

GOVERNMENT OF KARNATAKA
WATER RESOURCES DEPARTMENT



KARNATAKA ENGINEERING RESEARCH STATION
KRISHNARAJASAGARA

REPORT
ON
***STUDY OF RIVER WATER SAMPLES AT VARIOUS SITES IN
SOUTHERN KARNATAKA
(PDS UNDER HP-II)***

CONCRETE AND POZZOLONA BRANCH
TECHNICAL SERVICES DIVISION
K.E.R.S., K.R.SAGARA.

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ABSTRACT

Since time immemorial, water from rivers is being used for many purposes. Water is the life line of all the living beings on this Earth. In order to assess the quality of surface water in river Cauvery along with its tributaries a purpose driven study (PDS) under HP-II “Study of river water samples at various sites in Southern Karnataka” has been taken up.

Fourteen monitoring stations were selected giving due considerations to all the tributaries of river Cauvery. The selected points are ; Chiklihole river near reservoir, Cauvery near Kushalanagara, Cauvery near K.R.Nagara, Harangi near Kudige, Yagachi near Alur, Lakshmanatheertha near Bilikere, Lakshmanatheertha near Hanagodu, Kabini near H.D.Kote, Kabini near Suttur, Nugu near Chikkanandi, Taraka near Madapura, Shimsha near Halagur, Suvarnavathy near Kollegala and Lokapavani near Sreenivasa Agrahara.

The study was proposed for a duration of two years. The study was commenced in the month of December 2009 and final sample collection was done in the month of December 2011. The water samples were analyzed for 27 parameters as mentioned in HP-I mandate.

The parameters considered in the study are Colour, Odour, Temperature, pH, Electrical Conductivity (EC), Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Hardness, Chloride, Nitrogen Nitrite and Nitrate, Ammonical Nitrogen, Sulphate, Calcium, Magnesium, Boron, Iron, Fluoride, Sodium, Potassium, Carbonate, Bicarbonate, Total Alkalinity, Total Dissolved Solids (TDS), Total Coliform and Faecal Coliform.

From the study, it is seen that pH level at all points is in the range of 6.5 to 8.5. The DO in all the monitoring rivers is above 6 mg/l except in Suvarnavathy. The average BOD at all the points is less than 3 mg/l. Higher Coliform count is found in all the river which is because of human activities. Higher Alkalinity is observed in Taraka, Lakshmanatheertha near Bilikere, Shimsha and Suvarnavathy.

All other chemical parameters at all the stations are well within the desirable limit as prescribed by the IS code. Water Quality Index calculated using CCME method reveals that the WQI of Chiklihole is around 80 for Class A, as per use based classification. The quality of water at all other monitoring stations very well satisfy for Class C classification and are also suitable for irrigation purpose.

CHAPTER -1

INTRODUCTION

1.1 GENERAL:

Cauvery is a major river in Karnataka having second largest basin area. Area wise Krishna basin is the largest with a basin area of 1,13,290 sq.km which accounts to about 59.48 % of geographical area. Cauvery basin with an area of 34,270 sq.km accounts to about 17.99 % of geographical area.. Cauvery river originates at Talacauvery on the Brahmagiri Range of Hill in the Western Ghats in Kodagu district of the Karnataka State at an elevation of 1,341m (4,400 ft.) above mean sea level. The length of river Cauvery in Karnataka is 350 km. The river Cauvery has seven major tributaries such as Harangi, Hemavathy, Lakshmanatheertha, Kabini, Suvarnavathy, Shimsha and Arkavathy. The other minor tributaries include Nugu, Taraka, Chiklihole, Yagachi and Lokapavani.

1.2 SALIENT FEATURES OF MONITORING RIVERS:

The length of chiklihole river is 24 kms with a catchment area of 57 sq.km. Its catchment area comprises forest and coffee plantation with scarce human settlements. The only activity observed is coffee de –pulping process.

Cauvery river from its origin upto monitoring point at Kushalanagar has a length of 98 kms with an influencing catchment area of 1259 sq.km. Harangi has a length of 43 km up to its monitoring point at Kudige with influencing catchment area of 580sq.kms. The catchment area consists of forest, agriculture and plantation land. Many major towns are located in its catchment with many number of coffee processing units.

Cauvery river from Kushalanagar to monitoring point at K.R.Nagar has a length of 77 kms with an influencing catchment area of 3253 sq.km. The main activity is agriculture with irrigation facilities. Many major towns are located in its catchment. No major industries are located except one sugar manufacturing unit located at Chunchanakatte on the river bank.

Yagachi river has a length of 53 km from its origin upto monitoring point at Alur with an influencing catchment area of 854 sq.km. Its catchment area consists of agriculture and plantation land.

Lakshmanatheertha has a length of 68 km from its origin upto its monitoring point at Hanagodu with a catchment area of 915sq.km. Its catchment comprises mostly of forest land. The length of river from Hanagodu upto its monitoring point at Bilikere is 62 km with an influencing catchment area of 1658 sq.km. The main activity is agriculture with irrigation facilities.

Nugu river has a length of 99 kms from its origin to the monitoring point with a catchment area of 1271 sq.km. Its catchment area consists of forest and agricultural land. Taraka river has a length of 54 kms from its origin upto the monitoring point with a catchment area of 549 sq.km. Its catchment area consists of forest and agricultural land.

Kabini river from its origin upto monitoring point near H.D.Kote (Saragur) has a length of 110 kms with an influencing catchment area of 2336 sq.km. Its catchment area consists of forest and agricultural land. The second monitoring point for Kabini at Suttur is 212 km from origin with an influencing catchment area of 6809 sq.km. The main activity is agriculture. A major pilgrimage centre and major industrial area is located on the upstream of the river monitoring point.

Lokapavani has a length of 57 km with a catchment area of 470sq.km. Its catchment consists mainly of agricultural lands with and without irrigation facilities. The river flow is considerable even during non monsoon season which is due to return flow from irrigated lands.

Shimsha has a length of 202 kms from its origin upto monitoring point near Halagur. The catchment area is 7740 sq.km. The catchment area consists of agricultural lands with and without irrigation facilities. A number of medium and small scale industries are located in the catchment.

Suvarnavathy has a length of 73 kms from its origin upto monitoring point near Kollegala with a catchment area of 1521 sq.km. The catchment area consists of forest and agricultural lands.

1.3 ABOUT THE STUDY TAKEN UP:

A Purpose Driven Study under HP-II “Study of river water samples at various sites in Southern Karnataka” has been taken up by Karnataka Engineering Research Station, Krishnarajasagara. The study was estimated for Rs. 17.20 Lakhs and commenced during the month of December 2009.

Rivers in Cauvery basin were considered for assessing quality characteristics of surface water in the purpose driven study. The river monitoring points are given vide Annexure-I and map vide Annexure-II.

The study was intended for a period of two years from the month of commencement and accordingly the last samples were collected in the month of December 2011.

1.4 OBJECTIVES:

- To assess the general trend in quality of water.
- To assess the suitability of water for various uses.
- To classify the monitoring stations for future monitoring.

CHAPTER -2

LITERATURE REVIEW

Water is the basic necessity for life. Water is very precious compound whose quantity and quality is to be preserved. The quality of surface and sub surface water sources is getting polluted these days due to over exploitation in the name of development. Hence, in order to ensure good health of the public, it is very essential to protect the quality of water used especially for drinking.

Agriculture is the major activity in our country providing lot of employment. Self sustenance of any country depends on its capacity to provide food security to its masses. Moreover, it is not always possible to depend entirely on rainfall and therefore irrigation plays a major role. The water supplied for irrigation purpose should meet certain quality criteria as given in IS 11624-1986.

The most important quality parameters for drinking water are pH, Hardness, Alkalinity, Chloride, Total Dissolved Solids, Fluoride, Sulphate, Boron and Nitrate. The parameters to be considered for irrigation purpose are Electrical Conductivity, Boron, Residual Sodium Carbonate (RSC) and Sodium Adsorption Ratio (SAR).

The quality of water can be ascertained by analyzing and testing the physical, chemical and microbiological or bacteriological characteristics.

Physical analysis of water is carried out in order to determine the physical characteristics of water. This includes colour, taste, odour, temperature, turbidity.

Physical characteristics:

Colour is imparted due to presence of organic matter and some inorganic materials such as coloured soil. The excess growth of algae and aquatic micro-organisms may also impart colour to water. The presence of organic matter, inorganic salts and dissolved gases impart taste and odour to water. Turbidity is caused due to the presence of large amount of insoluble suspended matter such as clay, silt and finely divided organic matter. The turbidity depends upon the fineness and concentration of particles present in water.

Chemical characteristics:

Chemical Analysis of water is carried out in order to determine the chemical characteristics of water. This includes pH, Electrical Conductivity, BOD, COD, hardness, chloride, nitrogen, total solids, iron, fluoride, other minerals and dissolved gases.

pH:

pH is a measure of the hydrogen ion concentration in water. pH is reported as an inverse log with a scale ranging from 0 (acidic) to 14 (basic). Therefore, a small change in the pH reflects a tenfold magnitude of change in the ambient environment.

Electrical Conductivity:

Conductivity is a measure of the dissolved ions in water and is reported in micro-mhos/cm as specific conductivity at 25°C. Conductivity can be related to the amount of dissolved solids in water. With increase in temperature the conductivity also increases.

Hardness:

Hardness in water prevents the formation of sufficient lather when mixed with soap. This is caused due to the presence of calcium and magnesium salts in water. The hardness due to bicarbonates and carbonates of calcium and magnesium represents the temporary hardness which is also called as carbonate hardness. The hardness due to nitrates, sulphates and chlorides of calcium and magnesium is known as permanent hardness or non-carbonate hardness.

Alkalinity:

The alkalinity of water is due to the presence of bicarbonate, carbonate and hydroxides. The presence of alkalinity aids in coagulation.

Chlorides:

Chlorides are generally present in water in the form of sodium chloride. This may be due to leaching of marine sedimentary deposits, pollution from domestic wastes and sea water intrusion.

Nitrogen:

The presence of nitrogen is an indication of the presence of organic matter. They may occur as free ammonia - very first stage of decomposition of organic matter; albuminoid nitrogen - nitrogen present in water before decomposition has started; nitrite - partly decomposed organic matter; and nitrates - fully oxidized organic matter in water.

Total Solids:

This represents the total amount of solids, both suspended as well as dissolved present in water.

Dissolved Oxygen:

Dissolved oxygen (DO) is a measure of the concentration of O₂ molecules in water. DO is measured in mg/L. The DO in water decreases during decomposition of organic matter. Minimum DO required for the survival of aquatic life is 4 mg/l.

Biochemical Oxygen Demand (BOD):

The BOD is the measure of oxygen required to oxidize the organic matter by micro-organisms.

Chemical Oxygen Demand (COD):

COD test measures both biologically degradable and biologically non-degradable organic matter. COD is used to measure the oxygen equivalent of organic matter content of a sample that is susceptible to oxidation by strong chemical oxidants.

Fluoride:

Flouride is both beneficial and toxic depending upon its concentration. At very low concentrations it causes dental carries in children and at high concentration it leads to skeletal fluorosis - a crippling bone disease.

Water Quality requirement for irrigation use:

The Residual Sodium Carbonate (RSC) shall be determined by the equation;

$$\text{RSC} = (\text{CO}_3^- + \text{HCO}_3^-) - (\text{Ca}^{++} + \text{Mg}^{++})$$

Where CO_3^- = Carbonate ion concentration in me/l

HCO_3^- = Bicarbonate ion concentration in me/l

Ca^{++} = Calcium ion concentration in me/l

Mg^{++} = Magnesium ion concentration in me/l

The Sodium Adsorption Ratio (SAR) shall be determined by the equation

$$\text{SAR} = \text{Na}^+ / \sqrt{\{(\text{Ca}^{++} + \text{Mg}^{++}) / 2\}}$$

Where Na^+ = Bicarbonate ion concentration in me/l

Ca^{++} = Calcium ion concentration in me/l

Mg^{++} = Magnesium ion concentration in me/l

Other parameters to be observed are Electrical conductivity and Boron.

CHAPTER -3

METHODOLOGY

11 rivers (River Cauvery and some of its major and minor tributaries) at 14 different location sites were selected for the study to assess the variation in water quality due to various activities in the catchments. The monitoring location sites were so selected that the various activities leading to possible pollution may be identified. For the convenience of sampling, all the sample collection points were selected at the bridge locations.

The samples were collected once in every month and tested for 27 parameters. List of parameters analyzed is given vide Annexure -III. The samples so collected were analyzed for field parameters, general parameters and coliform group.

The field parameters such as colour, odour, temperature, pH, Electrical Conductivity and DO were tested immediately after the collection of sample.

For general parameters, the samples were collected and immediately transported to the laboratory in a polythene-can of 5 litres capacity placing it in an ice box i.e., maintaining a temperature of 4^o C.

The samples for dissolved oxygen were collected using DO sampler in a BOD bottle of 300 ml capacity. The sample meant for final DO test was placed in the ice box and transported to the laboratory for further incubation for a period of either 3 days at 27^o C or 5 days at 20^o C.

The samples for Coliform group were collected in the pre-sterilized bottles and transported to lab in sterile condition placed in ice box. Initially the coliform tests were done without dilution and hence the maximum value reported is 1600 MPN /100 ml. Later dilution of samples was carried out and the values are reported accordingly.

The sample analysis method for all the parameters is given vide Annexure -IV.

CHAPTER -4

TEST RESULTS AND DISCUSSION

TEST RESULTS:

The monthly test results of all fourteen monitoring station over two year period is averaged to obtain the overall quality of water. The test results obtained are compared for variation with respect to tolerance limit for both drinking and irrigation purpose as per relevant IS. Tolerance limit for drinking and irrigation are given vide Annexure V and VI respectively.

The result data were verified for outliers using statistical method. The high and low outliers were not considered in averaging the monthly data.

In order to assess the suitability of water for various uses, water quality index is calculated using Canadian Council of Ministers of Environment (CCME) water quality index -1.0. Separate water quality index is calculated for **Class A with Total Coliform**, **Class A without Total Coliform** and **Class B** as per use based classification of surface water. Use based classification of water is given vide Annexure – VII. The water quality index for irrigation purpose is calculated taking into consideration the parameters mentioned in IS 11624 -1986.

To represents the average concentration of each parameter at all the monitoring stations, graphs are plotted with average concentration in the ordinate and monitoring stations in the abscissa. The graphs are given vide Annexure – VIII and the test results vide Annexure –IX.

DISCUSSION:

Generally it is observed that DO at all the stations is above 6 mg/l except in Suvarnavathy. Higher DO is found in Shimsha because of turbulent and low depth of flow. In Chiklihole, the DO is higher because of photosynthetic activity of algae.

Total Alkalinity concentration is above 200 mg/l in Taraka, Lakshmanatheertha near Bilikere, Shimsha and Suvarnavathy. This is due to soaps and detergents entering the water body because of laundry activity. Coliform of both types are found higher in Taraka, Suvarnavathy and Lokapavani because of human activities and lean flow during most of the months.

CHAPTER -5

CONCLUSION

- pH at all the fourteen monitoring stations are in the range of 6.5 to 8.5 as per IS stipulation.
- Dissolved Oxygen at all the stations is above 6 mg/l except in Suvarnavthy near Kollegala.
- Total Dissolved Solids at all the points is well within permissible limit of 500 mg/l.
- The average BOD level at all the stations is less than 3 mg/l.
- The water is relatively soft in Chiklihole, Cauvery near Kushalanagar, Harangi, Yagachi, Lakshmanatheertha near Hangodu and Kabini (i.e., total hardness less than 100 mg/l)
- Alkalinity above 200 mg/l is observed Taraka, Lakshmanatheertha near Bilikere, Shimsha and Suvarnavathy.
- Higher coliform are found in all the river monitoring points and this is attributed to human activities.
- All other parameters are well within permissible limit as stipulated by the IS.
- Chiklihole can be grouped under Class A, as per use based classification since its water quality index is 78.
- All other river water has a water quality index in the range of 50 to 60 for Class A and above 80 for Class C.
- The water at all the points is most suitable for irrigation purpose.

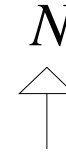
The water at all the stations confirm to Class C specifications as per use based classification. The overall quality of water at all the monitoring points is not much affected by present activities in catchment area and hence does not need regular monitoring. However in order to ascertain any change in quality due to future variation in land use pattern, it is desirable to monitor these rivers twice a year (i.e., pre monsoon and post monsoon).

