सत्यमेव जयते

GOVERNMENT OF MAHARASHTRA
WATER RESOURSE DEPARTMENT

HYDROLOGY PROJECT (SW)
Chief Engineer Hydrology Project, Nashik

Water quality Lab Level-II, Kolhapur

ANNUAL REPORT
2010-2011

Superintending Engineer
Data Collection, Planning & Hydrology Circle, Nashik

PREFACE

Well equipped (level-II) grade water quality laboratory at Kolhapur, is set up under technical assistance of World-Bank aided Hydrology Project, for monitoring the surface water quality of Krishna basin and west flowing rivers of Konkan region (in Ratanagiri & Sindhudurg district) in Maharashtra state.

The present annual report is prepared for the water - year 01/06/2010 to 31/05/2011 with the consideration of monsoon season from June to September and non-monsoon from October to May.

This report includes water quality data in Krishna Basin and Part of Konkan (west flowing rivers) for the period of June 2010 to May 2011. The data has been interpreted to known the affected locations.

This report attempts to briefly describe an over view and general conclusion based on the basis of water quality data of water samples collected from selected locations for define frequencies for the reported period.

Govt. Analyst	*Assistant Engineer Gr.I*	*ExecutiveEngineer*
WQ Lab level - II	*HP Sub- Division*	*Hydrology Project Division*
HP Sub-Division Kolhapur	*Kolhapur*	*Pune - 1*

Annual Report

On Water Quality Monitoring through Water Quality Lab Level-II, Kolhapur for the Year 2010 - 11

I N D E X

Annual Report

On Water Quality Monitoring through Water Quality Lab Level-II, Kolhapur for the Year 2010 - 11

ANN E X U R E

CHAPTER - I

Executive Summery

Chapter - 1

Executive Summery

Annual Report

On Water Quality Monitoring through Water Quality Lab Level-II, Kolhapur for the Year 2010- 11

1.1 Preamble:

Water is the most vital resources for life. With the increasing population & changing life patterns, consumption of water has increased many folds particularly for domestic, agriculture, & industrial consumption. "The negative change in physical, chemical & biological properties of natural water due to addition of pollutants causing adverse effect on aquatic life, & other living being, including man is known as water pollution."

The water quality monitoring in the area of surface water is performed in order to determine the quality of water. There are 33 stations comes under Kolhapur Level – II, from Kolhapur, Sangli, Satara, Ratnagiri & Sindhudurga district. For each station 35 parameters are analyzed in the laboratory and 6 parameters are tested at field level. All these records store monthly in SWDES and used for preparing the annual report. These data are considered in order to specify the quality of water at each location. This also helps to identify concentration of water pollution in each source of water at each station.

1.2 Water Quality Monitoring – Objectives

The main objectives of surface water quality monitoring in Maharashtra state is to collect the comprehensive data on the status of present health of important water resources i.e. rivers & reservoirs so as:

1) To establish Base Line water quality.
2) To detect the trends in water quality changes.
3) To provide warning of potentially deleterious changes.
4) Surveillance of available resources for drinking and/or irrigation use.

Observations of analysis of physical & chemical parameters as per "Uniform Protocol for Water Quality Monitoring Order 2005" for each location followed by Operation and Maintenance of Water Quality Laboratory Level-II, Kolhapur as per Standard Guidelines and mandates including collection, transportation and analysis of samples , data entry in SWDES Software. Preparation of the Annual Report as per specific guidelines issued by Superintending Engineer, Hydrology Project Circle (Collection), Nashik,

1.3 Water Quality Monitoring

The Annual Report is prepared for the year 2010 – 11 in combined. The Table below shows the number of sample analyzed during the reported period. In order to study water quality status station wise, all locations covered under this lab during the year 2010- 11 are considered.

TABLE SHOWING SAMPLES ANALYSED DURING THE REPORTING PERIOD

Sr. No.	Year	Baseline Sample	Flux Sample	Trend Sample	Dam Sample	Total
1	2010- 11	14	16	211	22	263

Seasonal averages of all analyzed parameters are calculated for study of seasonal water quality trend at each location.

1.4 Methodology:

Analysis of Physical and Chemical parameters is done in the laboratory on the basis of Standard Analytical Methods, Instrument Operating Instructions, Water Quality Manuals, CPCB Guidelines and APHA, 21st Ed., 2005.

Every month after analysis of sample data is collected, validated & entry is carried out in rough data sheet. This finally validated data is entered in SWDES software & then send it to the Data Storage Center, Nashik by mail for storage as per instructions of water quality manual.

1.5 Result and Observation:

After observing all this data it is clear that most of the physical parameters are within tolerance limit.

Most of the chemical parameters are also within tolerance limits, except DO, BOD, for station Wadange.

Bacteriological parameters like Total Coliform and Faecal Colifroms are also exceeding the limits.

From the observations at Wadange location, almost all parameters are crossing the desirable limit which indicates that at the upstream of this location there are a considerable source of pollution i.e. non point source which is to be find out for further study.

1.6 Conclusion

Biological parameter in all locations contain higher bacterial count is due to the discharge of sewage, drainage waste in to the water sources. Even human activities also increase number of various types of bacteria in the water, which increase the number of count in the water.

But with respect to parameters, locations like wadange is critical for certain parameters like Dissolved oxygen, Biological oxygen demand, Chemical oxygen demand & Coliforms. In the point of consideration for above location water is suitable for irrigation purpose followed by traditional irrigation method.

1.7 Recommendations/Remedial Measures:

- Domestic effluents should be treated and disinfected before discharging.
- Effluents from the non-point sources should be identified. These are required to be collected and treated.
- Use of water of such polluted locations may be useful for salt tolerance crop and is recommended based on special study.
- Use of direct source of water should be avoided.
- Bathing at such location should be restricted.

1.8 Suggestions:

- Create mass awareness in general public regarding surface and ground water quality aspects.
- Water quality Annual Report shall be publicly published every year.

CHAPTER - II

Introduction

Chapter - 2

Introduction

2.1 General

To check the pollution load & water safety for different uses there is need to regularly monitor water quality by using laboratory analysis method. The test includes physico-chemical parameters & biological parameters.

The water quality monitoring in the area of surface water is performed in order to determine the quality of water. There are 33 stations come under Kolhapur lab Level – II, from Kolhapur, Sangli, Satara, Ratnagiri & Sindhudurga district. For each station 35 parameters are analyzed in the laboratory and 6 parameters are tested at field level. All these records store monthly in SWDES and used for preparing the annual report. These data are considered in order to specify the quality of water at each location. This also helps to identify concentration of water pollution in each source of water at each station.

2.2 Water Quality Monitoring - Objectives

The main objectives of surface water quality monitoring in Maharashtra state is to collect the comprehensive data on the status of present health of important water resources i.e. rivers & reservoirs so as:

1) To establish Base Line water quality.
2) To detect the trends in water quality changes.
3) To provide warning of potentially deleterious changes.
4) Surveillance of available resources for drinking and/or irrigation use.

Observations of analysis of physical & chemical parameters as per "Uniform Protocol for Water Quality Monitoring Order 2005" for each location followed by Operation and Maintenance of Water Quality Laboratory Level-II, Kolhapur as per Standard Guidelines and mandates including collection, transportation and analysis of samples , data entry in SWDES Software and preparation of the said Annual Report as per specific guidelines issued by Superintending Engineer, Hydrology Project Circle(Collection), Nashik.

2.3 Water Quality Monitoring – Scope

- Seasonal averages of all analyzed parameters are calculated for study of seasonal water quality trend at each location.
- Used analysed data for preparation of annual report or study purpose.
- Find out major pollutants in river water at each station.
- Identify remedial measures for water quality.

2.4 Other activities

Other than working of regular Water Quality Monitoring for Water Quality lab level II at Kolhapur, we also analyzed water sample of Government, Semi Government, and Private sector.

Apart from HP sample drinking water, industrial effluent bore water, lake water, and irrigation water analysis is carried out in lab. Most of the students are also approach for analysis of water for study purpose.

During the year 2010- 11 many clients approached to the laboratory. Are as follows -

1) Kolhapur Irrigation Division
2) Abhishek Industries, MIDC Kolhapur.
3) Aadhar nursing home, Kolhapur.
4) Shivaji University Students, Kolhapur.
5) Dudhaganga Canal Division.
6) Podar Education Trust, Kolhapur.
7) Ichalkaranji Nagarparishad, STP Sample.
8) Griesel-Green Commitment, Kolhapur.

The revenue collected during the reported period is as follows.

Sr. No	Year	Amount
1.	2010 - 2011	1,93,751/-

2.5 Extra activity

Water Quality Lab Level – II @ Kolhapur is achieved 98.33% marks in Intra Laboratory AQC 2011 & 90.9% marks in CPCB AQC 2011

SALIENT FEATURES OF WATER QUALITY LABORATORY, AT RAJARAM TANK, KOLHAPUR.

Address	:	Hydrology Project Sub-Division, Kolhapur Water Quality Lab Level- II. At Rajaram Tank, Opp. Shivaji University, Sarnobat wadi Road Kolhapur – 416 004.
Latitude	:	16^0 42' 41''
Longitude	:	74^0 17' 00''
Year of Establishment	:	1st - February-2003.
No. of Baseline Sample locations	:	4 Nos.
No. of Flux locations	:	2 Nos.
No. of Trend Sample locations	:	19 Nos.
No. of Reservoir locations	:	1 No.
No. of Parameters Analysed	:	34 Nos.
Staff Position	:	Work of Operation & Maintenance of Lab. on annual contract basis.
Government officer/ staff related to the laboratory	:	1. Er. M. R. Metkari Executive Engineer 2. Er. S. D. Raje. Assistant Engineer gr. – I 3. Er. R. R. Deshpande. Govt. Analyst Assistant Engineer - II

Agency Staff related to the laboratory	:	M/S Mahabal Enviro Engineers Pvt. Ltd. Pune. 1. Mr. R. B. Mahabal. Managing Director. 2. Miss. S. S. Sadarekar. Chief Chemist. 3. Miss. D. L. Mane. Senior Research. Assistant. 4. Miss. S. V. Mudgal. Laboratory Chemist. 5. Mr. S. G. Patil Field Chemist.
Other Activities		1.Participation in AQC (Intra Lab exercise & CPCB AQC In SW Maharashtra)

Scope of Work: Operation and Maintenance of water Quality Laboratory Level - II, Kolhapur

Outdoor Work:

Collection of surface water and transporting the sample from selected Water Quality network sampling points

as per schedule of sampling during the said period.

The Surface Water sampling includes:

a) Field determination as per standard guideline.

b) Field parameters to be tested on site & entry to be taken on ID form.

c) Sample to be transported to laboratory within prescribed time limit.

Indoor Work:

- Day to Day Operation and Maintenance of Water Quality Laboratory Level II.
- The work includes analysis of water samples as per the test procedures.
- Operating the instruments as per specified instruction manual.
- Entry of data in SWDES Software.
- Participating in Analytical Quality Control Exercise (AQC) round.

  i) Within Laboratory AQC **ii)** Intra Laboratory AQC

The Laboratory staff employed;

1) Chief Chemist: 1 No.
2) Sr. Research Officers: 1 No.
3) Research Assistant: 2 Nos.
4) Lab. Assistant: 1 No.

- The Indoor work also includes keeping data record.
- Log book of Lab equipment
- Preparation of monthly sampling Schedule.
- Keeping sampling record, instruments operation, Laboratory Management, demonstration
- Training to Departmental staff as and when required.

Information to visitors & Customer Satisfaction. Work is carried out as per flow chart.

Hydrology Project Circle (Collection), Nashik

Water Quality Lab, Level – II, Kolhapur

Organisation Chart

SUPRINTENDING ENGINEER,
HYDROLOGY PROJECT CIRCLE (DATA COLLECTION & PLANNING) NASHIK

EXECUTIVE ENGINEER,
H.P.DIVISION, PUNE

ASST. EXECUTIVE ENGINEER-I H. P. SUB DIVISION, KOLHAPUR

GOVT. ANALYST

OPERATING AGENCY

CHIEF CHEMIST

ASSISTANT CHEMIST

Table showing No. of Location Covered under the jurisdiction of Water Quality Lab Level-II, Kolhapur.

Sr. no	Station	Name of River	Frequency of sampling	No. Of Samples 2010- 11
KOLHAPUR DISTRICT				
1.	Bubnal	Krishana	Monthly	05
2.	Kurundwad	Panchganga	Monthly	05
3.	Wadange	Panchganga	Monthly	11
4.	Radhanagari I	Bhogawati	Monthly	11
5.	Radhanagari II	Bhogawati	Monthly	11
SANGLI DISTRICT				
1.	Mhaisal	Krishna	Monthly	05
2.	Sangali (Ankali Bridge)	Krishna	Monthly	05
3.	Shigaon	Warana	Monthly	05
SATARA DISTRICT				
1.	Ambwade	Yerala	Monthly	02
2.	Bhuinj	Krishna	Monthly	05
3.	Parli	Urmodi	Monthly	04
4.	Rasati	Koyana	Monthly	05
5.	Shivade	Krishna	Monthly	05
6.	Varye	Venna	Monthly	05
7.	Warunji	Koyana	Monthly	05
RATNAGIRI DISTRICT				
1.	Anjanari	Kajavi	Monthly	11
2.	Barewadi	Bav	Monthly	04
3.	Chatav	Jagbudi	Monthly	09
4.	Kumbharkhani	Gad	Monthly	10
5.	Latwan	Bharaja	Monthly	04
6.	Pastewadi	Kajavi	Monthly	08
7.	Pawarwadi	Bhambedi	Monthly	11
8.	Pimpli	Vashishit		11
9.	Raipatan	Arjuna	Monthly	11
SINDHUDURGA DISTRICT				
1.	Araye	Achara	Monthly	11
2.	Banda	Terekhol	Monthly	11
3.	Baparde	Local Nala	Monthly	09
4.	Belane	Gad	Monthly	10
5.	Ghonsari-L	Devghar	Monthly	11
6.	Kerawade	Karli	Monthly	11
7.	Kudal	Bhansari	Monthly	11
8.	Shirshingi	Terekhol	Monthly	11
9.	Shivdav	Gad	Monthly	10

Total No. of Samples collected and analyzed during Reported Period (i.e. June 2010 to May 2011) = 263

CHAPTER - III

Methodology

Chapter - 3

Methodology

3.1 General:

Water, is the most essential element to life on earth, for survival of all living organisms. Water on earth is present in two forms i.e. fresh water & marine water. Fortunately almost the entire country is criss-crossed by rivers. Geographical area of the state is divided in five river basins viz. Godavari. Tapi, Narmada, Krishna and west flowing rivers in Konkan region.

In the last century the water sources increasingly polluted due to industrilization, urbnization & population explision.

3.2 Aim and Objective

The Hydrology Project goals & main objectives of water quality monitoring in Krishna basin & West Flowing River Tapi from Konkan region are -

- Establish base line quality
- Observe the trend in water quality over a period of time
- To create public awareness as regards water pollution & its prevention.
- Surveillance over pollution through to water quality.

3.3 Monitoring Frequency

Previously the frequency of sample collection for Baseline Stations was once in a month and that of trend stations was twice in a month.

There has been change in the frequency of sample collection from August 2003 given below.

Base Line : Once in a month (June to September)

Trend stations : once in a month

Flux stations : Once in month

Reservoirs : Fortnightly

3.4 Sampling Details

The water samples were collected stations from the main flowing stream of river at depth of 30 cm from the surface. The samples thus collected were transported to the laboratory within 48 hours from the time of collection.

The samples collected in this lab from Kolhapur, Sangli, Satara, Ratnagiri and Sindhudurga district.

3.5 Methodology

Analysis of Physical and Chemical parameters is done in the laboratory on the basis of Standard Analytical Methods, Instrument Operating Instructions, APHA, 21st Ed., 2005.

Data analyzed further validated with prescribed method as per Water Quality Manuals to verify various Ratios manually and is entered in SWDES Software for Water Quality Data Entry. Further the data is sent to State Data Center for further dissemination to user end.

Furthermore to get an idea of about data generated for the period it is decided and instructed to analyzed the generated data for the said period in the form of Annual report with the help of various tools in SWDES Software to find out critical parameters and critical locations in the jurisdiction of this Lab.

The Annual Report is prepared for the year 2010 - 11 in combined. The Table below shows the number of sample analyzed during the reported period. In order to study water quality status station wise, all locations covered under this lab during the year 2010 - 2011 are considered.

