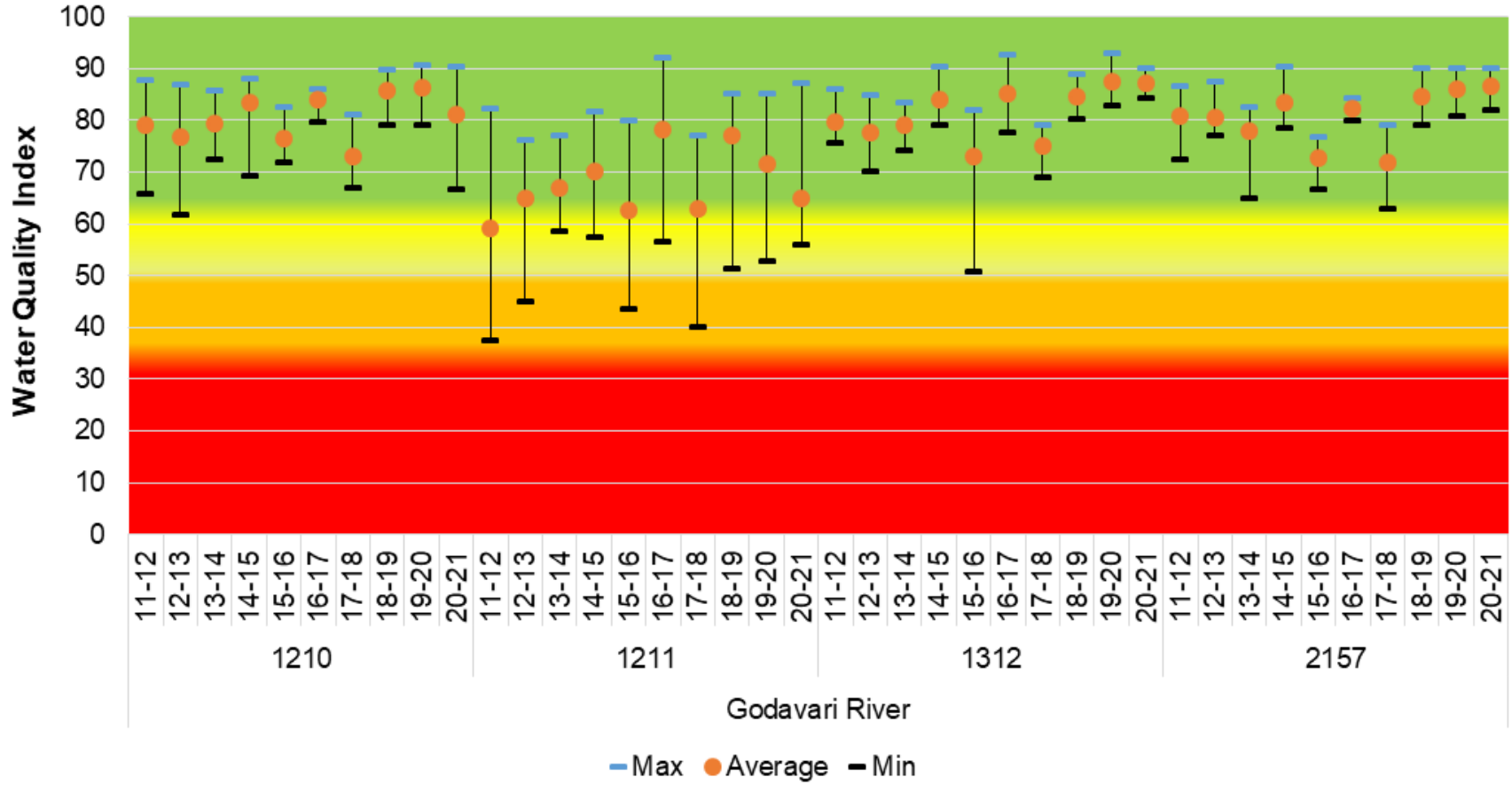
Note: * Stations are Dry/ No data available for respective year



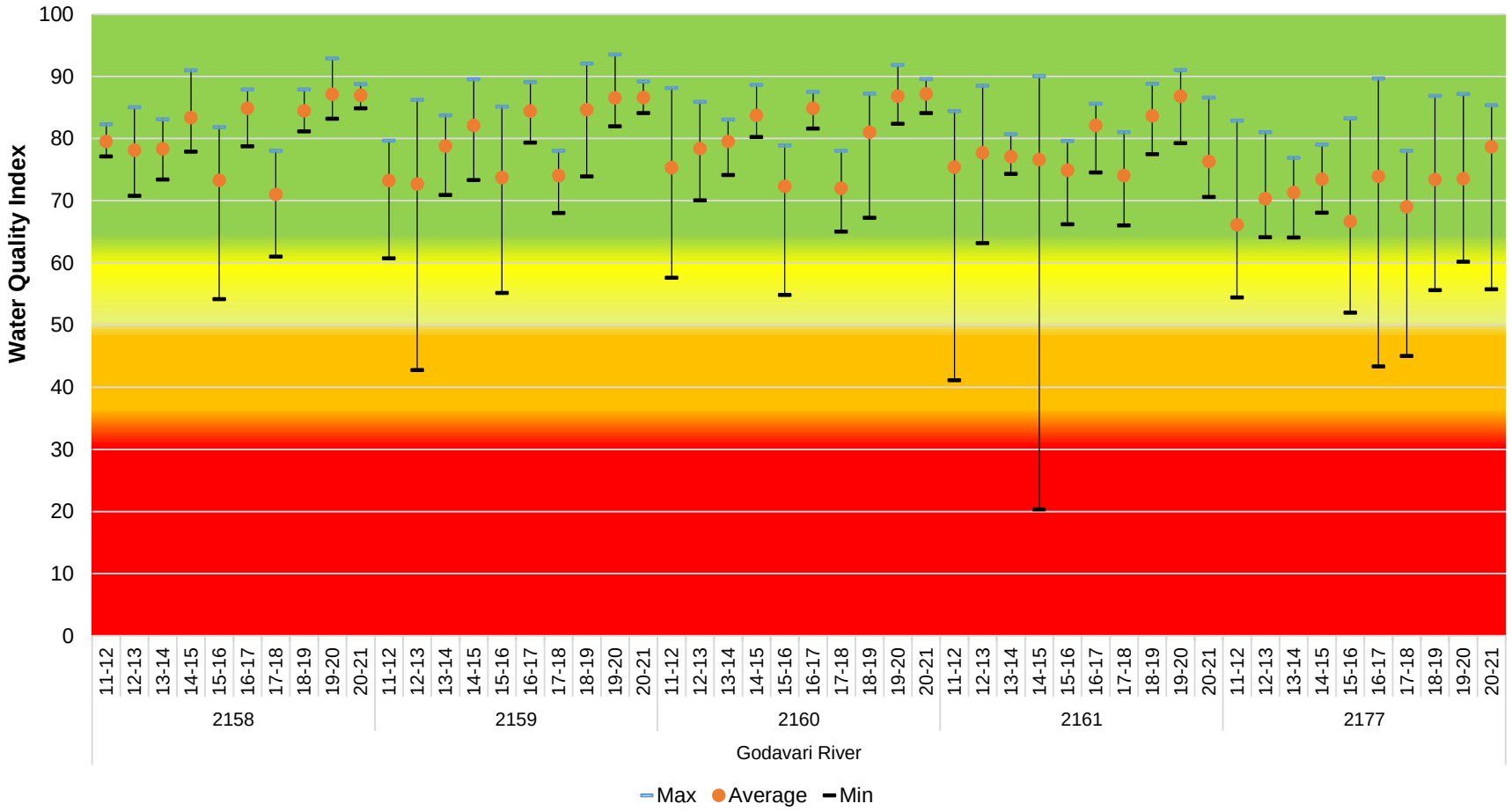
Note: * Stations are Dry/ No data available for respective year



Note: * Stations are Dry/ No data available for respective year



Note: * Stations are Dry/ No data available for respective year



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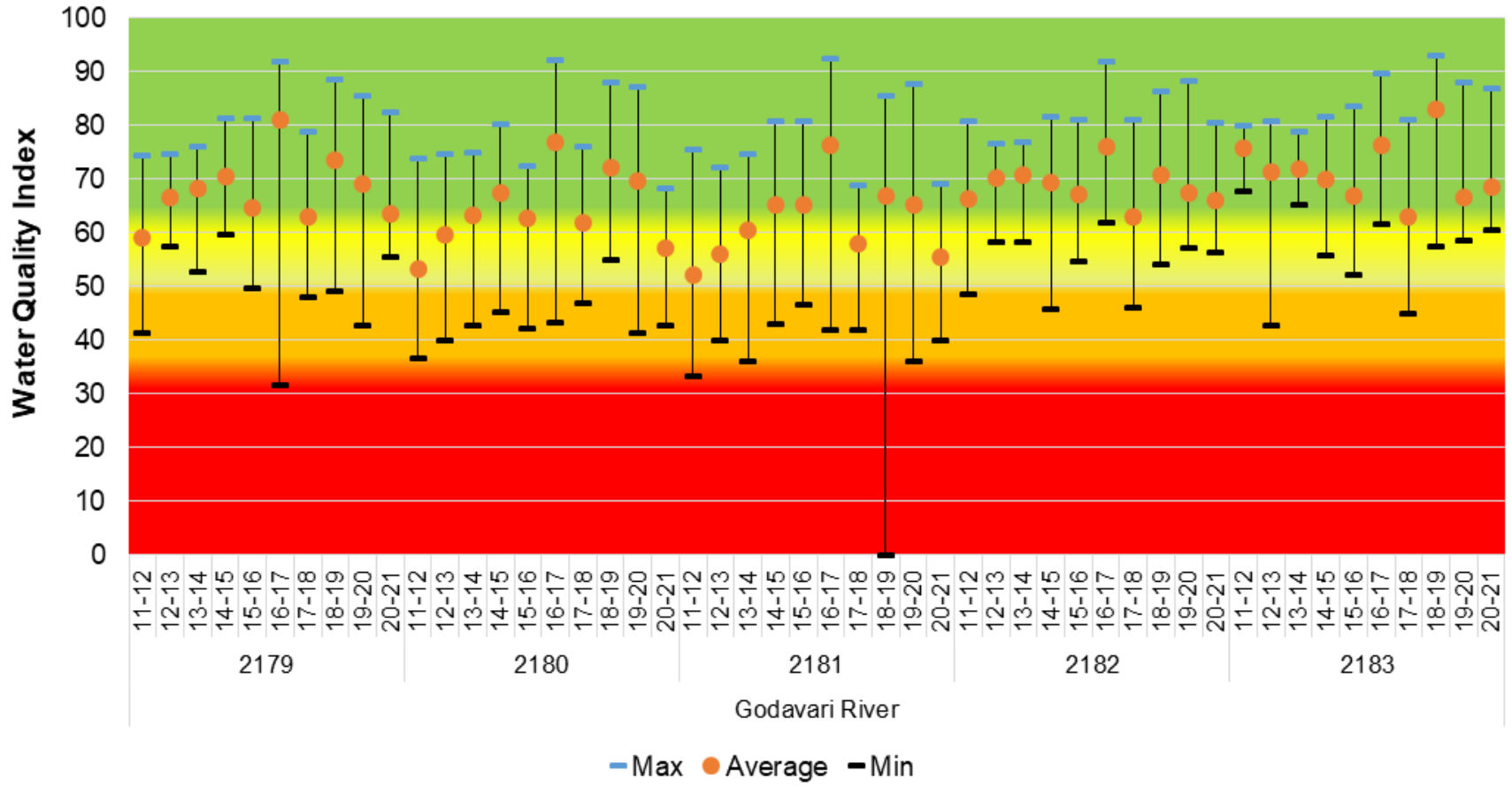
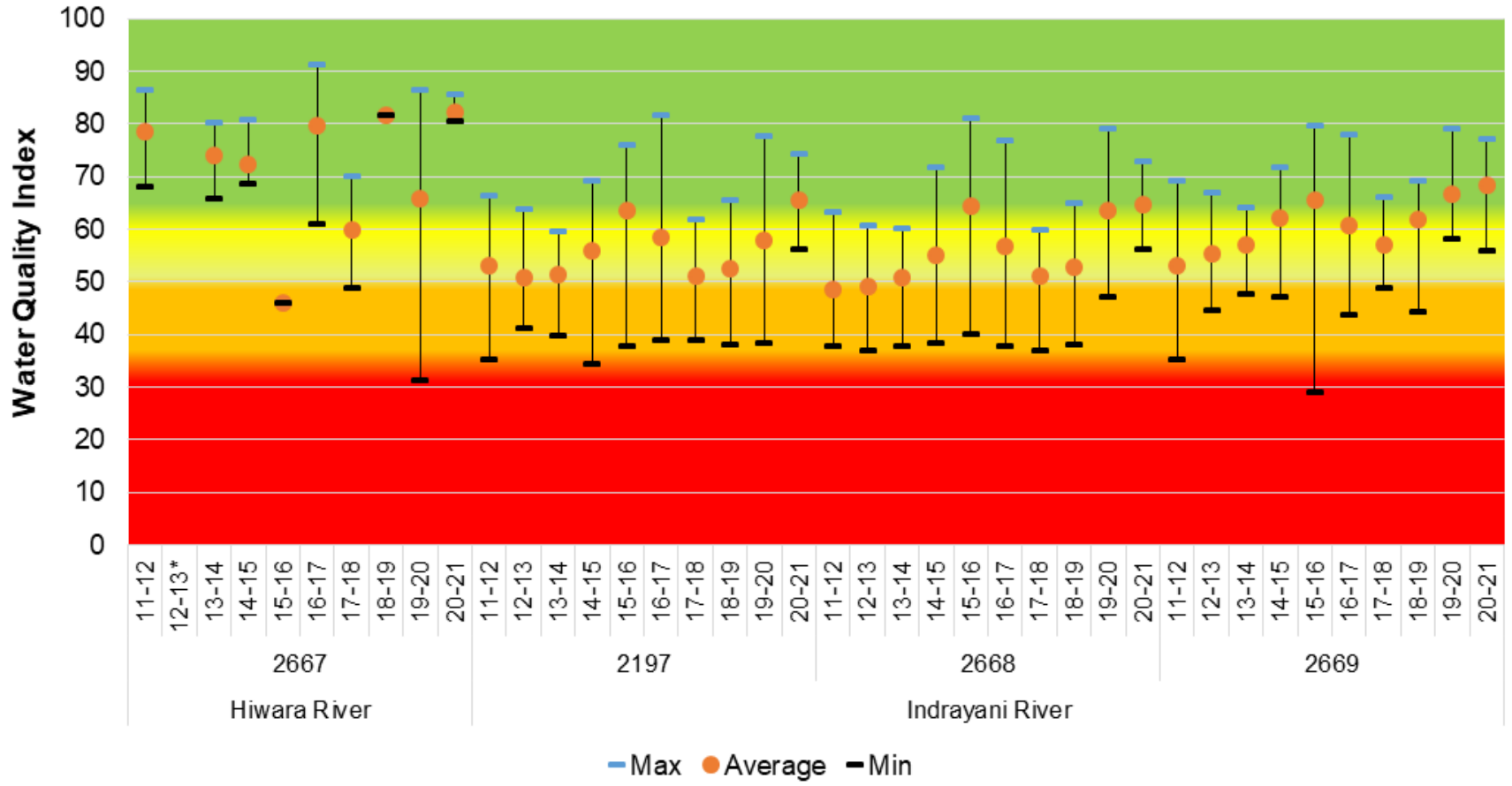
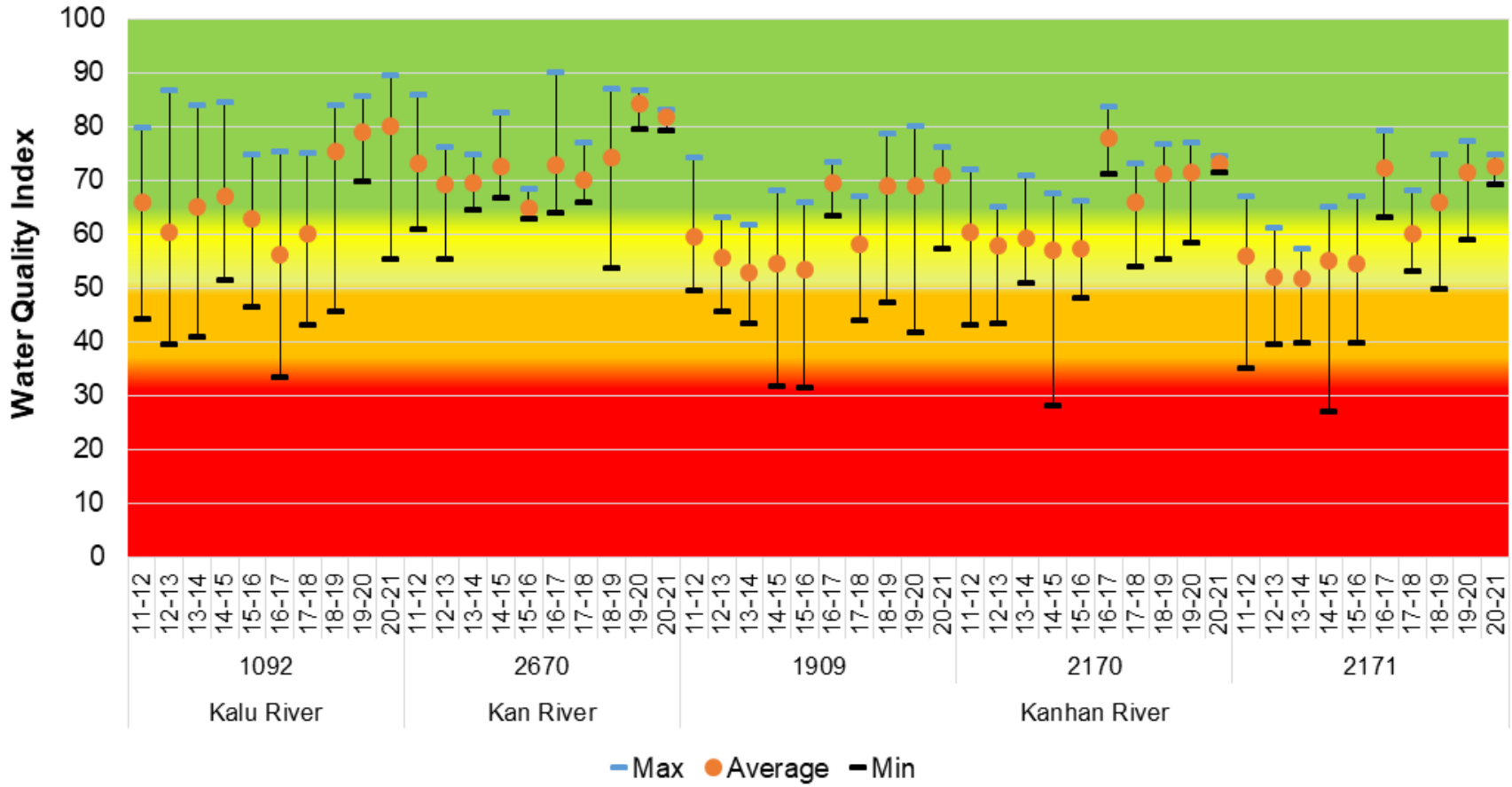