ANNEXURE -I

MONITORING RIVERS AND THEIR LOCATION

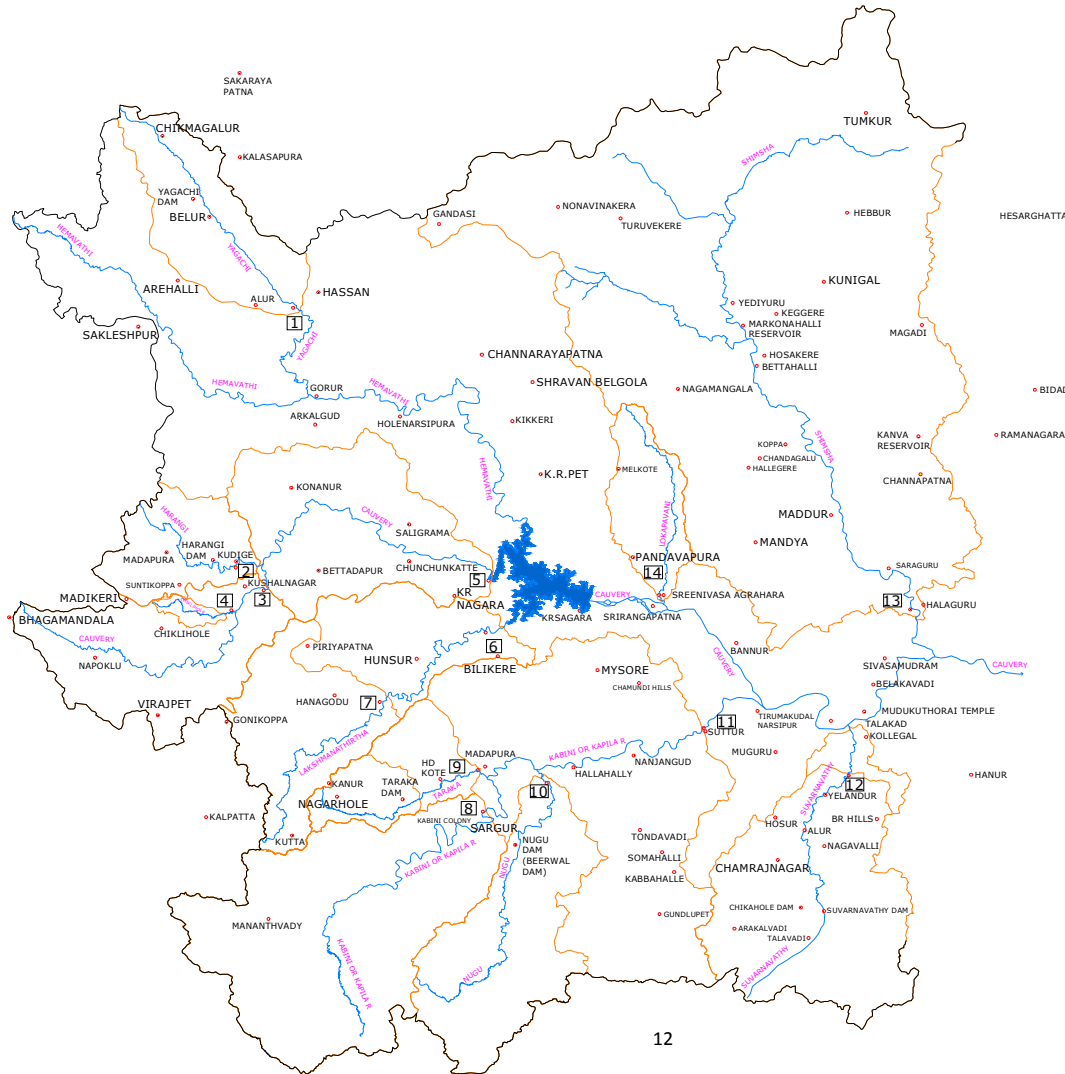
Sl.No.	Monitoring point	Notation given	Latitude Longitude
1	Chiklihole river near Kushalnagar	CHI	Lat 12°23'56.2" N Long 75°52'37.3" E
2	Cauvery river near Kushalnagar	CK	Lat 12°26'54.7" N Long 75°58'12.4" E
3	Harangi river near Kudige	HK	Lat 12°27'44.7" N Long 75°57'49.8" E
4	Cauvery river near K.R.Nagara	CKR	Lat 12°28'06.5" N Long 76°23'28.4" E
5	Yagachi river near Alur	YA	Lat 12°58'54.1" N Long 76°02'15.2" E
6	Lakshmanathirtha river near Hanagodu	LH	Lat 12°14'11.5" N Long 76°11'44.6" E
7	Lakshmanathirtha river near Bilikere	LBK	Lat 12°22'27.3" N Long 76°24'55.6" E
8	Kabini river near H.D.kote	K	Lat 12°01'15.2" N Long 76°23'06" E
9	Kabini river near Suttur	SU	Lat 12°10'5.4" N Long 76°47'34.4" E
10	Nugu river near Chikkanandi	N	Lat 12°05'29.6" N Long 76°28'44.2" E
11	Taraka river near Madapura	T	Lat 12°05'44.3" N Long 76°22'33.1" E
12	Suvarnavathi river near Kollegala	SK	Lat 12°04'35.0" N Long 77°04'20.3" E
13	Shimsha river near Halagur	SH	Lat 12°24'46.8" N Long 77°11'34.1" E
14	Lokapavani river near Sreenivasa Agrahara	LP	Lat 12°25'56.4" N Long 76°42'24.0" E

ANNEXURE-II LOCATION MAP OF MONITORING RIVERS



MONITORING STATIONS

- 01.Yagachi at Alur
- 02.Harangi at Kudige
- 03.Cauvery at Kushalnagara
- 04.Chiklihole
- 05.Cauvery at K.R.Nagara
- 06.Lakshmanathirtha at Bilikere
- 07.Lakshmanathirtha at Hanagodu
- 08.Kabini at Sargur
- 09.Taraka at Madapura
- 10.Nugu
- 11.Kabini at Suttur
- 12.Suvarnavathi at Kollegala
- 13.Shimsha at Halagur
- 14.Lokapavani at Sreenivasa Agrahara



ANNEXURE -III

LIST OF PARAMETERS ANALYSED

1	Temperature
2	Colour
3	Odour
4	pH
5	Electrical Conductivity
6	Dissolved Oxygen
7	Total Dissolved Solids
8	Total Hardness
9	Calcium as Ca
10	Magnesium as Mg
11	Bio Chemical Oxygen Demand
12	Chemical Oxygen Demand
13	Total Alkalinity as CaCO ₃
14	Carbonate
15	Bicarbonate
16	Sodium
17	Potassium
18	Nitrogen Ammonia
19	Nitrogen Nitrate
20	Nitrogen Nitrite
21	Chloride
22	Sulphate
23	Flouride
24	Boron
25	Iron
26	Total Coliform
27	Faecal Coliform

ANNEXURE -IV

PARAMETER ANALYSIS METHOD

Sl.No.	Parameters	Analysis Method
1	Temperature	Mercury Thermometer
2	Colour	Visual comparison in the field
3	Odour	Qualitative Human Receptor
4	pH	Potentiometric
5	Electrical Conductivity	Conductivity Cell Potentiometric
6	Dissolved Oxygen	Winkler Azide modification titration
7	Total Dissolved Solids	Gravimetric
8	Total Hardness	Titration with EDTA
9	Calcium as Ca	Titration with EDTA
10	Magnesium as Mg	Calculation from TH and CH
11	Bio Chemical Oxygen Demand	Incubation for 3 days
12	Chemical Oxygen Demand	Open reflux titration
13	Total Alkalinity as CaCO ₃	Titration with N/50 H ₂ SO ₄
14	Carbonate	Calculation from pH and Total Alkalinity
15	Bicarbonate	Calculation from pH and Total Alkalinity
16	Sodium	Flame Emission Photometric
17	Potassium	Flame Emission Photometric
18	Nitrogen Ammonia	Phenate Spectrophotometric
19	Nitrogen Nitrate	UV Spectrophotometric
20	Nitrogen Nitrite	UV Spectrophotometric
21	Chloride	Argentometric Titration
22	Sulphate	UV Spectrophotometric
23	Flouride	Visual Comparison
24	Boron	Curcumin Spectrophotometric
25	Iron	Phenanthroline Spectrophotometric
26	Total Coliform	Standard multiple tube fermentation
27	Faecal Coliform	Elevated Temperature fermentation

ANNEXURE -V

TOLERANCE LIMIT FOR DRINKING (as per IS 10500-1991)

Sl No.	Parameters	Unit	Desirable limit	Permissible limit in the absence of alternate source
1	Colour	hazen	5	25
2	Odour	--	unobjectionable	---
3	pH	--	6.5 to 8.5	No relaxation
4	Total Hardness as CaCO ₃	mg/l	300	600
5	Calcium as Ca	mg/l	75	200
6	Chloride	mg/l	250	1000
7	Total dissolved solids	mg/l	500	2000
8	Nitrate	mg/l	50	No relaxation
9	Fluoride	mg/l	1.0	1.5
10	Alkalinity as CaCO ₃	mg/l	200	600
11	Sulphate	mg/l	200	400
12	Boron	mg/l	1.0	5
13	Iron	mg/l	0.3	1

ANNEXURE -VI

TOLERANCE LIMIT FOR IRRIGATION (as per IS 11624-1986)

Sl No.	Parameters	Unit	Class			
			Low	Medium	High	Very high
1	Electrical Conductivity	micro-mhos /cm	<1500	1500 to 3000	3000 to 6000	>6000
2	Sodium Adsorption Ratio (SAR)		<10	10 to 18	18 to 26	> 26
3	Residual Sodium Carbonate (RSC)	me/l	<1.5	1.5 to 3	3 to 6	> 6
4	Boron	mg/l	< 1	1 to 2	2 to 4	> 4

ANNEXURE -VII

USE BASED CLASSIFICATION OF WATER

Sl. No	Parameters	Designated Best Use / Class of water				
		A	B	C	D	E
1	pH	6.5 - 8.5	6.5 - 8.5	6.5 - 8.5	6.5 - 8.5	6.0 – 8.5
2	Electrical Conductivity 25 ^o C in µmhos/cm	---	---	---	1000	2250
3	Dissolved Oxygen in mg/l	6	5	4	4	---
4	Bio chemical Oxygen Demand	2	3	3	---	---
5	Total Coliform MPN/100 ml	50	500	5000	---	---
6	Total Dissolved Solids in mg/l	500	---	1500	---	2100
7	Total Hardness in mg/l	300	---	---	---	---
8	Calcium Hardness in mg/l	200	---	---	---	---
9	Magnesium Hardness in mg/l	100	---	---	---	---
10	Iron	0.3	---	0.5	---	---
11	Chloride	250	---	600	---	600
12	Sulphate	400	---	400	---	1000
13	Nitrate	20	---	50	---	---
14	Fluoride	1.5	1.5	1.5	---	---

Class A : Drinking water source without conventional treatment but after disinfection.

Class B: Outdoor bathing

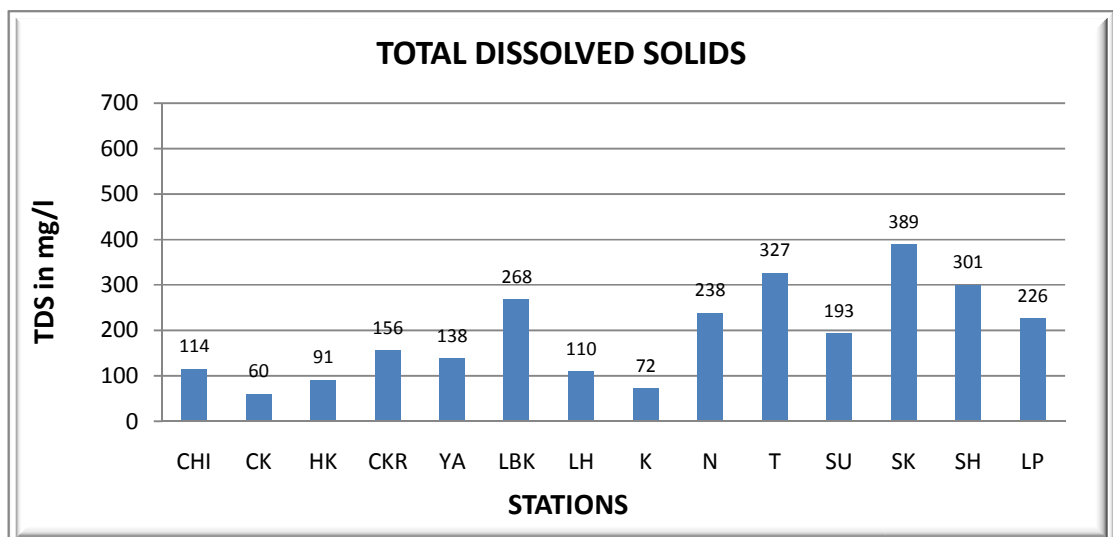
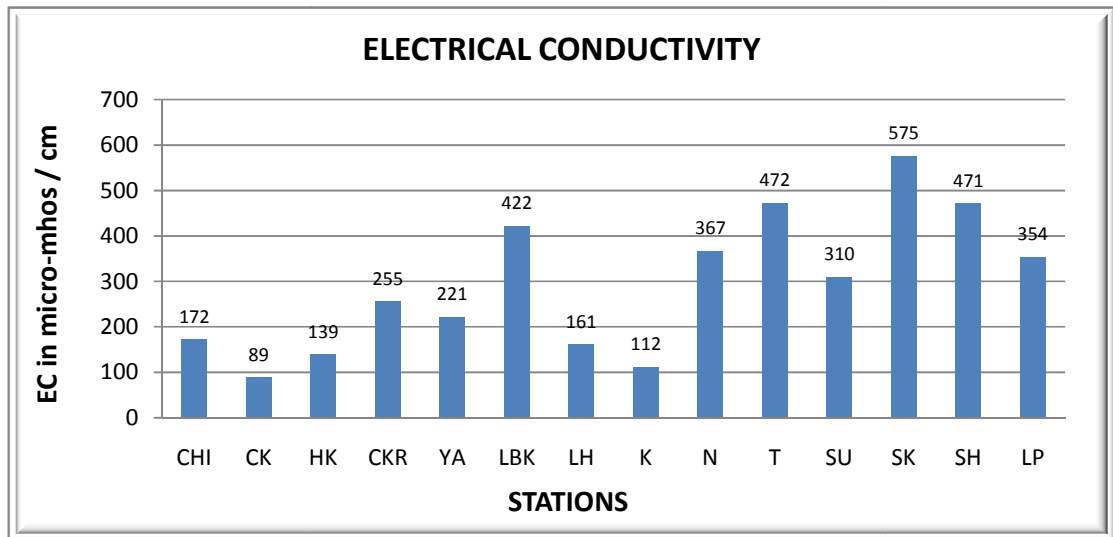
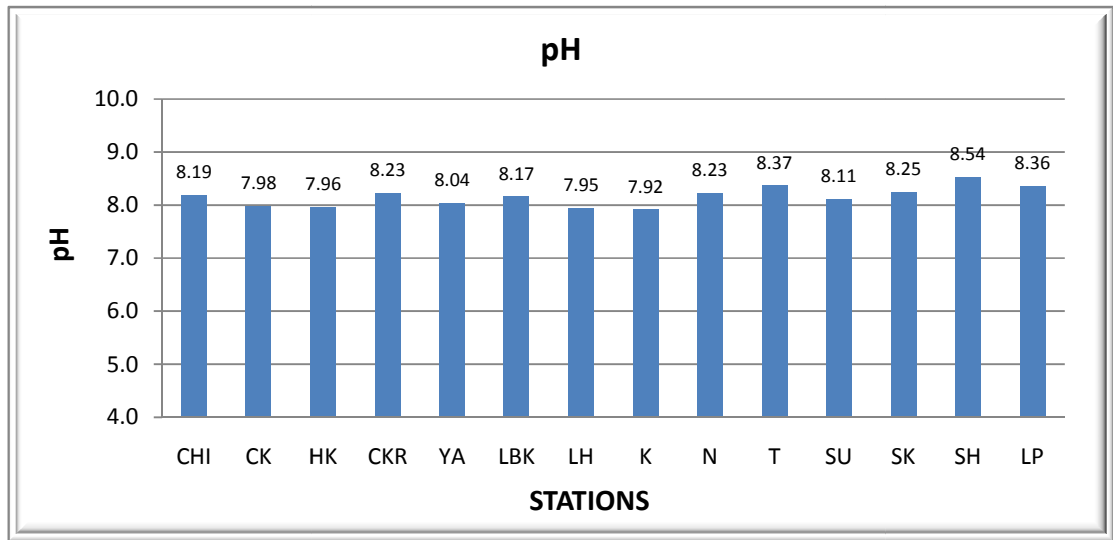
Class C: Drinking water source with conventional treatment.

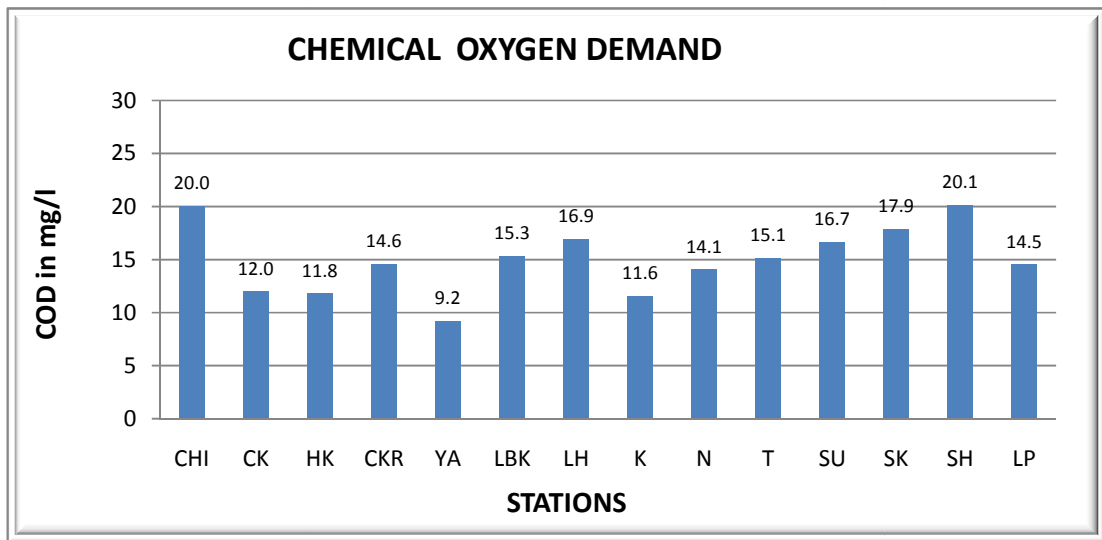
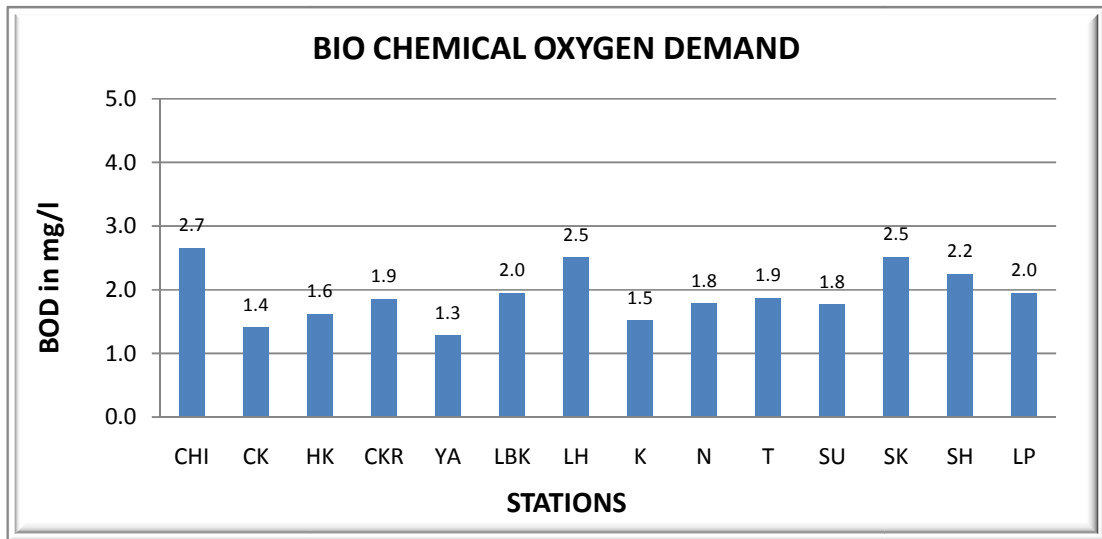
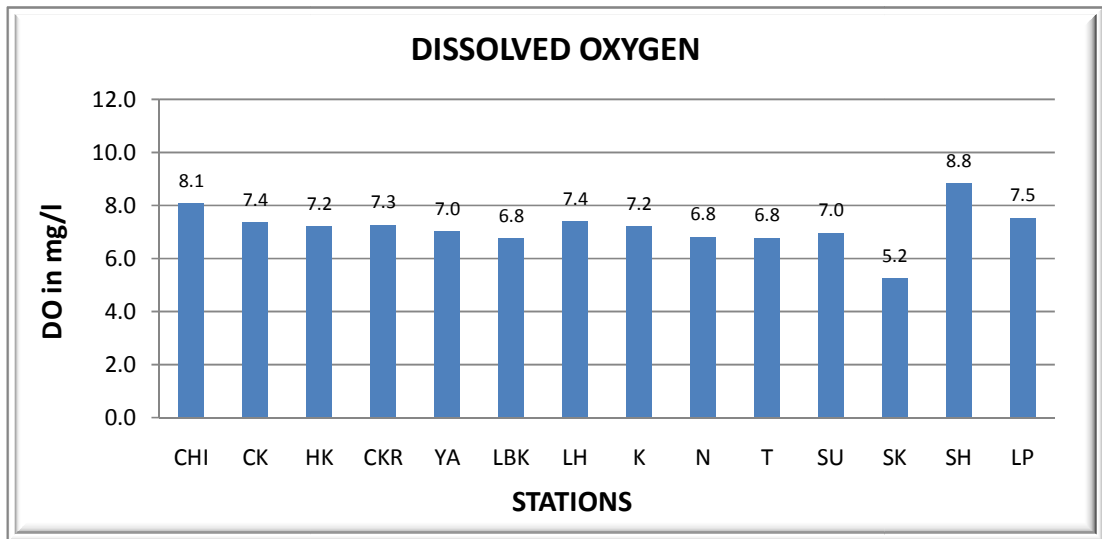
Class D: Propagation of wild life and fisheries.