TABLE SHOWING SAMPLES ANALYSED DURING THE REPORTING PERIOD

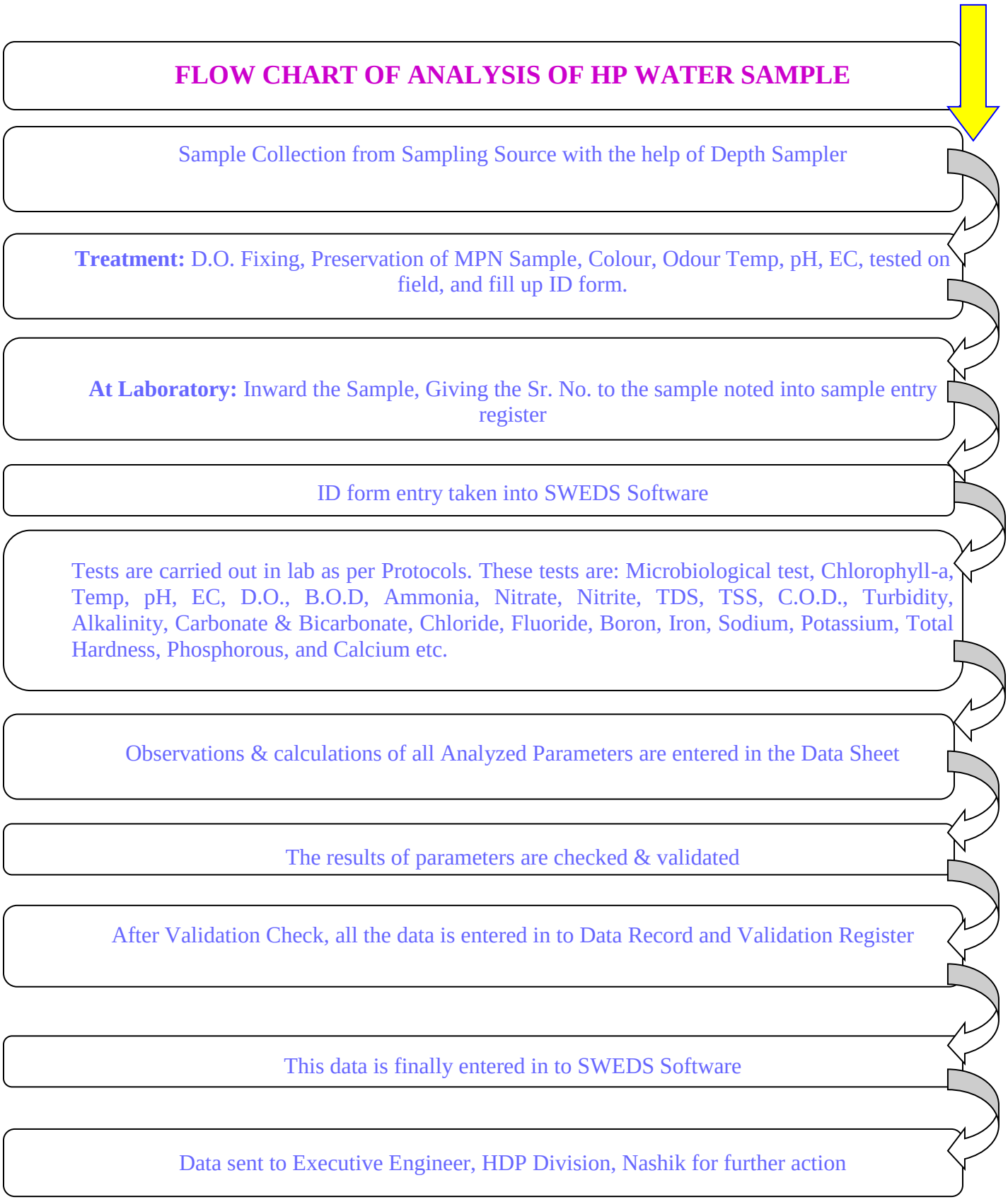
Sr. No.	Year	Baseline Sample	Flux Sample	Trend Sample	Dam Sample	Total
1.	2010- 11	14	16	211	22	263
Total Samples analyzed during reporting period						**263**

3.6 Flow Chart

The work of analysis of sample is being monitored on the basis of flow chart generated in the lab as per standard guidelines and analysis of sample is performs as per guidelines of world bank with APHA ,21 st Ed, 2005 as a standard procedures for analysis of samples.

As well refers BIS standards IS:10500 and other relevant BIS standards for analysis of various samples received from users for various purposed like Drinking, Irrigation, Ice preparation, Bathing (Swimming Tank),Construction, study and various Research & Development Activities.

FLOW CHART OF ANALYSIS OF HP WATER SAMPLE



Methodology For the analysis of Water Quality samples the following parameters were analyzed during the Period 2010 - 11

Table showing List of parameters and the methodology used for the analysis.

Sr. No	Parameters	Methodology
1.	Colour	APHA, 21st Ed., 2005, 2120-B, 2-2
2.	Odour	IS 3025 (Part 5): 1983, Reaffirmed 2006
3.	Temperature	APHA, 21st Ed., 2005, 2550-B, 2-61
4.	pH	APHA, 21st Ed., 2005, 4500-H^+- B, 4-90
5.	Electric Conductivity	APHA, 21st Ed., 2005, 2510- B, 2-47
6.	Dissolved Oxygen	IS 3025 (Part 38): 1989, Reaffirmed 2003
7.	Turbidity	APHA, 21st Ed., 2005, 2130-B, 2-9
8.	Total Solids	IS 3025 (Part 15): 1984, Reaffirmed 2003, Amds.1
9.	Dissolved Solids	IS 3025 (Part 16): 1984, Reaffirmed 2006, Ed.2.1 (1999-12)
10.	Suspended Solids	IS 3025 (Part 17): 1984, Reaffirmed 2006, Amds.1
11.	NH_3-N	APHA, 21st Ed., 2005, 4500-NH_3 F, 4-110
12.	NO_2^-	APHA, 21st Ed., 2005, 4500-NO_2-B, 4-118
13.	NO_3^-	APHA,21st Ed., 2005, 4500-NO_3, B -4 -120
14.	Total Phosphorous	APHA, 21st Ed., 2005, 4500 P, E, 4-153
15.	Biochemical Oxygen Demand	IS 3025 (Part 44): 1993, Reaffirmed 2003, Amds.1
16.	Chemical Oxygen Demand	APHA, 21st Ed., 2005, 5220-B, 5-15
17.	Potassium K^+	IS 3025 (Part 45): 1993, Reaffirmed 2003, Amds.1
18.	Sodium Na^+	IS 3025 (Part 45):1993, Reaffirmed 2003, Amds.1
19.	Calcium Ca^{++}	APHA, 21st Ed., 2005, 3500-B, 3-65
20.	Magnesium Mg^{++}	APHA, 21st Ed., 2005, 3500-Mg, B, 3-84
21.	Iron (as Fe)	APHA, 21st Ed., 2005, 3111-B, 3-17
22.	Carbonate CO_3	APHA, 21st Ed., 2005, 2320-B, 2-27, 5 -1 & 4500-CO_2-D, 4-34
23.	Bi-Carbonate H CO_3	APHA, 21st Ed., 2005, 2320-B, 2-27, 5 -3 & 4500-CO_2-D, 4-34
24.	Chloride Cl	APHA, 21st Ed., 2005, 4500-Cl, B, 4-70
25.	Fluoride F	APHA, 21st Ed., 2005, 4500-F^-, D, 4-85
26.	Boron B	APHA, 21st Ed., 2005, 4500-B-C, 4-23

27.	Total Coliforms	APHA, 21st Ed., 2005, 9221-B, 9-49
28.	Faecal Coliforms	APHA, 21st Ed., 2005, 9221-E, 9-56
29.	Alkalinity	IS 3025 (Part 23): 1986, Reaffirmed 2003, Amds.1

Annual Report

On Water Quality Monitoring through Water Quality Lab Level –II ,

Kolhapur for the Year 2010– 11

TABLE SHOWING SAMPLES ANALYSED DURING THE REPORTING PERIOD

Sr. No.	Year	Baseline Sample	Flux Sample	Trend Sample	Dam Sample	Total
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CHAPTER - IV

Result & Observation

Chapter - 4

Result & Observation

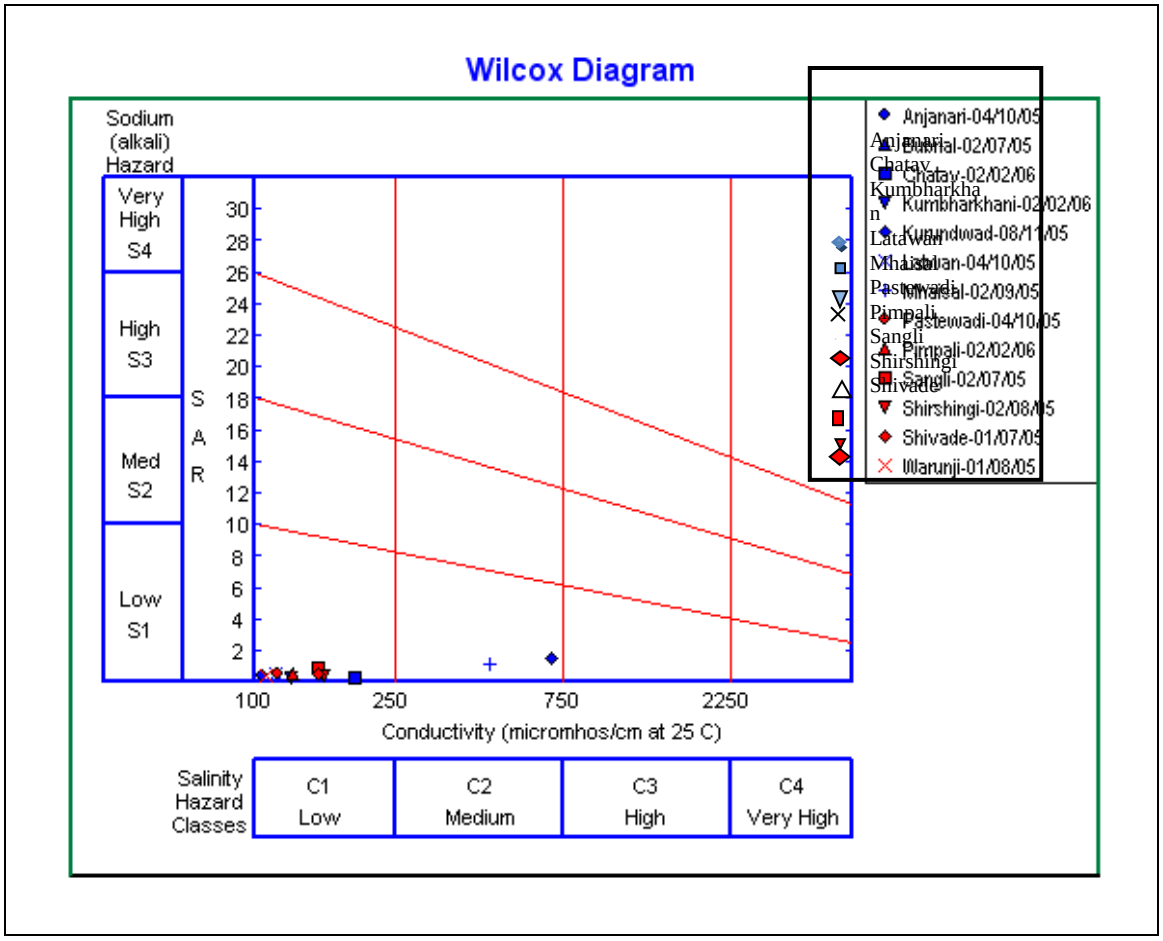


Table 1 -Classification of location on the basis of Wilcox technique towards use of water for irrigation purpose

Sr. No.	Name of Location	Year	Class as per Wilcox technique	Recommendation
I. Krishna River				
1.	Bhuinj	2010-2011	C2 & S1	Water is suitable for Irrigation purpose
2.	Bubnal	2010-2011	C2 & S1	Water is suitable for Irrigation purpose
3.	Mhaisal	2010-2011	C2 & S1	Water is suitable for Irrigation purpose.
4.	Sangali (Ankali Bridge)	2010-2011	C1 & S1	Water is suitable for Irrigation purpose.
5.	Shivade	2010-2011	C2 & S1	Water is suitable for Irrigation purpose.
II. Panchaganga River				
1.	Kurundwad	2010-2011	C1 & S1	Water is good for Irrigation purpose.
2.	Wadange	2010-2011	C1 & S1	Water is good for Irrigation purpose.
III. Urmodi River				
1.	Parli	2010-2011	C1 & S1	Water is good for Irrigation purpose.
IV. Koyana River				
1.	Rasati	2010-2011	S1	Unable to classify because of inadequate data
2.	Warunji	2010-2011	S1	Unable to classify because of inadequate data
V. Warana River				
1.	Shigaon	2010-2011	S1	Unable to classify because of inadequate data
VI. Venna				
1.	Varye	2010-2011	C2 & S1	Water is suitable for Irrigation purpose.

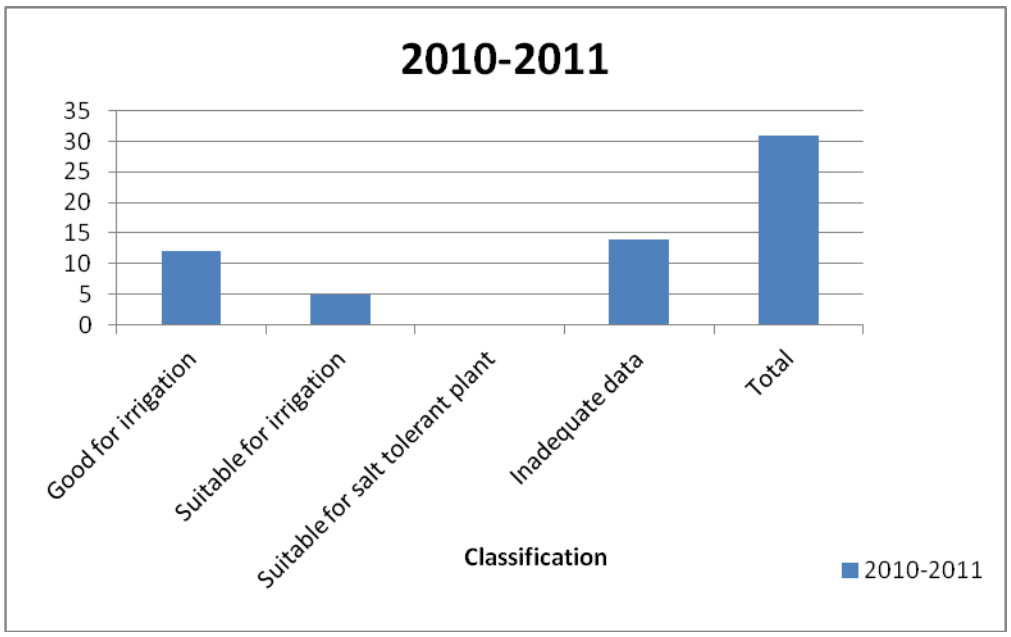
Sr. No.	Name of Location	Year	Class as per Wilcox Technique	Recommendation
VII. West Flowing River (WFR)Konkan				
1.	Araye	2010-2011	S1	Unable to classify because of inadequate data
2.	Anjanari	2010-2011	S1	Unable to classify because of inadequate data
3.	Banda	2010-2011	C1 & S1	Water is good for Irrigation purpose
4.	Baparde	2010-2011	-	Unable to classify because of inadequate data
5.	Barewadi	2010-2011	S1	Unable to classify because of inadequate data
6.	Belane	2010-2011	C1 & S1	Water is good for Irrigation purpose
7.	Chatav	2010-2011	S1	Unable to classify because of inadequate data
8.	Ghonsari – L	2010-2011	S1	Unable to classify because of inadequate data
9.	Kerwade	2010-2011	C1 & S1	Water is good for Irrigation purpose
10.	Kudal	2010-2011	S1	Unable to classify because of inadequate data
11.	Kumbharkhani	2010-2011	S1	Unable to classify because of inadequate data
12.	Latwan	2010-2011	C1 & S1	Water is good for Irrigation purpose
13.	Pastewadi	2010-2011	C1 & S1	Water is good for Irrigation purpose
14.	Pawarwadi	2010-2011	S1	Unable to classify because of inadequate data
15.	Pimpali	2010-2011	C1 & S1	Water is good for Irrigation purpose
16.	Raipatan	2010-2011	S1	Unable to classify because of inadequate data
17.	Shirshingi	2010-2011	C1 & S1	Water is good for Irrigation purpose
18.	Shivdav	2010-2011	C1 & S1	Water is good for Irrigation purpose
VIII. Dam location				
1.	Radhanagari	2010-2011	S1	Unable to classify because of inadequate data

Table 2 - Observation on the basis of classification of location

Sr. No.	River	Year	Observation
1.	Krishna River	2010-2011	Along the Krishna river there are 5 locations & as per above classification (table – 1) it shows that out of 5 location 4 location such as Bhuinj, Mhaisal, Bubnal & shivade having suitable water for irrigation purpose without any treatment. Sangli (ankali bridge) having a good water for irrigation purpose.
2.	Panchganga River	2010-2011	Kurundwad & Wadange these 2 locations comes under Panchganga river. As per above classification (table – 1) it show that. Water is good for irrigation purpose at both the locations.
3.	Urmodi River	2010-2011	Only one location comes under river Urmodi that is Parali. As per above classification (table - 1) there water is good for irrigation purpose.
4.	Koyana River	2010-2011	Along the Koyana river there are 2 location namely Rasati & Warunji. Both location water sample unable to classify because of inadequate data.
5.	Warana River	2010-2011	There is only one location such as Shigaon. There water sample unable to classify because of inadequate data.
6.	West Flowing River Konkan	2010-2011	Along Waste flowing river there are 18 locations and as per above (table - 1) classification it shows that out of 18 locations 10 locations such as Araye, Anjanari, Baparde, Barewadi, Chatav, Ghonsari – (L). Kudal, Kumbharkhani, Pawarwadi, Raipatan, there water is unable to classify because of inadequate data. And remaining 8 locations i.e. Banda, Belane, Kerwade, Latwan Pastewadi Pimpli, Shirshingi & Shivdav having water is good for irrigation purpose.
7.	Dam Location	2010-2011	1 locations goes under dam i. e. Radhanagari and as per above (Table - 1) classification it shows that there water is unable for classification because of inadequate data.