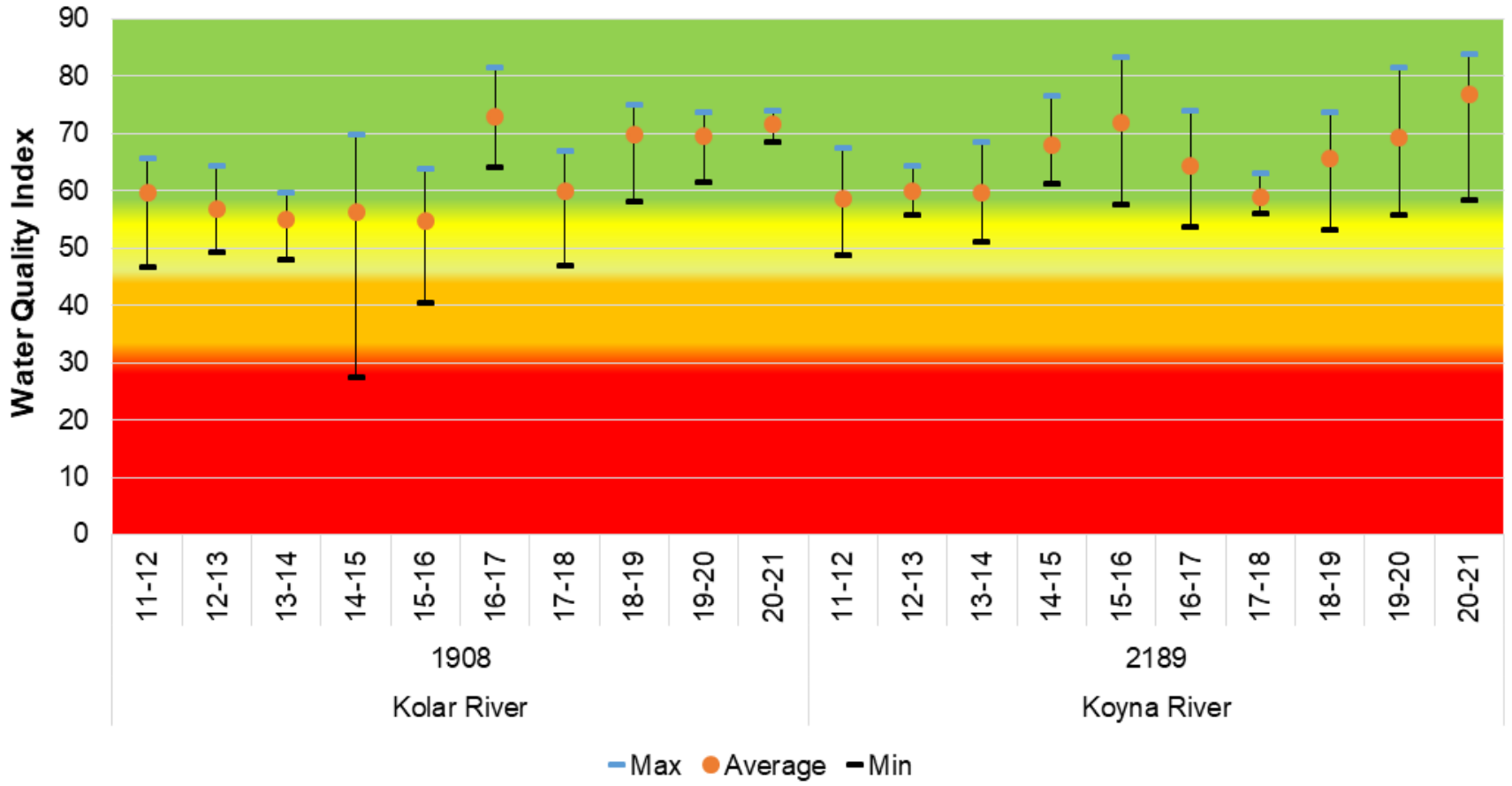
Note: * Stations are Dry/ No data available for respective year



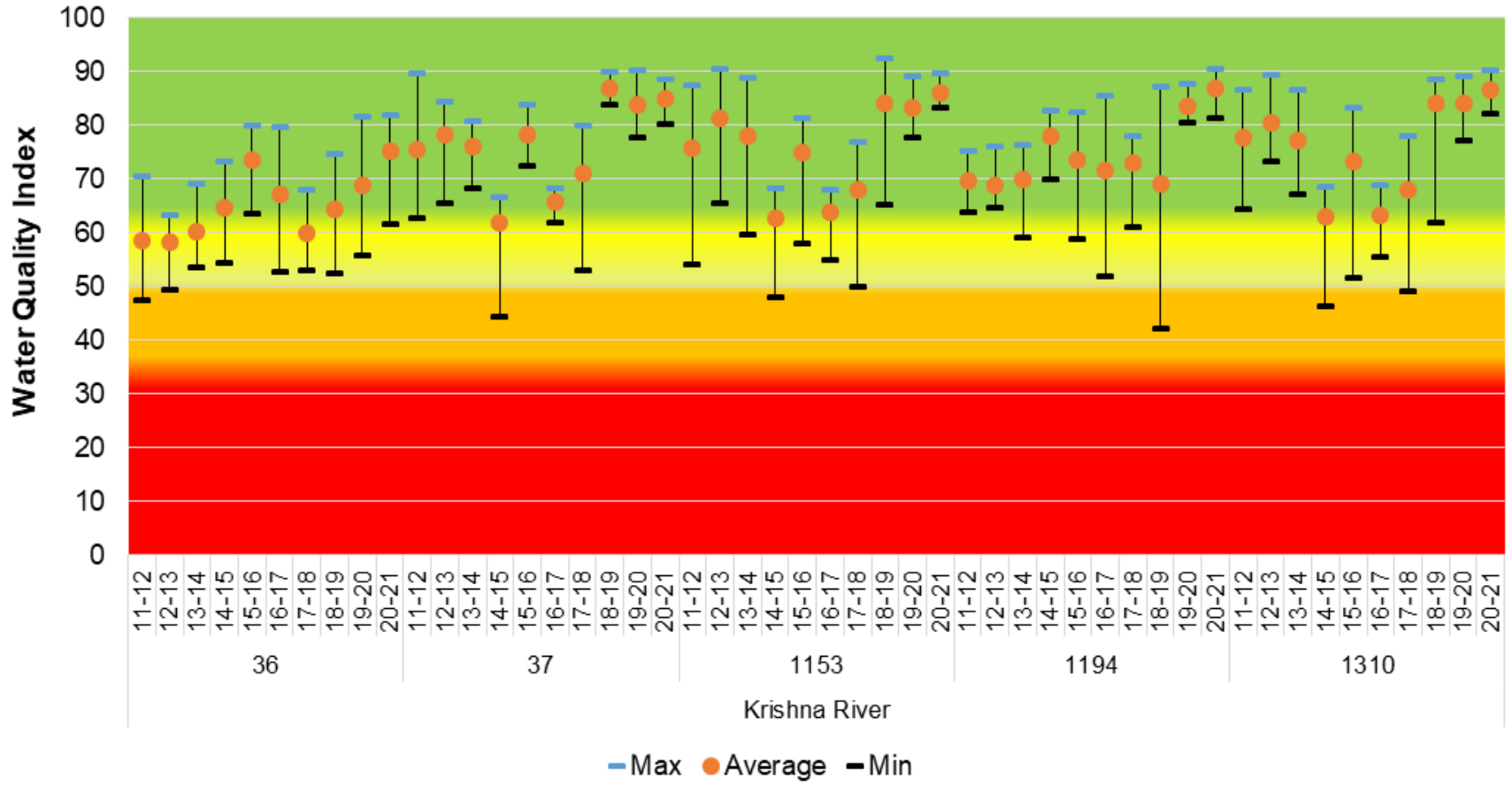
Note: * Stations are Dry/ No data available for respective year



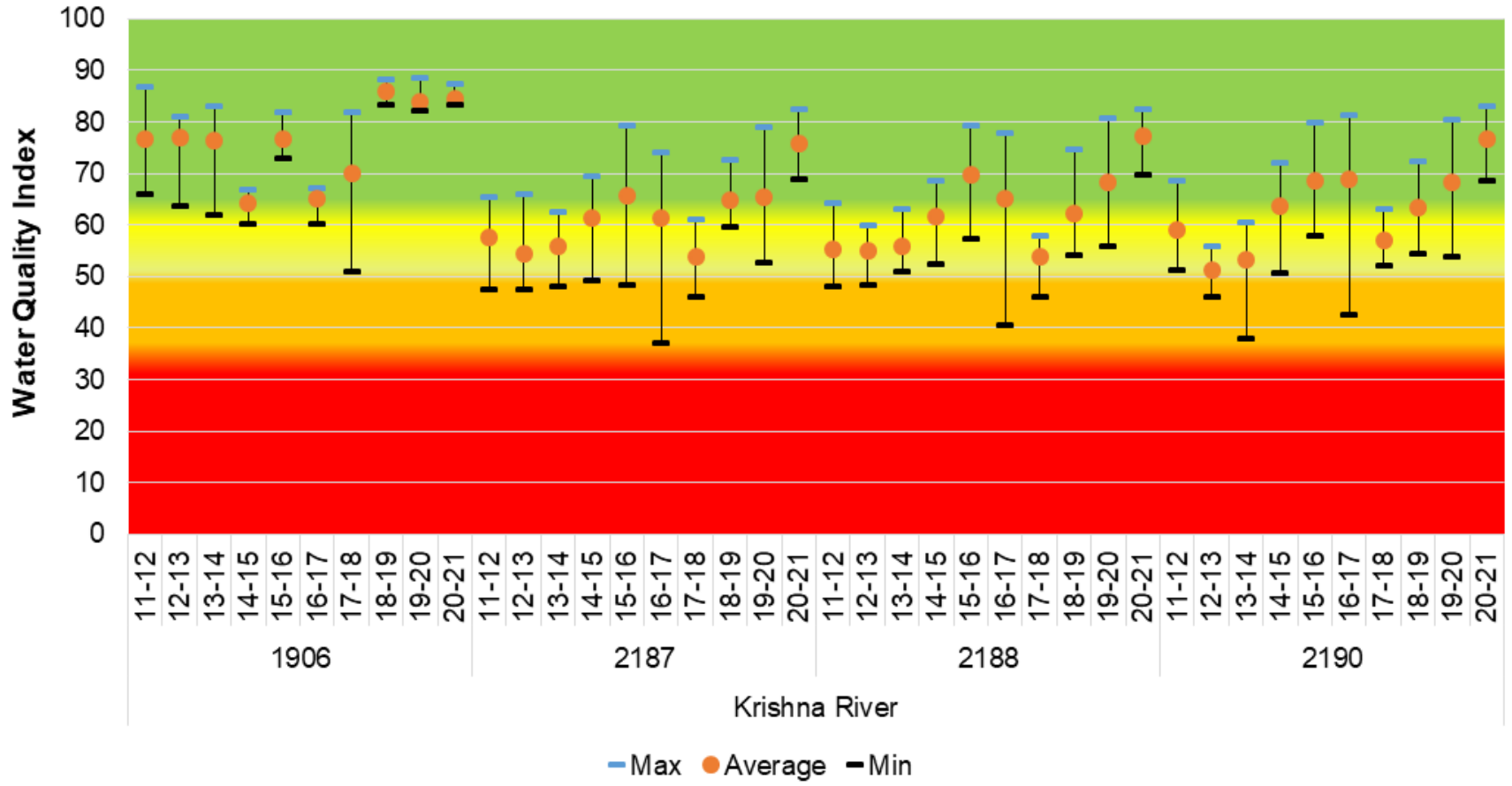
Note: * Stations are Dry/ No data available for respective year



Note: * Stations are Dry/ No data available for respective year



Note: * Stations are Dry/ No data available for respective year



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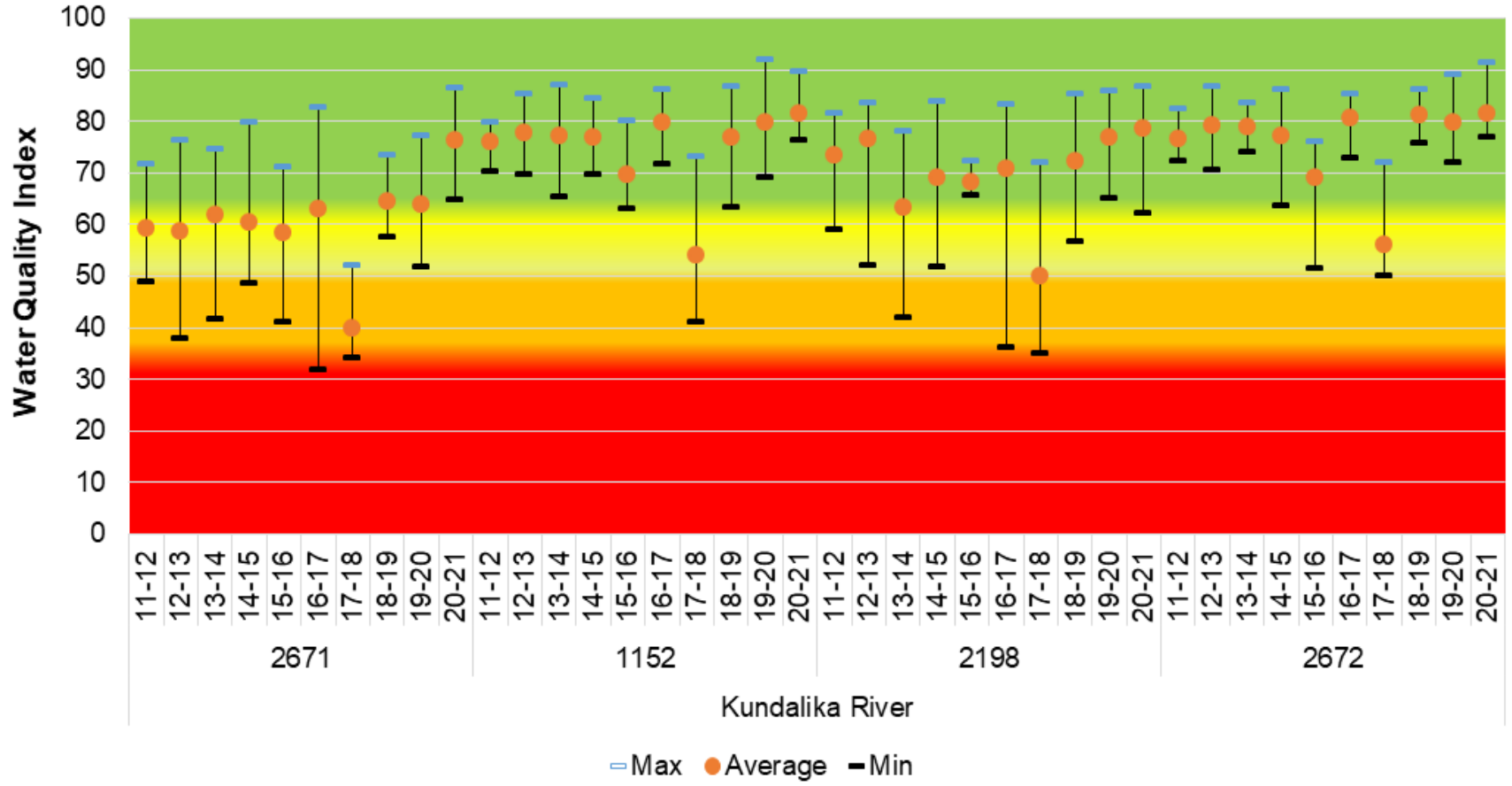

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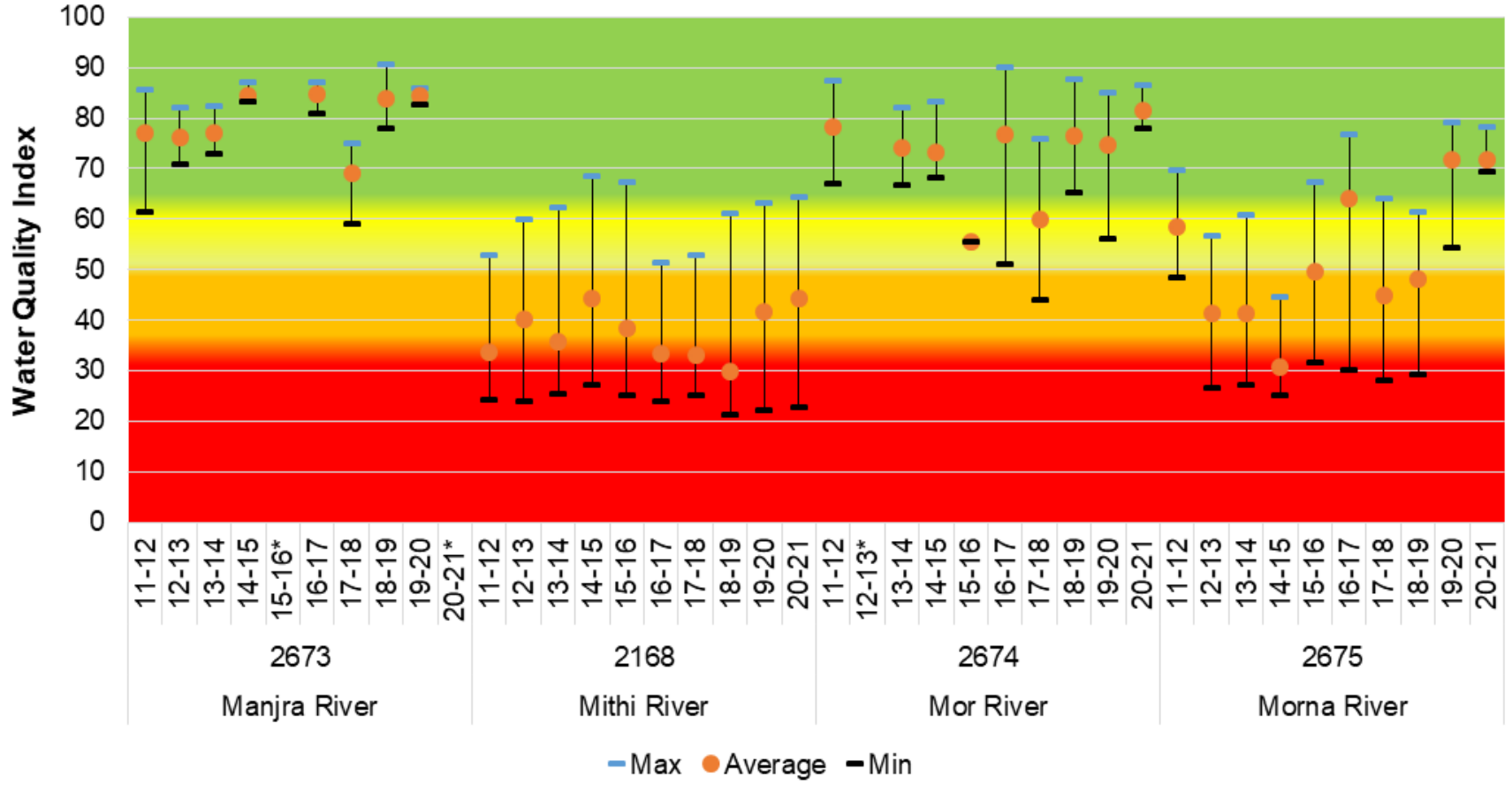