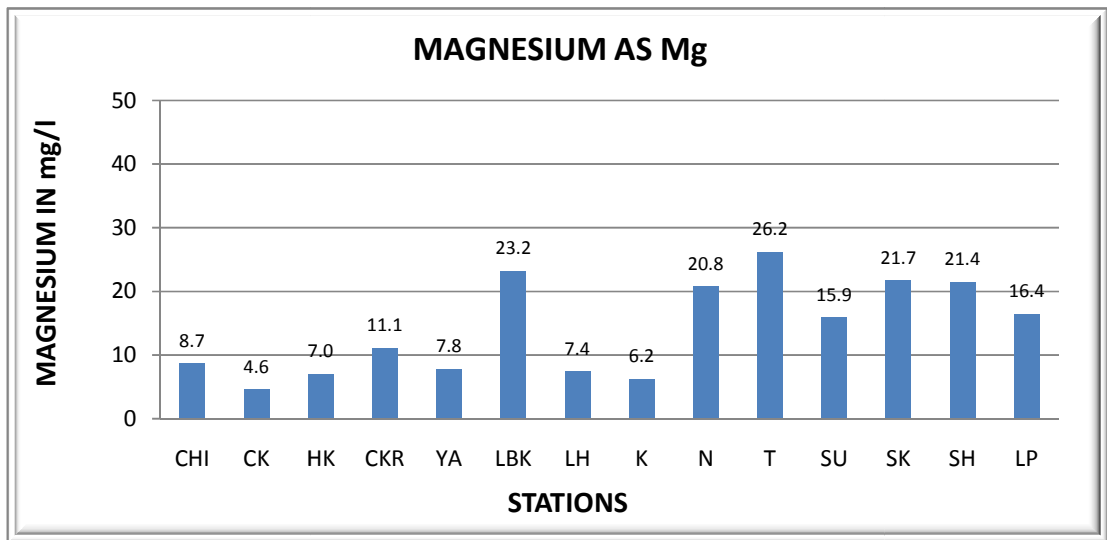
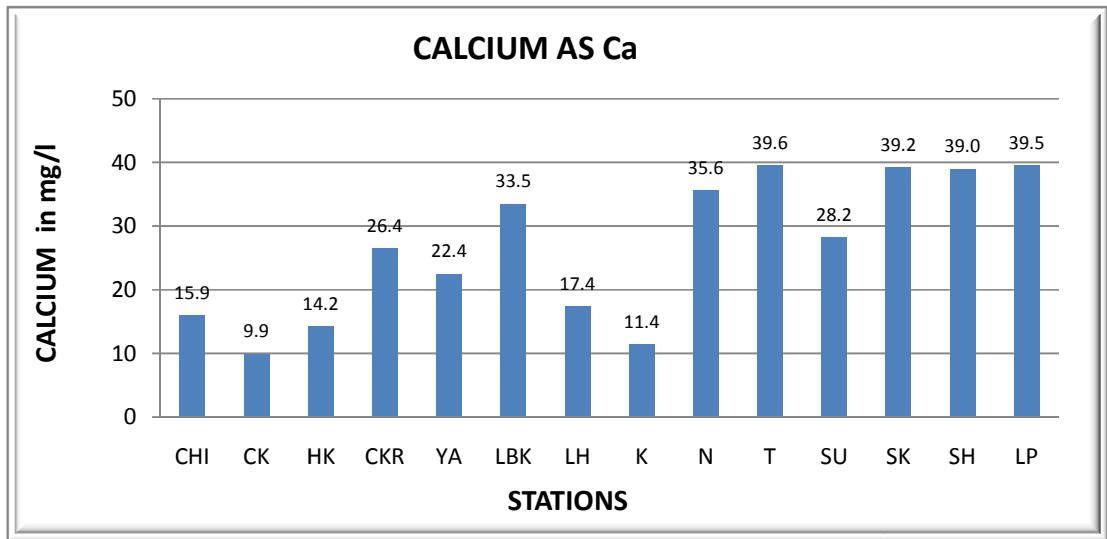
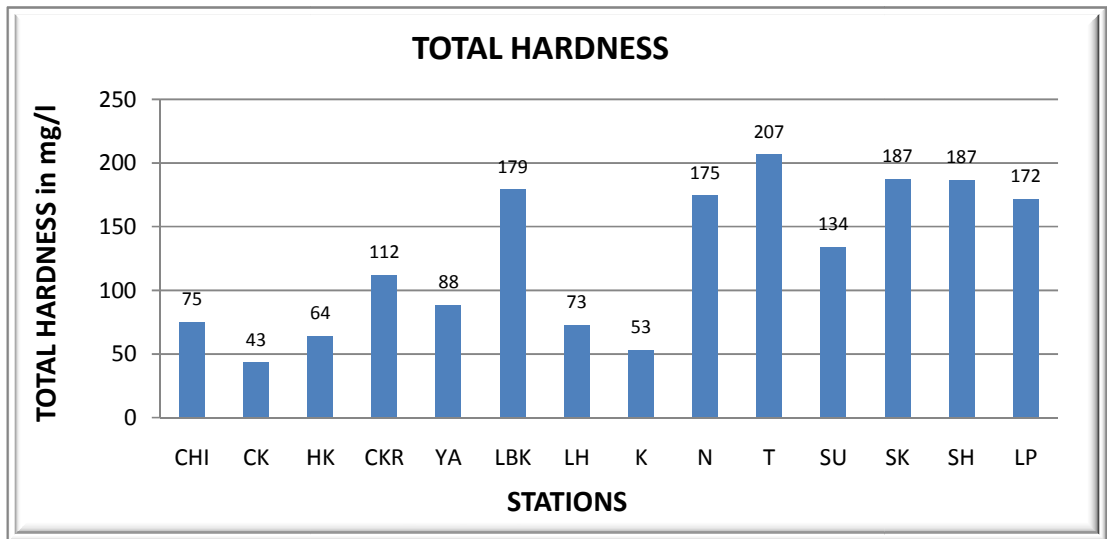
Class E: Irrigation, industrial cooling, controlled waste.

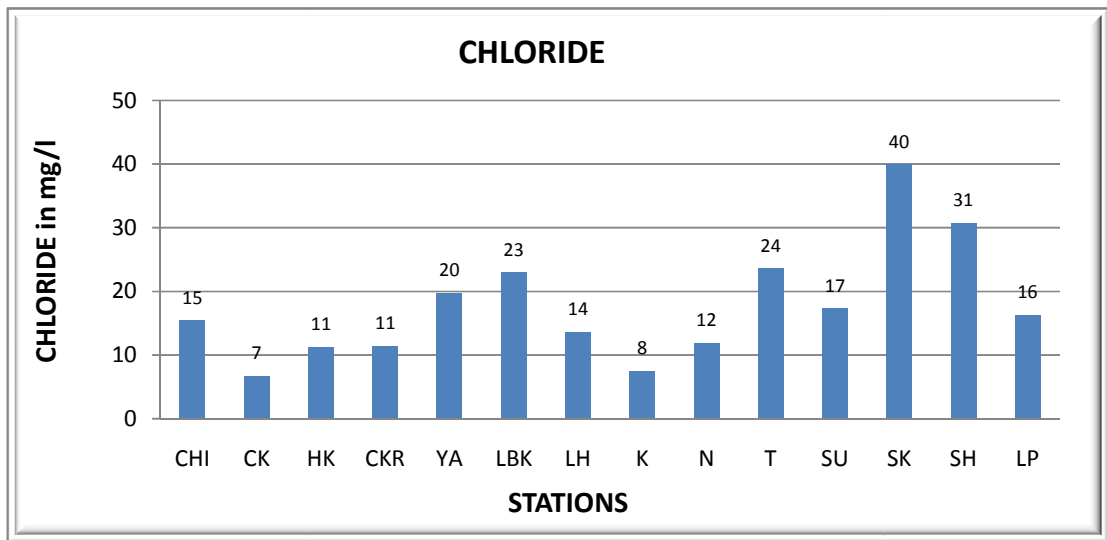
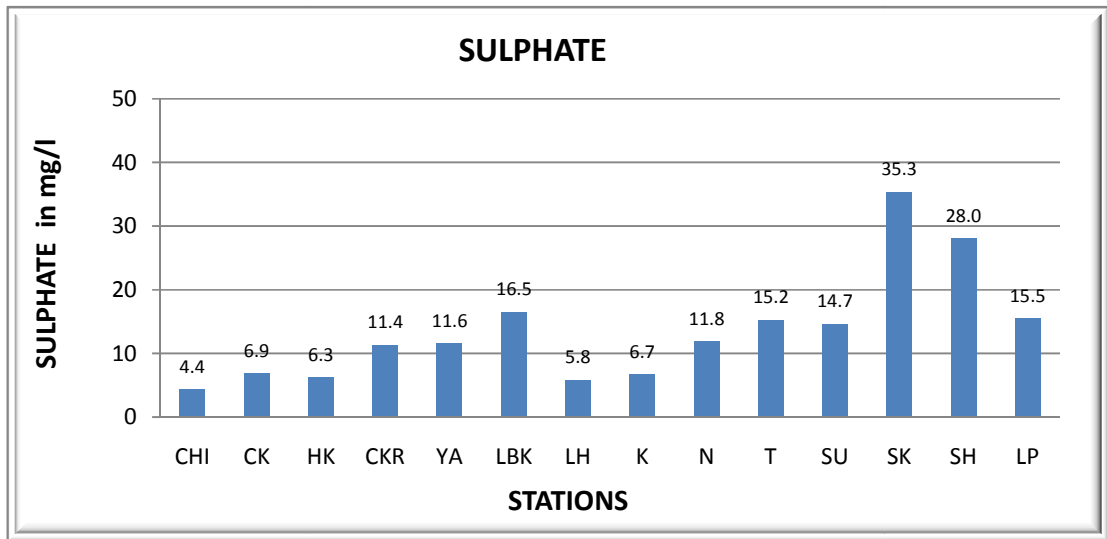
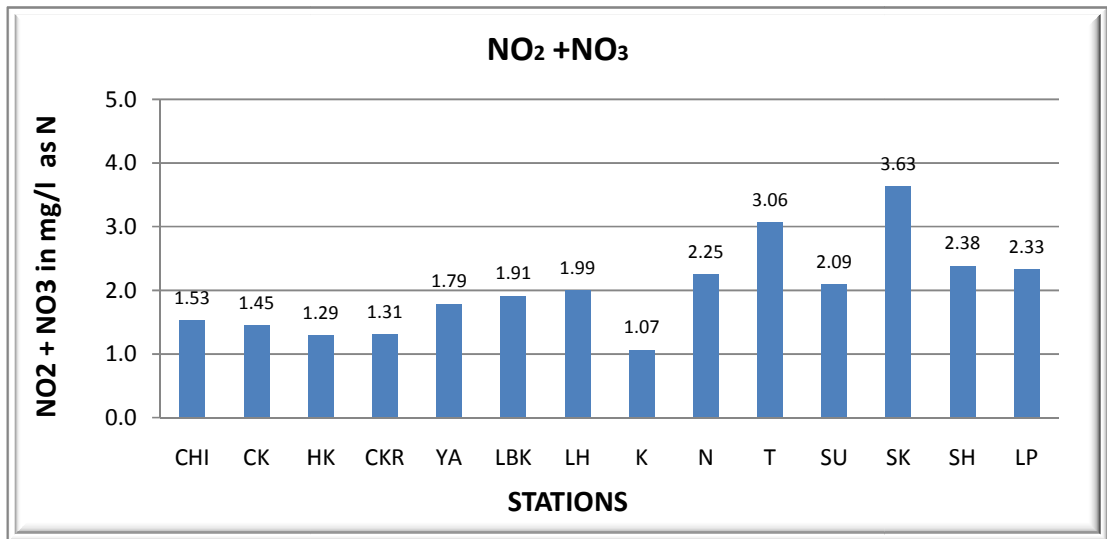
ANNEXURE -VIII

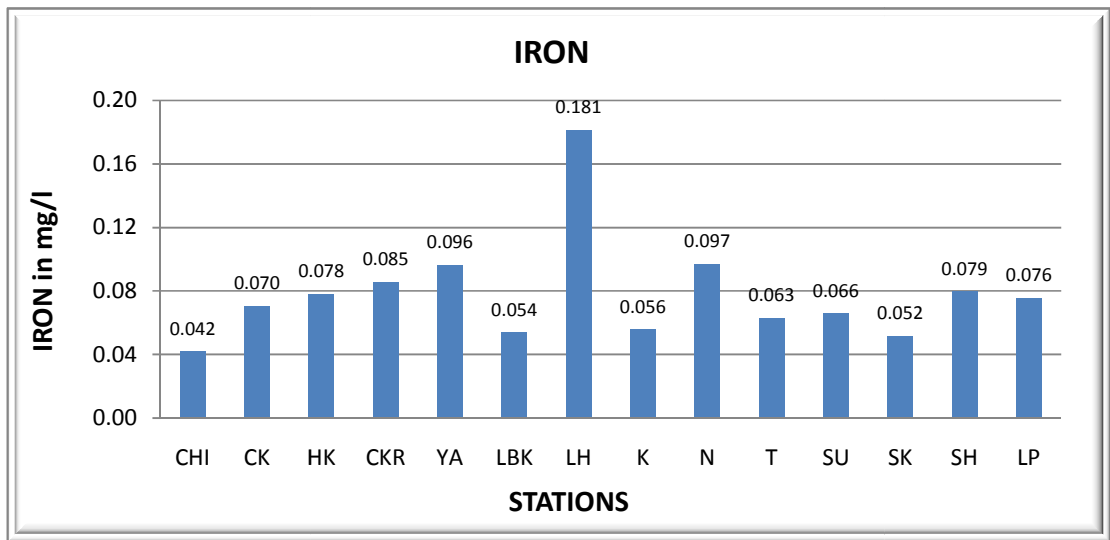
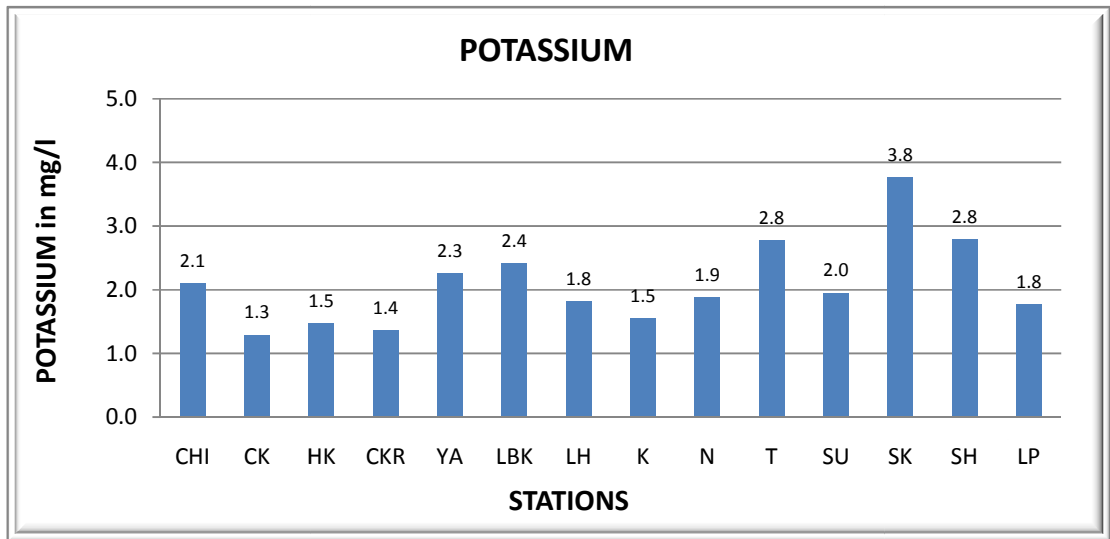
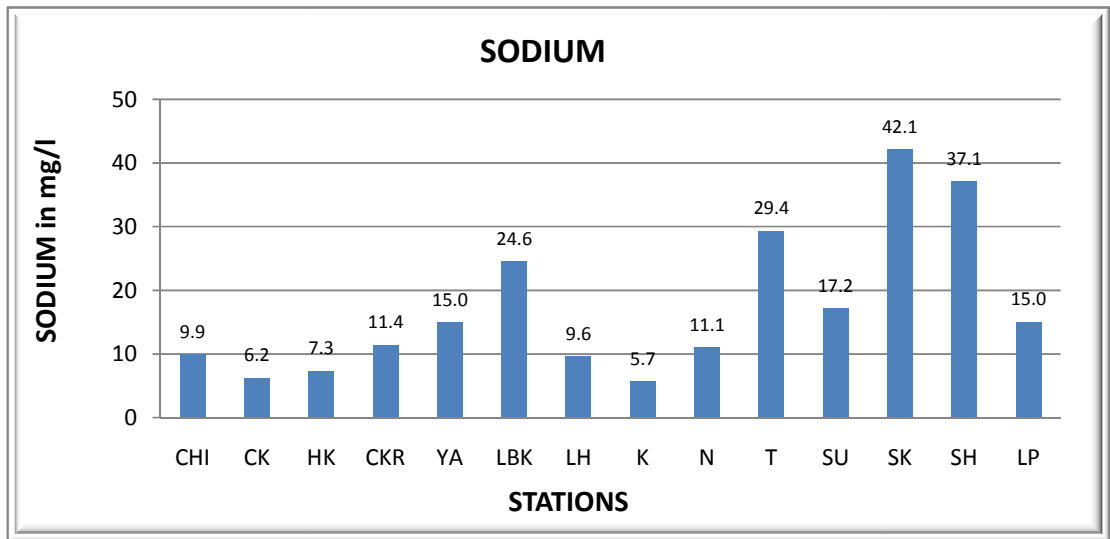
GRAPHS