Table 3 - Abstract for classification of water towards Irrigation purpose

Sr. No.	Year	Good for irrigation	Suitable for irrigation	Suitable for salt tolerant plant	Inadequate data	Total
1.	2010-2011	12	5	0	14	31



Data Abstract For 2010 – 11

Table – 1		KOLHAPUR DISTRICT								
Parameter	Unit	Season								
		Monsoon			Winter			Summer		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Station : Radhanagari -1										
DO	mg/L	6.8	7.4	7.1	7.4	7.8	7.6	6.6	7.6	7.15
BOD	mg/L	1	1	1	1	1	1	1	1	1
COD	mg/L	2	3	2.5	3	6	4.5	4	6	5
Total coliforms	MPN/100 ml	18	18	18	18	18	18	18	18	18
Total Dissolved Solids	mg/L	24	40	30	24	32	28	26	32	29
Station : Radhanagari -2										
DO	mg/L	6.8	7.4	7.2	6.8	7.4	7.15	6.4	7.6	7.1
BOD	mg/L	1	1	1	1	1	1	1	1	1
COD	mg/L	4	5	4.25	4	8	5.75	4	6	5
Total coliforms	MPN/100 ml	18	18	18	18	18	18	18	18	18
Total Dissolved Solids	mg/L	23	37	28.25	25	33	28.5	28	34	30.5
Station : Wadange										
DO	mg/L	5.8	6.8	6.25	0.2	6.6	2.95	0.6	7.8	4.4
BOD	mg/L	1	2.2	1.4	1	20	8.25	2.6	30	10.18
COD	mg/L	4	13	6.75	5	25	13.5	14	34	20
Total coliforms	MPN/100 ml	4300	1600	8785	3500	16000	8525	2800	24000	16200
Total Dissolved Solids	mg/L	70	172	106.5	128	188	156	58	316	124.5
Station : Kurundwad										
DO	mg/L	4.2	6.4	5.7	6.2	7.8	6.75	6.8	7.2	7
BOD	mg/L	1	2.2	1.4	1	1.6	1.35	1.2	1.2	1.2
COD	mg/L	8	9	8.25	7	14	11.5	12	12	12
Total coliforms	MPN/100 ml	1500	2800	2025	1500	2200	1725	1100	3500	1925
Total Dissolved Solids	mg/L	91	205	136.25	178	432	361.75	346	473	431.75

Station : Budnal										
DO	mg/L	5.6	6.4	6.05	6.2	7.8	7.3	7	7.4	7.2
BOD	mg/L	1	1.6	1.2	1	1.6	1.25	1	1.2	1.1
COD	mg/L	5	10	7.75	6	8	6.75	5	10	7
Total coliforms	MPN/100 ml	490	1300	997.5	940	1700	1235	220	630	410
Total Dissolved Solids	mg/L	162	278	199.5	245	506	413	242	296	269
Station : Shinganapur										
DO	mg/L	0	0	0	7.2	8	7.6	6.4	7.6	7
BOD	mg/L	0	0	0	1	1	1	1	2.2	1.6
COD	mg/L	0	0	0	4	8	6	7	11	9.25
Total coliforms	MPN/100 ml	0	0	0	320	470	393.33	330	2200	902.5
Total Dissolved Solids	mg/L	0	0	0	72	92	79.33	42	98	60

Table – 2 **SANGLI DISTRICT**

Parameter	**Unit**	**Season**								
		Monsoon			Winter			Summer		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Station : Shigaon										
DO	mg/L	5.4	6.6	6.1	6.4	7.6	7	6.4	7.2	6.75
BOD	mg/L	1	1.6	1.3	1	1.2	1.05	1	1.2	1.05
COD	mg/L	4	13	8	2	5	3.5	5	7	6
Total coliforms	MPN/100 ml	1100	5400	3575	1100	1700	1300	460	840	600
Total Dissolved Solids	mg/L	92	212	127	68	359	212.75	68	84	78.5
Station : Sangli(Ankali Bridge)										
DO	mg/L	5.6	6.8	6.25	6.2	7	6.6	6.4	7.2	6.93
BOD	mg/L	1.2	2.8	1.7	1.2	1.6	1.35	1	1.2	1.15
COD	mg/L	8	14	10.25	7	10	8.25	10	11	10.2
Total coliforms	MPN/100 ml	1700	16000	6650	3500	5400	3975	700	1400	1035
Total Dissolved Solids	mg/L	170	280	218.5	232	452	378	256	295	280.75

Station : Mhaisal										
DO	mg/L	6.2	6.8	6.6	6.8	7.8	7.4	6.8	7.6	7.2
BOD	mg/L	1	1.4	1.2	1	1.2	1.05	1.2	1.2	1.2
COD	mg/L	4	13	6.75	5	9	7.25	8	12	10
Total coliforms	MPN/100 ml	840	3500	2210	940	1100	1060	220	940	572.5
Total Dissolved Solids	mg/L	168	250	209.5	281	5.6	436.75	376	478	408.5

Table – 3 **SATARA DISTRICT**

Parameter	Unit	Season								
		Monsoon			Winter			Summer		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Station : Bhuinj										
DO	mg/L	6.0	8.2	7.5	7.2	8.4	7.75	7.2	7.4	7.3
BOD	mg/L	1	1	1	1	1	1	1	1.2	1.05
COD	mg/L	6	9	7.25	5	7	5.75	6	8	7.5
Total coliforms	MPN/100 ml	3500	16000	8250	1100	3500	2275	170	940	5.5
Total Dissolved Solids	mg/L	290	390	342.5	348	418	383.25	277	358	321.25
Station: Parli										
DO	mg/L	6.6	7.2	6.95	0	0	0	0	0	0
BOD	mg/L	1	1.2	1.05	0	0	0	0	0	0
COD	mg/L	3	12	5.5	0	0	0	0	0	0
Total coliforms	MPN/100 ml	2800	16000	10050	0	0	0	0	0	0
Total Dissolved Solids	mg/L	75	190	148	0	0	0	0	0	0
Station: Shivade										
DO	mg/L	6.6	7.2	6.9	7	7.4	7.25	6.8	7.4	7.05
BOD	mg/L	1	2.2	1.35	1	1	1	1	1.2	1.1
COD	mg/L	2	20	9.5	4	9	5.75	5	6	5.25
Total coliforms	MPN/100 ml	3500	16000	8525	1300	4300	2975	580	1100	865
Total Dissolved Solids	mg/L	191	438	330.5	277	289	316	264	426	309.5

Station : Rasati										
DO	mg/L	6.4	8.2	7.2	6.4	7.8	7.1	7	7.2	7.15
BOD	mg/L	1	1.2	1.05	1	1.2	1.1	1	1	1
COD	mg/L	1	5	3.25	3	5	3.75	4	6	4.5
Total coliforms	MPN/100 ml	1100	1400	1225	220	1300	852.5	110	120	150
Total Dissolved Solids	mg/L	30	48	39.5	29	68	41.75	32	56	43.5
Station : Varye										
DO	mg/L	5.6	7.4	6.55	7.2	8.2	7.8	7	7.2	7.05
BOD	mg/L	1	1	1	1	1.4	1.15	1	1.2	1.1
COD	mg/L	6	9	7.5	3	6	4.75	4	5	4.75
Total coliforms	MPN/100 ml	2100	16000	6750	630	2200	1292.5	210	580	375
Total Dissolved Solids	mg/L	225	366	310.25	174	242	203.5	63	348	172.25
Station : Warunji										
DO	mg/L	6	7.4	6.85	6.8	7.8	7.35	7	7.4	7.2
BOD	mg/L	1	1.4	1.2	1	1.2	1.1	1	1.2	1.05
COD	mg/L	5	10	6.5	5	8	10	6	6	6
Total coliforms	MPN/100 ml	5400	16000	9950	1700	5400	3550	580	1400	940
Total Dissolved Solids	mg/L	49	1289	90	79	152	117	52	112	72.25
Station : Ambawade										
DO	mg/L	6.6	7	6.8	7.2	7.2	7.2	0	0	0
BOD	mg/L	1.2	1.4	1.3	1	1	1	0	0	0
COD	mg/L	5	11	8	3	3	3	0	0	0
Total coliforms	MPN/100 ml	580	1300	940	210	210	210	0	0	0
Total Dissolved Solids	mg/L	336	368	52	338	338	338	0	0	0

Table – 4 **RATNAGIRI DISTRICT**

Parameter	Unit	Season								
		Monsoon			Winter			Summer		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Station : Latwan										
DO	mg/L	5.2	6.4	5.75	0	0	0	0	0	0
BOD	mg/L	1	2.2	1.4	0	0	0	0	0	0
COD	mg/L	2	16	8.75	0	0	0	0	0	0
Total coliforms	MPN/100 ml	3500	16000	7300	0	0	0	0	0	0
Total Dissolved Solids	mg/L	60	116	84	0	0	0	0	0	0
Station : Chatav										
DO	mg/L	6.6	7.2	6.9	7	7.6	7.35	6.8	7.2	7
BOD	mg/L	1	1.2	1.05	1	1.4	1.1	1	1.2	1.1
COD	mg/L	2	6	3.25	3	4	3.75	6	8	7
Total coliforms	MPN/100 ml	210	490	370	250	580	430	410	490	450
Total Dissolved Solids	mg/L	45	75	59.25	38	62	52	46	68	57
Station : Kumbharkhani										
DO	mg/L	7	7.6	7.3	6.8	7.8	7.3	6.4	7.4	7
BOD	mg/L	1	1	1	1	1.2	1.1	1.1	1.8	1.33
COD	mg/L	2	5	3	3	5	4.25	9	13	10.67
Total colliforms	MPN/100 ml	1400	1700	1625	940	1700	1235	580	840	706.67
Total Dissolved Solids	mg/L	40	89	64.75	47	78	62.75	76	116	96
Station : Pastewadi										
DO	mg/L	7.2	8	7.55	7.8	8.2	8	7.6	7.6	7.6
BOD	mg/L	1	1	1	1	1	1	1	1	1
COD	mg/L	2	5	4	5	8	6.5	6	6	6
Total coliforms	MPN/100 ml	1700	16000	7325	330	1400	812.5	330	330	330
Total Dissolved Solids	mg/L	60	105	80.75	50	84	64.5	66	66	66

Station : Pimpli										
DO	mg/L	7	7.4	7.25	7	7.6	7.4	5.6	7	6.3
BOD	mg/L	1	1	1	1	1.2	1.05	1	1.2	1.1
COD	mg/L	2	8	4	4	7	5	6	9	7.25
Total coliforms	MPN/100 ml	2800	5400	4000	2100	3500	2650	630	1700	1132.5
Total Dissolved Solids	mg/L	76	108	97.75	70	88	77.5	66	86	79
Station : Pawarwadi										
DO	mg/L	6.8	7.4	7	7.4	8.4	7.95	7.6	8.2	7.85
BOD	mg/L	1	1	1	1	1	1	1	1	1
COD	mg/L	3	9	5.5	4	9	7.75	8	10	8.75
Total coliforms	MPN/100 ml	380	1400	967.5	430	1200	762.5	1400	400	272.5
Total Dissolved Solids	mg/L	45	70	55.5	42	66	53.75	40	60	50.5
Station : Anjanari										
DO	mg/L	7	7.6	7.35	7	7.6	7.35	7.2	7.6	7.4
BOD	mg/L	1	1.2	1.05	1	1.2	1.05	1	1.5	1.13
COD	mg/L	2	5	3.5	6	8	6.75	5	11	8
Total coliforms	MPN/100 ml	400	1100	485	320	790	575	170	490	315
Total Dissolved Solids	mg/L	67	85	76.25	50	85	62.75	56	90	72
Station : Barewadi										
DO	mg/L	7	7.8	7.35	0	0	0	0	0	0
BOD	mg/L	1	1	1	0	0	0	0	0	0
COD	mg/L	2	4	3	0	0	0	0	0	0
Total coliforms	MPN/100 ml	330	490	422.5	0	0	0	0	0	0
Total Dissolved Solids	mg/L	42	70	62	0	0	0	0	0	0
Station : Raipatan										
DO	mg/L	6.4	7	6.6	7	7.8	7.5	7.4	7.6	7.55
BOD	mg/L	1	1.4	1.1	1	1	1	1	1.8	1.2
COD	mg/L	5	14	8	4	7	5.5	6	12	9
Total coliforms	MPN/100 ml	2400	16000	6350	1200	3500	2300	210	1100	625
Total Dissolved Solids	mg/L	49	76	63.75	49	71	64.5	42	70	56