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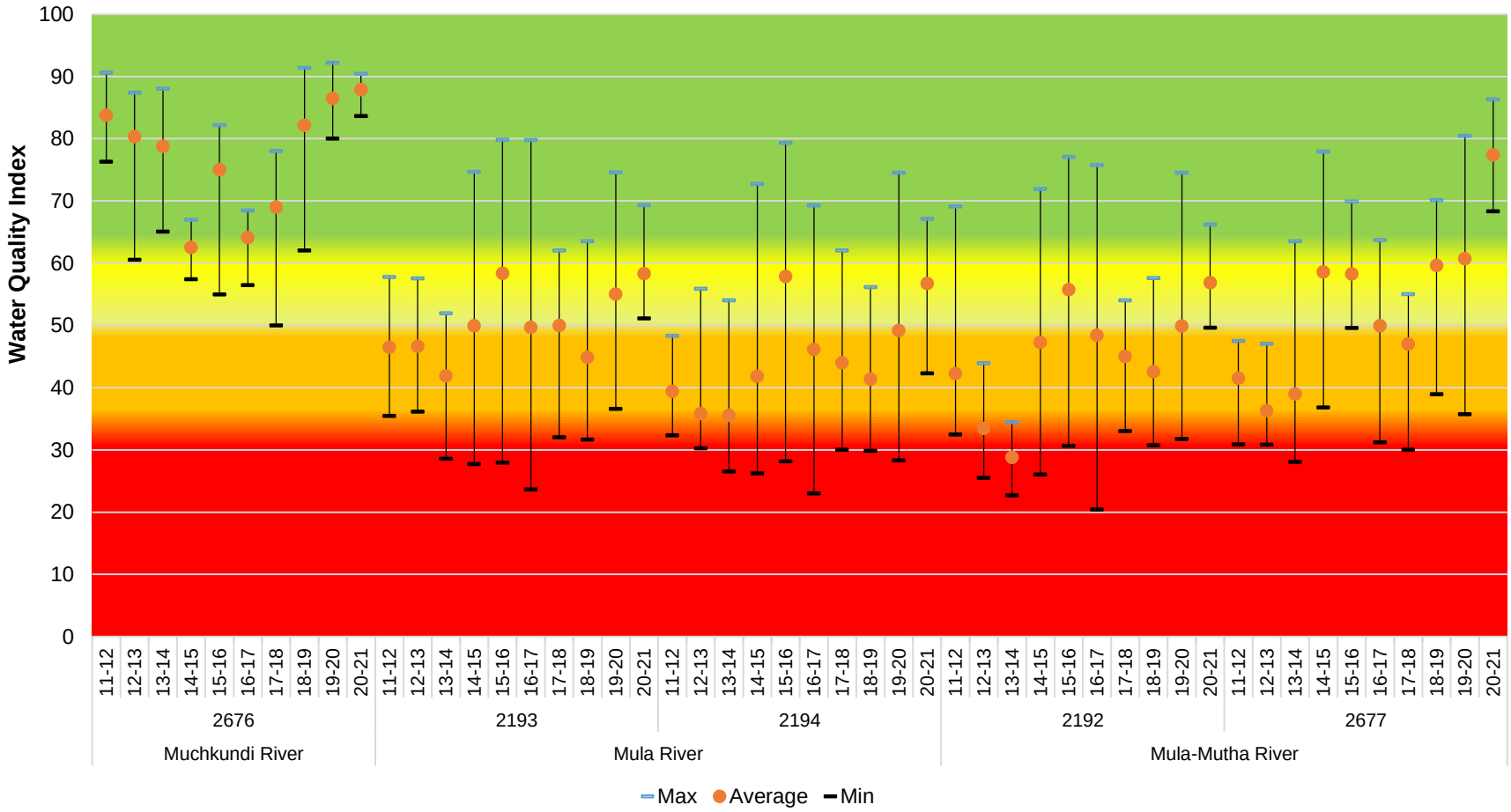

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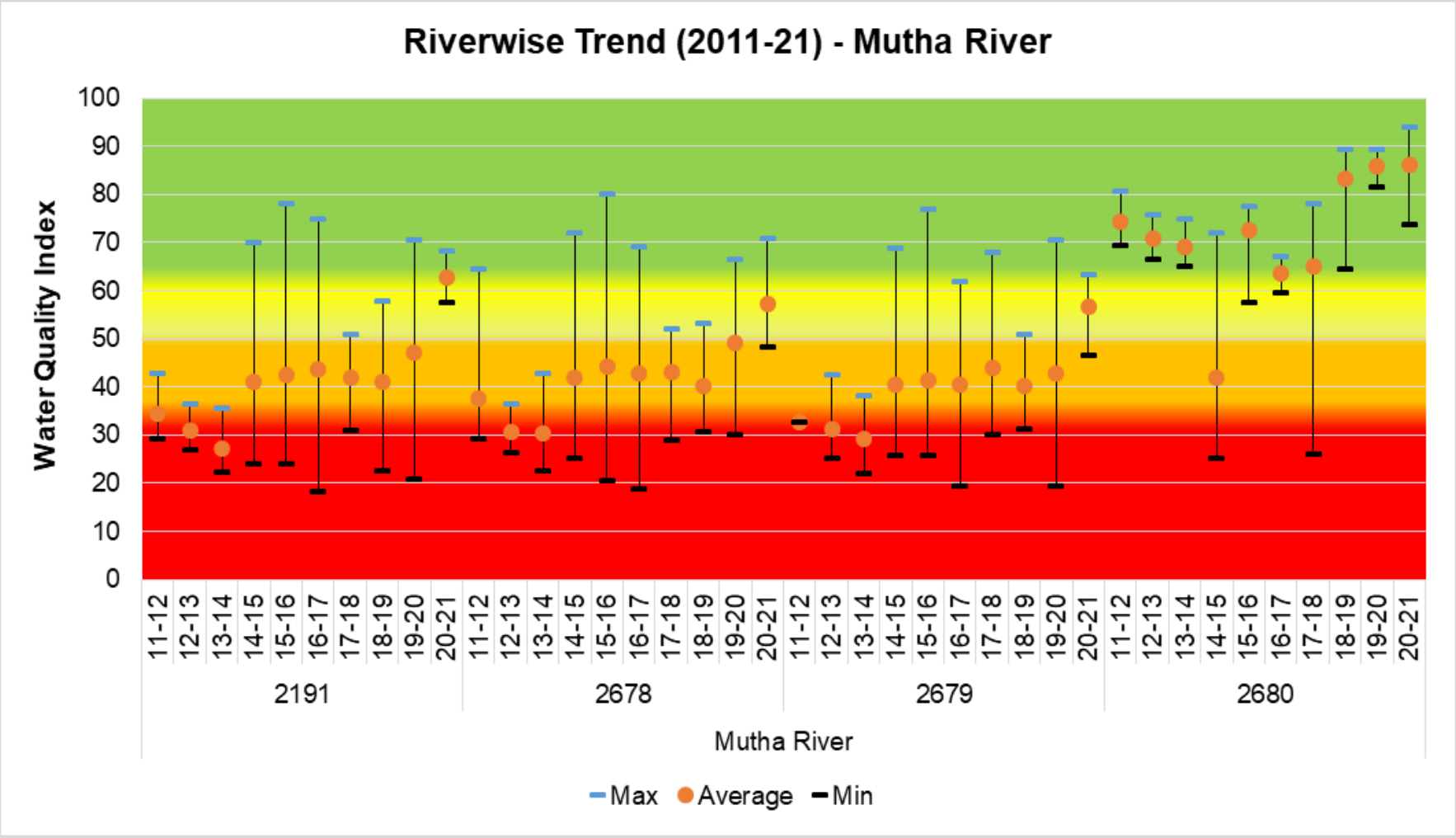

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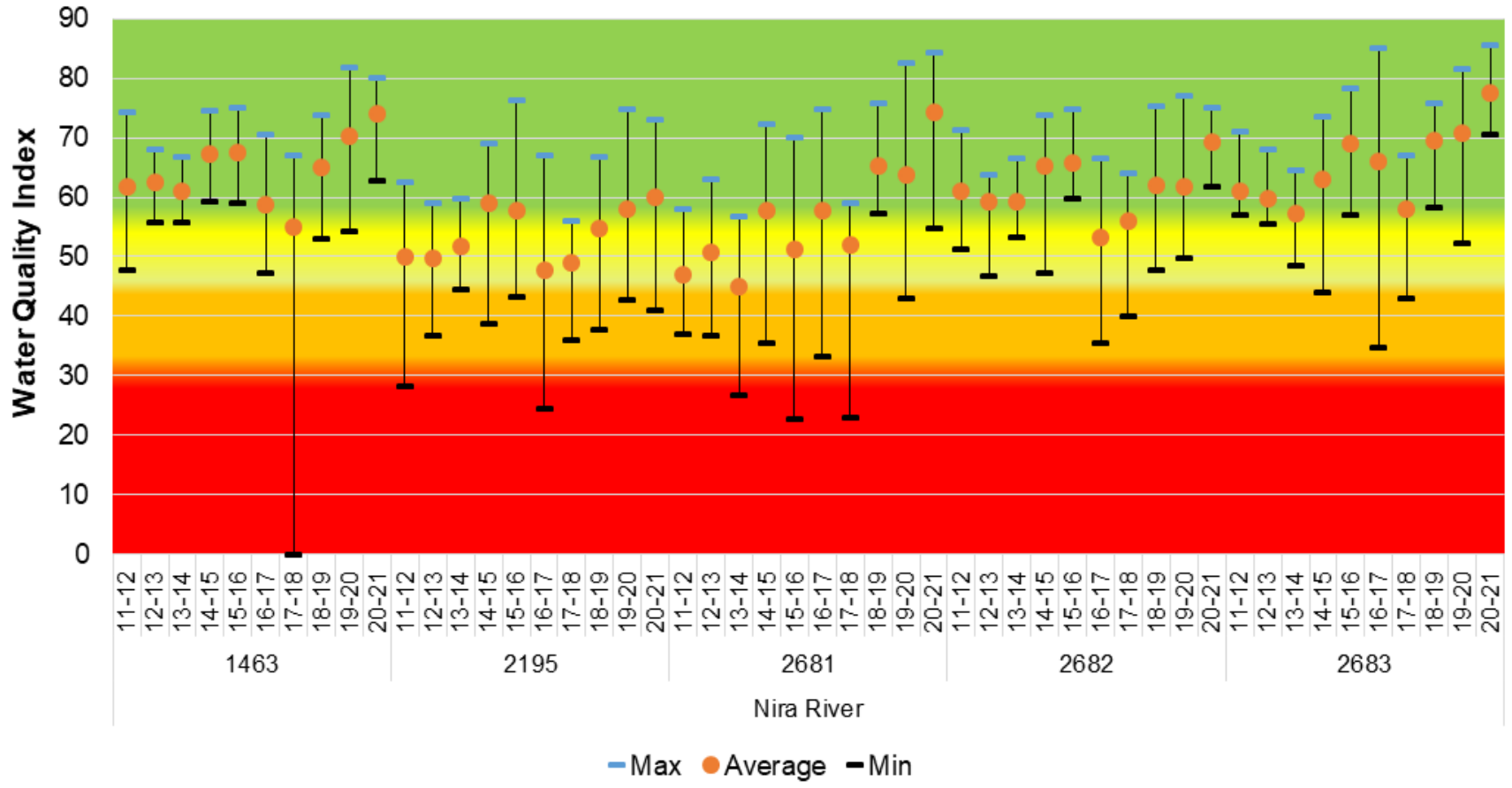

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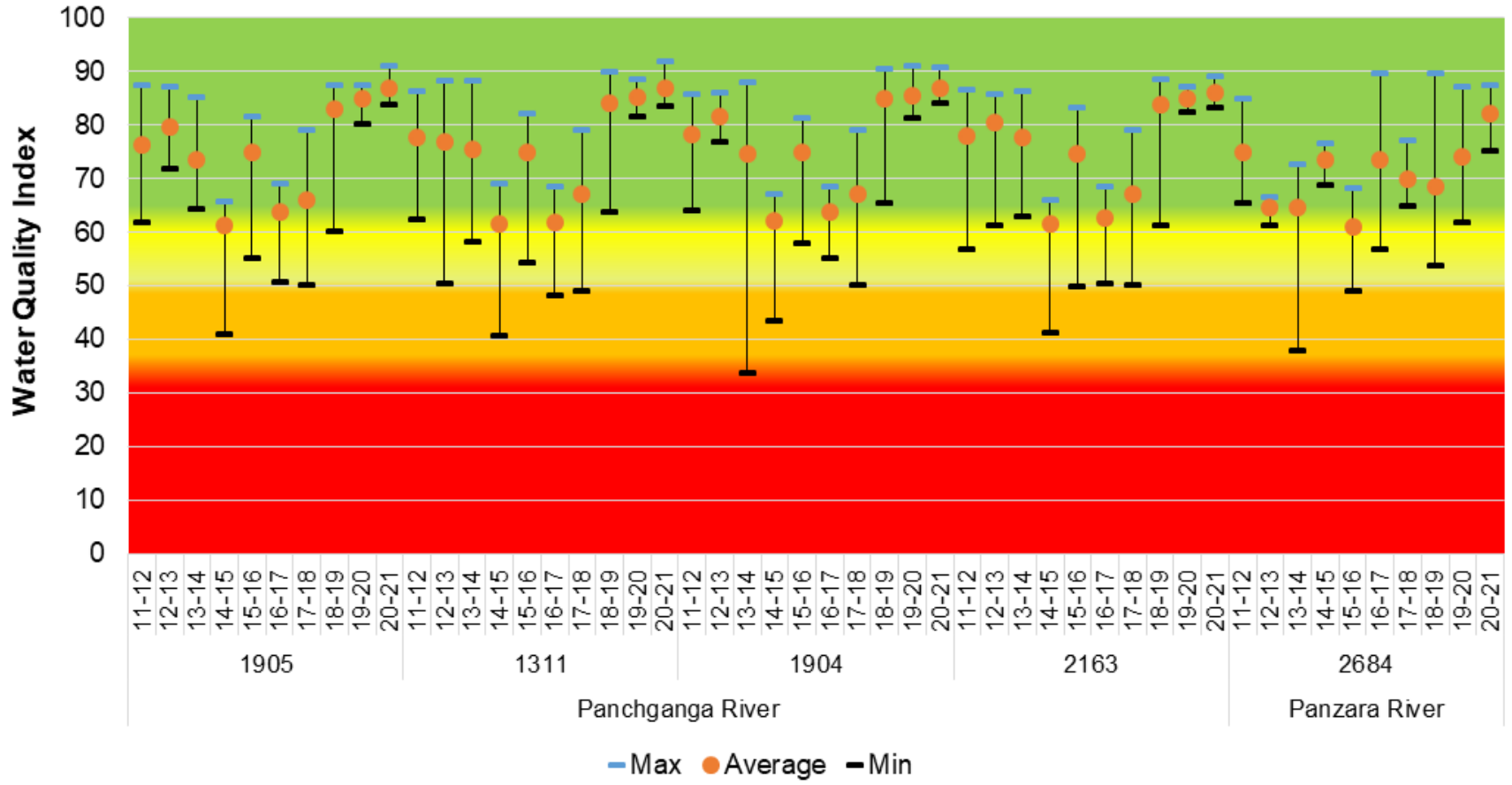

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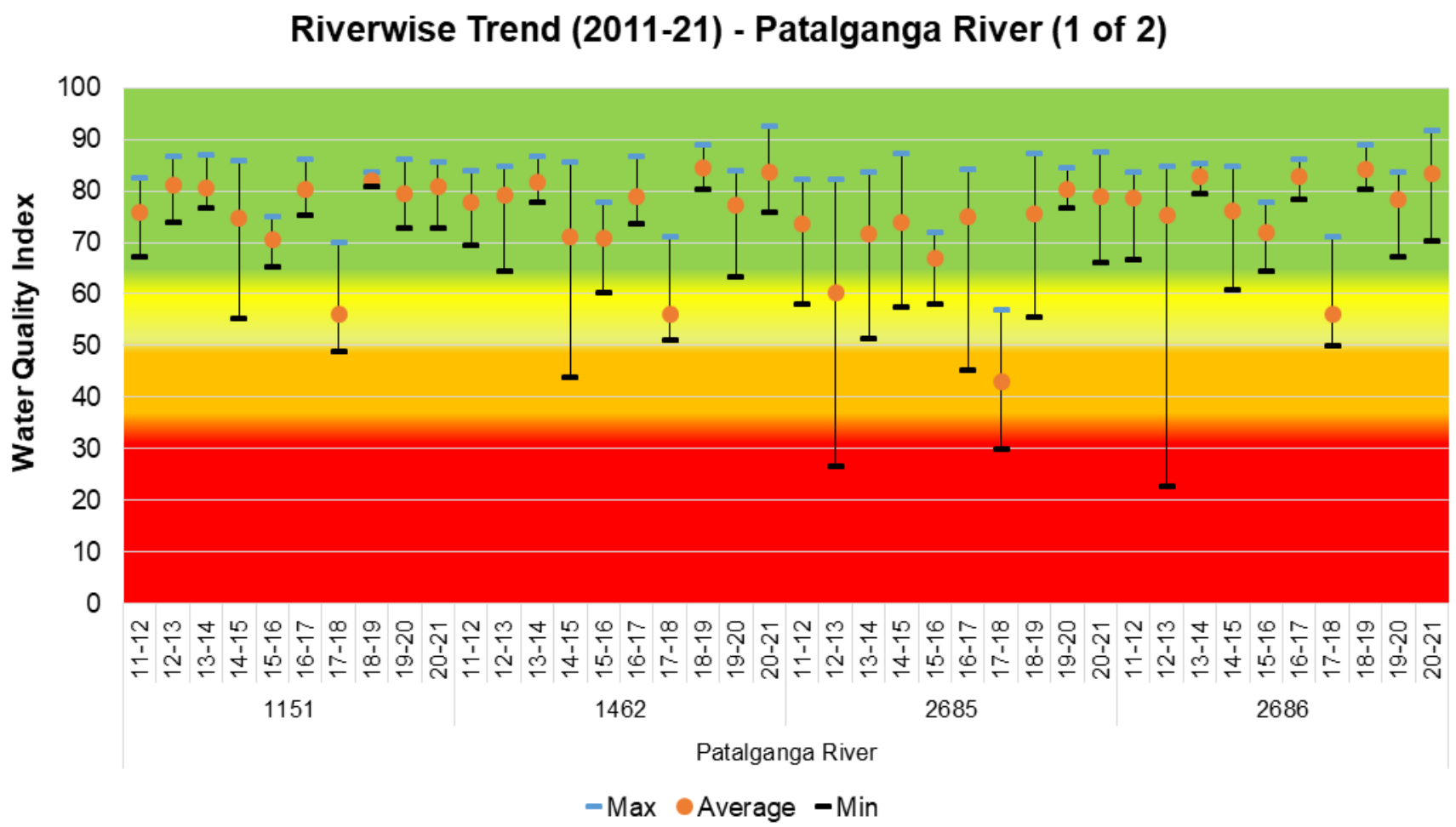
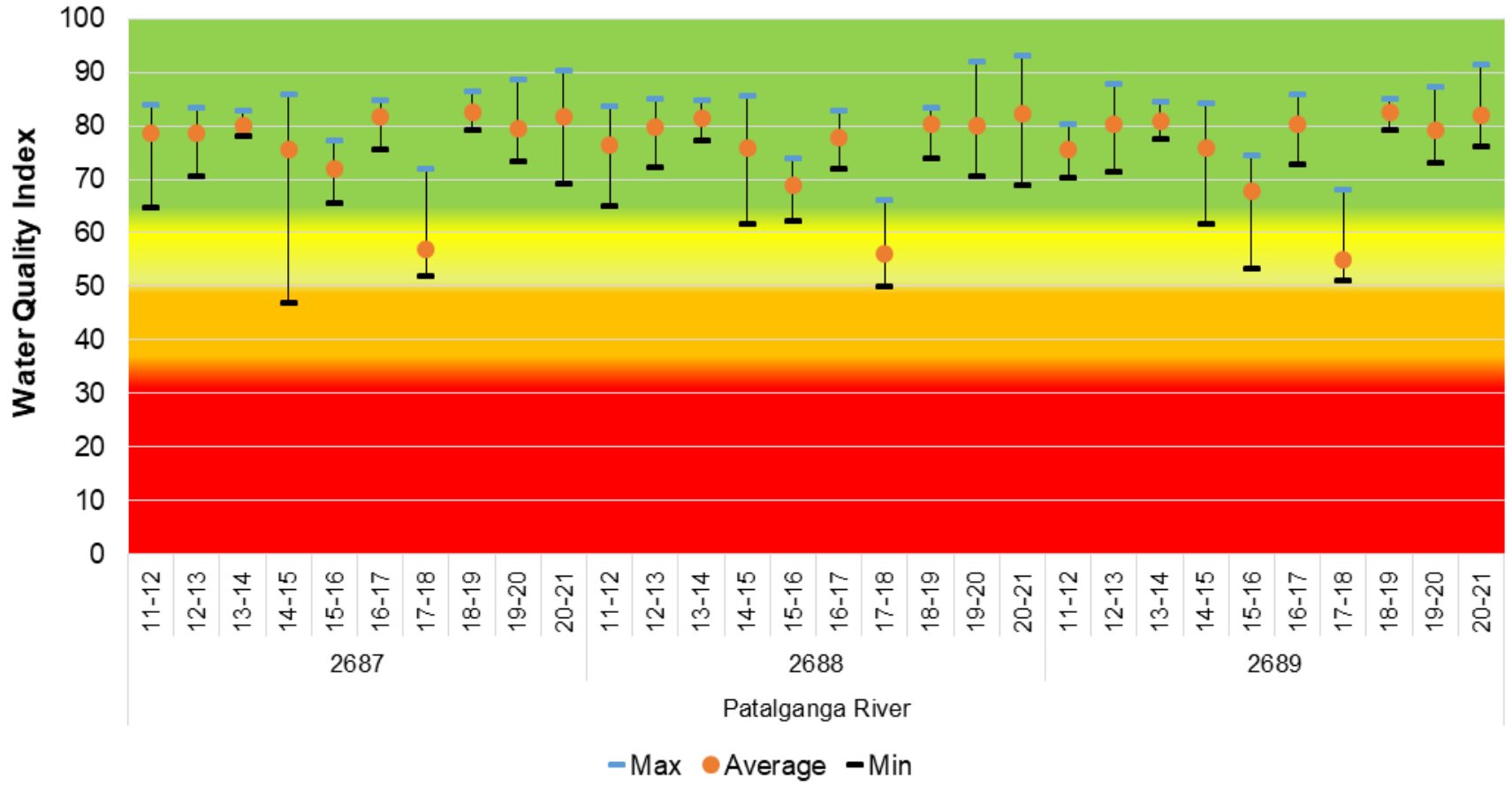