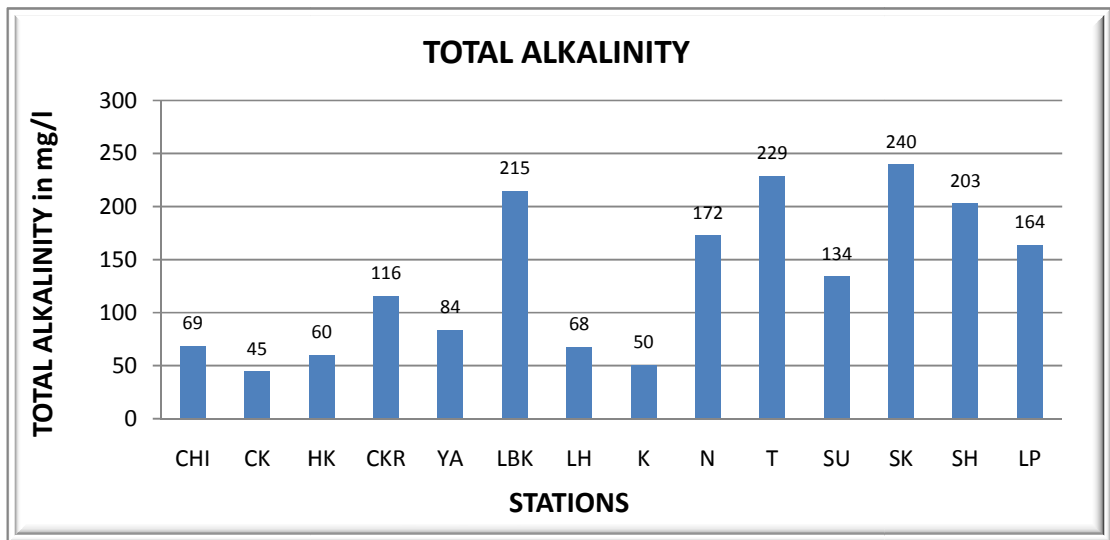
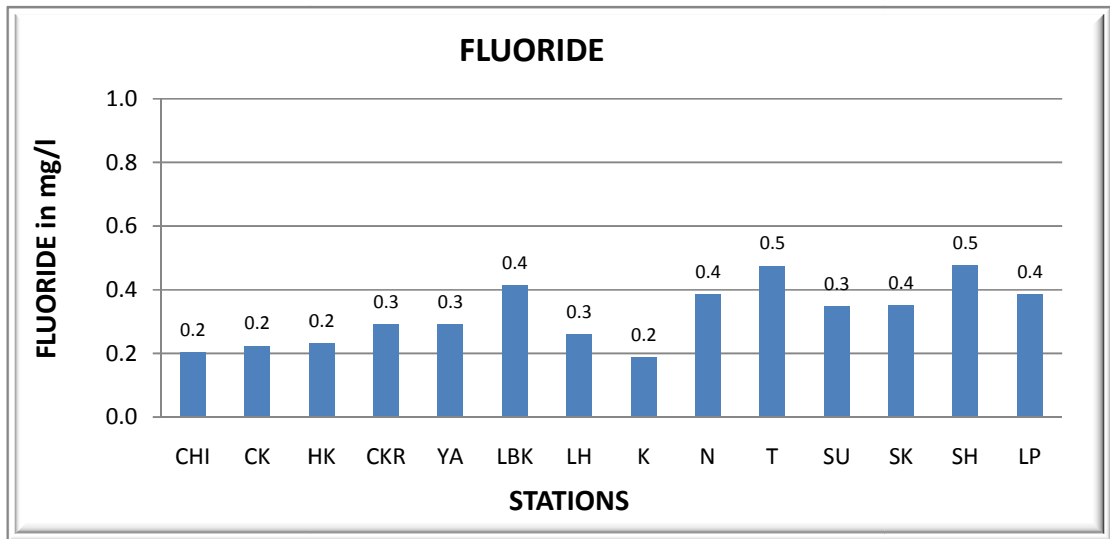
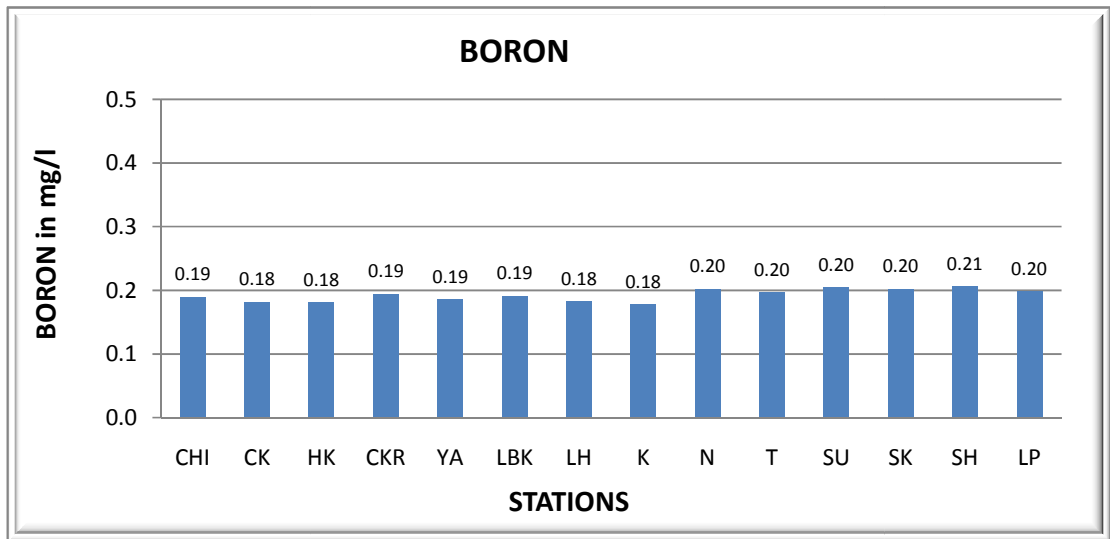


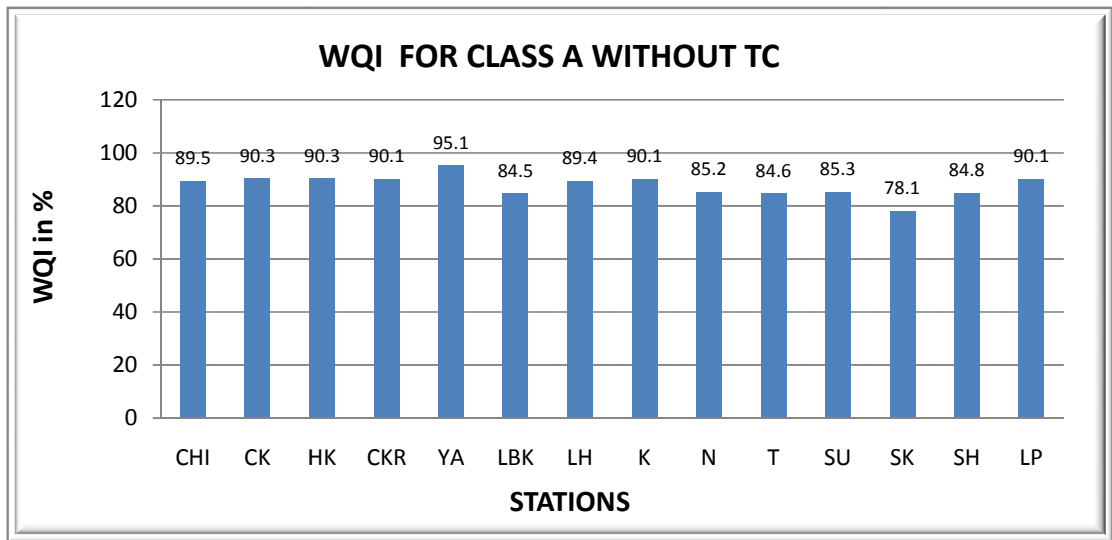
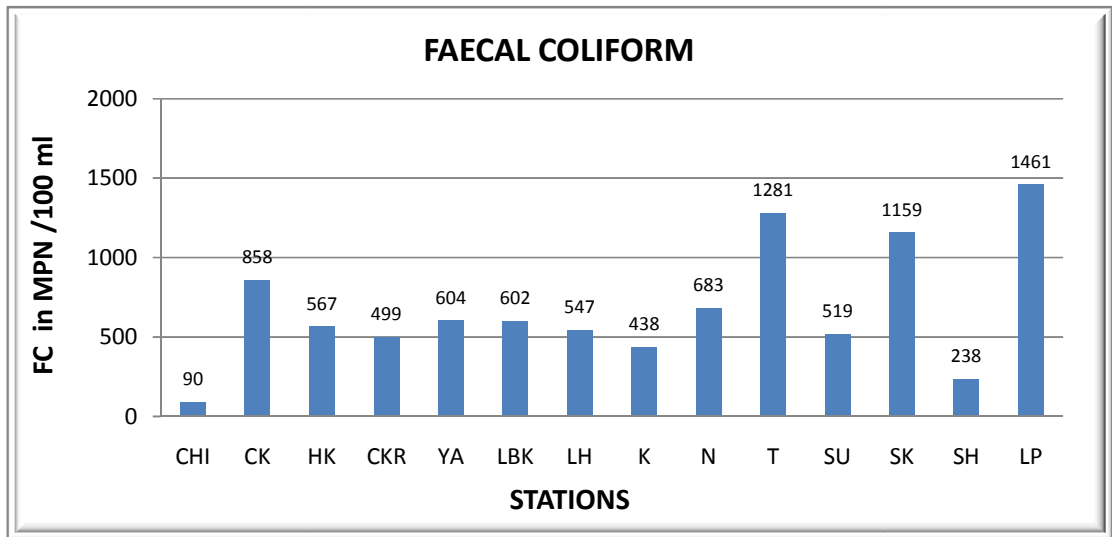
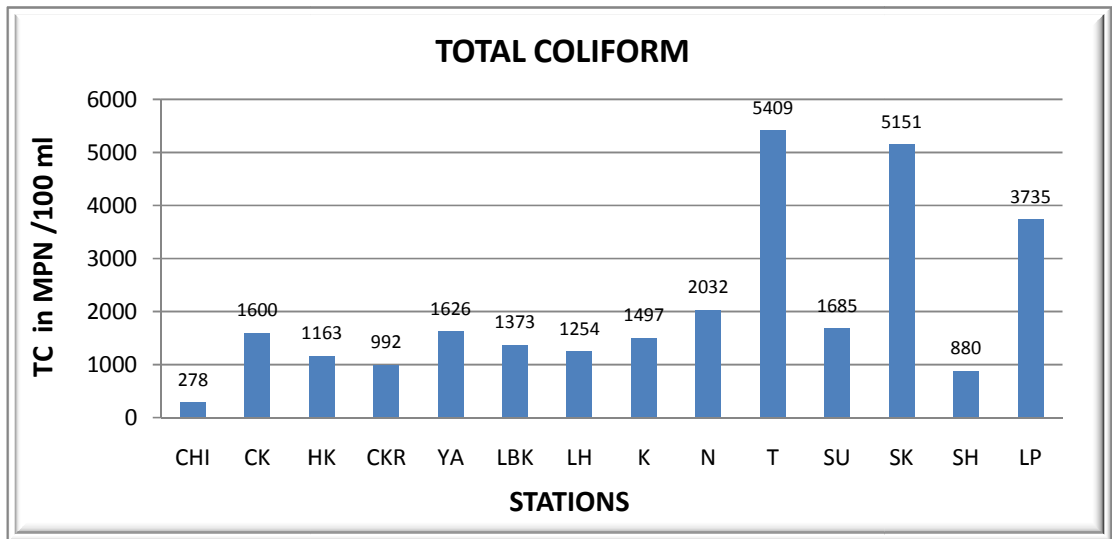


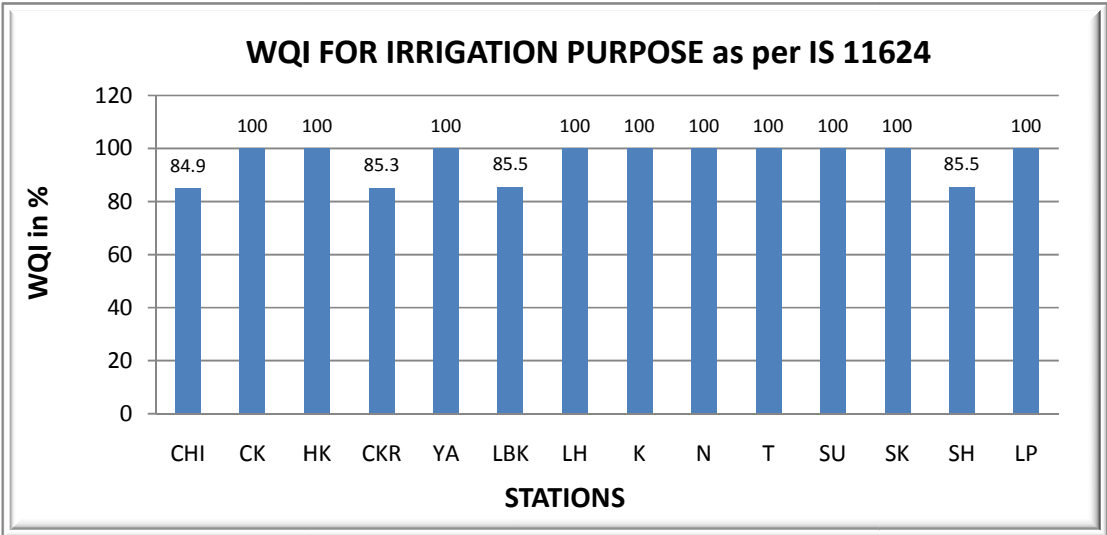
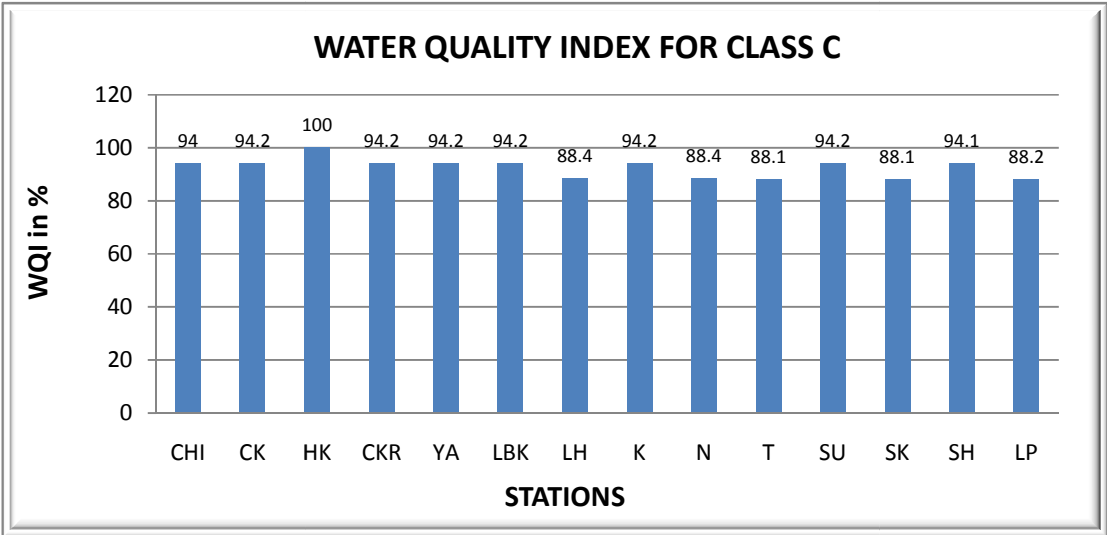
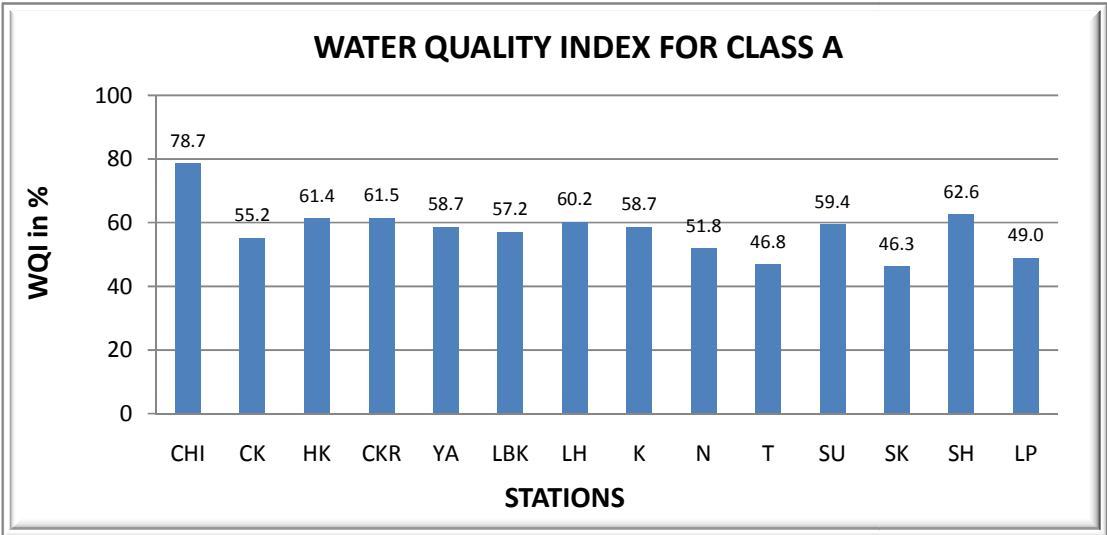