Table – 5 **SINDHUDURGA DISTRICT**

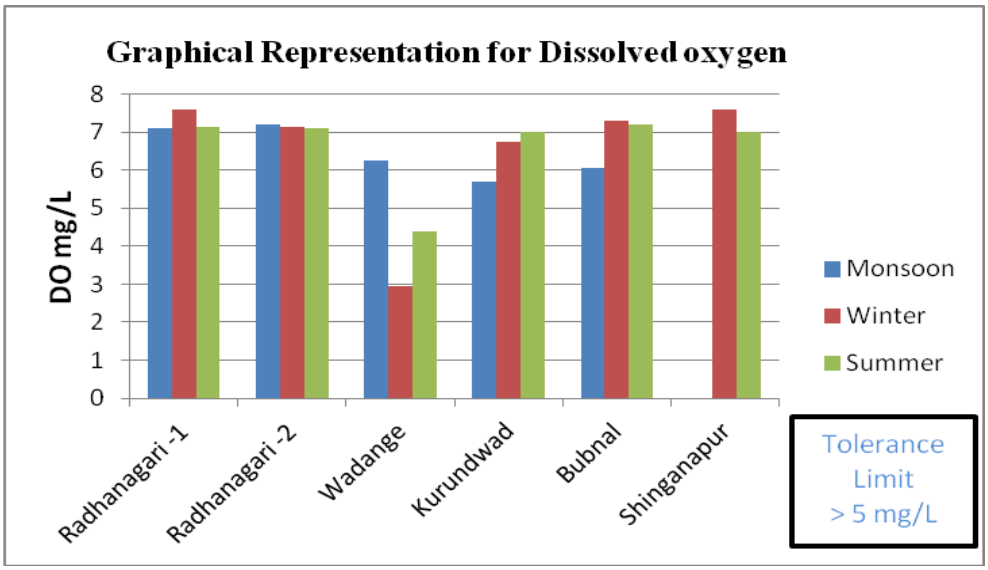
Parameter	Unit	Season								
		Monsoon			Winter			Summer		
		Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Station : Shirshingi										
DO	mg/L	6.8	7.4	7.2	7.6	8	7.8	7.4	7.8	7.7
BOD	mg/L	1	1	1	1	1	1	1.4	1.8	1.6
COD	mg/L	4	7	5.5	3	9	6.5	10	12	1075
Total coliforms	MPN/100 ml	690	1100	1022.5	940	1200	1110	240	1100	715
Total Dissolved Solids	mg/L	50	73	61.75	48	82	59.6	68	102	81.5
Station : Kerwade										
DO	mg/L	7	7.6	7.4	7.8	8.2	8	7	7.6	7.35
BOD	mg/L	1	1	1	1	1	1	1	2	1.25
COD	mg/L	3	6	4.25	3	4	3.5	5	12	8.25
Total coliforms	MPN/100 ml	1400	3500	2000	580	1700	1105	200	630	472.5
Total Dissolved Solids	mg/L	42	54	49	40	63	47.75	50	88	62
Station : Shivdav										
DO	mg/L	7.2	7.4	7.25	7.4	7.6	7.45	7.2	7.6	7.33
BOD	mg/L	1	1.2	1.05	1	1.2	1.1	1.4	2	1.73
COD	mg/L	2	5	3.5	4	6	4.75	10	12	11
Total coliforms	MPN/100 ml	170	700	337.5	170	230	192.5	260	390	330
Total Dissolved Solids	mg/L	60	78	66.5	54	70	63	66	106	83.33
Station : Ghonsari- L										
DO	mg/L	6.6	7	6.8	7.2	7.6	7.4	7.4	8.2	7.65
BOD	mg/L	1	1.2	1.05	1	1.8	1.25	1	1	1
COD	mg/L	2	5	3.25	4	6	5	6	8	7
Total coliforms	MPN/100 ml	480	840	610	480	490	487.5	460	940	670
Total Dissolved Solids	mg/L	40	44	41	30	64	45.75	28	50	36

Station : Banda										
DO	mg/L	6.8	7.2	7.05	7.2	7.4	7.35	6.6	7.2	7
BOD	mg/L	1	1.2	1.05	1	1.2	1.1	1	2.2	1.4
COD	mg/L	2	5	4	6	11	8	8	14	9.75
Total coliforms	MPN/100 ml	220	1400	780	320	1400	862.2	220	320	277.5
Total Dissolved Solids	mg/L	38	70	58.25	30	72	52	64	102	76.5
Station : Kudal										
DO	mg/L	6.6	7.2	6.9	6.2	7.4	6.75	5.6	6.4	6.05
BOD	mg/L	1	1.2	1.1	1	1.8	1.3	1	1.8	1.45
COD	mg/L	3	11	6.5	1	16	6.25	6	12	9.5
Total coliforms	MPN/100 ml	940	2100	1460	1500	2200	1775	1100	1700	1325
Total Dissolved Solids	mg/L	42	69	53.25	48	71	58	58	68	63
Station : Belane										
DO	mg/L	6.4	7	6.75	6.8	7.4	7.15	6.4	7.6	7.13
BOD	mg/L	1	1.2	1.05	1	1.2	1.1	1	1.8	1.47
COD	mg/L	2	4	3.25	3	11	7	6	13	10.33
Total coliforms	MPN/100 ml	320	5200	1595	630	4300	1682.5	330	580	463.33
Total Dissolved Solids	mg/L	44	88	49.5	60	80	71	70	80	75.33
Station : Araye										
DO	mg/L	6.2	6.4	6.3	6.8	7.4	7.15	4.6	7.2	6.1
BOD	mg/L	1	1.4	1.1	1	1.2	1.05	1	1.5	1.13
COD	mg/L	2	5	3.5	4	6	5	3	7	4.75
Total coliforms	MPN/100 ml	390	2800	1110	700	2200	1447.5	210	630	432.5
Total Dissolved Solids	mg/L	24	44	34.75	25	37	31.25	30	36	32.5
Station : Baparde										
DO	mg/L	6.2	6.8	6.6	7	7.4	7.2	6	6.6	6.3
BOD	mg/L	1	1.2	1.05	1	1	1	1	1.8	1.4
COD	mg/L	3	6	4.5	4	6	5.25	5	10	7.5
Total coliforms	MPN/100 ml	320	5200	1892.5	940	4300	1910	480	1100	970
Total Dissolved Solids	mg/L	25	44	32.25	28	55	37.25	40	54	47

PART I: RESULT OBTAINED DURING 2010-2011

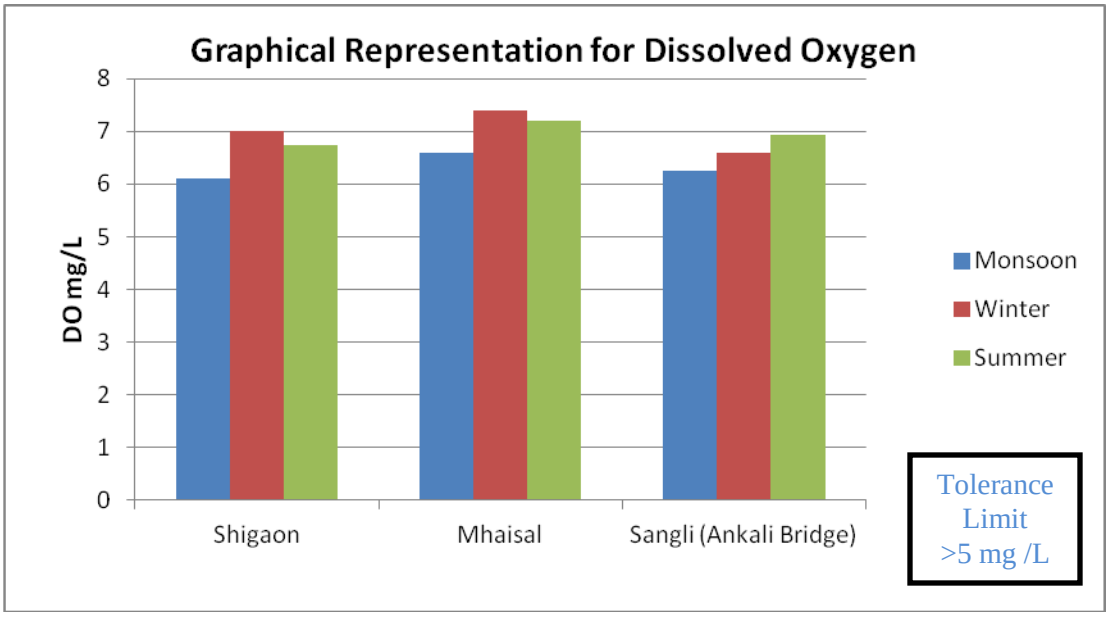
A) Dissolved Oxygen

1) Kolhapur District



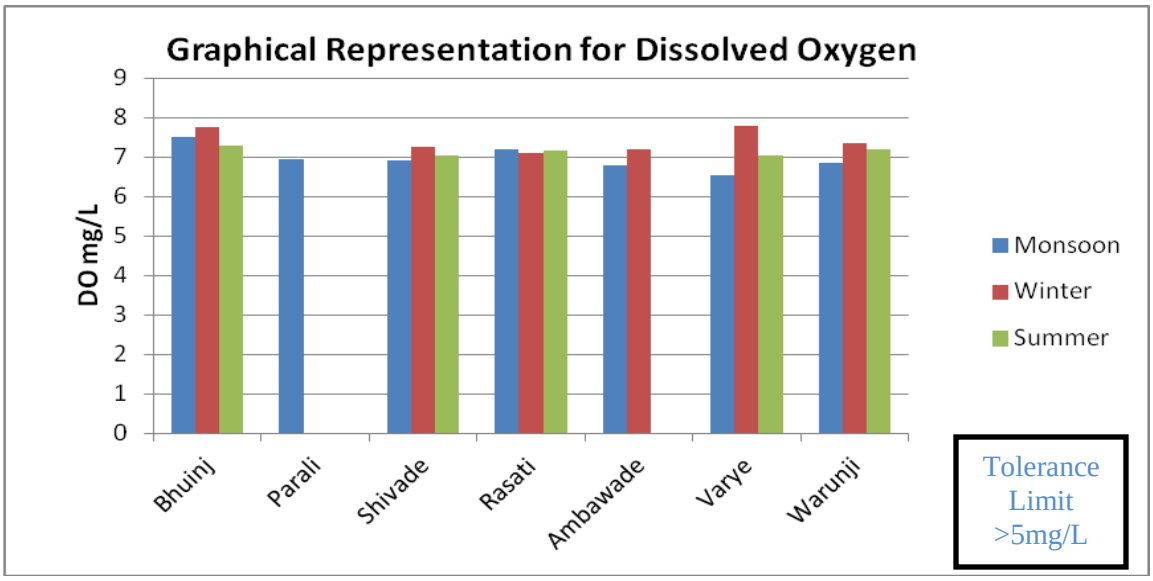
From the above graph it is observed that DO level of Wadange station is low, and Radhanagari & Shingnapur it is high during all the seasons than other stations.

2) Sangli District



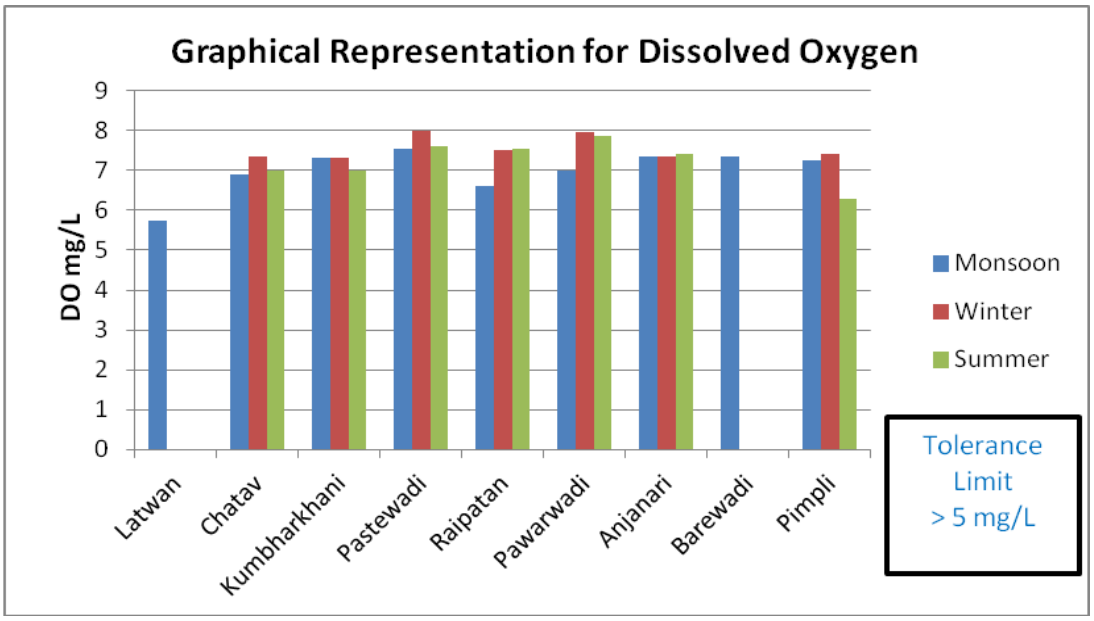
From the above graph it is observed that DO level for all the stations of Sangli district is ranges between 6.0 to 6.8 mg/L. It is within desirable limit.

3) Satara District



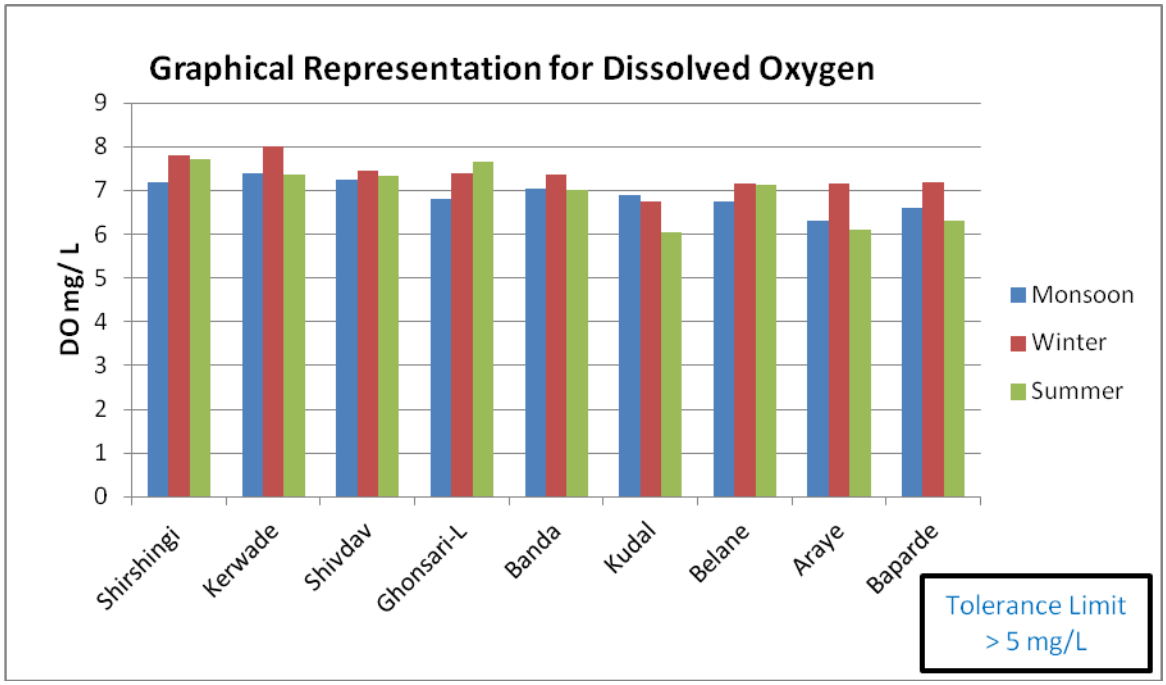
From the above graph it is observed that DO level of all the stations is within desirable limit.

4) Ratnagiri District



From the above graph it is observed that DO level of all the stations is within desirable limit.

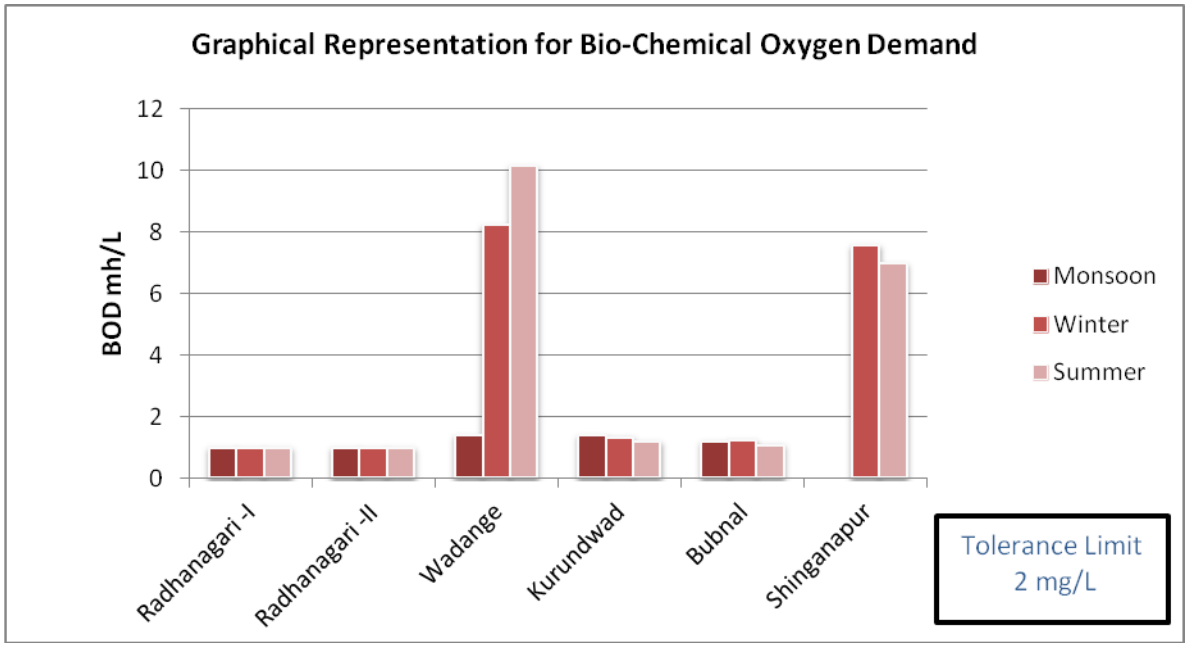
5) Sindhudurga District



From the above graph it is observed that DO level of all the stations is within limit.