Note: * Stations are Dry/ No data available for respective year



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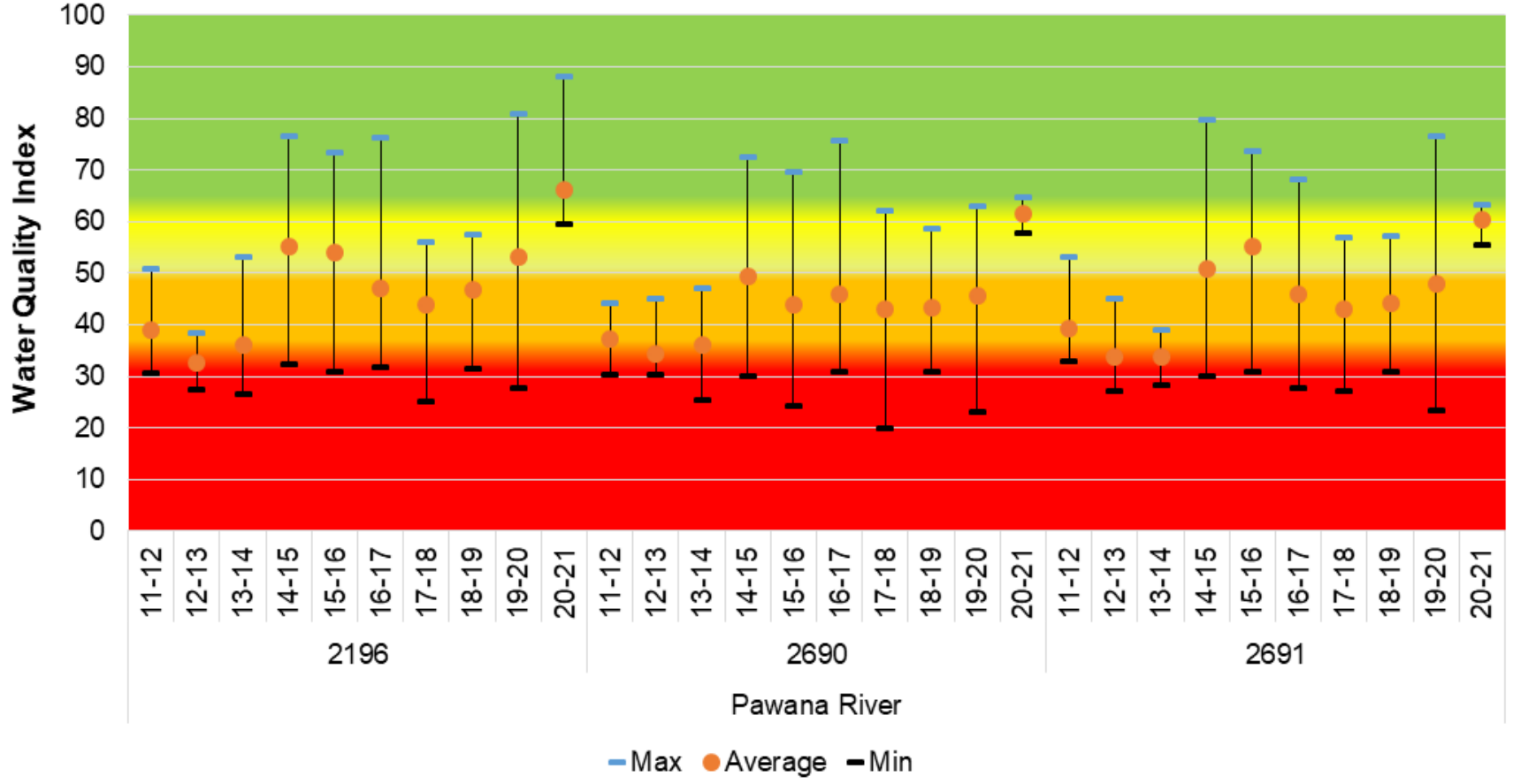

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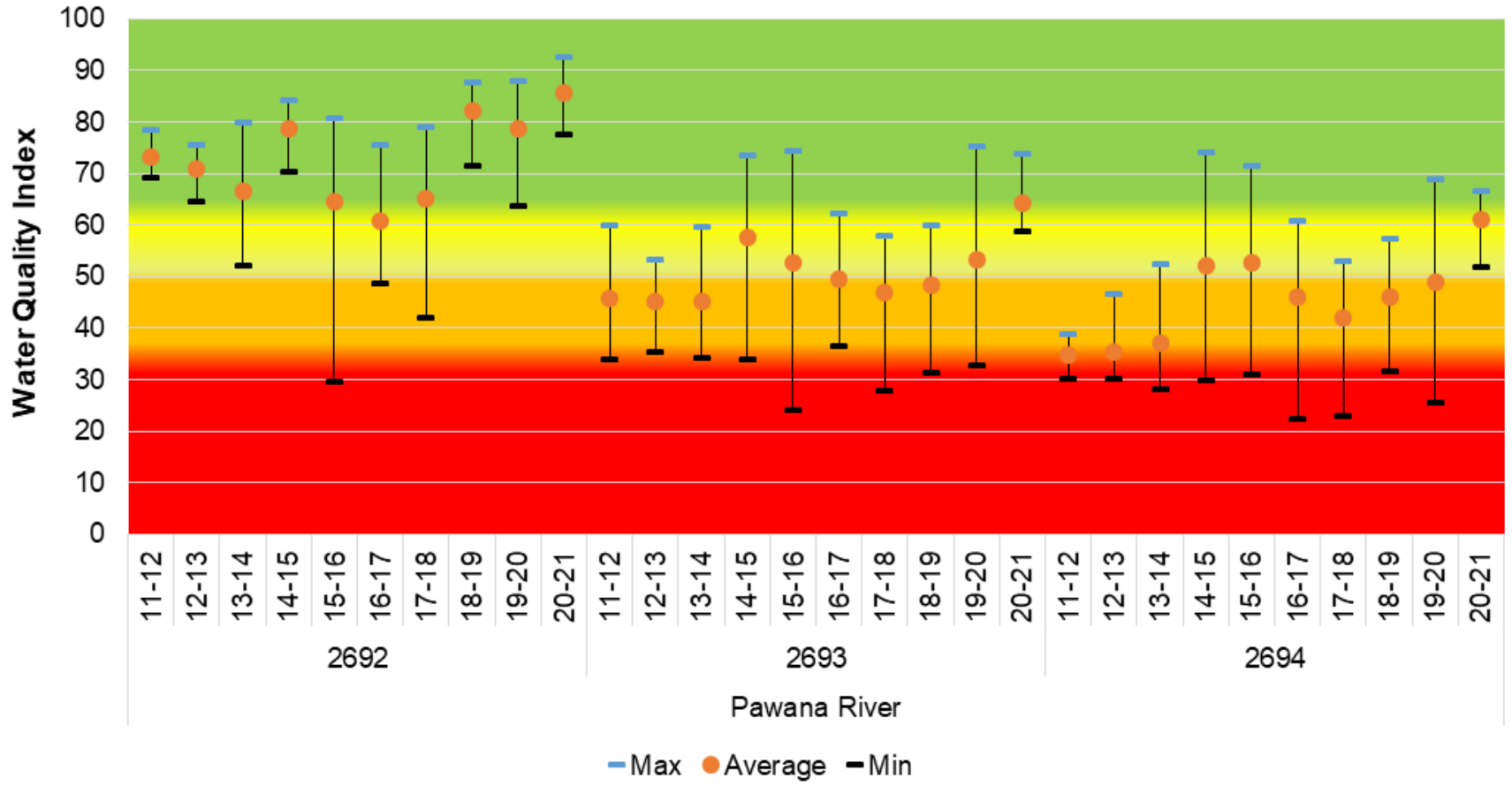

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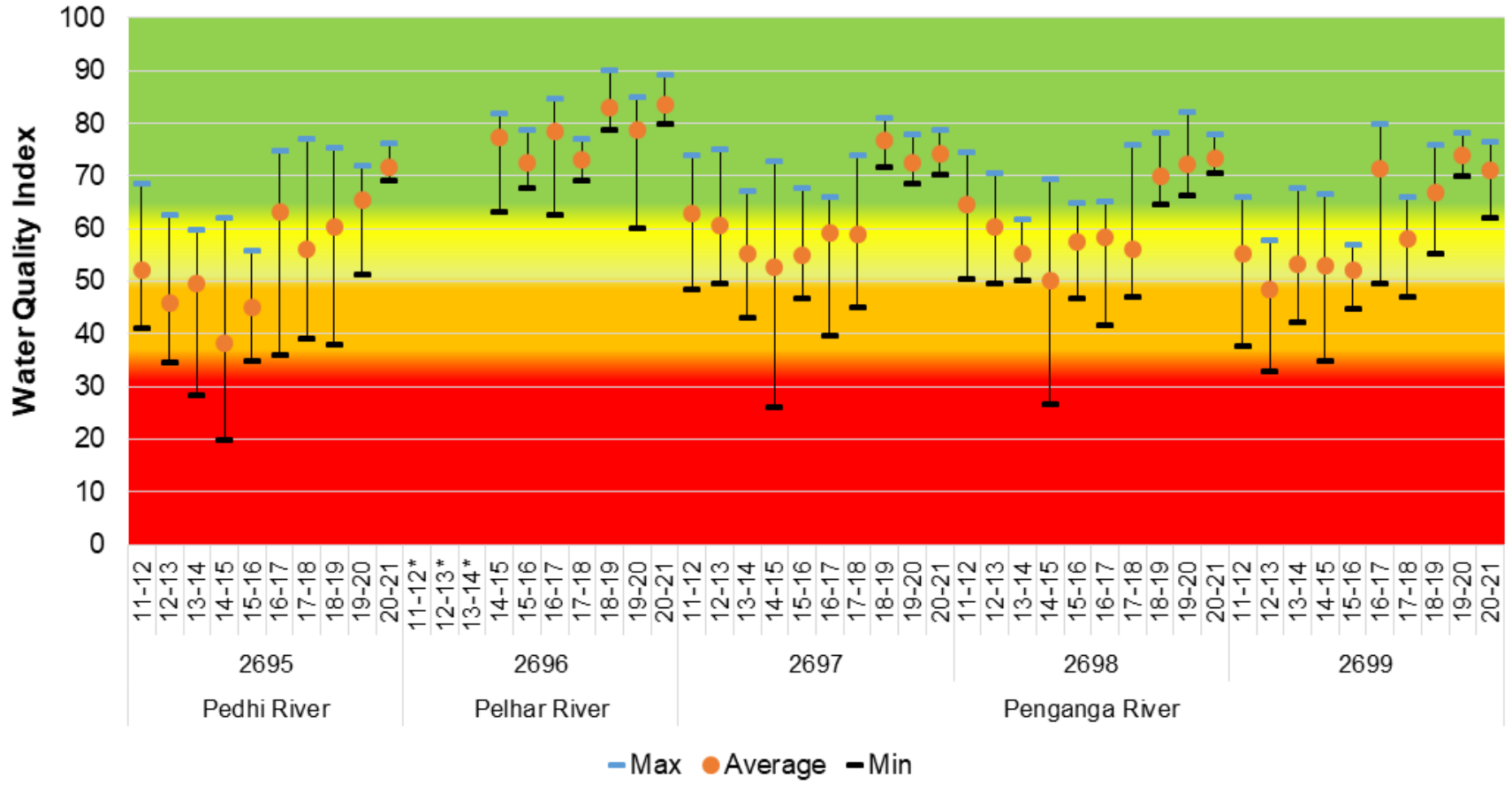
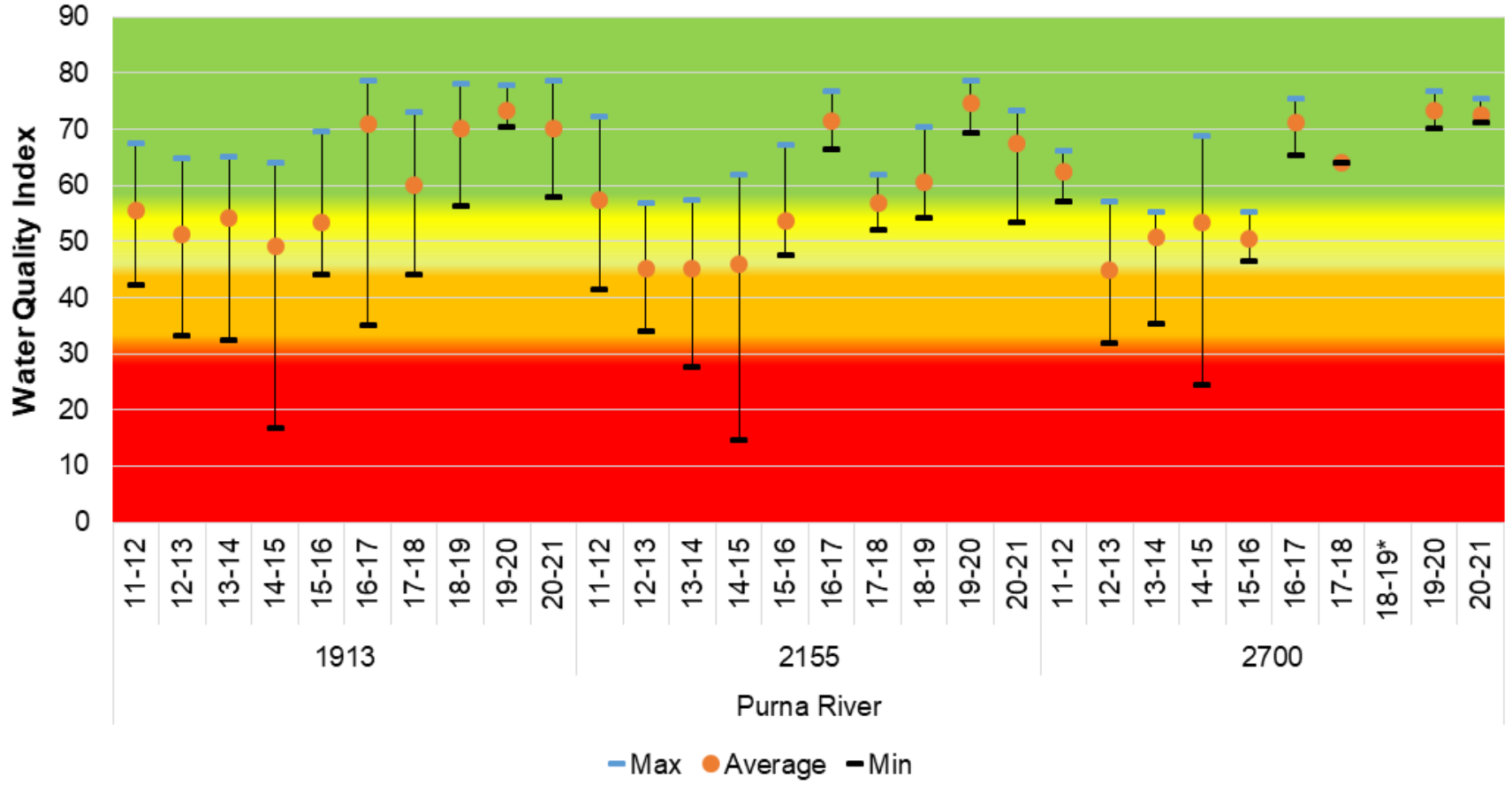