ANNEXURE -IX

TEST RESULTS

Chiklihole river near reservoir

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	8.3	25.0	8.4	199	126	0.12	3.0	2.3	6.9	89	51	20.4	9.2	10.0	2.8	17	1.0	1.8	74.1	0.2		0.03			76	0.0	0.5
Jan-10	Clear	odour free	11.6	26.0	8.5	172	110	0.07	1.9	3.0	21.1	84	46	18.4	9.2	9.0	2.3	18	1.0	2.2	75.6	0.2		0.03			78	0.0	0.4
Feb-10	Clear	odour free	9.0	28.0	8.5	187	116	0.07	1.0	2.5	15.1	85	46	18.4	9.5	8.0	2.3	20	1.0	2.3	77.5	0.3		0.01	300	300	80	0.0	0.4
Mar-10	Clear	odour free	8.0	30.0	8.3	232	130	0.16	0.9	3.0	39.3	85	39	15.6	11.2	11.0	3.2	14	1.0	1.5	80.4	0.2	0.22	0.02	27	27	82	0.0	0.5
Apr-10	Clear	odour free	6.4	28.5	8.1	221	130	0.11	0.8	2.8	27.2	90	45	18.0	10.9	11.0	2.4	23	1.0	2.1	69.8	0.1	0.18	0.04	900	220	72	0.0	0.5
May-10	Clear	odour free	4.4	28.2	8.0	220	151	0.12	1.1	1.4	9.7	90	45	18.0	10.9	13.0	2.7	23	1.0	0.8	80.2	0.1	0.18	0.03	130	130	81	0.0	0.6
Jun-10	Clear	odour free	11.0	25.0	8.7	215	142	0.06	1.1	3.8	25.9	98	50	20.0	11.7	14.0	4.7	20	1.0	4.3	90.5	0.1	0.18	0.02	140	22	95	0.0	0.6
Jul-10	Clear	odour free	9.0	25.0	8.2	194	143	0.05	1.7	4.4	28.4	88	43	17.2	10.9	8.0	1.3	15	6.0	1.1	73.8	0.1	0.18	0.06	110	26	75	0.0	0.3
Aug-10	Clear	odour free	9.2	24.4	9.2	160	98	0.18	1.8	3.8	21.0	64	36	14.4	6.8	12.0	1.0	15	7.0	8.2	55.0	0.2	0.19	0.05	14	8	64	0.0	0.6
Sep-10	Clear	odour free	11.0	29.2	8.2	141	81	0.05	1.2	4.3	26.8	60	32	12.8	6.8	9.0	1.8	11	6.0	0.9	59.0	0.2	0.19	0.06	27	27	60	0.0	0.5
Oct-10	Clear	odour free	12.0	27.8	8.2	161	98	0.12	1.7	5.2	25.7	64	38	15.2	6.3	12.0	1.1	14	4.6	1.0	60.0	0.1	0.20	0.10	11	11	61	0.0	0.6
Nov-10	Clear	odour free	7.6	24.2	8.2	160	90	0.09	2.4	1.1	15.2	68	36	14.4	7.8	13.0	1.2	12	3.9	0.9	61.0	0.2	0.20	0.07	170	170	62	0.0	0.7
Dec-10	Clear	odour free	10.4	26.5	9.4	178	98	0.12	1.3	1.9	17.5	70	40	16.0	7.3	12.0	1.5	16	6.0	11.6	49.1	0.3	0.17	0.02	27	7	62	0.0	0.6
Jan-11	Clear	odour free	9.6	28.3	8.4	182	109	0.06	1.8	3.0	31.2	72	40	16.0	7.8	11.0	1.5	15	6.7	1.8	74.1	0.2	0.17	0.02	900	220	64	0.0	0.5
Feb-11	Clear	odour free	8.4	26.0	8.1	177	138	0.05	1.0	2.8	16.8	84	44	17.6	9.7	10.0	1.2	14	6.0	0.8	73.2	0.3	0.17	0.01	170	50	74	0.0	0.5
Mar-11	Clear	odour free	8.0	29.0	8.8	155	124	0.15	1.2	3.0	19.2	77	40	16.0	9.0	9.0	3.4	19	6.5	4.6	75.1	0.3	0.18	0.04	240	130	80	0.0	0.4
Apr-11	Clear	odour free	8.0	29.0	8.0	161	118	0.09	0.7	3.2	15.4	80	38	15.2	10.2	9.0	2.4	16	1.6	0.7	71.2	0.2	0.17	0.04	50	17	72	0.0	0.4
May-11	Clear	odour free	6.0	28.0	8.9	196	133	0.05	1.2	2.5	19.9	80	46	18.4	8.3	10.0	1.2	17	4.0	5.2	64.4	0.2	0.17	0.03	50	13	70	0.0	0.5
Jun-11	Clear	odour free	7.0	25.0	8.3	162	111	0.05	1.6	1.8	13.5	80	44	17.6	8.8	8.0	2.9	12	5.0	1.2	68.7	0.2	0.16	0.01	50	30	70	0.0	0.4
Jul-11	Clear	odour free	5.6	23.0	7.4	133	89	0.06	2.4	2.0	13.5	50	30	12.0	4.9	7.0	2.7	9	4.0	0.1	47.9	0.2	0.18	0.07	40	27	48	0.0	0.4
Aug-11	Clear	odour free	6.8	22.0	7.2	107	79	0.07	1.8	2.3	32.0	50	30	12.0	4.9	8.0	2.4	11	7.0	7.3	49.9	0.2	0.17	0.05	26	17	50	6.2	0.5
Sep-11	Clear	odour free	6.4	24.0	7.6	120	82	0.06	1.3	1.8	19.3	54	28	11.2	6.3	7.1	1.1	12	8.0	0.2	49.8	0.2	0.18	0.06	300	80	50	0.0	0.3
Oct-11	L.Brown	odour free	5.6	24.0	7.1	136	105	0.07	1.8	1.2	19.3	56	26	10.4	7.3	7.0	2.4	11	9.0	7.5	57.9	0.3	0.19	0.09	900	240	58	8.1	0.4
Nov-11	Clear	odour free	7.2	23.0	8.0	161	128	0.08	1.3	1.2	10.5	80	40	16.0	9.7	10.0	1.8	15	7.4	0.6	63.4	0.2	0.32	0.06	220	80	64	0.0	0.5
Dec-11	Clear	odour free	5.2	23.0	7.1	172	133	0.06	2.3	2.0	10.6	88	41	16.4	11.4	7.3	2.4	11	8.9	0.1	68.0	0.3	0.19	0.03	900	240	58	0.0	0.5

Cauvery river near Kushalanagar

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	7.9	24.0	8.2	96	67	0.09	1.9	1.2	16.0	33	20	8.0	3.2	7.0	1.1	5	1.0	0.6	38.3	0.2		0.05			39	0.0	0.5
Jan-10	Clear	odour free	7.0	24.0	8.2	99	57	0.06	1.2	1.0	12.1	49	22	8.8	6.6	5.0	2.0	7	1.0	0.6	43.3	0.1		0.03			44	0.0	0.3
Feb-10	Clear	odour free	7.0	30.0	8.2	119	71	0.07	1.4	2.0	12.1	51	31	12.4	4.9	5.0	2.0	8	1.0	0.9	57.1	0.3		0.03	1600	1600	58	0.0	0.3
Mar-10	Clear	odour free	7.2	32.0	7.6	140	84	0.11	0.9	2.2	6.0	56	27	10.8	7.1	5.0	1.9	4	1.0	0.2	58.8	0.2	0.22	0.04	1600	1600	59	0.0	0.3
Apr-10	Clear	odour free	6.0	28.8	7.7	248	210	0.05	0.7	2.1	21.1	128	99	39.6	7.1	6.0	1.3	12	46.0	0.3	67.7	0.1	0.20	0.06	1600	900	68	0.0	0.2
May-10	Clear	odour free	6.0	28.9	7.6	110	91	0.17	1.3	0.6	6.0	50	30	12.0	4.9	8.0	1.2	10	4.2	0.2	43.8	0.2	0.22	0.06	900	33	44	0.0	0.5
Jun-10	Clear	odour free	7.6	23.9	8.6	65	49	0.18	1.7	1.2	11.5	44	26	10.4	4.4	4.0	1.2	3	1.3	1.4	38.4	0.1	0.20	0.08	900	140	40	0.0	0.3
Jul-10	L. Brown	odour free	7.6	25.0	7.9	64	45	0.05	2.0	1.8	16.9	32	20	8.0	2.9	1.0	0.1	3	1.0	0.2	27.8	0.2	0.19	0.08	1600	900	28	0.0	7.7
Aug-10	L. Brown	odour free	8.0	24.1	7.6	61	49	0.18	2.3	1.3	12.6	30	18	7.2	2.9	5.0	0.8	3	1.0	0.1	31.9	0.2	0.18	0.06	1600	280	32	0.0	0.4
Sep-10	L. Brown	odour free	8.8	28.4	8.0	73	48	0.16	1.9	2.7	7.6	34	26	10.4	1.9	7.0	1.5	4	8.0	0.5	48.5	0.2	0.19	0.16	1600	1600	49	0.1	0.5
Oct-10	Clear	odour free	8.4	27.5	8.1	67	38	0.11	1.7	1.5	8.2	32	20	8.0	2.9	8.0	1.0	6	4.9	0.5	48.4	0.3	0.17	0.11	1600	1600	49	0.2	0.6
Nov-10	Clear	odour free	7.8	24.2	8.0	84	49	0.12	0.9	0.6	5.8	46	20	8.0	6.3	4.0	0.8	4	4.3	0.4	39.5	0.2	0.17	0.07	1600	1600	40	0.0	0.3
Dec-10	Clear	odour free	8.4	26.3	8.3	95	53	0.18	1.2	0.5	4.6	46	32	12.8	3.4	5.0	1.0	8	9.3	0.7	39.2	0.3	0.17	0.05	1600	280	40	0.0	0.4
Jan-11	Clear	odour free	8.0	27.9	7.9	133	86	0.13	1.7	1.6	14.4	50	28	11.2	5.4	4.0	0.9	6	6.0	0.4	51.6	0.3	0.47	0.03	1600	1600	52	0.0	0.3
Feb-11	Clear	odour free	6.4	29.0	7.9	113	65	0.06	1.1	1.9	20.4	48	36	14.4	2.9	5.0	0.8	6	3.6	0.4	53.6	0.3	0.12	0.03	1600	140	54	0.0	0.3
Mar-11	Clear	odour free	6.4	29.0	8.2	117	92	0.08	1.6	1.4	20.4	63	28	11.2	8.5	7.0	2.6	10	5.7	0.9	63.0	0.2	0.17	0.06	1600	140	64	0.0	0.4
Apr-11	Clear	odour free	7.0	28.0	8.3	87	58	0.05	1.7	1.5	12.6	42	20	8.0	5.4	7.0	2.7	10	8.2	0.7	39.2	0.2	0.19	0.08	1600	900	40	0.0	0.5
May-11	D. Brown	odour free	5.6	27.0	8.2	106	87	0.39	1.7	1.4	10.8	48	40	16.0	1.9	9.0	2.7	6	15.0	0.8	49.1	0.2	0.16	0.08	1600	280	50	0.0	0.5
Jun-11	Clear	odour free	6.4	25.0	8.2	47	35	0.06	1.0	1.2	9.0	24	16	6.4	1.9	12.0	0.5	16	9.0	0.4	23.5	0.3	0.15	0.09	1600	220	24	0.0	1.1
Jul-11	Clear	odour free	7.6	25.0	7.4	51	33	0.05	0.3	0.7	11.7	36	16	6.4	4.9	2.0	0.4	2	2.0	0.1	33.9	0.3	0.17	0.06	900	170	34	0.0	0.1
Aug-11	Clear	odour free	7.2	24.0	7.7	48	39	0.05	1.5	0.4	4.8	28	16	6.4	2.9	4.0	1.5	4	9.0	0.2	31.8	0.2	0.17	0.05	300	130	32	0.0	0.4
Sep-11	Clear	odour free	8.0	25.0	8.3	57	34	0.05	1.1	1.1	6.4	32	18	7.2	3.4	4.0	0.5	7	8.0	0.6	32.3	0.2	0.19	0.14	1600	220	33	0.0	0.3
Oct-11	Clear	odour free	10	25.0	7.5	77	59	0.07	1.3	2.0	18.0	32	20	8.0	2.9	9.0	1.1	6	3.4	0.1	35.9	0.3	0.19	0.15	7000	1700	36	0.0	0.7
Nov-11	Clear	odour free	8.0	25.0	8.1	118	86	0.06	1.6	2.0	21.3	72	34	13.6	9.2	8.0	1.2	9	14.0	0.6	51.3	0.2	0.21	0.07	5000	1100	52	0.0	0.4
Dec-11	Clear	odour free	7.8	24.0	7.8	107	66	0.06	1.4	1.3	9.7	56	30	12.0	6.3	5.6	0.3	9	4.2	0.3	52.0	0.3	0.19	0.05	5000	900	52	0.0	0.4

Harangi river near Kudige

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	7.7	25.0	8.6	171	108	0.08	1.5	1.8	22.9	81	43	17.2	9.2	10.0	1.6	11	2.0	2.8	75.0	0.2		0.06			78	0.0	0.5
Jan-10	Clear	odour free	7.4	26.0	8.3	178	108	0.06	0.9	1.0	15.1	82	43	17.2	9.5	11.0	2.0	13	1.0	1.5	80.4	0.2		0.05			82	0.0	0.5
Feb-10	Clear	odour free	6.0	28.0	8.1	135	80	0.07	1.1	1.6	18.1	58	37	14.8	5.1	6.0	2.0	11	1.0	0.7	55.3	0.3		0.04	900	900	56	0.0	0.4
Mar-10	Clear	odour free	6.2	31.0	7.7	126	71	0.15	1.1	1.1	9.1	52	27	10.8	6.1	4.0	1.5	3	1.5	0.3	54.7	0.3	0.20	0.04	1600	900	55	0.0	0.3
Apr-10	Clear	odour free	7.0	28.2	7.6	127	79	0.16	0.9	2.0	27.2	50	24	9.6	6.3	4.0	2.1	8	1.0	0.2	43.8	0.1	0.18	0.03	1600	1600	44	0.0	0.3
May-10	Clear	odour free	7.1	28.9	8.1	141	96	0.18	0.5	0.3	3.6	60	35	14.0	6.1	6.0	0.9	11	1.0	0.6	51.3	0.1	0.18	0.04	1600	33	52	0.0	0.3
Jun-10	Clear	odour free	5.5	25.7	8.1	162	100	0.18	0.8	1.5	11.5	72	40	16.0	7.8	6.0	1.0	11	1.0	0.7	61.2	0.1	0.19	0.06	280	33	62	0.0	0.3
Jul-10	Brown	odour free	8.0	25.0	7.5	132	90	0.07	1.1	2.4	7.3	57	31	12.4	6.3	5.0	1.3	12	10.0	0.1	37.9	0.2	0.18	0.05	1600	1600	38	0.0	0.3
Aug-10	Clear	odour free	8.4	24.1	7.6	51	36	0.37	1.4	1.3	10.9	22	12	4.8	2.4	5.0	1.2	4	6.0	0.1	27.9	0.2	0.12	0.06	300	110	28	2.1	0.5
Sep-10	L. Brown	odour free	9.0	28.6	8.2	156	100	0.18	2.7	2.2	17.7	72	43	17.2	7.1	10.0	1.9	15	8.0	1.1	76.8	0.2	0.20	0.14	1600	1600	78	0.0	0.5
Oct-10	Clear	odour free	8.0	27.6	8.1	139	99	0.14	2.2	1.4	16.3	65	33	13.2	7.8	9.0	1.2	12	7.2	0.9	68.1	0.2	0.19	0.18	220	220	69	0.0	0.5
Nov-10	L. Brown	odour free	7.4	24.2	8.3	191	132	0.18	1.5	0.2	2.3	80	42	16.8	9.2	11.0	1.5	14	4.5	1.3	70.6	0.3	0.19	0.16	1600	1600	72	0.0	0.5
Dec-10	Clear	odour free	8.0	26.4	8.3	206	119	0.18	1.2	1.2	11.6	84	42	16.8	10.2	12.0	1.8	16	11.0	1.6	80.3	0.3	0.17	0.06	1600	110	82	0.0	0.6
Jan-11	Clear	odour free	8.0	28.2	7.9	122	82	0.16	1.3	2.0	19.2	52	32	12.8	4.9	6.0	1.1	8	8.9	0.4	57.5	0.2	0.17	0.06	500	170	58	0.0	0.4
Feb-11	L. Brown	odour free	6.2	27.0	7.8	100	56	0.18	1.1	1.7	4.8	56	30	12.0	6.3	6.0	1.0	9	8.2	0.3	50.7	0.2	0.13	0.05	1600	280	51	0.0	0.4
Mar-11	Clear	odour free	7.0	28.0	7.9	94	78	0.06	1.3	2.8	14.4	49	26	10.4	5.6	5.0	1.8	6	5.9	0.4	51.5	0.3	0.19	0.05	1600	350	52	0.0	0.3
Apr-11	Clear	odour free	7.2	29.0	8.2	112	78	0.06	0.6	2.2	6.3	60	30	12.0	7.3	7.0	1.4	10	1.7	0.8	53.1	0.2	0.20	0.05	500	170	54	0.0	0.4
May-11	Clear	odour free	6.4	28.0	8.5	128	85	0.05	0.8	1.4	2.7	56	34	13.6	5.4	5.0	2.7	8	3.0	1.6	48.3	0.1	0.19	0.04	300	110	50	0.0	0.3
Jun-11	Clear	odour free	5.8	25.0	8.1	166	118	0.09	2.4	0.8	4.5	88	52	20.8	8.8	10.0	2.3	19	15.0	0.6	61.3	0.3	0.17	0.06	300	170	62	0.0	0.4
Jul-11	L. Brown	odour free	7.0	24.0	7.5	84	61	0.05	0.8	0.9	9.0	46	25	10.0	5.1	3.0	0.8	6	3.0	0.1	35.9	0.3	0.17	0.05	240	130	36	0.0	0.2
Aug-11	L. Brown	odour free	7.4	24.0	7.7	113	90	0.07	1.3	1.2	12.8	50	34	13.6	3.9	7.0	1.4	12	14.0	0.3	55.7	0.3	0.18	0.06	900	300	56	0.0	0.4
Sep-11	Clear	odour free	7.0	26.0	8.2	104	60	0.06	1.4	1.4	6.4	52	30	12.0	5.4	6.0	0.7	11	11.0	0.8	51.2	0.3	0.20	0.20	1600	280	52	0.0	0.3
Oct-11	Clear	odour free	7.8	25.0	7.1	148	104	0.10	1.4	1.2	14.1	60	40	16.0	4.9	9.0	1.2	11	9.7	0.1	69.9	0.3	0.19	0.18	1600	280	70	0.0	0.5
Nov-11	Clear	odour free	8.4	24.0	8.0	143	95	0.08	1.9	1.8	18.4	76	34	13.6	10.2	12.0	1.3	11	14.5	0.5	59.4	0.3	0.19	0.13	1700	500	60	0.0	0.6
Dec-11	Clear	odour free	6.4	24.0	7.7	157	104	0.06	1.0	2.4	8.8	82	43	17.2	9.5	8.2	1.1	14	6.2	0.3	72.0	0.3	0.20	0.06	3000	1600	72	0.0	0.4