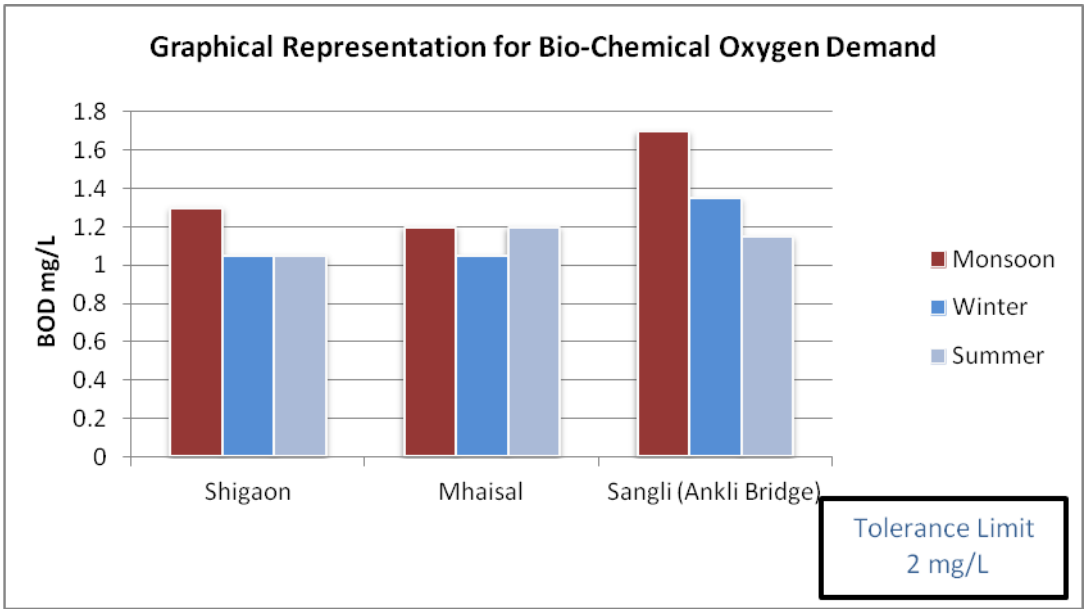
B) Bio-Chemical Oxygen Demand

1) Kolhapur District



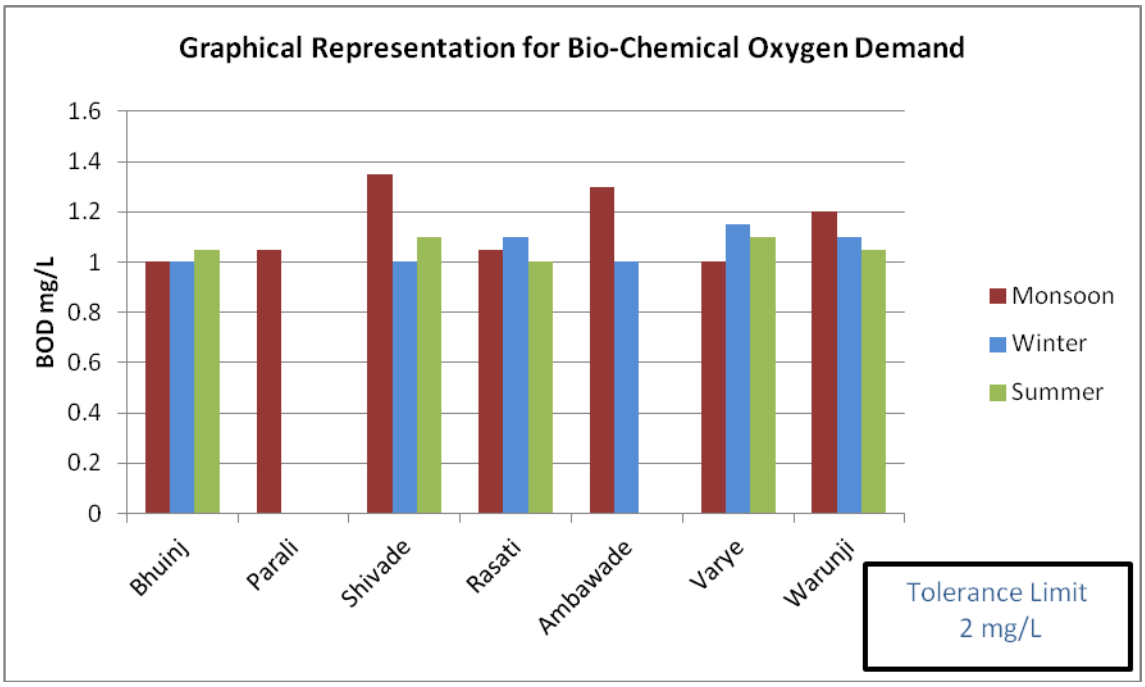
From the above graph it is observed that BOD level of all station are within desirable limit but the Wadange station shows high BOD during winter & summer.

2) Sangli District



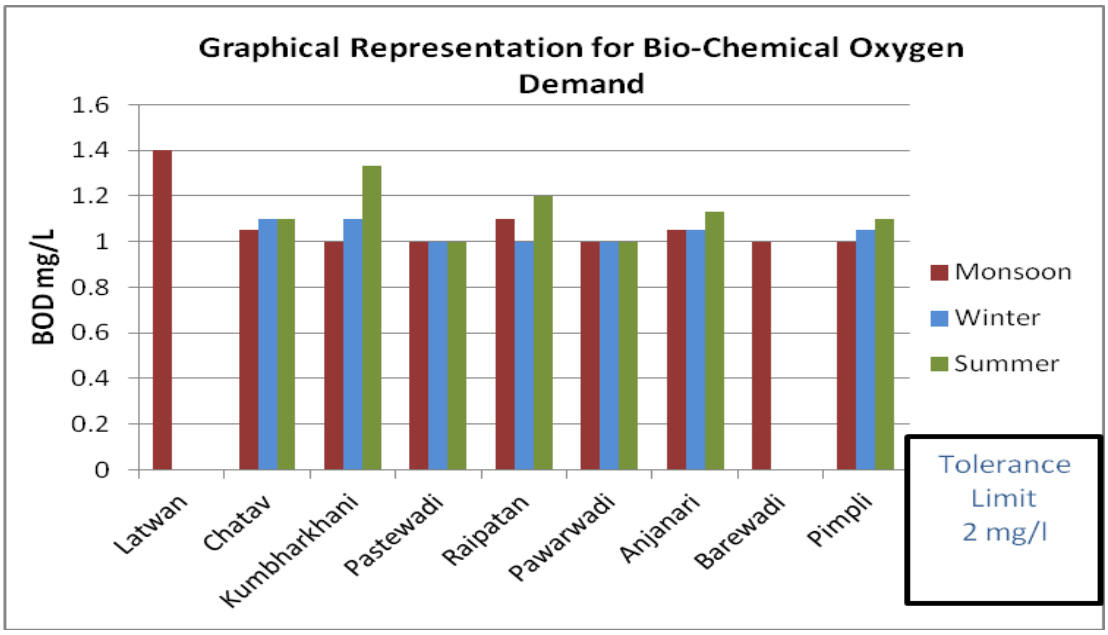
From the above graph it is observed that BOD level is within desirable limit.

3) Satara District



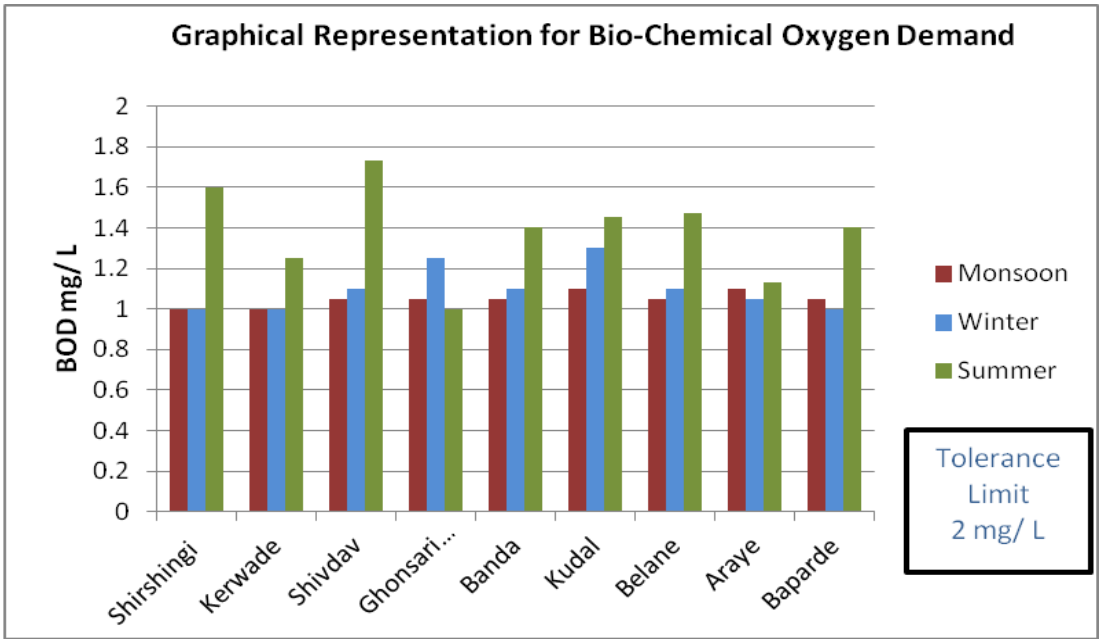
From the above graph it is observed that BOD level all the stations is within desirable limit.

4) Ratnagiri District



From the above graph it is observed that BOD level all the stations is within desirable limit.

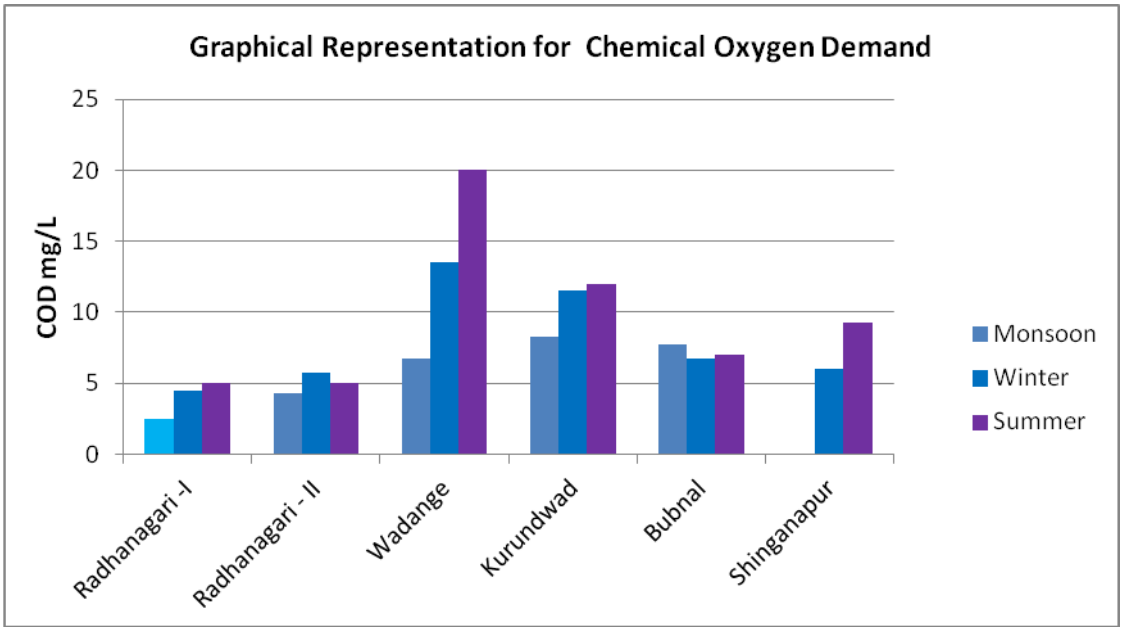
5) Sindhudurga District



From the above graph it is observed that BOD level all the stations is within desirable limit.

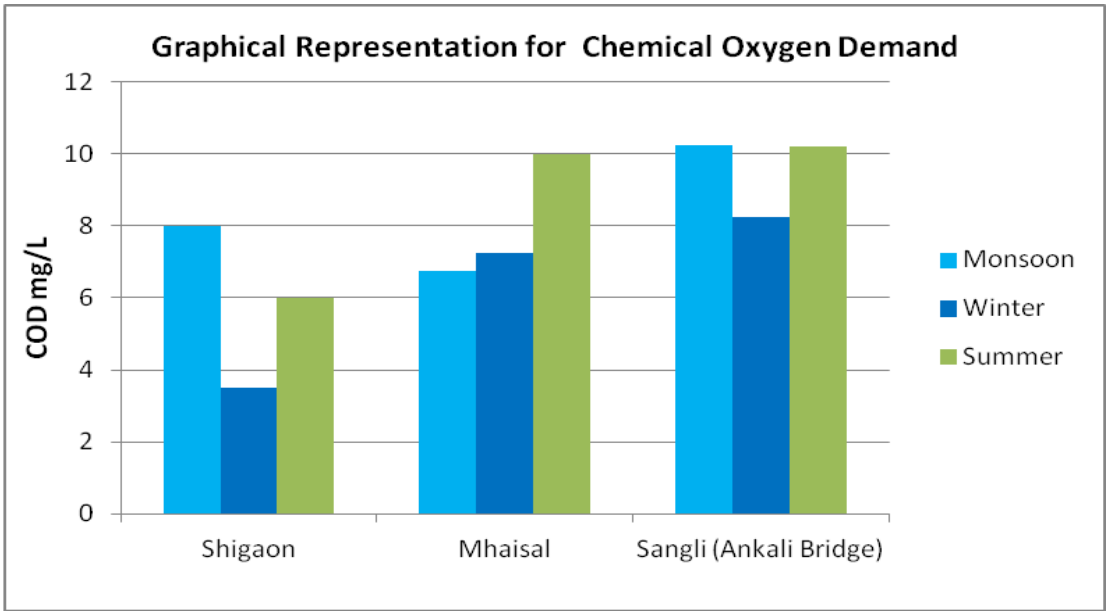
C) Chemical Oxygen Demand

1) Kolhapur District



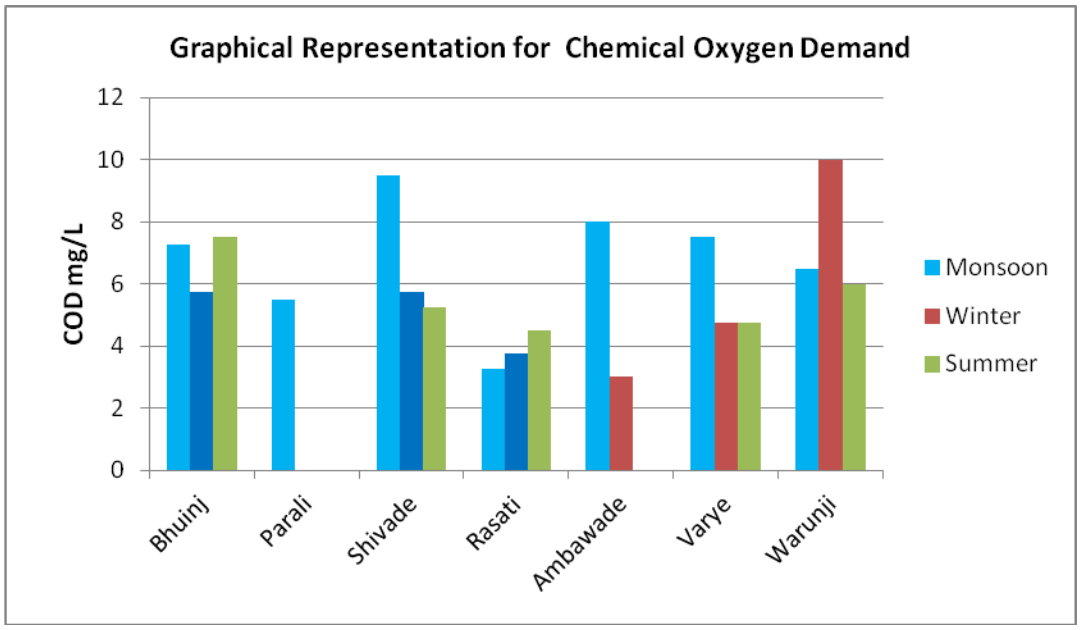
From the above graph it is observed that all the station shows COD level between 3 to 12 mg/L, expect Wadanage which COD level goges up to 20 mg/L during sumeer.