Note: * Stations are Dry/ No data available for respective year



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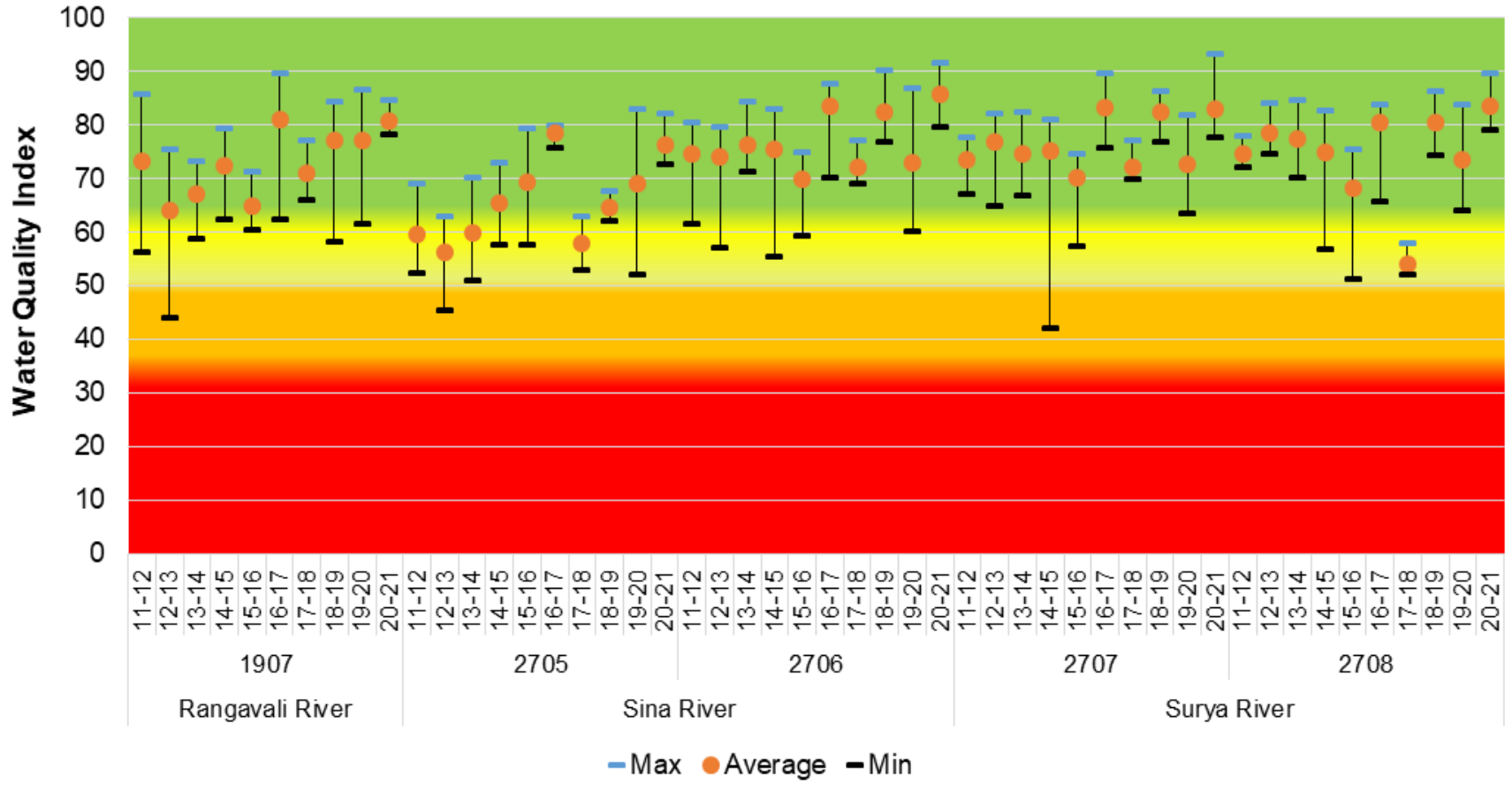
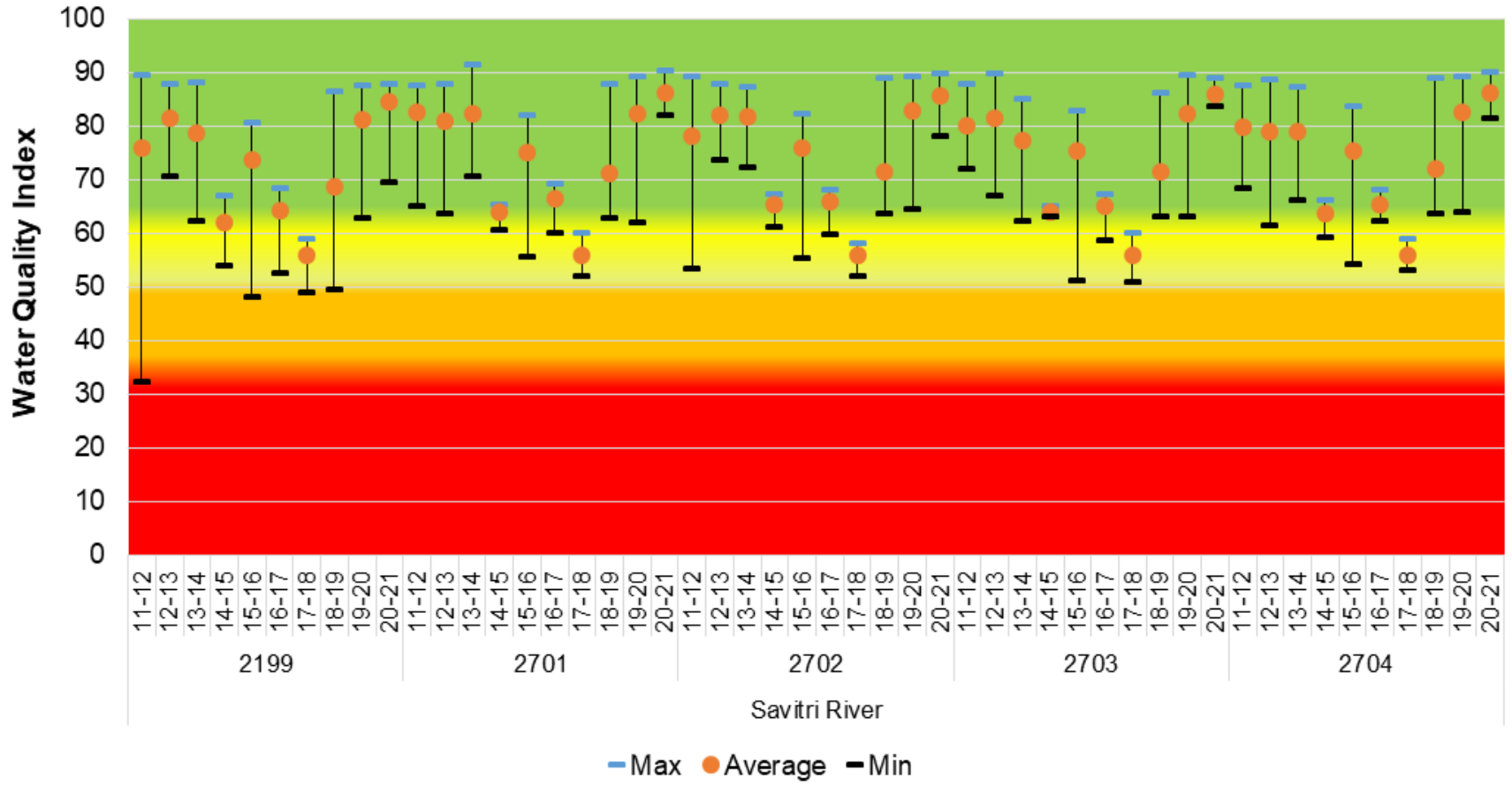
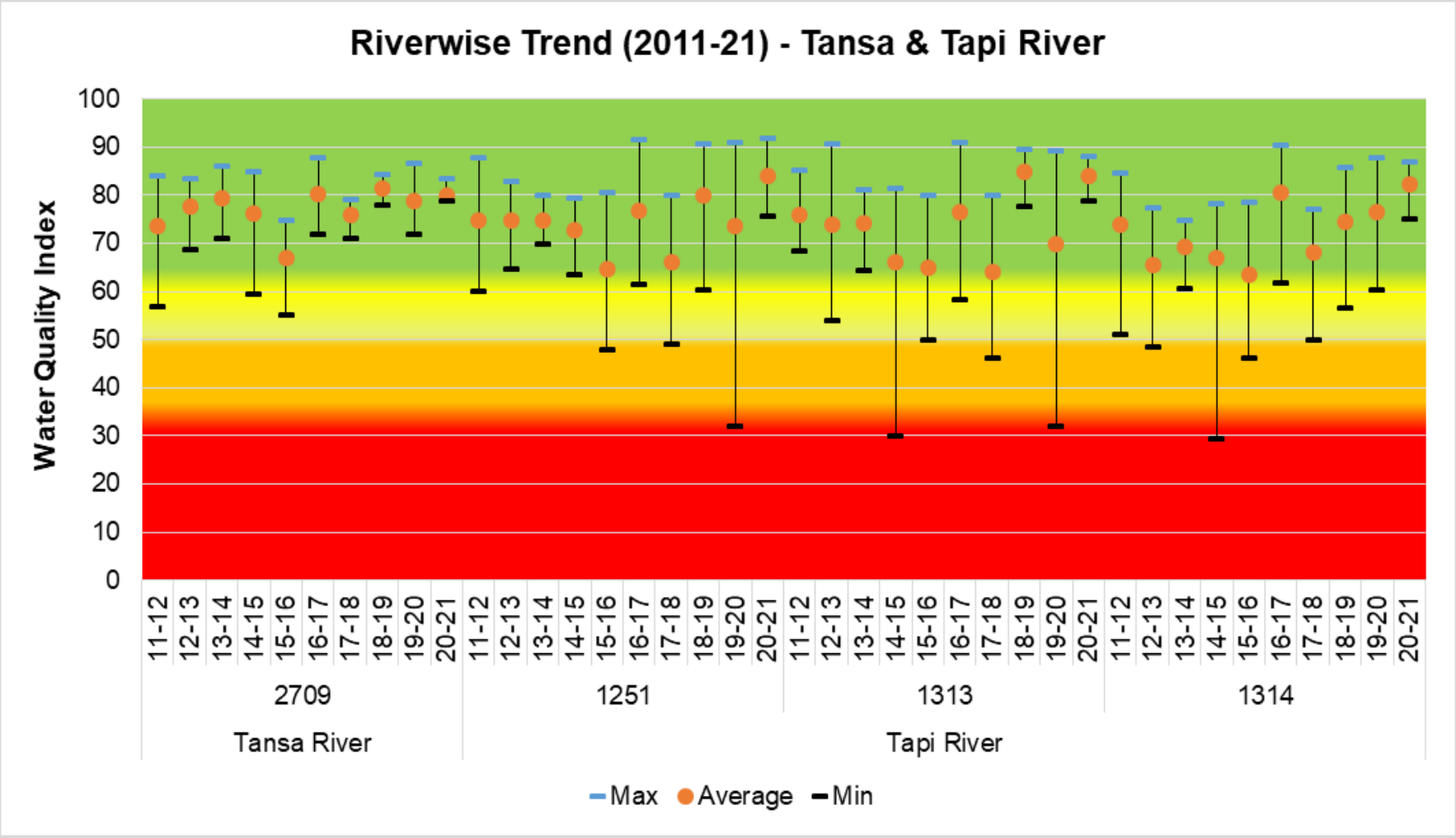


Note: * Stations are Dry/ No data available for respective year



Note: * Stations are Dry/ No data available for respective year



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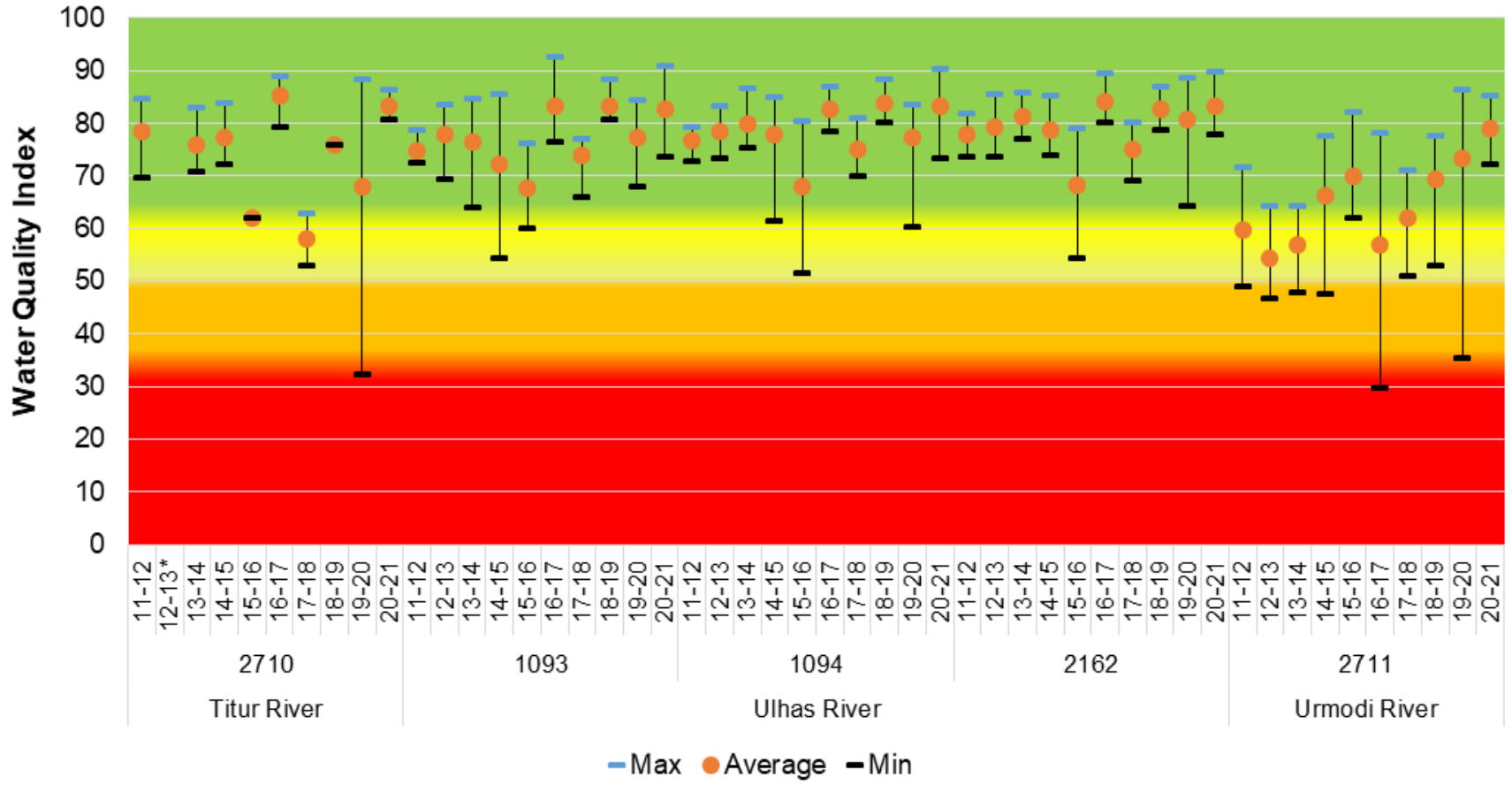
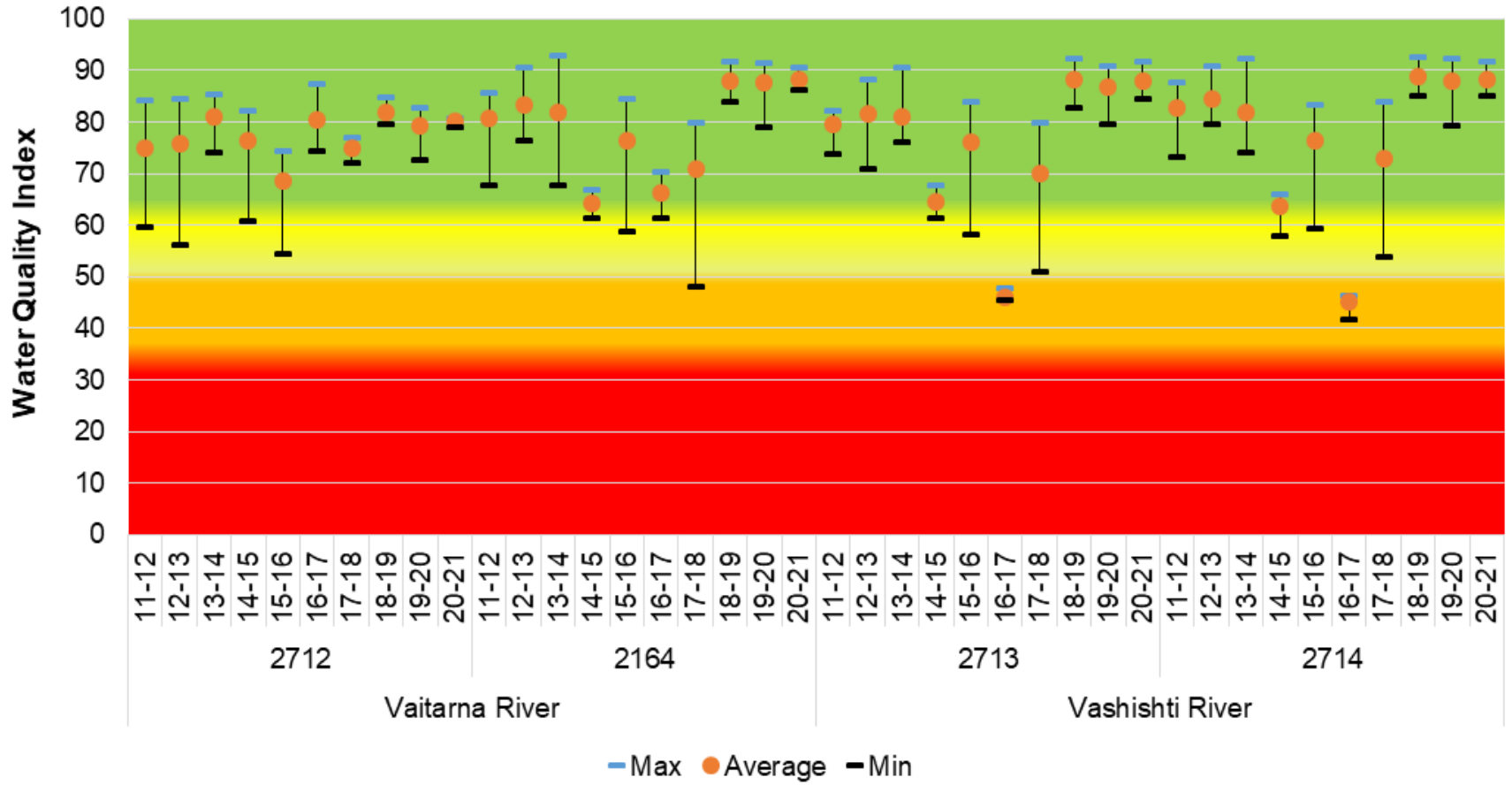