Cauvery river near K.R.Nagara

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	8.0	25.0	8.4	249	140	0.06	1.3	2.1	27.7	112	63	25.2	11.9	13.0	1.6	8	4.0	2.7	115.2	0.1		0.07			118	0.0	0.5
Jan-10	Clear	odour free	8.0	27.0	8.3	307	190	0.06	0.8	2.2	21.7	141	80	32.0	14.8	14.0	2.0	13	4.0	2.6	138.3	0.2		0.06			141	0.0	0.5
Feb-10	Clear	odour free	7.3	29.0	8.6	444	265	0.06	1.3	1.7	18.1	191	121	48.4	17.0	22.0	2.1	22	29.0	7.4	197.4	0.4		0.07	80	80	205	0.0	0.7
Mar-10	Clear	odour free	5.4	30.0	8.3	486	268	0.06	2.0	2.7	39.3	188	111	44.4	18.7	14.0	2.2	18	12.5	3.3	174.6	0.5	0.21	0.09	1600	1600	178	0.0	0.4
Apr-10	Clear	odour free	5.0	27.9	8.3	478	272	0.09	2.0	2.5	36.2	186	106	42.4	19.4	23.0	1.1	15	11.9	3.8	202.1	0.2	0.22	0.09	500	500	206	0.0	0.7
May-10	Clear	odour free	7.0	29.6	8.5	422	259	0.18	1.0	1.1	9.7	180	112	44.8	16.5	11.0	0.8	18	6.7	4.5	151.3	0.4	0.18	0.06	280	17	156	0.0	0.4
Jun-10	L. Brown	odour free	7.0	26.6	8.5	91	51	0.18	2.0	1.0	13.3	56	42	16.8	3.4	3.0	0.8	3	3.0	1.3	44.5	0.1	0.25	0.07	1600	280	46	0.0	0.2
Jul-10	L. Brown	odour free	8.0	26.0	8.2	80	52	0.18	2.2	1.2	7.9	44	26	10.4	4.4	3.0	0.1	4	4.0	0.5	35.4	0.2	0.18	0.07	1600	300	36	0.0	0.2
Aug-10	L. Brown	odour free	7.0	24.4	8.2	262	154	0.17	1.1	0.4	4.2	40	26	10.4	3.4	6.0	0.9	9	5.0	0.6	39.3	0.3	0.17	0.08	1600	280	40	0.0	0.4
Sep-10	Clear	odour free	7.2	28.2	8.2	207	121	0.18	2.3	3.0	13.6	91	52	20.8	9.5	5.0	1.2	6	9.0	1.4	96.5	0.2	0.17	0.15	1600	1600	98	0.0	0.3
Oct-10	L. Brown	odour free	8.4	26.0	8.1	228	137	0.16	0.7	3.4	16.3	80	50	20.0	7.3	6.0	0.7	7	7.8	1.2	91.7	0.2	0.17	0.18	1600	280	93	0.0	0.3
Nov-10	Clear	odour free	7.6	24.2	8.3	225	133	0.08	1.0	1.3	11.7	92	52	20.8	9.7	11.0	0.9	9	4.0	2.2	107.7	0.2	0.17	0.09	500	170	110	8.9	0.5
Dec-10	Clear	odour free	10.1	27.4	8.4	243	135	0.16	0.5	1.9	9.3	118	62	24.8	13.6	8.0	0.7	11	10.7	2.8	117.1	0.3	0.20	0.09	220	220	120	0.0	0.3
Jan-11	Clear	odour free	8.4	27.7	8.5	291	165	0.18	1.1	3.9	12.0	120	56	22.4	15.6	8.0	1.4	12	7.1	3.7	138.1	0.4	0.17	0.07	240	80	142	0.0	0.3
Feb-11	Clear	odour free	8.4	24.0	8.5	353	200	0.05	0.7	2.2	12.0	164	96	38.4	16.5	11.0	2.0	14	16.0	5.2	164.6	0.4	0.22	0.07	500	130	170	0.0	0.4
Mar-11	Clear	odour free	7.0	29.0	8.6	352	250	0.05	1.0	3.8	21.6	192	116	46.4	18.5	26.0	2.8	21	23.1	6.9	192.9	0.4	0.21	0.09	500	170	200	0.0	0.8
Apr-11	Clear	odour free	6.8	28.0	8.4	230	179	0.05	0.8	2.3	10.8	122	68	27.2	13.1	18.0	2.3	12	14.9	3.2	124.6	0.3	0.17	0.11	500	130	128	0.0	0.7
May-11	Clear	odour free	6.1	27.0	8.4	331	222	0.06	1.1	1.2	9.0	166	84	33.6	19.9	17.0	1.7	15	16.0	3.2	152.7	0.4	0.19	0.04	1600	170	156	0.0	0.6
Jun-11	L. Brown	odour free	7.4	24.0	8.3	58	49	0.06	1.1	1.1	4.5	40	20	8.0	4.9	13.0	1.2	22	10.0	0.7	39.2	0.3	0.17	0.06	2600	1700	40	0.0	0.9
Jul-11	Clear	odour free	6.8	25.0	7.8	76	48	0.06	0.8	0.3	4.5	44	23	9.2	5.1	2.0	0.5	4	6.0	0.2	31.8	0.4	0.25	0.08	900	220	32	0.0	0.1
Aug-11	Clear	odour free	7.0	25.0	7.7	103	79	0.06	1.3	1.7	4.8	60	32	12.8	6.8	5.0	1.2	7	12.0	0.3	59.7	0.2	0.17	0.06	5000	1100	60	0.0	0.1
Sep-11	Clear	odour free	6.4	27.0	7.6	165	101	0.05	1.5	1.7	19.3	76	45	18.0	7.5	8.0	1.0	8	14.0	0.0	56.1	0.3	0.20	0.10	900	300	92	0.0	0.4
Oct-11	L. Brown	odour free	6.1	24.5	7.6	193	110	0.08	2.7	1.2	16.7	80	52	20.8	6.8	10.0	1.6	9	19.0	0.0	59.8	0.3	0.21	0.16	1100	170	98	0.0	0.5
Nov-11	Clear	odour free	7.2	24.0	7.6	236	150	0.07	1.7	1.2	15.5	84	70	28.0	3.4	21.0	1.3	12	14.8	0.4	99.6	0.3	0.21	0.06	210	170	100	0.0	1.0
Dec-11	Clear	odour free	8.4	24.0	8.3	271	170	0.06	0.8	1.4	4.8	130	86	34.4	10.7	7.6	0.6	8	19.3	2.5	121.0	0.3	0.19	0.07	1600	300	124	0.0	0.3

Yagachi river near Alur

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	8.0	25.0	8.3	221	155	0.09	1.7	1.4	10.9	90	53	21.2	9.0	14.0	3.2	20	5.0	1.5	81.4	0.3		0.10			83	0.0	0.6
Jan-10	Clear	odour free	7.2	27.0	8.0	232	130	0.06	0.9	1.0	9.0	85	65	26.0	4.9	15.0	2.3	23	2.0	0.8	81.2	0.2		0.09			82	0.0	0.7
Feb-10	Clear	odour free	7.6	29.0	8.2	228	130	0.11	1.6	0.8	9.1	78	54	21.6	5.8	15.0	2.2	23	6.0	1.5	82.4	0.4		0.06	240	240	84	0.0	0.7
Mar-10	Clear	odour free	6.0	30.0	8.1	246	138	0.16	1.3	0.4	6.0	82	67	26.8	3.7	15.0	2.6	16	3.1	1.0	81.0	0.2	0.18	0.07	900	220	82	0.0	0.7
Apr-10	Clear	odour free	6.0	28.0	7.7	247	144	0.15	3.4	1.6	15.1	78	48	19.2	7.3	17.0	2.6	19	5.2	0.4	79.6	0.2	0.20	0.07	1600	1600	80	0.0	0.9
May-10	Clear	odour free	7.2	28.5	8.2	217	140	0.17	1.9	0.9	8.4	78	50	20.0	6.8	16.0	1.9	24	3.5	0.9	61.0	0.1	0.18	0.09	170	17	62	0.0	0.8
Jun-10	Clear	odour free	6.8	26.7	8.3	273	158	0.17	1.2	1.3	6.0	115	66	26.4	11.9	13.0	2.0	22	5.4	1.9	92.0	0.2	0.18	0.07	170	80	94	0.0	0.5
Jul-10	L. Brown	odour free	6.4	27.0	7.9	234	177	0.16	1.3	1.2	15.1	96	60	24.0	8.8	16.0	0.1	19	11.0	0.6	81.4	0.3	0.20	0.08	300	170	82	0.0	0.7
Aug-10	L. Brown	odour free	6.0	24.3	7.9	258	150	0.18	2.2	0.3	2.9	92	50	20.0	10.2	17.0	1.5	18	9.0	0.7	91.3	0.3	0.17	0.09	1600	900	92	0.0	0.8
Sep-10	L. Brown	odour free	7.2	28.4	7.9	204	115	0.17	4.2	2.0	16.9	62	39	15.6	5.6	10.0	1.1	12	16.0	0.5	61.5	0.3	0.17	0.11	1600	1600	62	0.0	0.6
Oct-10	L. Brown	odour free	7.6	26.0	7.9	161	102	0.05	2.1	3.6	12.8	70	46	18.4	5.8	12.0	1.5	15	14.0	0.5	73.5	0.3	0.17	0.14	1600	220	74	0.0	0.6
Nov-10	Clear	odour free	6.8	24.2	8.2	215	138	0.06	1.1	0.9	10.5	84	48	19.2	8.8	14.0	1.6	17	8.2	1.2	82.7	0.3	0.17	0.14	900	500	84	0.0	0.7
Dec-10	Clear	odour free	8.4	27.1	8.1	220	125	0.13	1.1	0.8	8.2	100	62	24.8	9.2	15.0	1.7	19	11.9	1.0	84.9	0.2	0.18	0.15	1600	1600	86	0.0	0.7
Jan-11	Clear	odour free	8.0	27.3	8.3	235	132	0.10	1.3	2.1	8.4	116	62	24.8	13.1	15.0	2.2	21	13.8	1.8	94.1	0.3	0.17	0.09	1600	500	96	0.0	0.6
Feb-11	Clear	odour free	7.0	25.0	8.2	242	140	0.05	1.0	1.9	14.4	92	56	22.4	8.8	14.0	2.7	20	14.7	1.2	80.8	0.5	0.17	0.05	500	170	82	0.0	0.6
Mar-11	Clear	odour free	7.4	27.0	8.2	180	144	0.05	0.3	2.9	9.6	88	50	20.0	9.2	15.0	3.9	23	7.8	1.4	88.6	0.3	0.19	0.06	1600	280	90	0.0	0.7
Apr-11	Clear	odour free	8.0	28.0	8.2	187	150	0.05	0.7	2.5	7.2	96	56	22.4	9.7	16.0	2.8	24	15.4	1.3	84.7	0.3	0.17	0.08	220	80	86	0.0	0.7
May-11	L. Brown	odour free	6.4	26.5	8.2	220	140	0.08	2.0	1.9	9.0	92	56	22.4	8.8	17.0	2.1	22	20.0	1.1	64.9	0.2	0.18	0.09	1600	240	66	0.0	0.8
Jun-11	Clear	odour free	7.2	25.0	8.3	229	155	0.07	1.8	0.8	4.5	104	70	28.0	8.3	12.0	2.8	16	15.0	1.7	88.2	0.3	0.19	0.07	5000	1700	90	0.0	0.5
Jul-11	L. Brown	odour free	6.4	25.0	7.8	208	161	0.07	2.6	0.9	5.4	88	60	24.0	6.8	17.0	2.4	18	19.0	0.6	87.4	0.4	0.23	0.06	5000	140	88	0.0	0.8
Aug-11	Clear	odour free	6.4	26.0	7.7	204	136	0.08	2.0	0.4	6.4	86	72	28.8	3.4	18.0	2.8	20	23.0	0.4	99.5	0.4	0.18	0.09	5000	1100	100	0.0	0.8
Sep-11	Clear	odour free	6.6	27.0	7.7	213	124	0.17	1.6	0.9	11.6	82	55	22.0	6.6	13.0	1.3	21	12.0	0.0	54.3	0.4	0.21	0.11	500	240	89	0.0	0.6
Oct-11	Clear	odour free	6.6	24.2	7.6	190	112	0.14	2.2	0.3	3.8	70	46	18.4	5.8	11.0	2.4	14	18.0	0.0	50.0	0.3	0.22	0.17	900	110	82	0.0	0.6
Nov-11	Clear	odour free	6.8	24.0	7.8	187	120	0.10	2.3	0.4	6.1	86	52	20.8	8.3	22.0	3.4	18	16.0	0.5	79.5	0.3	0.20	0.17	1400	1100	80	0.0	1.1
Dec-11	Clear	odour free	7.6	25.0	8.2	224	144	0.05	1.4	1.0	11.3	100	60	24.0	9.7	14.8	1.2	22	15.7	1.5	94.0	0.3	0.17	0.11	3400	500	96	0.0	0.6

Lakshmanatheertha river near Bilikere

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	7.4	25.0	8.4	535	371	0.07	1.4	1.3	4.0	214	101	40.4	27.5	24.0	2.2	23	7.0	5.5	234.3	0.4		0.02			240	0.0	0.7
Jan-10	Clear	odour free	9.0	27.0	8.4	428	237	0.05	0.2	3.8	48.3	189	79	31.6	26.7	17.0	2.1	20	5.0	4.7	199.2	0.4		0.04			204	0.0	0.6
Feb-10	Clear	odour free	5.0	29.0	8.5	550	309	0.05	1.4	1.1	12.1	229	103	41.2	30.6	40.0	2.2	27	19.0	8.2	276.6	0.5		0.04	1600	1600	285	0.2	1.2
Mar-10	Clear	odour free	6.6	29.0	8.4	612	344	0.10	1.0	2.7	30.2	230	98	39.2	32.1	18.0	3.1	21	11.6	5.3	224.6	0.5	0.18	0.07	1600	900	230	0.0	0.5
Apr-10	Clear	odour free	5.6	27.5	8.3	597	358	0.11	1.9	2.4	8.5	196	84	33.6	27.2	46.0	0.7	28	15.6	4.7	251.2	0.2	0.21	0.07	1600	1600	256	0.4	1.4
May-10	L. Brown	odour free	7.2	29.0	8.5	642	437	0.17	3.6	2.8	27.9	225	98	39.2	30.9	51.0	5.7	51	14.5	6.6	221.3	0.4	0.18	0.05	500	33	228	0.0	1.5
Jun-10	Clear	odour free	6.0	26.6	8.1	290	161	0.18	2.4	1.5	6.0	142	48	19.2	22.8	10.0	2.8	19	6.5	1.4	118.5	0.1	0.18	0.05	1600	900	120	0.0	0.4
Jul-10	L. Brown	odour free	7.2	26.0	7.9	125	102	0.17	2.7	1.6	15.7	62	35	14.0	6.6	5.0	0.1	8	19.0	0.4	55.5	0.3	0.18	0.03	1600	900	56	0.0	0.3
Aug-10	Clear	odour free	6.0	24.3	8.2	430	252	0.18	2.0	1.3	12.6	164	82	32.8	19.9	26.0	1.8	14	11.0	2.8	185.2	0.3	0.17	0.04	220	90	188	0.0	0.9
Sep-10	Clear	odour free	6.0	28.2	8.3	364	219	0.05	2.6	1.1	10.9	153	73	29.2	19.4	12.0	1.3	13	10.0	3.2	157.7	0.3	0.19	0.07	1600	1600	161	0.0	0.4
Oct-10	Clear	odour free	6.4	26.0	8.3	435	297	0.10	1.8	3.4	14.0	185	97	38.8	21.4	16.0	1.9	19	14.3	4.7	232.2	0.5	0.17	0.10	1600	280	237	0.3	0.5
Nov-10	Clear	odour free	7.4	24.4	8.4	474	291	0.10	4.3	1.6	11.7	200	92	36.8	26.2	23.0	2.4	21	8.6	5.3	206.5	0.6	0.17	0.04	140	80	212	0.0	0.7
Dec-10	Clear	odour free	8.0	27.5	8.3	509	312	0.17	1.2	2.4	7.0	224	100	40.0	30.1	19.0	2.1	25	15.8	5.0	242.9	0.5	0.22	0.04	110	110	248	0.0	0.6
Jan-11	Clear	odour free	7.6	28.1	8.3	535	339	0.18	1.1	2.9	15.6	220	114	45.6	25.8	19.0	2.8	25	14.9	5.1	272.8	0.5	0.17	0.05	1600	1600	278	0.3	0.6
Feb-11	Clear	odour free	6.4	24.0	8.4	596	337	0.06	0.9	2.4	18.0	224	100	40.0	30.1	19.0	2.9	27	21.7	6.0	261.8	0.5	0.10	0.03	1600	350	268	1.7	0.6
Mar-11	Clear	odour free	6.2	28.0	8.5	466	299	0.05	0.7	2.4	11.2	224	92	36.8	32.1	34.0	3.4	33	21.5	7.1	234.7	0.5	0.22	0.08	900	500	242	0.0	1.0
Apr-11	Clear	odour free	6.6	27.0	8.5	431	354	0.09	0.8	2.1	25.3	220	96	38.4	30.1	46.0	2.3	32	28.0	7.4	228.4	0.3	0.18	0.09	220	110	236	0.0	1.3
May-11	Clear	odour free	6.0	22.0	8.3	521	359	0.05	1.3	1.8	13.6	238	116	46.4	29.7	39.0	2.0	35	20.0	4.2	225.7	0.4	0.21	0.04	1600	280	230	0.0	1.1
Jun-11	L. Brown	odour free	7.4	24.5	8.1	114	88	0.06	1.0	2.1	12.6	68	40	16.0	6.8	6.0	2.8	5	15.0	0.8	71.1	0.3	0.19	0.07	3000	1100	72	0.0	0.3
Jul-11	L. Brown	odour free	6.8	25.0	8.2	124	95	0.07	2.2	0.8	5.4	60	34	13.6	6.3	7.0	1.5	10	8.0	0.8	59.1	0.4	0.17	0.03	1100	500	60	0.0	0.4
Aug-11	Clear	odour free	6.0	24.5	7.5	245	159	0.07	2.3	0.8	11.2	114	68	27.2	11.2	19.0	2.8	14	24.0	0.4	125.6	0.5	0.17	0.05	1600	170	126	0.0	0.8
Sep-11	Clear	odour free	7.4	27.0	7.2	326	200	0.06	1.8	1.9	9.9	145	78	31.2	16.3	22.0	2.6	15	34.1	0.2	144.8	0.4	0.23	0.09	1100	500	145	0.0	0.8
Oct-11	Clear	odour free	6.2	24.5	7.3	330	193	0.11	3.8	1.6	20.6	128	60	24.0	16.5	22.0	2.7	24	25.1	0.0	93.9	0.4	0.28	0.10	3000	900	154	0.0	0.9
Nov-11	Clear	odour free	7.2	25.0	7.3	423	300	0.07	2.0	1.2	11.4	206	102	40.8	25.3	37.0	3.5	24	15.8	0.4	219.6	0.4	0.23	0.04	110	80	220	0.0	1.1
Dec-11	Clear	odour free	7.4	24.0	8.6	446	294	0.07	1.7	1.8	19.4	220	104	41.6	28.2	36.9	1.8	24	26.6	8.3	212.0	0.4	0.21	0.04	3300	140	220	0.0	1.1