2) Sangli District



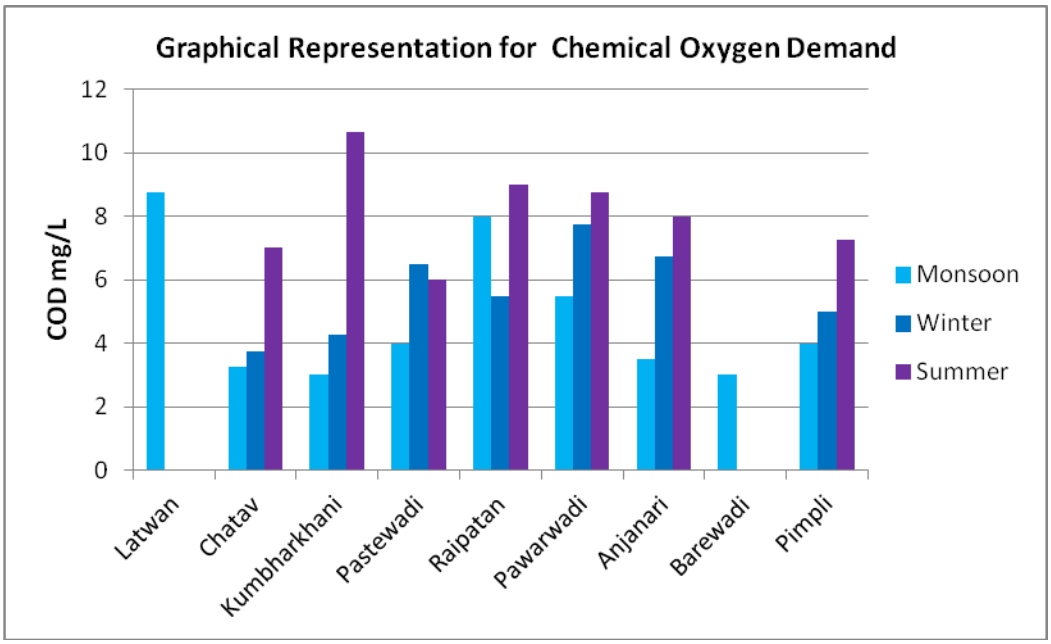
From the above graph it is observed that COD level of all station are gose up 2 to 10mg/L.

3) Satara District



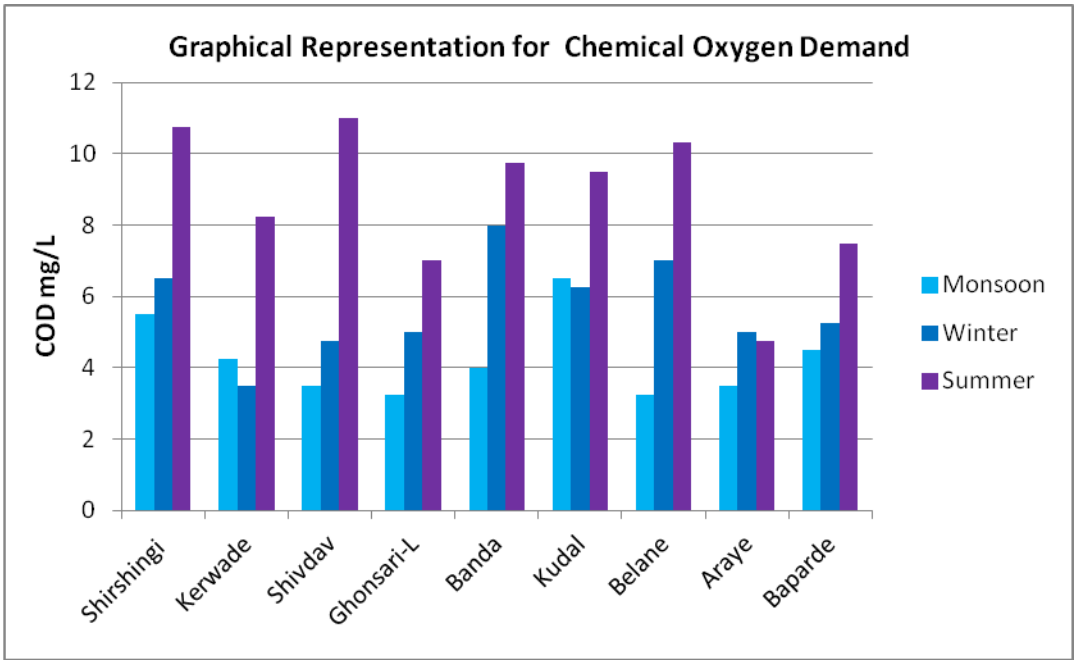
From the above graph it is observed that COD level of all station Shivade and Warunji goes uo to 10 mg/L during monsoon and summer respectively.

4) Ratnagiri District



From the above graph it is observed that COD level of all stations are shows between 3 to 9 mg/L, expect Kumbharkhani it shows COD level goes up to 11 mg/L during summer.

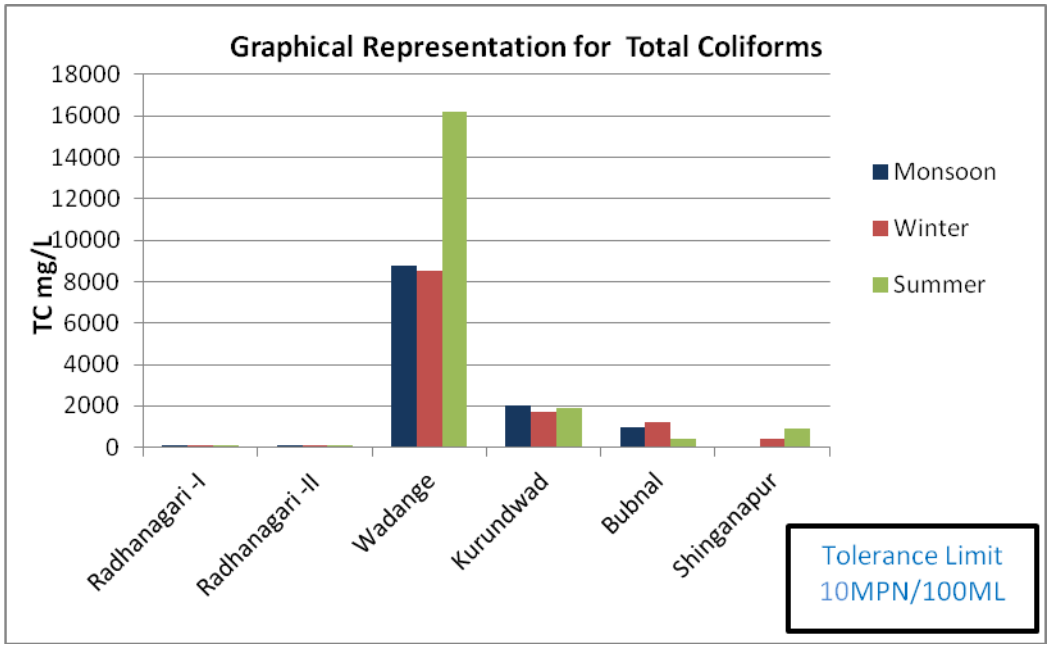
5) Sindhudurga District



From the above graph it is observed that COD level of all stations shows high during summer than other two seasons.

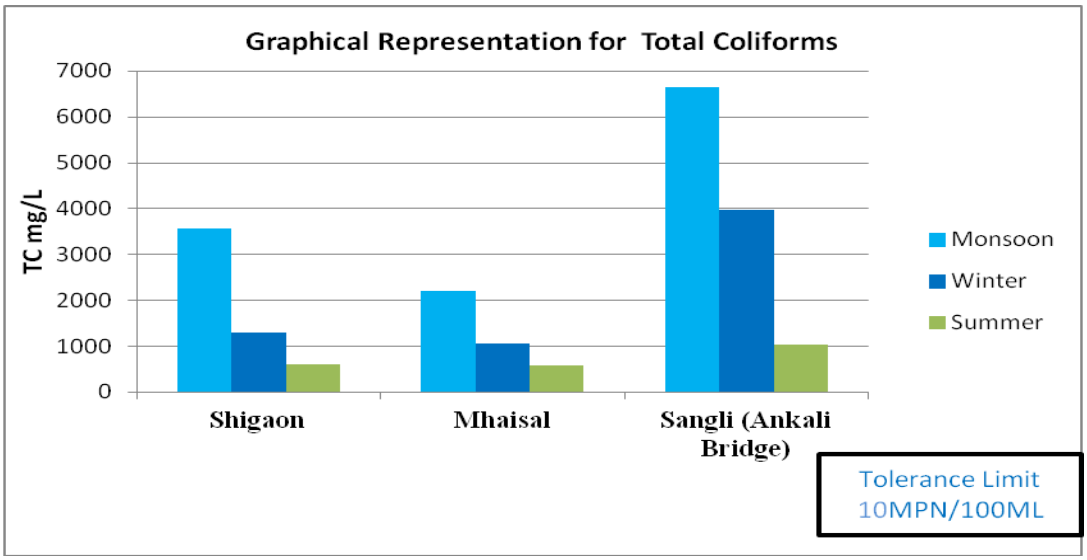
D) Total Coliforms (TC)

1) Kolhapur District



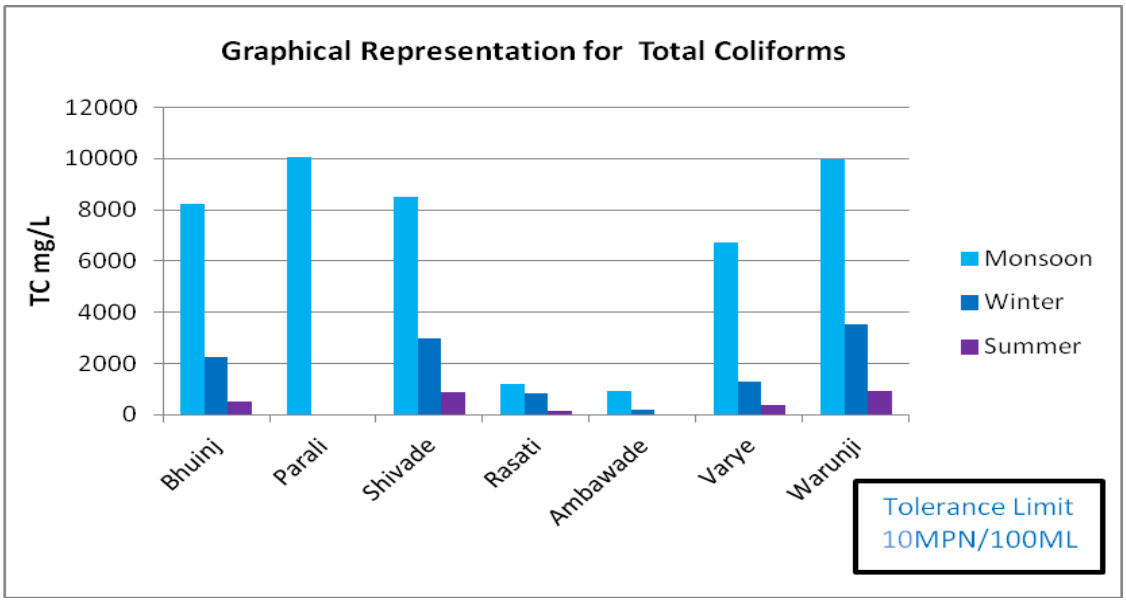
From the above graph it is observed that, Wadanage station shows very high coliform count than other stations. But all stations shows bacterial count high i.e. above the tolerance limit during all the season.

2) Sangli District



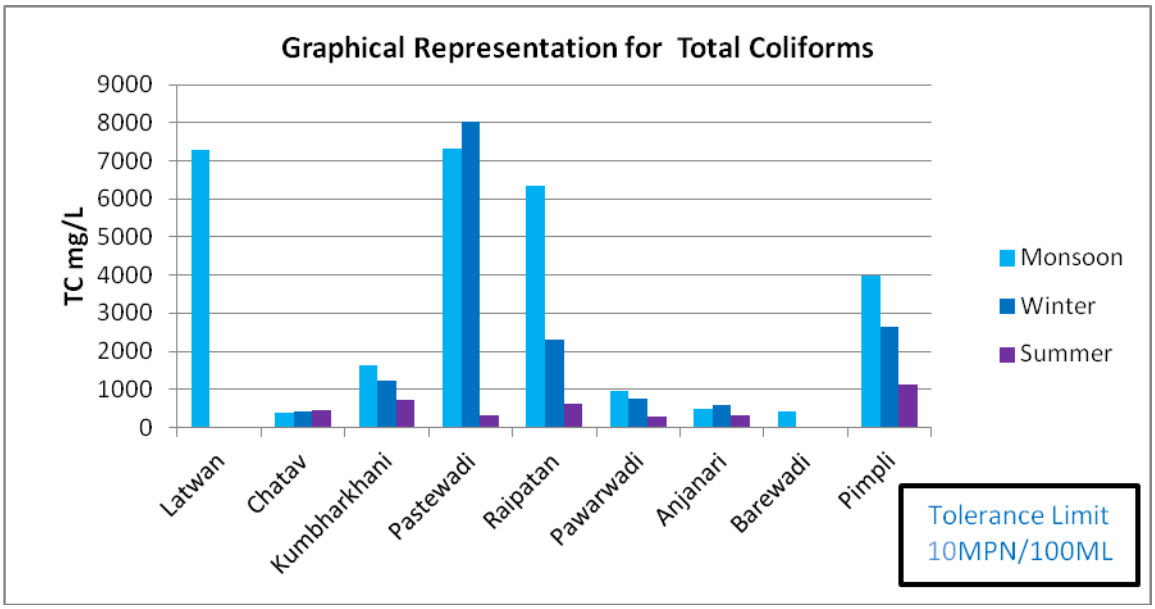
From the above graph it is observed that, Total coliforms count of all station is high than tolerance limit during all season.

3) Satara District



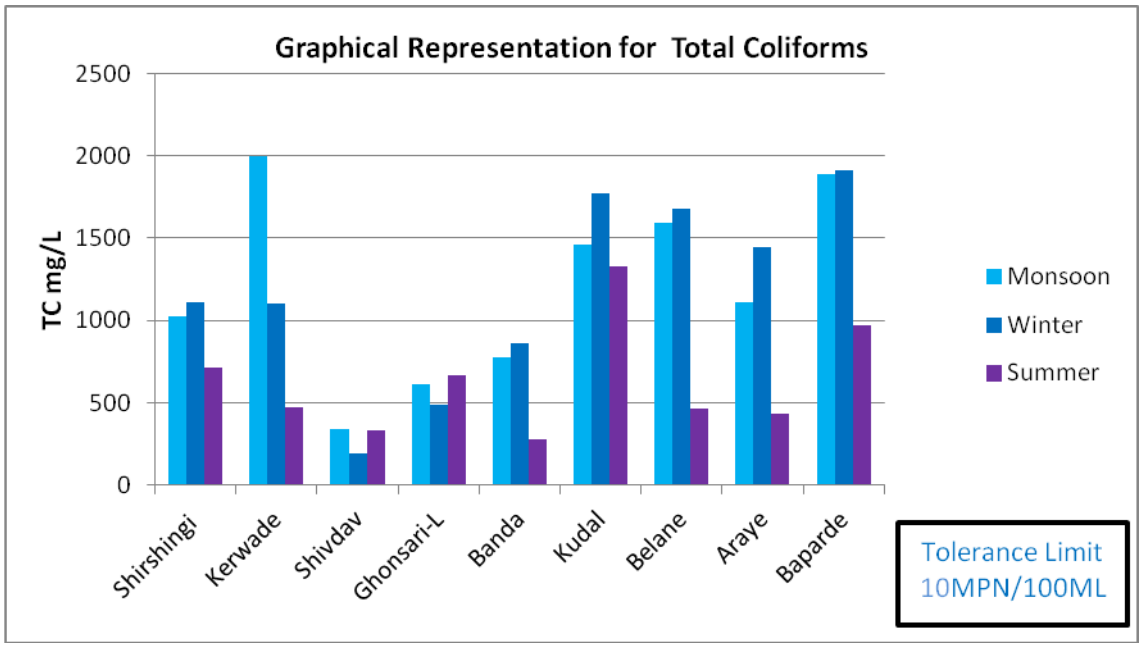
From the above graph it is observed that, Total coliform count of all stations is high than tolerance limit during all the seasons.