Note: * Stations are Dry/ No data available for respective year



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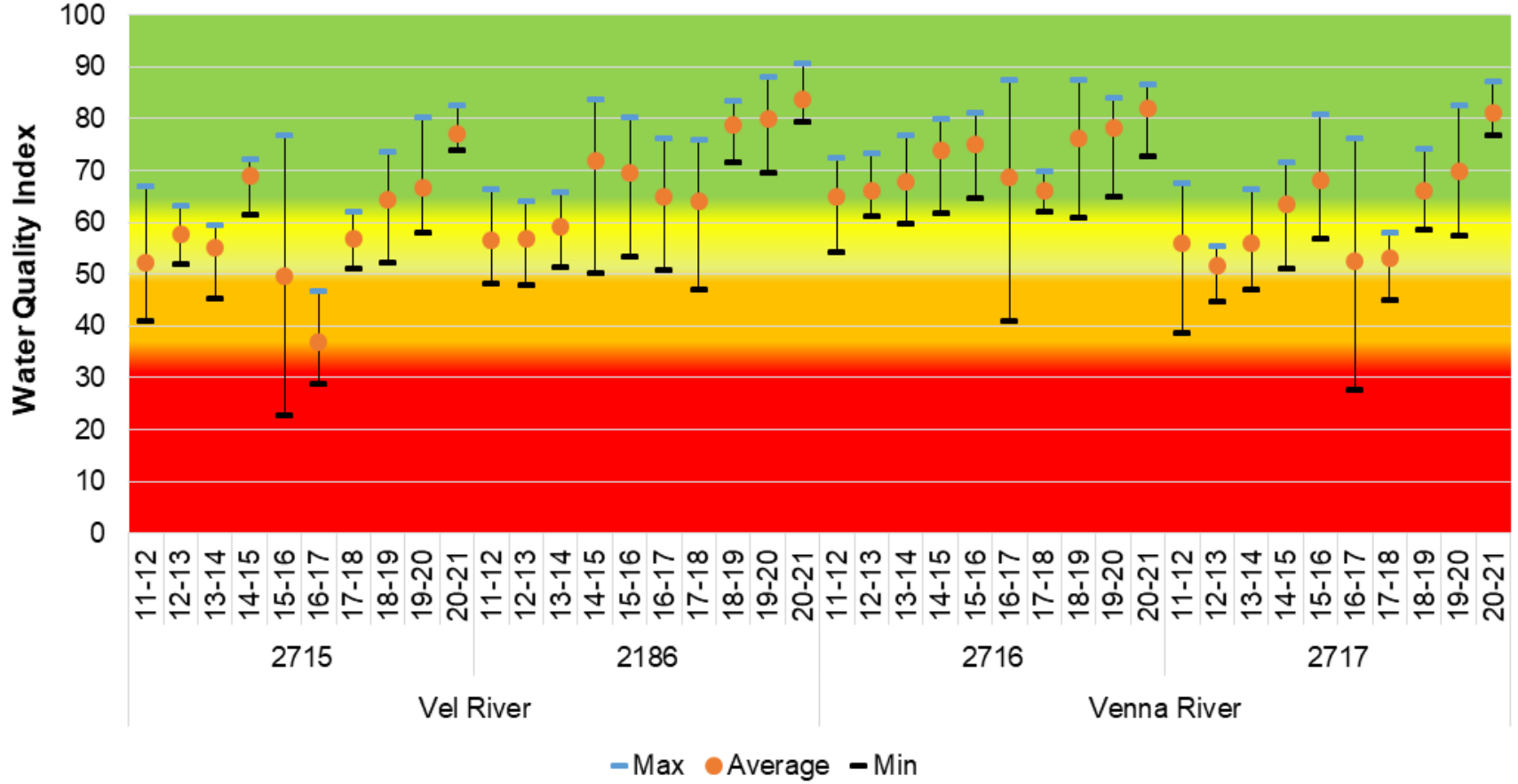

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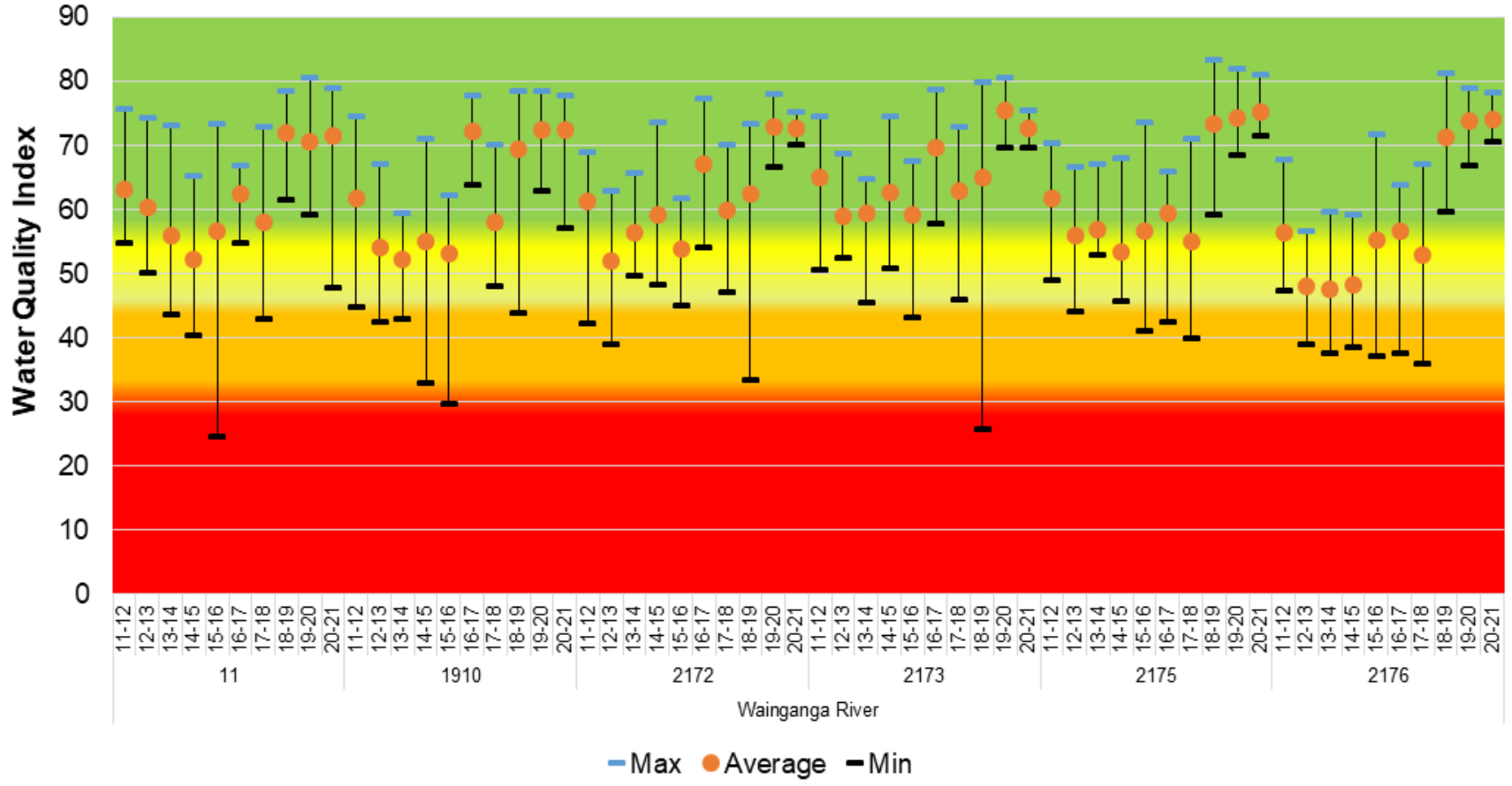

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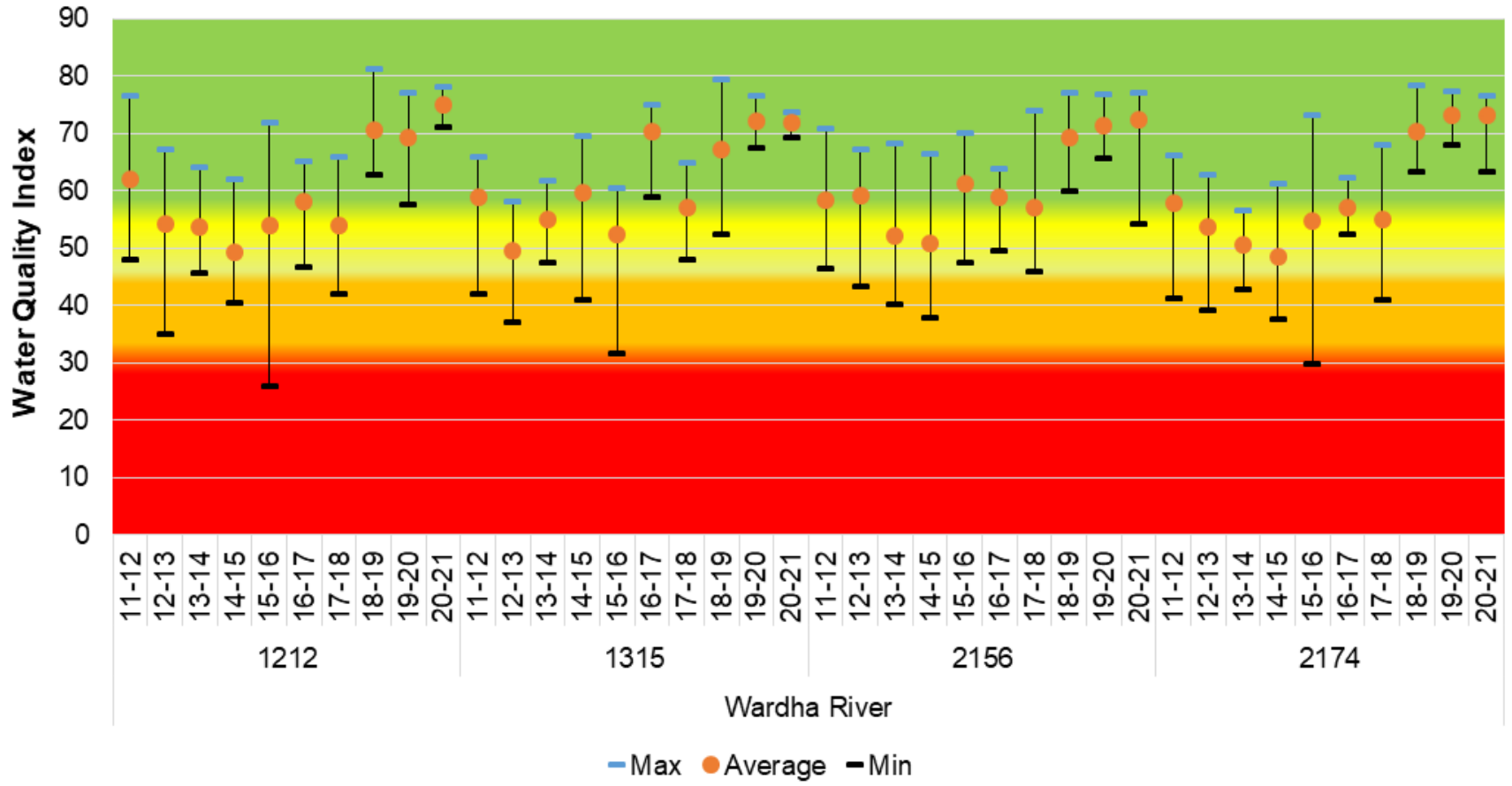

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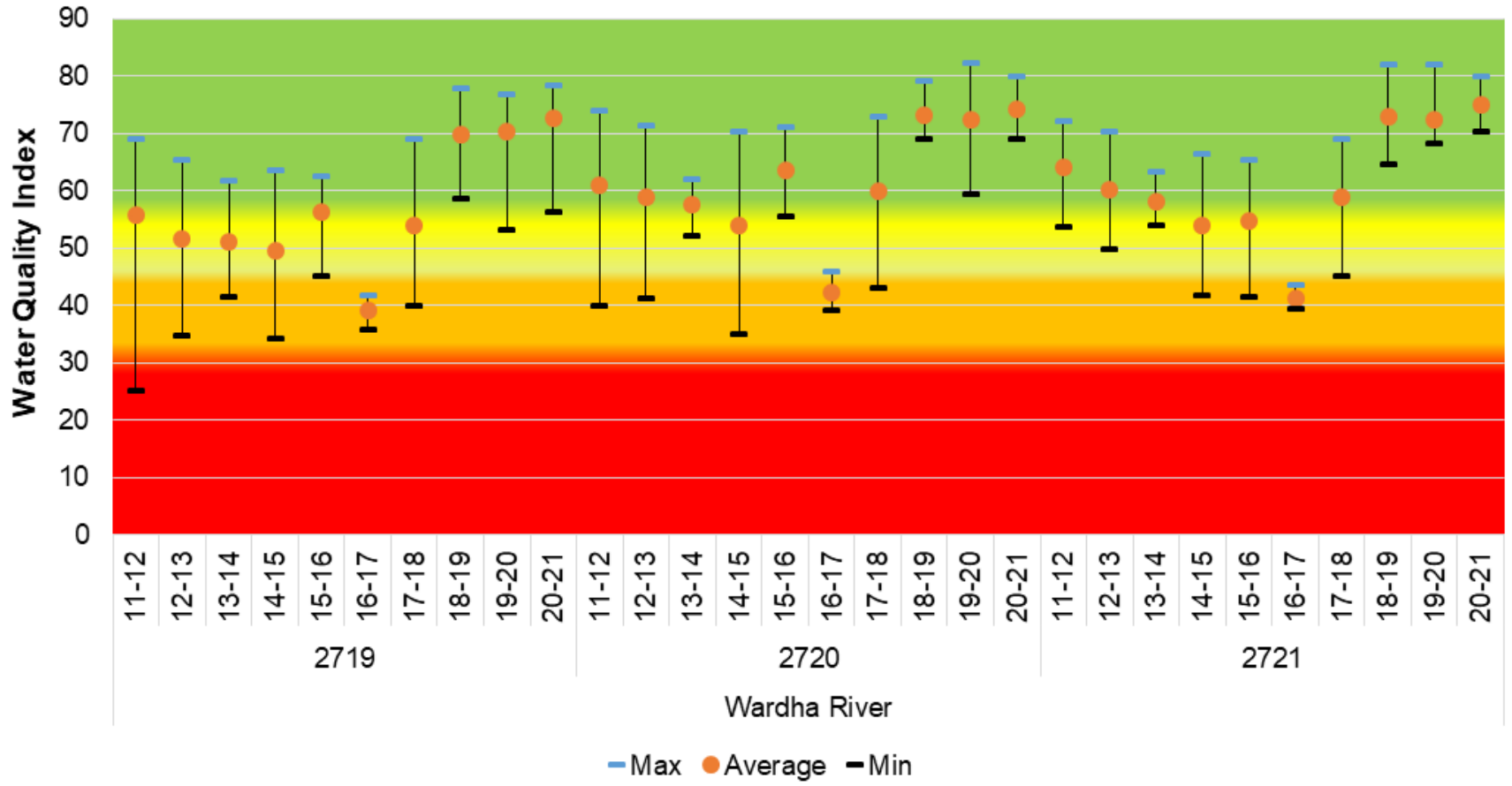
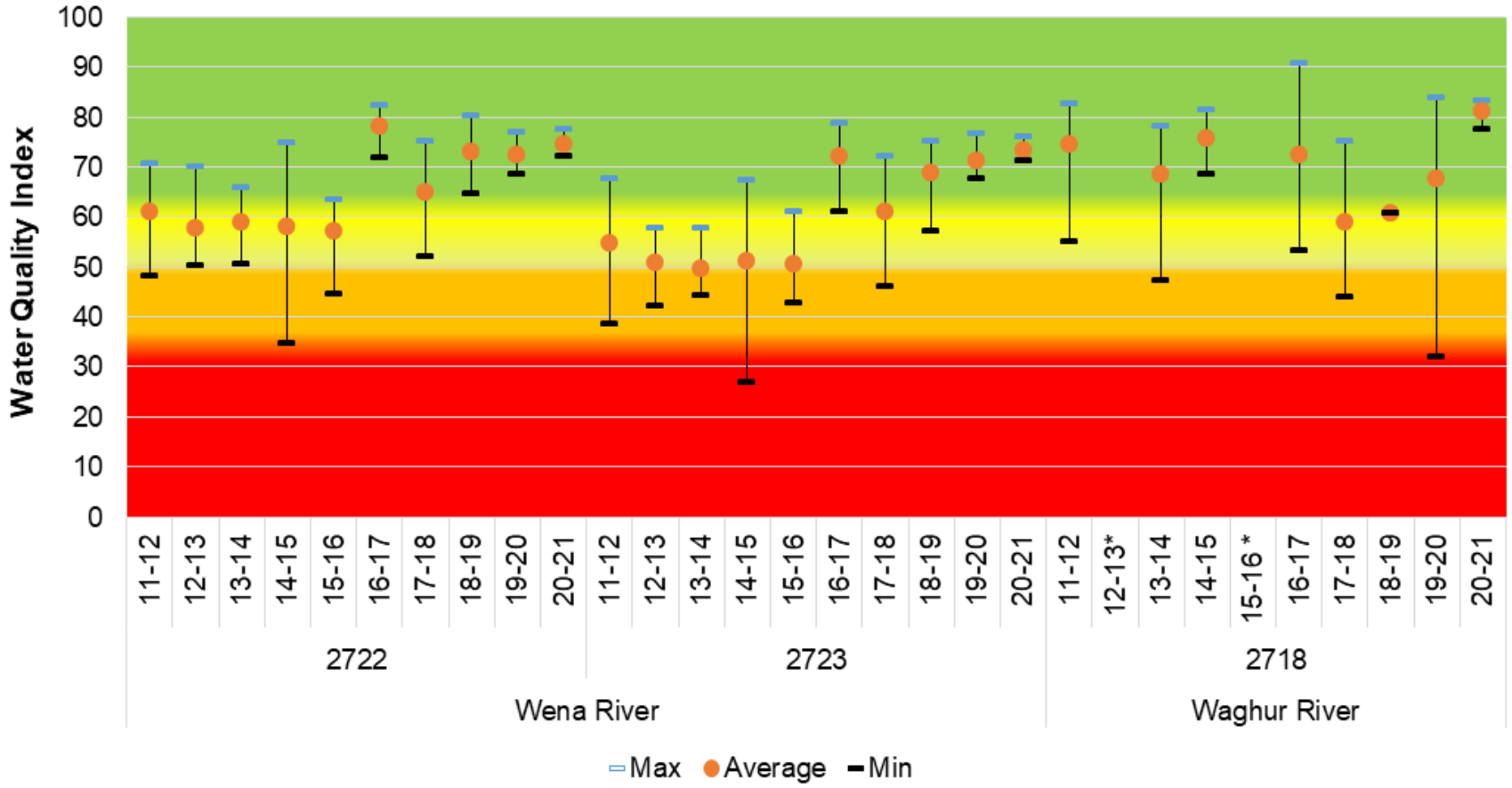


Note: * Stations are Dry/ No data available for respective year

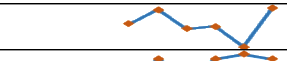
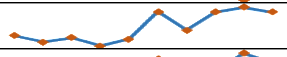
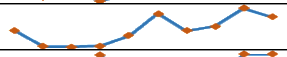
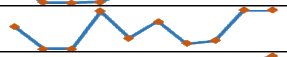
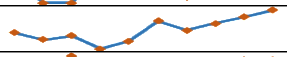
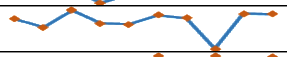
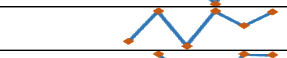
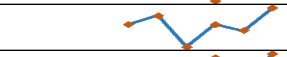
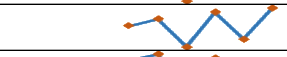
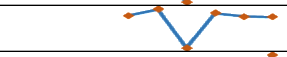
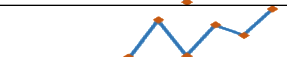
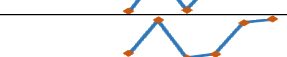
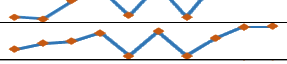


Note: * Stations are Dry/ No data available for respective year

Annex VII Stationwise Trend in WQI (2011-21)

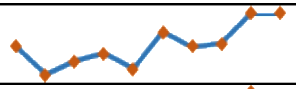
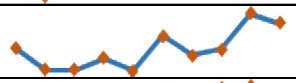
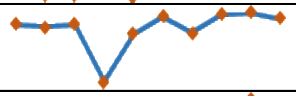
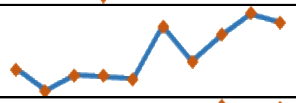
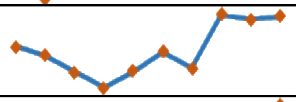
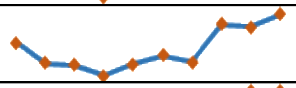
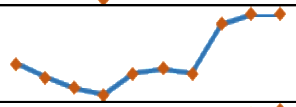
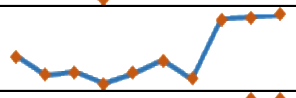
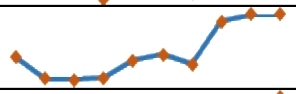
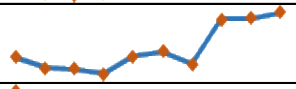
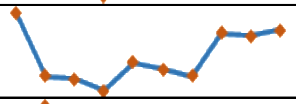
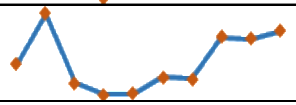
Surface water