Lakshmanatheertha river near Hanagodu

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR			
Dec-09	Clear	odour free	6.8	25.0	8.3	158	101	0.09	1.9	2.6	15.4	72	44	17.6	6.8	10.0	2.1	11	1.0	1.3	66.7	0.1		0.09			68	0.0	0.5			
Jan-10	Clear	odour free	7.8	24.0	8.4	187	127	0.06	0.8	2.8	21.1	94	53	21.2	10.0	8.0	2.1	15	1.0	1.9	80.0	0.2		0.19			82	0.0	0.4			
Feb-10	Clear	odour free	7.2	29.0	8.0	212	119	0.15	2.0	4.1	36.2	95	50	20.0	10.9	8.0	2.2	18	2.0	0.8	89.1	0.3		0.15	280	280	90	0.0	0.3			
Mar-10																																
Apr-10								SAMPLE COULDN'T BE COLLECTED BECAUSE OF NO FLOW IN THE RIVER																								
May-10																																
Jun-10	L. Brown	odour free	8.0	25.7	8.4	131	109	0.16	4.6	3.7	27.2	56	38	15.2	4.4	10.0	1.5	11	5.3	1.0	46.9	0.1	0.21	0.45	280	33	48	0.0	0.6			
Jul-10	Brown	odour free	8.0	25.0	7.7	85	48	0.06	4.7	2.0	9.7	43	26	10.4	4.1	5.0	0.8	6	3.0	0.2	39.8	0.2	0.21	0.07	1600	350	40	0.0	0.3			
Aug-10	L. Brown	odour free	7.0	24.2	7.8	235	187	1.82	3.1	1.9	24.0	100	60	24.0	9.7	12.0	1.1	20	2.0	0.5	81.5	0.4	0.26	0.07	1600	900	82	0.0	0.5			
Sep-10	L. Brown	odour free	7.6	29.8	7.7	181	100	0.18	2.0	2.4	9.4	75	42	16.8	8.0	8.0	0.9	11	4.0	0.3	63.7	0.2	0.41	0.36	1600	1600	64	0.0	0.4			
Oct-10	L. Brown	odour free	8.0	27.2	7.8	122	84	0.09	1.3	4.1	14.0	54	27	10.8	6.6	8.0	1.3	11	3.5	0.3	55.7	0.2	0.17	0.34	1600	1600	56	0.0	0.5			
Nov-10	L. Brown	odour free	6.8	24.2	7.8	167	98	0.10	1.9	1.3	17.5	74	40	16.0	8.3	7.0	1.1	5	8.8	0.3	63.6	0.3	0.17	0.39	1600	1600	64	0.0	0.3			
Dec-10	Clear	odour free	8.0	25.9	8.2	166	95	0.17	1.2	2.0	19.8	70	40	16.0	7.3	11.0	1.2	14	6.5	0.9	59.0	0.4	0.17	0.08	1600	110	60	0.0	0.6			
Jan-11	Clear	odour free	6.2	27.8	7.7	194	110	0.07	1.8	1.2	13.2	78	56	22.4	5.4	11.0	1.8	15	7.6	0.4	81.6	0.3	0.17	0.10	300	300	82	0.0	0.5			
Feb-11	L. Brown	odour free	7.6	29.0	8.1	214	120	0.08	1.0	3.0	20.4	94	60	24.0	8.3	10.0	1.4	16	11.9	1.0	87.0	0.4	0.17	0.08	900	110	88	0.0	0.5			
Mar-11	Clear	odour free	8.0	30.0	8.7	216	159	0.07	1.2	3.6	14.4	114	54	21.6	14.6	15.0	3.0	19	6.3	5.4	106.4	0.2	0.17	0.04	170	130	112	0.0	0.6			
Apr-11	Clear	odour free	6.8	28.0	8.0	210	147	0.07	1.1	3.0	6.3	104	58	23.2	11.2	12.0	3.2	20	1.6	0.9	97.0	0.3	0.21	0.12	1600	350	98	0.0	0.5			
May-11	Clear	odour free	7.0	29.0	8.7	205	128	0.06	1.4	1.5	11.7	90	44	17.6	11.2	15.0	3.8	21	5.0	3.6	76.2	0.3	0.19	0.04	1600	500	80	0.0	0.7			
Jun-11	L. Brown	odour free	6.4	26.0	7.7	94	78	0.07	1.8	2.4	22.6	44	18	7.2	6.3	6.0	2.1	11	11.0	0.2	43.8	0.1	0.19	0.03	300	130	44	0.0	0.4			
Jul-11	L. Brown	odour free	7.2	24.0	7.6	94	81	0.07	1.7	1.7	8.1	50	27	10.8	5.6	5.0	0.7	6	5.0	0.1	37.8	0.4	0.16	0.06	350	110	38	0.0	0.3			
Aug-11	L. Brown	odour free	7.6	25.0	7.6	93	75	0.06	2.9	1.6	24.0	42	28	11.2	3.4	8.0	2.8	11	12.0	0.2	43.8	0.3	0.16	0.07	1600	220	44	0.0	0.5			
Sep-11	Clear	odour free	7.0	25.0	7.4	96	69	0.06	1.8	4.8	18.0	48	36	14.4	2.9	6.0	1.2	12	9.1	0.1	48.9	0.3	0.19	0.50	3000	500	49	0.0	0.4			
Oct-11	L. Brown	odour free	8.6	26.0	7.1	137	86	0.05	1.8	2.6	7.7	56	40	16.0	3.9	9.0	2.1	13	7.5	7.4	59.9	0.2	0.18	0.40	3000	1600	60	0.1	0.5			
Nov-11	Clear	odour free	8.2	25.0	8.1	182	127	0.14	2.5	2.3	19.3	62	48	19.2	3.4	19.0	2.4	18	9.5	0.8	73.1	0.3	0.19	0.21	1600	350	74	0.0	1.1			
Dec-11	Clear	odour free	6.8	25.0	8.0	168	107	0.06	1.3	1.6	12.6	86	42	16.8	10.7	8.7	1.1	16	4.5	0.7	75.0	0.2	0.19	0.14	500	170	76	0.0	0.4			

Kabini river near H.D.Kote

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	8.0	26.0	8.3	167	100	0.06	1.1	1.4	19.4	86	40	16.0	11.2	5.2	1.4	9	2.0	1.1	74.8	0.2		0.02			76	0.0	0.2
Jan-10	Clear	odour free	8.6	25.0	8.3	106	91	0.05	0.5	1.1	6.0	59	40	16.0	4.6	5.0	2.0	7	2.0	1.1	59.8	0.1		0.06			61	0.0	0.3
Feb-10	Clear	odour free	5.8	27.0	8.3	120	75	0.15	1.1	1.1	12.1	60	40	16.0	4.9	5.0	2.0	11	1.0	1.0	54.9	0.3		0.07	300	300	56	0.0	0.3
Mar-10	Clear	odour free	6.4	28.0	8.2	107	64	0.18	0.7	1.4	18.1	49	30	12.0	4.6	3.0	2.1	9	1.0	0.7	49.2	0.3	0.18	0.05	300	240	50	0.0	0.2
Apr-10	Clear	odour free	6.6	28.4	7.8	168	94	0.18	1.6	1.4	15.1	64	39	15.6	6.1	9.0	2.4	11	1.0	0.4	69.6	0.1	0.19	0.03	1600	1600	70	0.0	0.5
May-10	Clear	odour free	6.4	27.3	7.7	116	82	0.18	0.6	1.1	7.2	46	26	10.4	4.9	8.0	1.5	11	3.2	0.2	40.8	0.1	0.10	0.02	1100	26	41	0.0	0.5
Jun-10	Clear	odour free	7.0	26.2	7.9	132	75	0.18	0.6	1.5	13.3	53	36	14.4	4.1	9.0	1.7	7	13.8	0.4	49.6	0.1	0.18	0.02	1600	900	50	0.0	0.6
Jul-10	Clear	odour free	9.4	24.3	8.1	89	74	0.05	1.4	2.0	15.7	42	16	6.4	6.3	2.0	0.7	6	6.4	0.4	29.6	0.1	0.20	0.08	900	220	30	0.0	0.1
Aug-10	Clear	odour free	6.4	26.1	7.8	69	49	1.92	1.1	0.4	1.7	32	18	7.2	3.4	2.0	0.5	4	5.0	0.2	31.8	0.2	0.17	0.05	1600	170	32	0.0	0.2
Sep-10	Clear	odour free	8.2	27.9	7.5	92	53	0.18	1.4	3.4	38.8	33	19	7.6	3.4	4.0	0.8	5	5.0	0.1	39.9	0.2	0.19	0.09	300	300	40	0.0	0.3
Oct-10	Clear	odour free	8.0	27.6	8.2	201	117	0.14	0.8	2.2	23.3	63	34	13.6	7.1	7.0	0.7	9	6.7	1.1	68.8	0.1	0.17	0.09	1600	140	70	0.0	0.4
Nov-10	Clear	odour free	5.6	25.3	7.6	101	59	0.16	3.1	0.6	5.8	40	16	6.4	5.8	6.0	1.1	5	9.3	0.2	39.8	0.2	0.18	0.03	1600	1600	40	0.0	0.4
Dec-10	Clear	odour free	9.6	27.1	8.4	169	101	0.18	0.6	0.6	5.8	76	44	17.6	7.8	8.0	1.3	10	9.7	1.7	72.2	0.2	0.17	0.02	80	50	74	0.0	0.4
Jan-11	Clear	odour free	8.6	26.5	8.2	94	53	0.11	1.0	2.3	19.2	38	32	12.8	1.5	3.0	0.6	5	5.7	0.7	41.2	0.2	0.17	0.07	1600	1600	42	0.0	0.2
Feb-11	L.Brown	odour free	6.3	26.5	7.6	96	63	0.55	1.2	1.1	9.6	48	22	8.8	6.3	5.0	0.7	6	9.0	0.2	47.8	0.3	0.17	0.08	1600	220	48	0.0	0.3
Mar-11	Clear	odour free	5.7	26.0	8.1	76	46	0.06	0.2	1.2	10.9	48	22	8.8	6.3	7.0	2.3	12	3.0	0.5	47.4	0.2	0.19	0.04	1600	170	48	0.0	0.4
Apr-11	L.Brown	odour free	5.1	28.0	8.1	140	98	0.05	0.8	2.1	8.1	86	48	19.2	9.2	12.0	4.8	9	13.1	0.9	81.1	0.3	0.19	0.04	1600	280	82	0.0	0.6
May-11	Clear	odour free	6.8	29.0	7.7	109	69	0.05	0.6	2.6	15.4	54	30	12.0	5.8	6.0	1.0	7	4.0	0.3	53.7	0.1	0.16	0.04	1600	350	54	0.0	0.4
Jun-11	Clear	odour free	5.8	24.0	7.8	100	79	0.06	0.8	1.0	10.8	40	18	7.2	5.4	8.0	2.4	10	22.0	0.2	39.7	0.2	0.17	0.02	900	110	40	0.0	0.5
Jul-11	Clear	odour free	7.6	24.0	7.8	61	45	0.05	1.9	1.7	8.0	32	20	8.0	2.9	4.0	1.4	4	8.0	0.2	29.8	0.2	0.24	0.08	1700	280	30	0.0	0.3
Aug-11	Clear	odour free	7.2	25.0	7.9	78	53	0.06	1.1	1.2	8.0	30	16	6.4	3.4	2.0	1.0	4	8.0	0.2	29.7	0.2	0.17	0.06	1600	240	30	0.0	0.2
Sep-11	Clear	odour free	7.2	26.0	7.9	52	39	0.37	1.3	0.8	7.8	34	16	6.4	4.4	3.0	1.2	4	6.0	0.2	29.7	0.2	0.18	0.18	1600	110	30	0.0	0.2
Oct-11	Clear	odour free	8.2	25.0	7.3	78	49	0.06	1.2	3.7	10.3	70	20	8.0	12.2	5.0	1.4	6	6.4	8.6	41.9	0.2	0.17	0.09	900	110	42	0.0	0.3
Nov-11	Clear	odour free	7.8	23.0	7.3	87	55	0.10	1.3	1.0	8.3	56	25	10.0	7.5	7.0	1.9	8	7.3	7.2	39.9	0.2	0.18	0.04	5000	220	40	0.0	0.4
Dec-11	Clear	odour free	8.0	24.0	8.2	193	123	0.05	0.7	1.0	8.7	92	44	17.6	11.6	7.7	1.7	10	8.7	1.3	85.0	0.2	0.19	0.03	3000	900	86	0.0	0.4

Nugu river near Chikkanandi

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	8.2	25.0	8.3	450	259	0.09	1.7	1.9	28.0	180	59	23.6	29.4	12.0	2.8	13	6.0	3.3	173.6	0.3		0.08			177	0.0	0.4
Jan-10	Clear	odour free	7.2	21.0	8.3	472	266	0.05	0.8	1.2	18.1	222	98	39.2	30.1	18.0	2.4	14	5.0	4.2	221.7	0.4		0.09			226	0.0	0.5
Feb-10	Clear	odour free	5.8	27.0	8.3	549	307	0.17	3.0	1.6	21.1	163	89	35.6	18.0	11.0	2.2	14	10.0	2.9	153.0	0.4		0.07	900	900	156	0.0	0.4
Mar-10	Clear	odour free	5.8	27.0	8.3	455	261	0.18	2.3	1.4	9.1	209	105	42.0	25.3	5.0	0.8	10	8.7	3.3	175.6	0.4	0.19	0.05	1600	350	179	0.0	0.2
Apr-10	Clear	odour free	6.0	25.5	7.9	460	261	0.05	3.4	1.5	18.1	188	100	40.0	21.4	13.0	1.9	12	9.1	1.4	199.6	0.2	0.19	0.05	1600	1600	201	0.0	0.4
May-10	L.Brown	odour free	6.8	27.3	8.4	322	223	0.18	4.3	1.1	13.3	154	81	32.4	17.7	8.0	1.8	13	4.5	2.9	124.0	0.3	0.16	0.07	1600	900	127	0.0	0.3
Jun-10	Clear	odour free	7.4	26.0	8.3	456	270	0.17	1.7	1.7	12.7	258	117	46.8	34.3	8.0	1.5	14	7.5	4.7	230.2	0.3	0.23	0.08	1600	900	235	0.0	0.2
Jul-10	Clear	odour free	4.6	24.6	7.5	290	233	0.07	1.2	3.9	18.1	150	75	30.0	18.2	6.0	1.0	9	6.2	0.4	134.6	0.3	0.21	0.08	1600	240	135	0.0	0.2
Aug-10	L.Brown	odour free	6.2	26.2	8.1	302	201	0.06	4.0	0.7	4.6	140	68	27.2	17.5	13.0	0.6	10	13.0	1.5	124.5	0.3	0.18	0.10	900	110	126	0.0	0.5
Sep-10	L.Brown	odour free	8.6	27.8	8.3	443	244	0.18	3.8	3.9	26.8	180	89	35.6	22.1	10.0	1.4	11	15.0	3.3	174.6	0.2	0.21	0.14	500	500	178	0.0	0.3
Oct-10	L.Brown	odour free	7.6	27.0	8.3	360	269	0.16	3.1	2.6	11.7	149	80	32.0	16.8	8.0	1.4	11	10.6	3.3	166.6	0.4	0.17	0.20	1600	350	170	0.0	0.3
Nov-10	L.Brown	odour free	7.8	25.3	8.3	301	171	0.16	3.0	1.0	3.5	144	84	33.6	14.6	10.0	1.4	10	9.3	2.6	137.3	0.5	0.21	0.18	1600	1600	140	0.0	0.4
Dec-10	Clear	odour free	8.6	26.9	8.1	443	281	0.17	1.9	2.6	5.8	216	106	42.4	26.7	12.0	1.8	16	14.5	2.6	219.3	0.5	0.23	0.09	1600	220	222	0.0	0.3
Jan-11	Clear	odour free	7.0	26.5	8.3	462	283	0.15	1.9	2.4	24.0	220	120	48.0	24.3	10.0	1.6	14	12.3	4.4	221.6	0.5	0.17	0.12	900	900	226	0.0	0.3
Feb-11	L.Brown	odour free	5.4	25.5	7.9	306	216	0.08	2.4	1.2	14.4	160	86	34.4	18.0	7.0	1.3	10	21.3	1.3	162.7	0.5	0.16	0.09	900	170	164	0.0	0.3
Mar-11	L.Brown	odour free	6.0	26.0	8.3	261	206	0.13	2.0	1.2	14.5	154	72	28.8	19.9	13.0	3.2	14	14.0	2.8	147.1	0.4	0.20	0.06	1600	170	150	0.0	0.5
Apr-11	Clear	odour free	6.8	25.5	8.3	327	271	0.06	1.6	2.8	9.0	192	100	40.0	22.4	15.0	3.1	16	11.8	3.6	182.3	0.4	0.21	0.04	1600	300	186	0.0	0.5
May-11	L.Brown	odour free	6.0	25.0	8.4	268	170	0.07	1.7	0.8	6.3	144	80	32.0	15.6	11.0	1.0	9	16.0	2.7	127.2	0.5	0.20	0.07	1600	500	130	0.0	0.4
Jun-11	Clear	odour free	7.5	24.0	8.1	374	263	0.05	0.9	2.3	27.1	198	100	40.0	23.8	9.0	2.6	13	16.0	2.3	187.6	0.4	0.17	0.09	9000	2100	190	0.0	0.3
Jul-11	L.Brown	odour free	6.2	24.0	8.4	278	217	0.07	2.3	1.3	16.0	124	70	28.0	13.1	13.0	3.6	12	17.0	2.9	134.0	0.5	0.24	0.08	3000	350	137	0.0	0.5
Aug-11	Clear	odour free	6.6	24.0	8.1	345	237	0.07	2.3	2.0	8.0	160	86	34.4	18.0	13.0	2.5	10	17.0	1.9	166.1	0.4	0.22	0.08	5000	2100	168	0.0	0.5
Sep-11	L.Brown	odour free	6.4	26.0	7.9	314	195	0.08	2.7	0.9	10.7	140	80	32.0	14.6	12.0	2.2	9	13.0	0.5	145.5	0.4	0.21	0.10	1600	140	146	0.0	0.5
Oct-11	L.Brown	odour free	10.4	24.0	8.4	259	166	0.10	1.3	3.8	12.8	116	72	28.8	10.7	10.0	1.9	10	12.3	3.5	144.4	0.4	0.21	0.16	1400	210	148	0.2	0.4
Nov-11	Clear	odour free	7.0	23.0	8.2	278	195	0.10	1.9	1.2	13.5	176	102	40.8	18.0	10.0	1.2	10	12.2	2.6	161.3	0.3	0.23	0.10	7000	1100	164	0.0	0.3
Dec-11	Clear	odour free	6.6	21.0	8.4	396	295	0.05	1.1	0.6	4.8	230	108	43.2	29.6	19.3	1.7	15	12.5	5.3	225.0	0.4	0.24	0.15	5000	500	230	0.0	0.6