4) Ratnagiri District



From the above graph it is observed that, Total coliform count of all station is high than tolerance limit during all seasons. But Latwan , Pastewadi, Raipatan shows very high Coliform count during Monsoon.

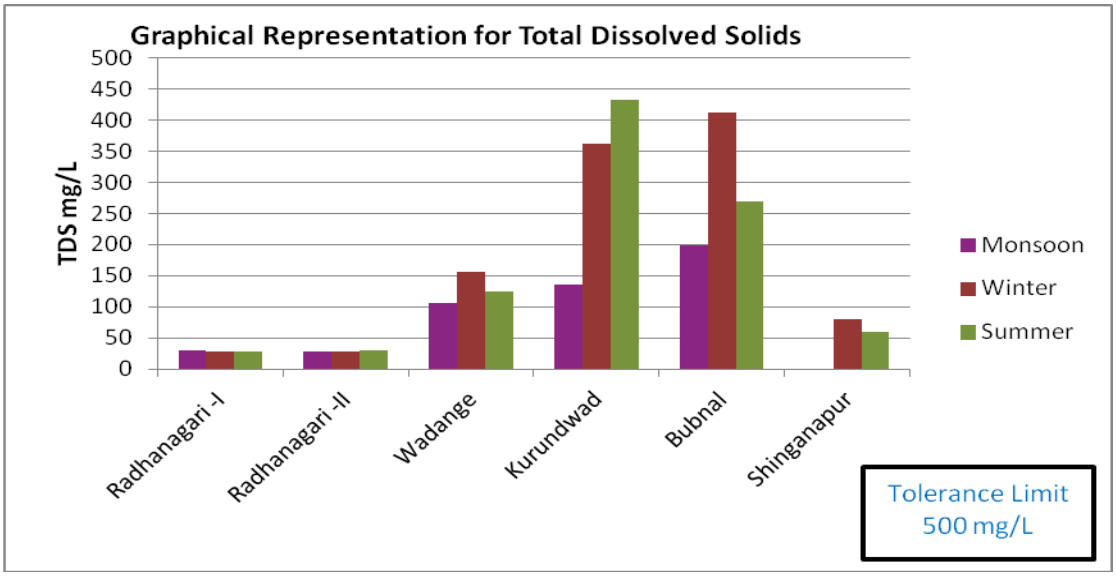
5) Sindhudurga District



From the above graph it is observed that, Total coliform count of all station is high than tolerance limit during all seasons.

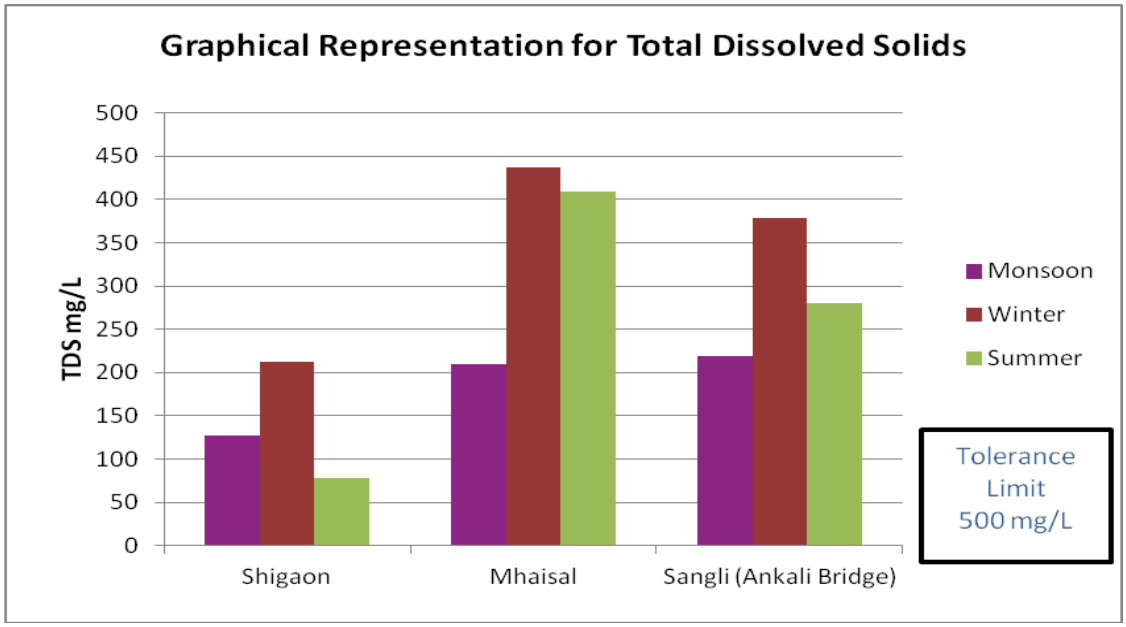
E) Total Dissolved Solids (TDS)

1) Kolhapur District



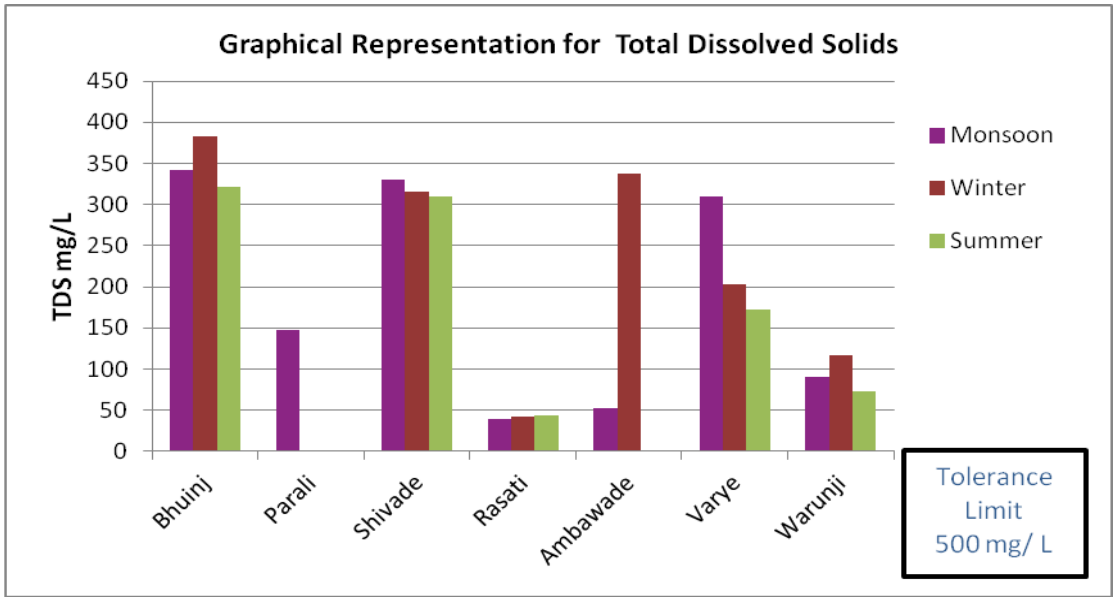
From the above graph it is observed that, TDS level of all station is within desirable limit during all seasons.

2) Sangli District



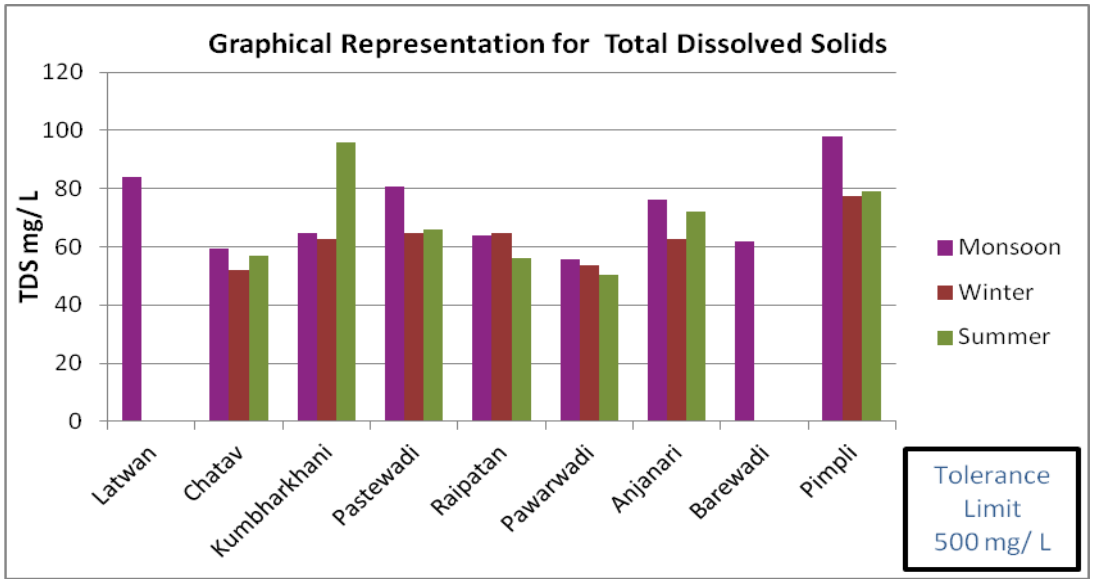
From the above graph it is observed that, TDS level of all the station is within desirable limit during all the seasons.

3) Satara District



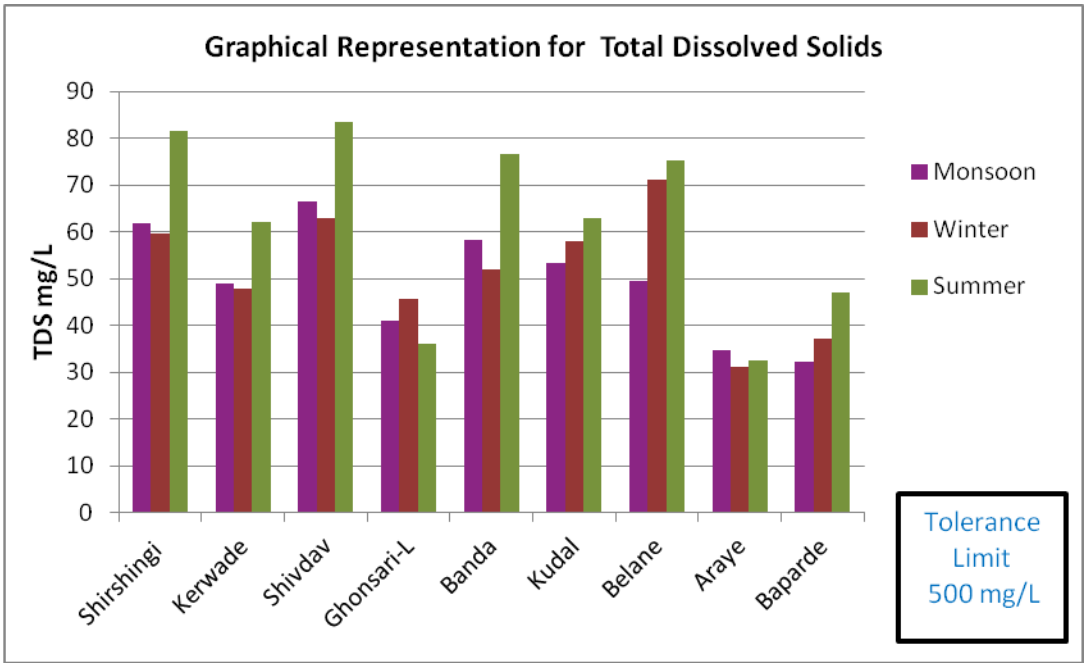
From the above graph it is observed that, TDS level of all the station is within desirable limit during all the seasons.

4) Ratnagiri District



From the above graph it is observed that, TDS level of all the station is within desirable limit during all the seasons.

5) Sindhudurga District



From the above graph it is observed that, TDS level of all the station is within desirable limit during all the seasons.

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CHAPTER – V

Conclusion

Chapter - 5

Conclusion

CONCLUSION FOR 2010– 11

Many water quality parameters are used to reflect the impact of various impurities on selected water uses, as well as to quantify the extend of such impact of. Such water quality parameters may be either physical, chemical or biological.

From the previous chapter we concluded that, bacterial count of Ratnagiri district is very high than other stations during all season. This is an indicator of high organic pollution in the river body. Due to the human activity & release of industrial effluent in a river basins, it is very serious problem which dealing with this sites.

The Concentration of coliform bacteria of both faecal & non- faecal origin was found very high. This is a strong indicator of both urban pollution & discharge of city sewage in the water body.

Thus the water is not suitable for drinking purposes without any conventional treatment & disinfection.

REMEDIAL MEASURS

- For Industrial effluent & sewage water give treatment before discharge into river body.
- Use of such water for salt tolerance crop is recommended based on special study.
- Avoid human activities like cattle washing, bathing etc. in river basins.
- Awareness in local people about river water pollution.
- Classification of source may be as per use of water for irrigation based on Sodium Absorption Ratio, Percent Sodium, and Residual Sodium Carbonate.

CHAPTER – VI

Other Activities

Chapter - 6

Other Activities

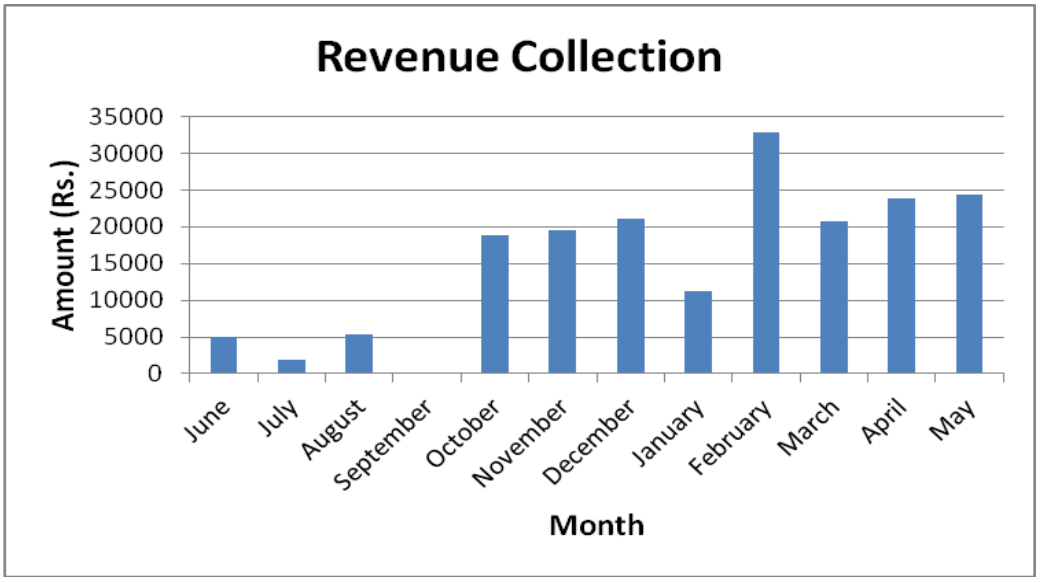
6.1 REVENUE GENERATION TO GOVERNMENT OF MAHARASHTRA

Apart from monitoring of water quality network for Water Quality lab level II at Kolhapur, the infrastructure facility is made available to the users from various Government, Non-Government, as well as individuals.

The revenue collected in this lab during the water year 2010-2011is as follows.