Ahmednagar, Akola, Amravati & Aurangabad District

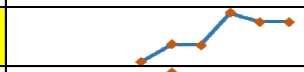
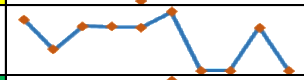
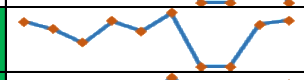
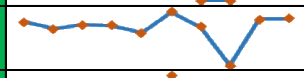
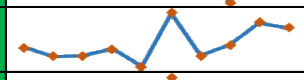
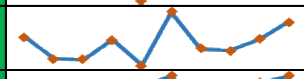
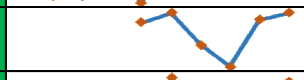
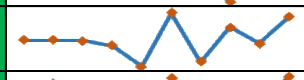
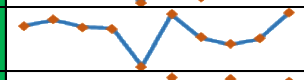
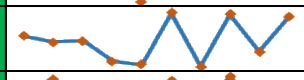
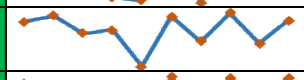
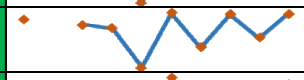
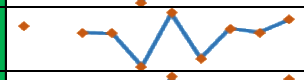
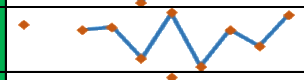
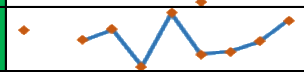
District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Ahmednagar	195					48	60	44	46	29	62		Quality Improved	4.32
Akola	1913	55	51	54	49	53	70	59	70	73	70		Quality Improved	2.36
Akola	2155	57	46	45	46	54	70	57	61	75	68		Quality Improved	1.66
Akola	2675	59	41	41	71	50	63	46	48	72	72		Quality Improved	2.04
Amravati	2695	52	46	49	38	45	62	54	60	65	72		Quality Improved	3.20
Amravati	2700	62	45	81	53	51	70	64	Dry	73	73		Quality Improved	1.53
Aurangabad	178					68	82	66	82	75	82		Quality Improved	3.12
Aurangabad	179						81	38	Dry	82	80		No Significant Change	-0.38
Aurangabad	180					60	67	42	60	55	73		Quality Improved	3.30
Aurangabad	181					62	65	53	67	56	69		Quality Improved	1.96
Aurangabad	182					63	68	40	65	62	62		No Significant Change	-0.21
Aurangabad	183					58	76	58	73	68	81		Quality Improved	5.91
Aurangabad	184					66	81	64	66	80	81		Quality Improved	3.49
Aurangabad	1312	80	78	79	85	73	85	75	85	87	87		No Significant Change	0.89
Aurangabad	2158	79	79	78	83	73	85	70	84	87	87		No Significant Change	0.90
Aurangabad	2159	73	73	79	83	74	84	73	85	87	87		Quality Improved	1.69
Aurangabad	2160	75	78	80	84	72	85	72	81	87	87		Quality Improved	1.46

For calculation of CAGR refer to Page No. 27

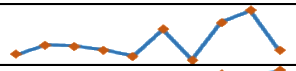
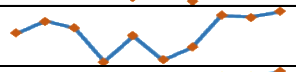
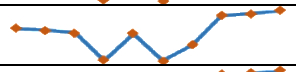
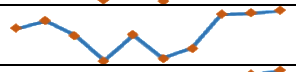
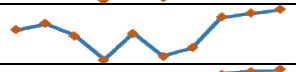
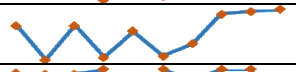
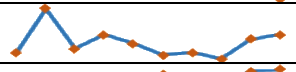
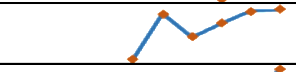
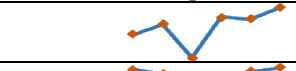
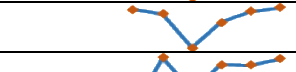
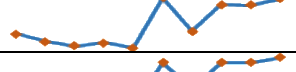
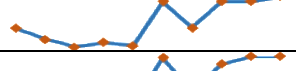
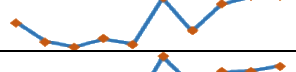
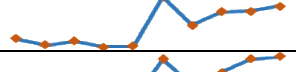
Bandara, Beed & Chandrapur District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Bandara	2172	61	52	56	59	54	66	61	62	73	73		Quality Improved	1.71
Bandara	2173	65	59	59	63	59	69	64	65	75	73		Quality Improved	1.05
Beed	2657	78	76	78	41	71	83	73	84	86	82		No Significant Change	0.48
Buldana	2699	55	48	53	53	52	70	58	67	74	71		Quality Improved	2.55
Chandrapur	11	63	61	56	52	57	62	57	72	70	71		Quality Improved	1.23
Chandrapur	1212	63	54	54	49	54	57	55	71	69	75		Quality Improved	1.78
Chandrapur	2174	58	54	51	48	55	57	55	70	73	73		Quality Improved	2.38
Chandrapur	2175	62	56	57	53	57	61	55	73	74	75		Quality Improved	1.97
Chandrapur	2176	57	48	48	48	55	58	54	71	74	74		Quality Improved	2.74
Chandrapur	2719	56	52	51	50	56	58	53	70	70	73		Quality Improved	2.69
Chandrapur	2720	80	59	58	54	63	61	59	73	72	74		No Significant Change	-0.77
Chandrapur	2721	64	81	58	55	55	60	59	73	73	75		Quality Improved	1.57

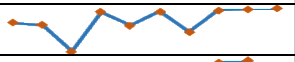
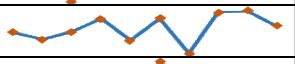
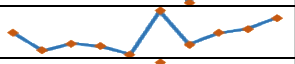
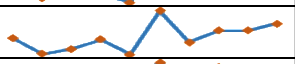
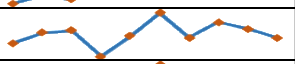
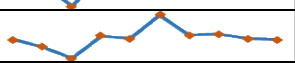
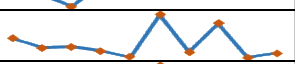
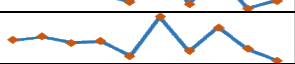
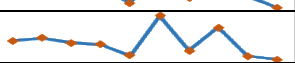
Dhule & Jalgaon District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Dhule	197					50	54	54	63	61	61		Quality Improved	3.43
Dhule	2652	75	31	65	64	64	87	No data	Dry	63	Dry		Quality Deteriorated	-1.63
Dhule	2659	75	63	40	76	59	90	No data	Dry	71	77		No Significant Change	0.35
Dhule	2666	73	62	69	67	55	90	65	Dry	77	79		No Significant Change	0.77
Dhule	2670	73	69	70	73	65	89	70	74	84	82		Quality Improved	1.11
Dhule	2684	75	65	64	74	62	87	70	69	74	82		No Significant Change	0.92
Jalgaon	196					59	65	45	32	61	65		Quality Improved	1.64
Jalgaon	1251	75	75	75	73	65	86	66	80	74	84		Quality Improved	1.16
Jalgaon	1252	74	78	74	73	50	81	67	63	67	83		Quality Improved	1.05
Jalgaon	1313	76	74	74	66	65	85	64	85	70	84		No Significant Change	0.97
Jalgaon	2658	80	83	73	75	53	83	68	85	67	80		No Significant Change	0.10
Jalgaon	2667	78		75	72	46	83	60	82	66	82		No Significant Change	0.48
Jalgaon	2674	78		74	74	56	86	60	77	75	82		No Significant Change	0.40
Jalgaon	2710	79		76	77	62	84	58	76	68	83		No Significant Change	0.57
Jalgaon	2718	74		69	76	51	86	59	61	68	81		No Significant Change	0.85

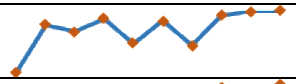
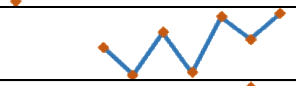
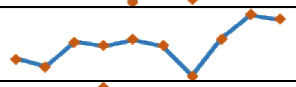
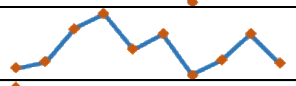
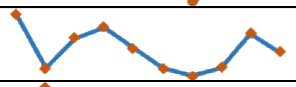
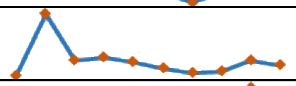
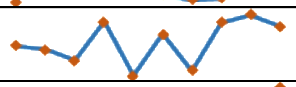
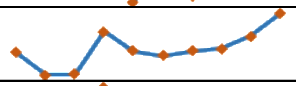
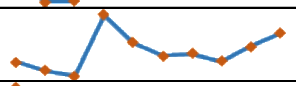
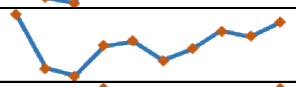
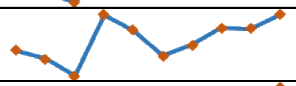
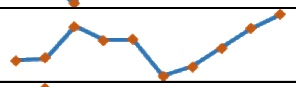
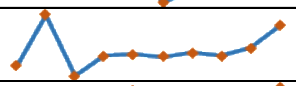
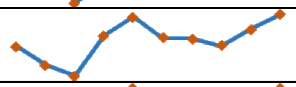
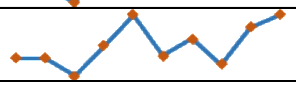
Jalna, Kolhapur, Latur & Nagpur District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Jalna	2161	75	78	77	77	75	82	74	84	87	76		No Significant Change	0.12
Kolhapur	1153	76	81	78	63	75	63	69	84	83	86		Quality Improved	1.26
Kolhapur	1310	78	70	77	63	73	63	69	84	84	86		Quality Improved	1.08
Kolhapur	1311	78	77	75	61	75	61	69	84	85	87		Quality Improved	1.12
Kolhapur	1904	78	82	75	62	75	63	68	85	85	87		Quality Improved	1.07
Kolhapur	1905	76	80	73	61	75	63	67	83	85	87		Quality Improved	1.31
Kolhapur	2163	78	60	78	62	75	62	68	84	85	86		Quality Improved	1.00
Latur	2673	78	76	77	85		85	69	84	84	Dry		No Significant Change	0.84
Mumbai	2168	34	61	36	44	39	32	34	30	42	44		Quality Improved	2.80
Nagpur	185					51	71	60	66	71	72		Quality Improved	6.03
Nagpur	186					32	38	28	35	37	46		Quality Improved	6.50
Nagpur	187					33	40	30	34	38	46		Quality Improved	5.72
Nagpur	188					38	41	29	44	43	48		Quality Improved	4.11
Nagpur	189					47	45	31	42	47	48		No Significant Change	0.33
Nagpur	1908	60	57	55	56	55	72	60	70	70	72		Quality Improved	1.85
Nagpur	1909	59	56	53	54	53	69	60	69	69	71		Quality Improved	1.79
Nagpur	1910	62	54	52	55	53	72	59	69	72	72		Quality Improved	1.60
Nagpur	2170	60	58	59	57	57	77	66	71	71	73		Quality Improved	1.94
Nagpur	2171	56	52	52	56	54	72	61	66	71	73		Quality Improved	2.64

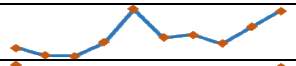
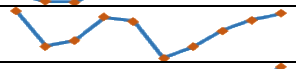
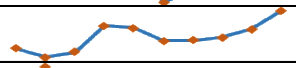
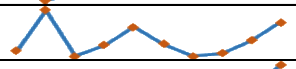
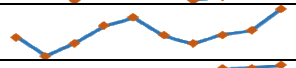
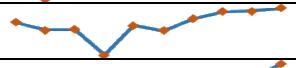
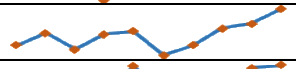
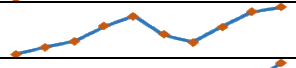
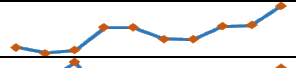
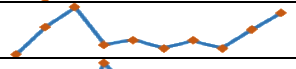
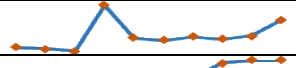
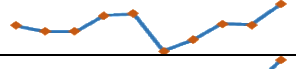
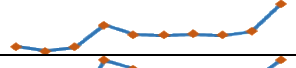
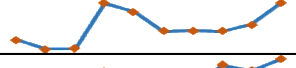
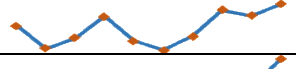
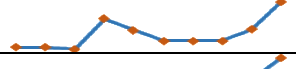
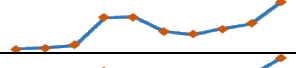
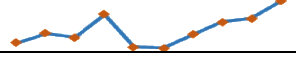
Nanded, Nandurbar & Nashik District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Nanded	1209	77	75	61	83	75	83	72	84	84	85		No Significant Change	1.00
Nanded	1210	79	77	79	83	76	84	72	86	86	81		No Significant Change	0.26
Nandurbar	1314	75	65	69	68	64	86	68	74	76	82		No Significant Change	0.98
Nandurbar	1907	73	65	67	72	65	88	71	77	77	81		No Significant Change	1.00
Nashik	194					62	88	55	79	Dry	73		Quality Improved	2.57
Nashik	1095	77	77	77	76	69	88	64	75	69	85		No Significant Change	0.99
Nashik	1096	63	66	70	69	63	80	68	82	71	66		No Significant Change	0.53
Nashik	1211	59	65	67	80	63	79	63	77	72	65		No Significant Change	0.93
Nashik	1253	77	65	70	74	63	84	73	67	63	60		Quality Deteriorated	-2.42
Nashik	2177	67	51	71	73	67	83	69	73	74	79		Quality Improved	1.63
Nashik	2178	49	54	51	68	59	72	59	67	76	62		Quality Improved	2.45
Nashik	2179	60	67	68	51	65	80	63	74	69	64		No Significant Change	0.61
Nashik	2180	53	60	63	67	63	80	62	72	70	57		No Significant Change	0.69
Nashik	2181	52	56	30	65	65	82	58	67	65	56		No Significant Change	0.59
Nashik	2182	66	60	51	69	67	87	70	71	67	66		No Significant Change	-0.06
Nashik	2183	76	71	72	70	67	87	69	83	67	69		No Significant Change	-0.98
Nashik	2660	73	72	72	71	68	89	72	67	69	68		No Significant Change	-0.66
Nashik	2661	75	75	72	72	68	89	67	83	65	69		No Significant Change	-0.84
Nashik	2662	75	77	74	75	67	88	69	82	71	64		Quality Deteriorated	-1.58
Nashik	2663	75	76	74	73	68	87	70	81	67	66		Quality Deteriorated	-1.24
Nashik	2664	77	74	72	70	69	88	72	80	69	66		Quality Deteriorated	-1.52

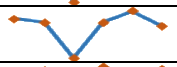
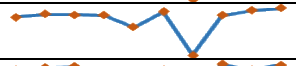
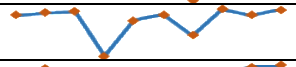
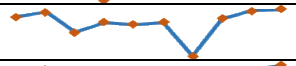
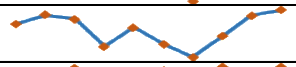
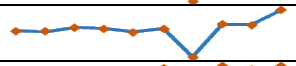
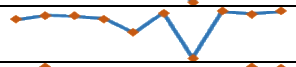
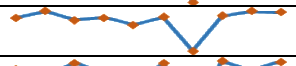
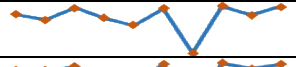
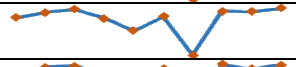
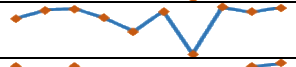
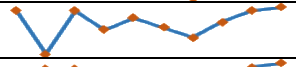
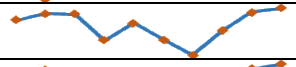
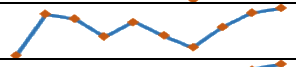
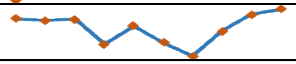
Osmanabad, Palghar & Pune District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Osmanabad	2157	61	81	78	83	73	82	72	85	86	87		Quality Improved	3.59
Palghar	2696				77	72	80	73	83	79	83		Quality Improved	1.11
Palghar	2785	24	22	27	26	28	26	20	28	33	32		Quality Improved	2.90
Palghar	2786	23	26	39	46	31	37	21	27	37	25		No Significant Change	0.85
Palghar	2787	43	24	35	39	31	24	22	25	37	30		Quality Deteriorated	-3.59
Palghar	2788	19	80	33	36	32	26	21	23	34	29		Quality Improved	4.32
Parbhani	12	79	78	75	84	71	81	73	84	86	83		No Significant Change	0.57
Pune	1189	46	37	37	54	47	45	47	48	52	61		Quality Improved	2.92
Pune	1190	39	33	30	70	52	43	45	39	49	58		Quality Improved	4.08
Pune	1191	81	47	42	61	64	52	59	70	67	76		No Significant Change	-0.65
Pune	1192	52	47	39	70	62	49	55	63	63	70		Quality Improved	3.11
Pune	1463	62	63	71	67	67	58	60	65	70	74		Quality Improved	1.81
Pune	2191	34	71	27	41	42	41	43	41	47	63		Quality Improved	6.19
Pune	2192	42	33	29	47	56	46	46	43	50	57		Quality Improved	3.02
Pune	2193	46	47	42	50	58	47	52	45	55	58		Quality Improved	2.29

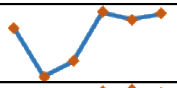
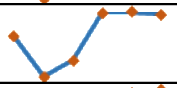
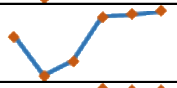
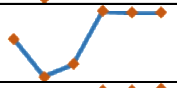
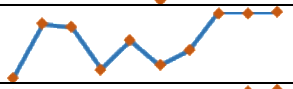
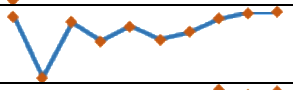
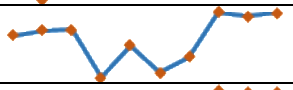
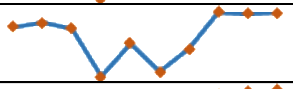
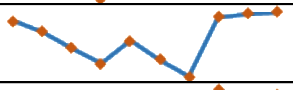
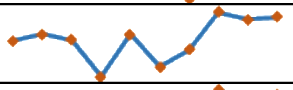
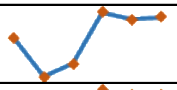
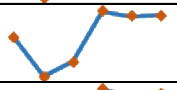
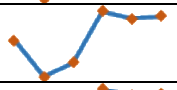
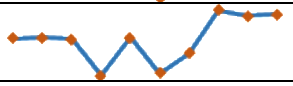
Pune District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Pune	2194	39	36	36	42	58	44	46	41	49	57		Quality Improved	3.72
Pune	2195	61	50	52	59	58	46	49	55	58	60		No Significant Change	-0.15
Pune	2196	39	33	36	55	54	45	45	47	53	66		Quality Improved	5.47
Pune	2197	54	71	51	56	64	57	51	53	58	66		Quality Improved	2.05
Pune	2655	57	46	54	63	68	58	53	58	61	73		Quality Improved	2.56
Pune	2656	64	59	59	41	62	58	67	72	73	75		Quality Improved	1.57
Pune	2665	54	61	51	60	62	48	54	64	67	76		Quality Improved	3.53
Pune	2668	49	49	61	55	64	55	51	53	64	65		Quality Improved	2.91
Pune	2669	53	55	57	62	65	59	57	62	67	68		Quality Improved	2.54
Pune	2677	42	36	39	59	58	49	48	60	61	77		Quality Improved	6.42
Pune	2678	38	51	60	42	44	40	44	40	49	57		Quality Improved	4.31
Pune	2679	33	31	29	71	41	39	42	40	43	57		Quality Improved	5.64
Pune	2680	74	51	69	42	72	63	69	83	86	86		Quality Improved	1.48
Pune	2682	61	59	59	65	66	52	56	62	62	69		Quality Improved	1.22
Pune	2690	37	34	37	49	44	44	44	43	46	62		Quality Improved	5.17
Pune	2691	39	34	34	60	55	44	45	44	48	60		Quality Improved	4.40
Pune	2692	73	60	66	79	65	60	67	82	79	86		Quality Improved	1.55
Pune	2693	46	46	45	57	53	49	48	48	53	64		Quality Improved	3.45
Pune	2694	35	35	37	52	53	45	43	46	49	61		Quality Improved	5.78
Pune	2715	52	58	55	69	50	49	57	64	67	77		Quality Improved	4.00

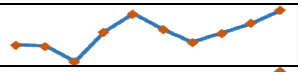
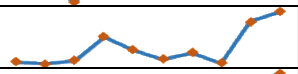
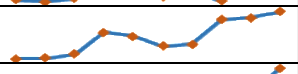
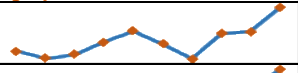
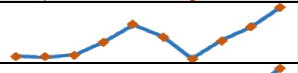
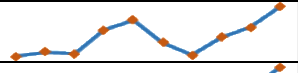
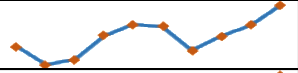
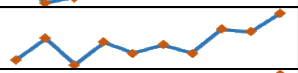
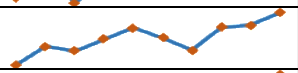
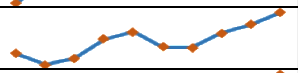
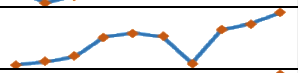
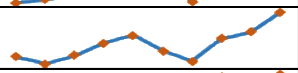
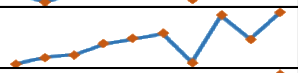
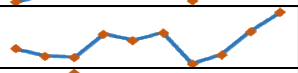
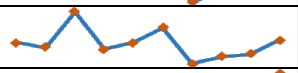
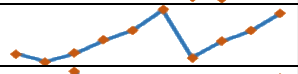
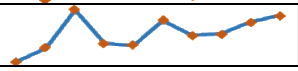
Raigad District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Raigad	192					72	83	55	80	80	80		Quality Improved	1.87
Raigad	193					71	81	56	80	82	82		Quality Improved	2.28
Raigad	216					65	62	34	62	72	59		Quality Deteriorated	-1.59
Raigad	1151	76	81	70	75	71	80	55	82	80	81		No Significant Change	0.62
Raigad	1152	76	78	77	77	70	79	53	77	80	82		No Significant Change	0.71
Raigad	1462	78	80	82	31	71	78	55	84	77	84		No Significant Change	0.75
Raigad	2198	73	76	63	70	68	70	48	72	77	79		No Significant Change	0.69
Raigad	2199	76	81	79	63	74	64	56	69	81	84		Quality Improved	1.04
Raigad	2651	77	78	80	77	69	78	54	80	78	80		No Significant Change	0.50
Raigad	2671	59	59	62	61	58	61	38	64	64	76		Quality Improved	2.54
Raigad	2672	77	79	79	77	69	80	55	81	80	82		No Significant Change	0.63
Raigad	2685	74	81	72	74	67	74	42	75	80	79		No Significant Change	0.71
Raigad	2686	79	75	83	76	72	83	54	84	78	83		No Significant Change	0.58
Raigad	2687	79	79	80	76	72	82	55	83	79	82		No Significant Change	0.36
Raigad	2688	76	80	81	76	69	77	55	80	80	82		No Significant Change	0.73
Raigad	2689	76	81	81	76	68	80	54	82	79	82		No Significant Change	0.82
Raigad	2701	83	40	82	64	75	66	56	71	82	86		No Significant Change	0.44
Raigad	2702	78	82	82	65	76	66	56	71	83	86		No Significant Change	0.92
Raigad	2703	50	81	77	64	75	65	56	71	82	86		Quality Improved	5.57
Raigad	2704	80	79	80	64	75	65	57	72	82	86		No Significant Change	0.75

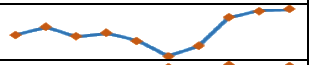
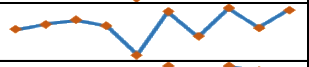
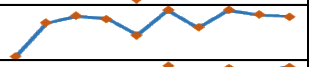
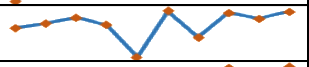
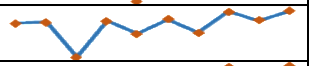
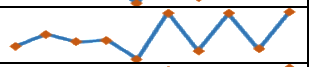
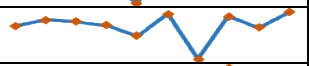
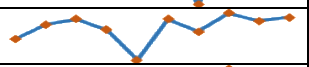
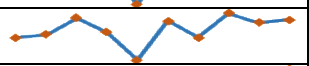
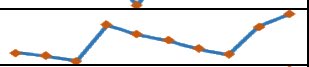
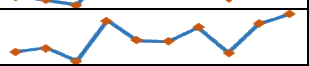
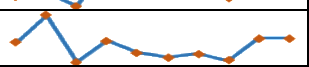
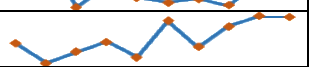
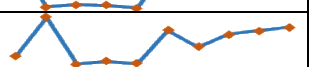
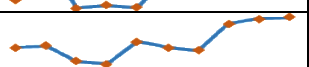
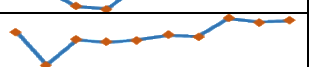
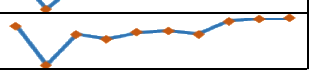
Ratnagiri and Sangli District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Ratnagiri	201					79	65	69	84	82	83		No Significant Change	0.89
Ratnagiri	202					79	65	71	87	88	87		Quality Improved	1.58
Ratnagiri	203					79	66	71	86	87	88		Quality Improved	1.80
Ratnagiri	204					78	65	70	88	87	87		Quality Improved	1.86
Ratnagiri	2164	61	83	82	64	77	66	72	88	88	88		Quality Improved	3.77
Ratnagiri	2676	84	31	79	63	75	64	70	82	86	88		No Significant Change	0.48
Ratnagiri	2713	80	82	82	64	76	66	72	88	87	88		No Significant Change	0.99
Ratnagiri	2714	83	85	82	64	77	65	74	89	88	88		No Significant Change	0.64
Ratnagiri	2790	79	73	65	56	69	59	49	81	83	84		No Significant Change	0.61
Sangli	37	76	78	76	62	78	66	72	87	84	85		Quality Improved	1.17
Sangli	198					78	64	69	87	84	85		Quality Improved	1.58
Sangli	199					78	64	69	87	85	85		Quality Improved	1.55
Sangli	200					77	64	69	87	84	85		Quality Improved	1.70
Sangli	1906	77	77	76	64	77	65	72	86	84	85		No Significant Change	0.98

Satara and Solapur District

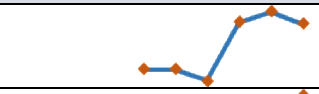
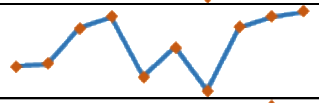
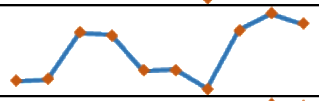
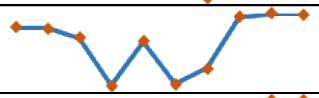
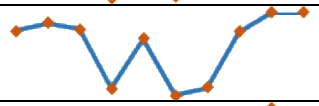
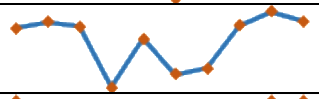
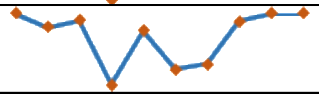
District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Satara	36	59	58	51	65	73	66	60	64	69	75		Quality Improved	2.53
Satara	1194	70	69	70	78	74	70	73	69	83	87		Quality Improved	2.27
Satara	2186	57	57	59	72	69	64	65	79	80	84		Quality Improved	3.97
Satara	2187	58	54	56	61	66	60	54	65	66	76		Quality Improved	2.79
Satara	2188	55	55	56	62	70	64	54	62	68	77		Quality Improved	3.40
Satara	2189	59	60	60	68	72	64	59	66	69	77		Quality Improved	2.73
Satara	2190	59	51	53	64	68	68	57	63	68	77		Quality Improved	2.67
Satara	2681	48	60	45	58	51	56	51	65	64	74		Quality Improved	4.49
Satara	2683	50	60	57	64	69	64	58	70	71	78		Quality Improved	4.49
Satara	2711	60	54	58	66	70	63	62	69	73	79		Quality Improved	2.85
Satara	2716	65	66	68	74	75	74	65	76	78	82		Quality Improved	2.35
Satara	2717	56	52	56	64	68	59	53	66	70	81		Quality Improved	3.79
Solapur	28	55	58	59	63	65	67	56	75	65	76		Quality Improved	3.21
Solapur	1188	62	59	59	67	65	67	57	60	68	74		Quality Improved	1.86
Solapur	1911	65	63	80	62	65	72	56	59	60	66		No Significant Change	0.17
Solapur	1912	59	56	58	52	62	62	51	50	59	65		No Significant Change	0.94
Solapur	2705	59	56	60	65	69	78	58	65	69	76		Quality Improved	2.52
Solapur	2789	30	43	80	47	46	70	55	56	68	74		Quality Improved	9.35

Thane, Wardha and Yavatmal District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Thane	1092	66	70	65	67	63	54	60	75	79	80		Quality Improved	1.97
Thane	1093	75	78	76	72	68	82	74	83	77	83		Quality Improved	1.00
Thane	1094	77	79	80	78	68	82	74	84	77	83		No Significant Change	0.79
Thane	1461	58	75	79	78	69	82	73	82	80	79		Quality Improved	3.08
Thane	2162	78	79	81	79	68	84	75	83	81	83		No Significant Change	0.67
Thane	2653	76	77	61	78	72	78	72	82	78	82		No Significant Change	0.72
Thane	2654	77	78	79	77	72	79	72	81	76	82		No Significant Change	0.61
Thane	2706	74	74	76	75	70	83	72	82	73	86		Quality Improved	1.41
Thane	2707	73	77	75	75	70	83	72	82	73	83		Quality Improved	1.21
Thane	2708	75	78	77	75	68	82	54	81	74	83		Quality Improved	1.12
Thane	2709	74	78	79	76	67	79	76	81	79	80		No Significant Change	0.85
Thane	2712	75	76	81	76	69	80	75	82	79	80		No Significant Change	0.67
Thane	2782	30	28	26	42	38	35	32	29	41	47		Quality Improved	4.70
Thane	2783	32	33	29	43	36	36	41	32	42	46		Quality Improved	3.64
Thane	2784	41	60	27	42	33	30	32	28	44	43		No Significant Change	0.66
Wardha	1315	59	50	55	60	52	70	57	67	72	72		Quality Improved	2.02
Wardha	2722	81	58	59	59	57	78	66	73	72	74		No Significant Change	-0.80
Wardha	2723	55	80	50	51	50	71	61	69	71	73		Quality Improved	2.99
Yavatmal	2156	58	59	52	51	61	58	57	69	71	72		Quality Improved	2.18
Yavatmal	2697	63	30	55	53	55	60	58	77	72	74		Quality Improved	1.64
Yavatmal	2698	64	21	55	50	57	59	55	70	72	73		Quality Improved	1.31

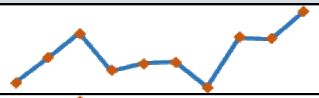
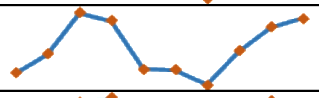
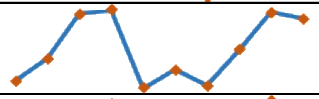
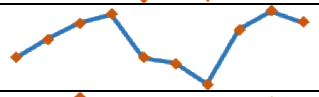
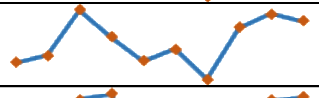
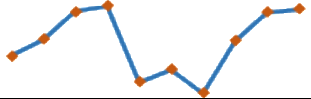
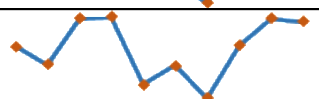
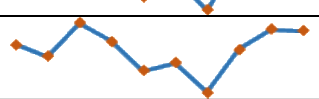
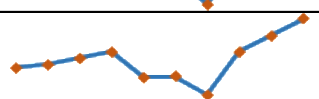
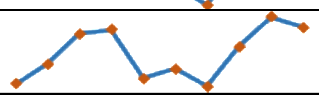
Saline water

Raigad & Ratnagiri District

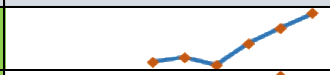
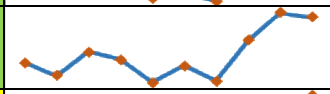
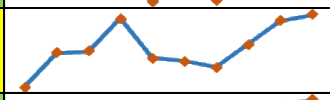
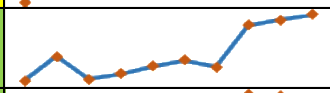
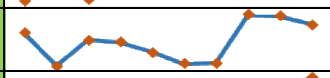
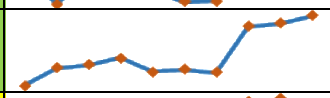
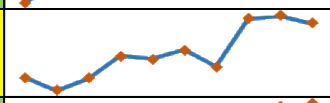
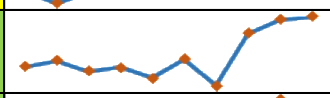
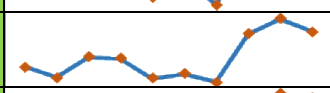
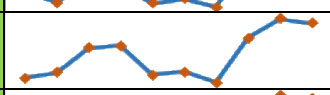
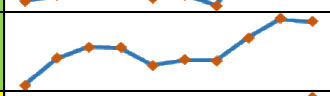
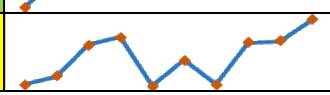
District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Raigad	191					48	48	46	54	56	54		No Significant Change	0.02
Raigad	1317	49	50	55	57	48	52	45	56	57	58		Quality Improved	1.68
Raigad	2803	55	55	70	69	58	58	52	71	76	73		Quality Improved	2.92
Ratnagiri	2804	82	82	79	63	77	64	69	85	87	86		No Significant Change	0.49
Ratnagiri	2813	75	77	76	62	74	60	62	75	80	80		No Significant Change	0.59
Ratnagiri	2814	74	76	75	54	71	59	61	75	80	77		No Significant Change	0.31
Ratnagiri	2815	78	73	76	53	72	58	60	75	78	78		No Significant Change	0.03

For calculation of CAGR refer to Page No. 27

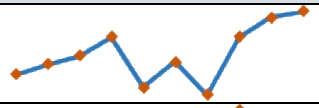
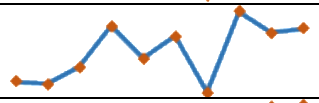
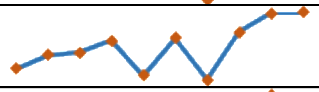
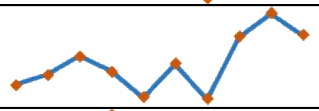
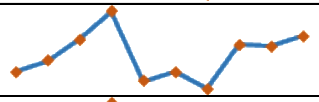
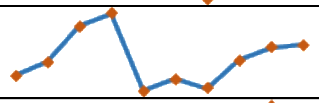
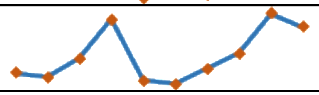
Mumbai District

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Mumbai	1318	47	51	54	49	50	50	46	54	53	57		Quality Improved	1.97
Mumbai	2165	46	49	55	54	47	47	44	49	53	54		Quality Improved	1.69
Mumbai	2166	46	49	54	55	45	47	45	50	54	54		Quality Improved	1.57
Mumbai	2167	48	51	53	55	48	47	43	52	55	53		Quality Improved	1.13
Mumbai	2169	45	46	55	50	45	47	41	52	54	53		Quality Improved	1.69
Mumbai	2808	49	51	54	55	46	47	44	51	54	55		Quality Improved	1.16
Mumbai	2809	51	48	55	55	45	48	43	51	55	54		No Significant Change	0.67
Mumbai	2810	51	49	54	51	47	48	43	50	53	53		No Significant Change	0.40
Mumbai	2811	49	50	51	52	48	48	45	52	54	57		Quality Improved	1.41
Mumbai	2812	45	48	52	53	46	47	45	50	55	53		Quality Improved	1.71

Thane District (1 of 2)

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Thane	190					52	53	51	57	62	66		Quality Improved	4.30
Thane	1316	55	53	57	56	52	55	52	60	65	64		Quality Improved	1.45
Thane	2184	49	55	55	61	54	53	52	57	61	62		Quality Improved	2.50
Thane	2185	52	56	52	53	54	56	54	62	63	64		Quality Improved	2.21
Thane	2791	63	52	61	60	57	53	53	69	68	65		No Significant Change	0.40
Thane	2792	51	55	56	57	54	55	54	64	65	66		Quality Improved	2.58
Thane	2793	50	47	50	55	54	56	53	64	64	62		Quality Improved	2.20
Thane	2794	57	58	56	56	54	58	53	63	65	66		Quality Improved	1.57
Thane	2795	57	55	59	59	55	56	54	63	66	63		Quality Improved	1.08
Thane	2796	53	55	60	60	54	55	53	62	66	65		Quality Improved	1.92
Thane	2797	47	54	58	58	52	54	54	61	66	65		Quality Improved	3.42
Thane	2798	49	51	56	58	49	54	49	57	57	61		Quality Improved	2.10

Thane District (2 of 2)

District	Station Code	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Trend	Quality	CAGR %
Thane	2799	51	52	53	55	49	52	48	55	58	58		Quality Improved	1.43
Thane	2800	55	55	56	61	57	60	54	62	60	61		No Significant Change	0.98
Thane	2801	54	56	56	58	52	59	52	60	63	63		Quality Improved	1.64
Thane	2802	53	55	57	55	52	56	52	60	63	60		Quality Improved	1.13
Thane	2805	50	52	55	60	48	50	47	55	54	56		Quality Improved	1.18
Thane	2806	50	52	59	61	47	49	48	53	55	55		Quality Improved	1.06
Thane	2807	47	46	49	56	46	45	48	50	57	54		Quality Improved	1.47

Maharashtra Pollution Control Board

महाराष्ट्र प्रदूषण नियंत्रण मंडळ

Maharashtra Pollution Control Board
Kalpataru Point, 3rd and 4th Floor,
Opp. Cine Planet, Sion Circle
Mumbai – 400 022
Telephone : +91 22 24020781/24014701
Fax : +91 22 24024068
Website : http//mpcb.gov.in/

The Energy and Resources Institute
Western Regional Centre,
318, Raheja Arcade,
Sector 11, CBD Belapur,
Navi Mumbai – 400614
Telephone : +91 22 27580021/40241615
Fax : +91 22 27580022
Website : www.teriin.org