Sr. No	Month	Amount
1.	June	5,074/-
2.	July	1,833/-
3.	August	5,431/-
4.	September	0
5.	October	18,782/-
6.	November	19,480/-
7.	December	21,100/-
8.	January	11,303/-
9.	February	32,835/-
10.	March	20,777/-
11.	April	23,930/-
12.	May	24,393/-
	Total Amount	**1,84,938/-**

Graphical Representation for Revenue Collection



CHAPTER – VII

Annexure

List Of Client 2010-2011

Sr. No.	Name of Client	Purpose
1.	Miss. Deepali Biraje, Shivaji University Kolhapur	Study Purpose
2.	Mr. Suraj Kadakane, Kolhapur	Drinking Purpose
3.	Aadhar Nursing Home, Kolhapur	Drinking Purpose
4.	Mr. Ranjeet Harne, Kolhapur	Drinking Purpose
5.	Mrs. Tejaswini Pol, Shivaji University Kolhapur	Study Purpose
6.	Kolhapur Irrigation Division, Kolhapur	Irrigation Purpose
7.	Dudhaganga Canal Dv. No. 1, Kolhapur	Drinking & Irrigation Purpose
8.	Ichalkaranji Nagarparishad (STP)	Industrial Purpose
9.	Ashokrao Mane Polytechnic College, Ambap & Vathar	Drinking Purpose
10.	Ashokrao Mane Pharmacy College	Drinking Purpose
11.	Balasaheb Mane Polytechnic College, Vathar	Drinking Purpose
12.	Bramhaneshwar Shikshan Ssanstha, Phonda ghat	Drinking Purpose
13.	KIT College, Kolhapur	Study Purpose
14.	Top High School, Top	Drinking Purpose
15.	Hotel Pearl, Kolhapur	Drinking Purpose
16.	Mr. S. S. Kapase, Kolhapur	Drinking Purpose
17.	Kisanrao More High School & Junior College Kolhapur	Drinking Purpose
18.	Prof. R. S. Patil, Shivaji University, Kolhapur	Research Purpose

Quality Policy

We at Water Quality Lab – Level II are committed to provide services for all interested parties as per their need & expectations to achieve total customer satisfaction.

This shall be achieved through continual improvement in all process and service quality with the help of implementation of QMS as per the ISO 9001 : 2008

(Er. U.V.Parvate)
Executive Engineer
Hydrology Project Division,
Pune

Management ensures that the Quality Policy:

a) Is appropriate to the purpose of the organization,
b) Includes a commitment to comply with requirements and continually improve the effectiveness of the Quality Management System,
c) Provides a framework for establishing and reviewing Quality Objectives,
d) Is communicated through display and understood within the organization, and
e) Is reviewed in each MRM for continuing suitability.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

South Asia

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited

certifies that

WATER QUALITY LAB.LEVEL-II
OPP. SHIVAJI UNIVERSITY,
NEAR RAJARAM TANK,
KOLHAPUR - 416 006, INDIA

has established
and applies a Quality Management System for

Services for Water Testing &
River Water Monitoring for Water Quality

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2008 requirements may be obtained by consulting the certification body.

An audit was performed, Report No. **20055703**

Proof has been furnished that the requirements according to
ISO 9001 : 2008

are fulfilled. The certificate is valid until **2012-09-21**

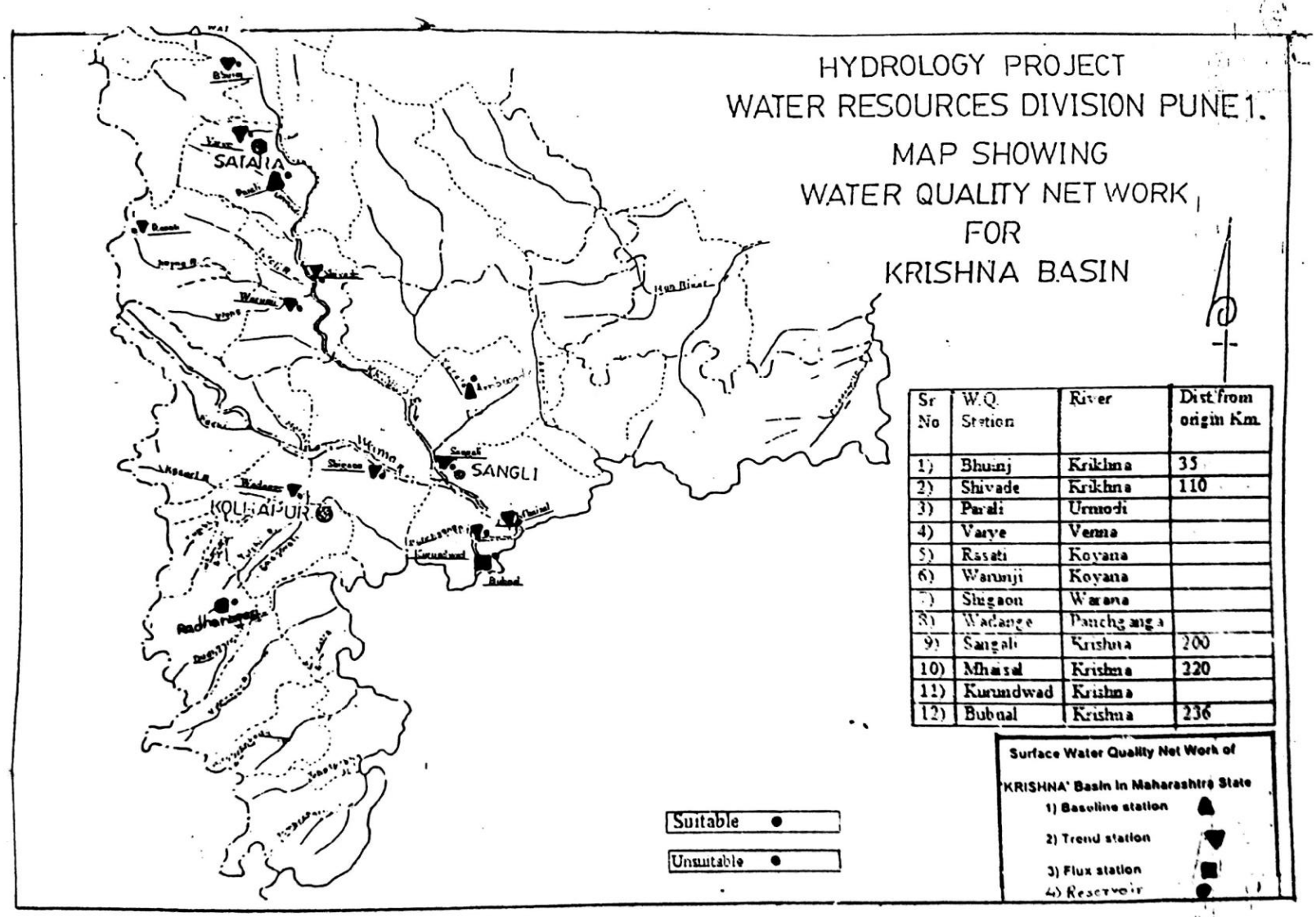
Certificate Registration No. **99 100 11168**

Mumbai, 2009-09-22

Certification Body
of TÜV SÜD South Asia Private Limited
Member of TÜV SÜD Group

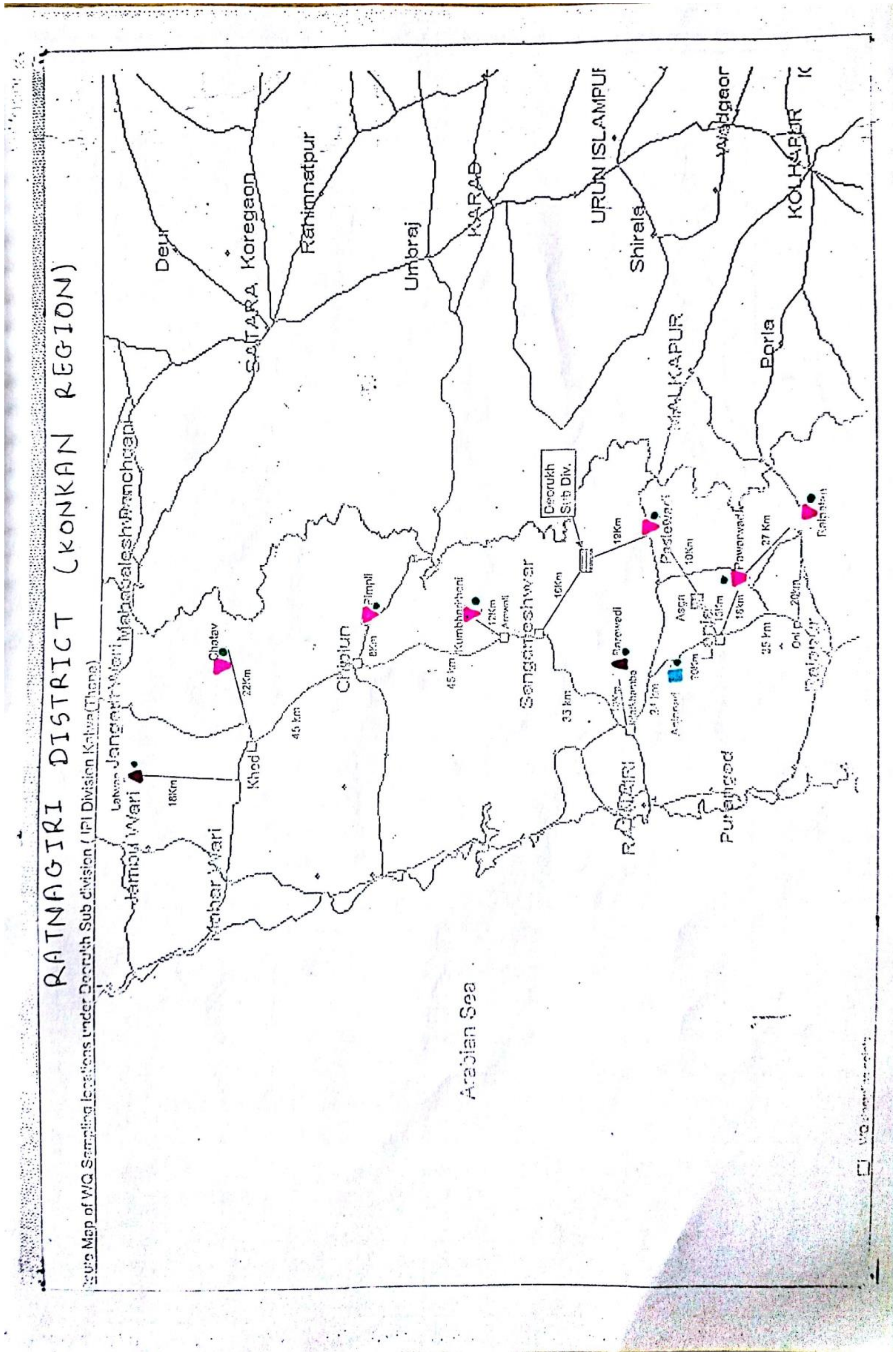
NABCB
QM011

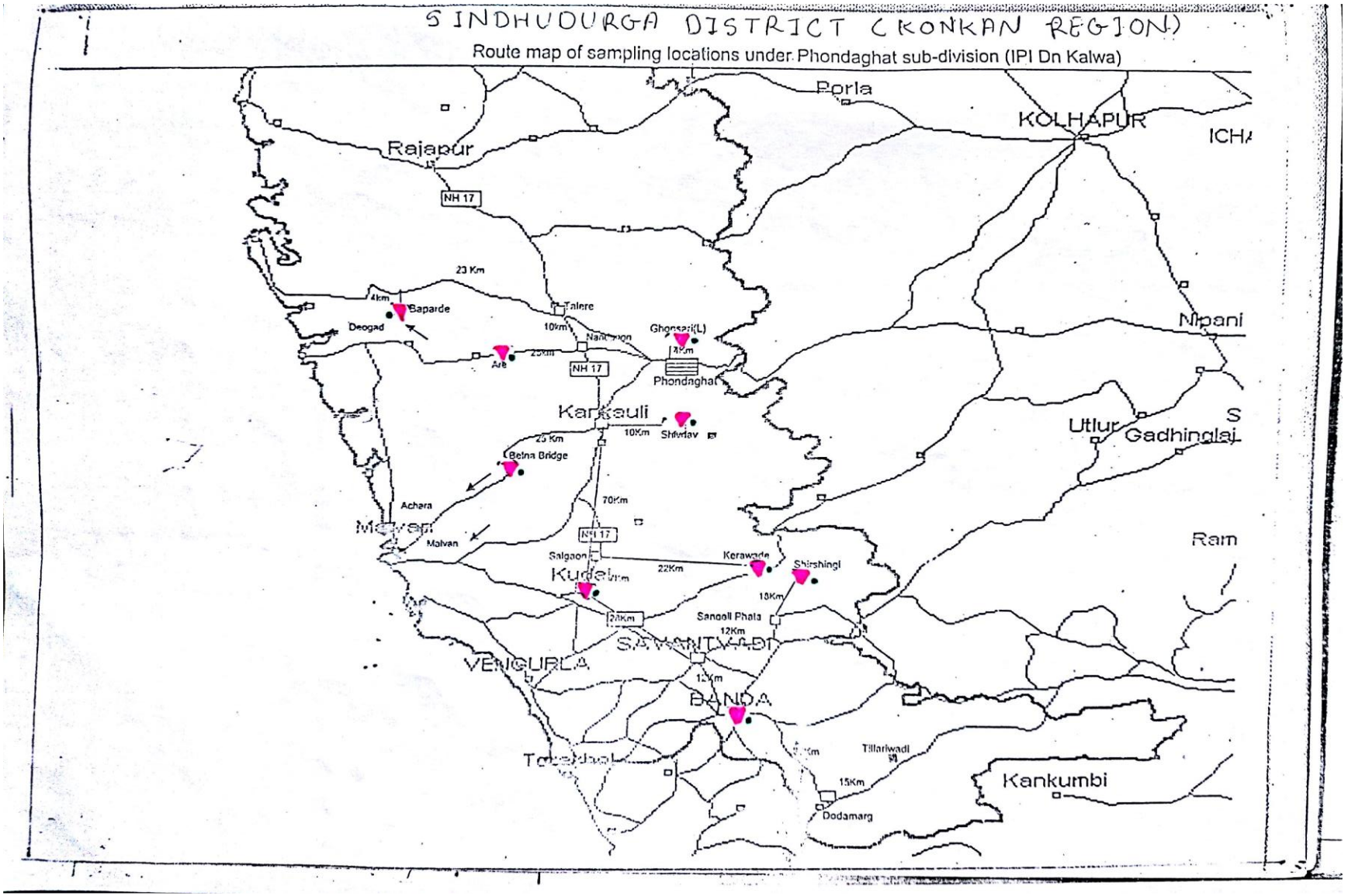
TÜV SÜD South Asia ● TÜV SÜD Group ● Off Saki Vihar Road ● Saki Naka ● Andheri (East) ● Mumbai – 400072



Sr No	W.Q. Station	River	Dist from origin Km.
1)	Bhuinj	Krishna	35
2)	Shivade	Krishna	110
3)	Parali	Urmodi	
4)	Varye	Verna	
5)	Rasati	Koyana	
6)	Warunji	Koyana	
7)	Shigaon	Warana	
8)	Wadange	Panchganga	
9)	Sangali	Krishna	200
10)	Mhaisal	Krishna	220
11)	Kurundwad	Krishna	
12)	Bubnal	Krishna	236

Surface Water Quality Net Work of
'KRISHNA' Basin in Maharashtra State
1) Baseline station
2) Trend station
3) Flux station
4) Reservoir


RATNAGIRI DISTRICT (KONKAN REGION)
Arabian Sea
SATARA
Koregaon
Rahimatpur
Umbraj
KARAD
URUN ISLAMPUR
Shirala
MALKAPUR
Borla
KOLHAPUR
Chiplun
Sangameshwar
Khed
Chatav
Pimpli
Deorukh
Sub Div.
Lanja
Jangarh Wari
Mahabaleshwar
45 km
22Km
18Km
33 km
15Km
19Km
10Km
27 Km
25 km


SINDHUDURGA DISTRICT (KONKAN REGION)
Route map of sampling locations under Phondaghat sub-division (IPI Dn Kalwa)
Porla
KOLHAPUR
Rajapur
NH 17
23 Km
4km
Baparde
Deogad
Talere
10Km
Ghonsari(L)
Nipani
Are
NH 17
Phondaghat
Karkauli
10Km
Shivdav
Utlur
Gadhinglaj
25 Km
Betna Bridge
70Km
Achara
Malvan
NH 17
Salgaon
Kerawade
Shirshingi
22Km
Kudel
18Km
Sangoli Phata
12Km
SAWANTWADI
VENGURLA
BANDA
Tillariwadi
15Km
Kankumbi
Dodamarg