Taraka river near Madapura

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	6.8	25.0	8.4	556	311	0.13	3.1	1.5	5.1	219	86	34.4	32.3	25.0	2.7	24	11.0	3.5	237.4	0.5		0.05			241	0.0	0.7
Jan-10	Clear	odour free	9.0	25.0	8.5	307	275	0.15	2.6	3.3	21.1	177	89	35.6	21.4	33.0	2.5	22	10.8	6.0	202.8	0.5		0.06			209	0.0	1.1
Feb-10	Clear	odour free	6.0	28.0	8.3	362	300	0.08	2.7	1.0	6.0	222	107	42.8	28.0	40.0	2.4	29	13.0	4.4	235.5	0.5		0.01	1600	1600	240	0.0	1.2
Mar-10	Clear	odour free	5.4	29.0	8.3	451	273	0.18	2.2	2.3	30.2	177	83	33.2	22.8	20.0	3.0	19	10.4	3.1	162.9	0.3	0.21	0.03	1600	1600	166	0.0	0.7
Apr-10	Clear	odour free	6.4	26.0	8.4	604	356	0.15	5.2	1.3	15.1	202	101	40.4	24.5	42.0	3.1	25	22.7	5.7	248.2	0.3	0.19	0.03	1600	1600	254	0.2	1.3
May-10	Clear	odour free	6.0	27.2	8.3	614	398	0.16	4.6	1.5	13.7	240	117	46.8	29.9	54.0	2.0	31	12.9	4.5	238.4	0.4	0.14	0.03	500	500	243	0.0	1.5
Jun-10	L.Brown	odour free	5.2	26.1	8.4	641	421	0.18	4.1	1.1	6.6	272	130	52.0	34.5	23.0	2.2	31	15.6	5.2	236.7	0.4	0.22	0.02	1600	1600	242	0.0	0.6
Jul-10	L.Brown	odour free	6.0	24.3	8.4	545	493	0.11	3.8	2.4	20.5	226	109	43.6	28.4	31.0	2.5	24	9.5	5.4	228.5	0.9	0.45	0.05	1600	1600	234	0.0	0.9
Aug-10	L.Brown	odour free	7.0	26.0	8.4	483	293	0.17	3.4	1.8	13.1	190	88	35.2	24.8	38.0	2.0	21	9.0	5.7	242.2	0.5	0.18	0.04	1600	900	248	0.4	1.2
Sep-10	L.Brown	odour free	8.8	27.9	8.4	423	258	0.17	3.4	4.5	36.6	169	87	34.8	19.9	18.0	2.1	19	9.0	4.9	208.0	0.5	0.22	0.08	1600	1600	213	0.2	0.6
Oct-10	Clear	odour free	7.8	27.2	8.3	497	283	0.16	3.1	2.6	25.6	178	89	35.6	21.6	16.0	1.9	19	7.9	4.7	235.2	0.5	0.20	0.11	1600	900	240	0.5	0.5
Nov-10	L.Brown	odour free	8.4	25.3	8.5	410	286	0.17	2.8	2.2	8.2	176	100	40.0	18.5	14.0	2.1	14	7.6	5.2	194.7	0.5	0.17	0.15	1600	1600	200	0.0	0.5
Dec-10	Clear	odour free	7.6	26.7	8.1	529	340	0.18	3.2	1.1	5.8	280	114	45.6	40.3	18.0	2.0	24	17.7	3.0	256.9	0.6	0.18	0.08	1600	1600	260	0.0	0.5
Jan-11	Clear	odour free	7.4	26.4	8.4	588	387	0.08	4.1	2.0	24.0	230	108	43.2	29.7	20.0	2.9	27	19.0	6.6	297.3	0.5	0.17	0.12	500	500	304	0.5	0.6
Feb-11	L.Brown	odour free	5.8	26.0	8.4	479	377	0.07	2.6	1.6	12.0	234	110	44.0	30.1	21.0	2.4	27	27.3	6.9	271.0	0.5	0.15	0.06	1600	350	278	0.0	0.6
Mar-11	Clear	odour free	5.3	26.0	8.4	418	367	0.11	2.4	1.6	5.8	215	100	40.0	28.0	28.0	4.0	25	18.2	4.6	199.3	0.5	0.21	0.04	1600	280	204	0.0	0.8
Apr-11	L.Brown	odour free	6.4	26.5	8.4	457	391	0.08	2.2	1.4	15.4	222	106	42.4	28.2	49.0	4.1	32	23.4	5.3	246.6	0.5	0.24	0.04	1600	280	252	0.0	1.4
May-11	L.Brown	odour free	6.2	25.0	8.8	489	346	0.08	2.1	0.6	5.4	218	106	42.4	27.2	31.0	3.6	24	22.0	12.3	207.4	0.5	0.19	0.04	1600	300	220	0.0	0.9
Jun-11	Clear	odour free	6.0	24.0	8.1	458	317	0.09	2.5	1.6	9.9	200	100	40.0	24.3	31.0	3.5	24	17.0	2.5	207.4	0.5	0.17	0.04	11000	5000	210	0.0	0.9
Jul-11	Clear	odour free	6.4	24.0	8.4	480	338	0.08	3.9	1.3	16.0	196	85	34.0	27.0	41.0	3.7	24	9.0	5.8	236.0	0.5	0.24	0.04	3000	350	242	0.2	1.3
Aug-11	L.Brown	odour free	6.8	24.0	8.0	431	306	0.07	2.4	1.7	16.0	198	94	37.6	25.3	31.0	2.9	22	21.0	1.7	200.2	0.5	0.18	0.04	13000	3400	202	0.0	1.0
Sep-11	Clear	odour free	6.0	25.0	8.4	377	257	0.08	2.7	1.0	14.2	166	80	32.0	20.9	36.0	3.6	19	11.0	4.6	205.3	0.5	0.22	0.08	14000	3000	210	0.2	1.2
Oct-11	L.Brown	odour free	10.4	24.5	8.7	414	266	0.15	2.1	4.8	12.8	156	88	35.2	16.5	34.0	2.3	20	22.5	9.6	214.1	0.5	0.22	0.12	9000	900	224	0.7	1.2
Nov-11	Clear	odour free	6.8	23.0	8.1	357	255	0.20	2.9	2.8	22.2	192	92	36.8	24.3	20.0	3.0	18	14.4	2.1	179.8	0.4	0.23	0.11	11000	2800	182	0.0	0.6
Dec-11	L.Brown	odour free	7.6	21.0	8.4	433	285	0.08	2.5	1.3	17.4	210	104	41.6	25.7	20.7	1.2	17	18.6	4.8	199.0	0.5	0.20	0.09	11000	2200	204	0.0	0.6

Kabini river near Suttur

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	8.5	26.0	8.3	479	271	0.10	2.2	1.5	18.3	200	83	33.2	28.4	33.0	2.8	22	9.0	4.0	215.9	0.5		0.02			220	0.0	1.0
Jan-10	Clear	odour free	8.0	26.0	8.3	463	284	0.10	1.8	1.6	15.1	178	76	30.4	24.8	35.0	2.4	27	10.0	3.7	197.2	0.4		0.05			201	0.0	1.2
Feb-10	Clear	odour free	6.2	30.0	8.3	344	200	0.05	1.9	2.2	21.7	136	71	28.4	15.8	21.0	2.2	20	20.0	2.5	132.4	0.4		0.05	140	140	135	0.0	0.8
Mar-10	Clear	odour free	6.2	29.0	8.2	333	184	0.18	1.8	2.0	18.1	137	80	32.0	13.9	15.0	2.5	15	9.7	1.8	124.1	0.3	0.20	0.03	170	80	126	0.0	0.5
Apr-10	Clear	odour free	4.6	26.9	7.6	233	150	0.16	3.5	2.7	18.1	96	53	21.2	10.5	18.0	1.9	23	11.0	0.3	84.7	0.1	0.18	0.05	1600	1600	85	0.0	0.8
May-10	Clear	odour free	6.2	27.5	7.9	309	187	0.15	1.7	0.7	4.2	114	64	25.6	12.2	14.0	1.6	19	13.0	0.7	99.2	0.3	0.40	0.07	300	17	100	0.0	0.6
Jun-10	Clear	odour free	7.2	29.4	8.3	424	248	0.18	1.3	1.1	12.7	171	120	48.0	12.4	12.0	1.2	23	5.5	2.8	141.1	0.1	0.18	0.05	300	130	144	0.0	0.4
Jul-10	L.Brown	odour free	6.4	27.0	7.9	167	108	0.07	1.6	1.9	24.8	60	26	10.4	8.3	5.0	0.6	10	10.2	0.4	49.6	0.2	0.18	0.05	1600	300	50	0.0	0.3
Aug-10	L.Brown	odour free	6.0	25.7	7.9	210	147	1.96	4.6	2.4	33.7	82	44	17.6	9.2	14.0	1.1	10	9.0	0.6	79.4	0.3	0.17	0.17	1600	900	80	0.0	0.7
Sep-10	L.Brown	odour free	8.0	27.6	8.3	271	166	0.27	2.8	3.8	8.3	111	56	22.4	13.4	11.0	1.0	12	17.0	2.3	111.6	0.3	0.19	0.11	380	170	114	0.0	0.5
Oct-10	Clear	odour free	8.0	28.2	8.5	474	281	0.07	1.7	3.5	22.2	156	78	31.2	19.0	13.0	1.6	17	12.0	4.8	183.0	0.3	0.21	0.07	1600	280	188	0.0	0.5
Nov-10	L.Brown	odour free	7.0	25.0	8.3	314	187	0.17	2.8	0.5	7.0	132	68	27.2	15.6	12.0	1.5	13	14.3	2.4	129.5	0.4	0.23	0.05	1600	1600	132	0.0	0.4
Dec-10	Clear	odour free	9.4	25.5	8.4	516	337	0.18	1.9	1.0	11.7	264	96	38.4	40.8	23.0	2.4	30	18.2	5.0	228.8	0.5	0.24	0.03	1600	1600	234	0.0	0.6
Jan-11	Clear	odour free	7.6	26.1	8.4	287	160	0.11	1.3	1.1	7.2	192	104	41.6	21.4	9.0	1.4	13	13.7	3.5	162.4	0.4	0.26	0.05	1600	1600	166	0.0	0.3
Feb-11	Clear	odour free	5.8	28.6	8.1	306	182	0.06	1.3	1.9	20.4	130	66	26.4	15.6	11.0	1.1	17	25.1	1.5	126.4	0.4	0.17	0.07	500	100	128	0.0	0.4
Mar-11	Clear	odour free	6.4	28.0	8.4	294	216	0.13	2.5	1.4	10.9	152	70	28.0	19.9	26.0	3.4	19	23.0	4.0	155.8	0.4	0.22	0.04	220	110	160	0.0	0.9
Apr-11	Clear	odour free	7.4	30.0	8.3	288	202	0.05	0.8	2.1	14.4	140	76	30.4	15.6	28.0	2.7	23	30.3	3.0	144.9	0.5	0.24	0.06	1600	900	148	0.0	1.0
May-11	Clear	odour free	7.2	29.0	8.9	365	213	0.08	1.9	3.1	32.5	156	82	32.8	18.0	33.0	2.3	24	18.0	10.7	146.9	0.6	0.20	0.07	240	80	158	0.0	1.2
Jun-11	Clear	odour free	6.2	25.0	7.9	204	137	0.06	0.8	1.1	16.0	80	48	19.2	7.8	13.0	2.7	18	10.0	0.7	91.2	0.3	0.19	0.04	900	170	92	0.0	0.6
Jul-11	L.Brown	odour free	6.0	24.0	7.7	149	98	0.07	2.6	2.7	38.4	70	40	16.0	7.3	10.0	1.2	9	15.0	0.3	64.7	0.4	0.22	0.07	900	170	65	0.0	0.5
Aug-11	L.Brown	odour free	6.6	26.0	7.8	174	108	0.06	1.4	1.9	20.8	68	40	16.0	6.8	10.0	2.6	10	13.0	0.4	75.6	0.4	0.17	0.17	500	130	76	0.0	0.5
Sep-11	Clear	odour free	6.0	25.0	7.5	178	117	0.49	2.1	1.0	12.8	80	56	22.4	5.8	10.0	1.6	8	10.1	0.3	87.7	0.3	0.20	0.13	300	130	88	0.0	0.5
Oct-11	L.Brown	odour free	7.6	25.0	7.5	238	170	0.12	2.1	1.2	10.3	86	44	17.6	10.2	12.0	1.9	11	16.0	0.3	111.7	0.3	0.20	0.08	5000	900	112	0.1	0.6
Nov-11	Clear	odour free	7.8	25.0	7.3	249	159	0.19	2.1	0.8	6.7	146	82	32.8	15.6	13.0	1.8	14	14.8	0.3	126.7	0.3	0.22	0.04	3000	280	127	0.0	0.5
Dec-11	Clear	odour free	5.4	22.0	8.9	475	324	0.09	3.8	1.0	10.6	220	96	38.4	30.1	28.3	2.0	26	18.8	14.3	205.0	0.3	0.22	0.03	1600	170	220	0.0	0.3

Suvarnavathy river near Kollegala.

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCoL-MPN	FCoL-MPN	Alk-TOT	RSC	SAR				
Dec-09	Clear	odour free	4.4	25.0	8.4	596	385	0.15	3.7	1.5	22.3	191	100	40.0	22.1	44.0	4.9	50	35.0	1.9	258.0	0.3		0.03			260	0.5	1.3				
Jan-10	Clear	odour free	7.4	24.0	8.4	950	609	0.06	0.4	4.6	39.3	230	71	28.4	38.6	61.0	5.7	71	21.0	28.8	161.0	0.3		0.03			312	0.0	1.7				
Feb-10	Clear	odour free	3.0	25.0	8.5	997	590	0.18	1.4	2.5	24.7	269	129	51.6	34.0	45.0	4.7	82	42.0	25.2	213.5	0.3		0.07	1600	1600	392	0.0	1.2				
Mar-10																																	
Apr-10																																	
May-10									SAMPLE COULDN'T BE COLLECTED BECAUSE OF NO FLOW IN THE RIVER																								
Jun-10																																	
Jul-10																																	
Aug-10	L.Brown	odour free	4.0	25.8	7.9	357	303	0.17	7.7	2.5	26.5	100	54	21.6	11.2	39.0	2.8	20	11.0	1.0	131.0	0.4	0.17	0.03	1600	170	132	0.2	1.7				
Sep-10	L.Brown	odour free	4.4	27.5	8.4	477	321	0.17	5.9	3.6	32.0	147	77	30.8	17.0	30.0	2.5	28	30.0	4.1	191.8	0.3	0.20	0.03	1600	1600	196	0.3	1.1				
Oct-10	Clear	odour free	5.6	28.2	8.4	644	375	0.11	3.8	2.6	16.4	190	103	41.2	21.1	31.0	2.8	35	24.3	5.9	251.0	0.3	0.24	0.08	1600	1600	257	0.5	0.9				
Nov-10	L.Brown	odour free	6.6	24.9	8.1	393	252	0.18	4.6	1.2	16.3	154	76	30.4	19.0	24.0	3.8	20	26.6	2.0	160.0	0.3	0.20	0.05	1600	1600	162	0.0	0.8				
Dec-10	Clear	odour free	6.2	25.3	8.4	819	543	0.18	3.5	0.7	7.0	256	130	52.0	30.6	35.0	2.9	56	51.8	24.0	180.6	0.5	0.19	0.04	1600	1600	336	0.0	0.9				
Jan-11	Clear	odour free	4.8	26.3	8.5	756	467	0.10	3.1	1.7	8.4	250	176	70.4	18.0	32.0	2.4	42	36.3	9.2	322.7	0.4	0.19	0.04	1600	1600	332	0.6	0.8				
Feb-11	Clear	odour free	4.6	28.4	8.4	805	503	0.06	2.6	2.5	14.4	256	128	51.2	31.1	39.0	3.1	50	52.6	31.2	181.8	0.4	0.21	0.09	1600	1600	350	0.0	1.1				
Mar-11	Clear	odour free	5.0	30.0	8.4	608	479	0.11	3.9	4.0	24.0	230	110	44.0	29.2	90.0	5.9	51	43.0	7.0	288.9	0.4	0.23	0.13	1600	280	296	0.4	2.6				
Apr-11	Clear	odour free	5.2	28.0	8.5	465	391	0.07	1.9	1.7	9.9	218	112	44.8	25.8	41.0	4.9	30	26.1	5.8	209.1	0.4	0.24	0.12	1600	1600	215	0.0	1.2				
May-11	L.Brown	odour free	4.4	28.0	8.5	606	437	0.09	3.6	3.4	29.8	190	108	43.2	19.9	55.0	5.3	48	60.0	6.1	229.8	0.4	0.20	0.05	1600	280	236	0.2	1.7				
Jun-11	Clear	odour free	5.0	25.0	8.4	813	587	0.10	2.5	3.4	9.0	272	132	52.8	34.0	51.0	6.0	56	45.0	19.2	200.1	0.3	0.17	0.07	1700	500	360	0.0	1.3				
Jul-11	L.Brown	odour free	4.4	24.0	7.8	254	168	0.08	3.1	1.9	4.8	88	56	22.4	7.8	21.0	2.0	15	28.0	0.7	112.3	0.4	0.22	0.01	2200	500	113	0.1	1.0				
Aug-11	L.Brown	odour free	5.6	25.0	7.9	275	201	0.08	3.1	2.6	6.4	90	58	23.2	7.8	37.0	3.2	19	21.0	1.0	141.0	0.4	0.17	0.01	220	130	142	0.6	1.7				
Sep-11	L.Brown	odour free	5.0	25.0	7.4	298	203	0.09	3.6	2.5	29.6	110	64	25.6	11.2	38.0	2.7	19	24.0	0.3	145.7	0.3	0.20	0.03	11000	2200	146	0.2	1.6				
Oct-11	Brown	odour free	6.2	24.0	7.7	210	150	0.15	5.5	2.2	10.3	80	46	18.4	8.3	17.0	2.7	13	18.3	0.5	107.5	0.3	0.18	0.05	9000	1700	108	0.1	0.8				
Nov-11	Clear	odour free	6.2	22.0	7.7	394	270	0.15	2.6	1.2	8.7	166	88	35.2	19.0	43.0	3.5	26	28.3	0.9	187.0	0.3	0.22	0.06	3000	900	188	0.0	1.5				
Dec-11	Clear	odour free	4.6	21.0	8.4	788	548	0.06	3.0	2.2	17.4	260	140	56.0	29.2	69.6	3.5	68	57.9	7.0	253.0	0.3	0.31	0.03	11000	1400	260	0.0	1.9				

Shimsha near Halagur

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	10.0	26.0	8.4	376	253	0.10	2.2	1.0	34.9	162	88	35.2	18.0	33.0	2.5	23	11.0	4.3	181.6	0.3		0.03			186	0.0	1.1
Jan-10	Clear	odour free	9.9	26.0	8.6	442	249	0.11	1.5	1.8	12.0	167	88	35.2	19.2	43.0	2.3	30	16.0	7.1	190.7	0.5		0.02			198	2.7	1.4
Feb-10	Clear	odour free	7.4	30.0	8.7	530	297	0.18	2.1	2.2	22.3	170	82	32.8	21.4	48.0	2.6	36	26.0	9.8	208.0	0.5		0.06	110	80	218	0.3	1.6
Mar-10	Clear	odour free	10.6	30.0	8.9	599	358	0.09	2.6	1.7	12.1	184	80	32.0	25.3	60.0	3.6	38	25.9	14.3	191.3	0.7	0.18	0.08	1600	170	206	0.0	1.9
Apr-10	Clear	odour free	9.8	30.2	8.5	612	348	0.18	2.1	7.1	30.2	181	74	29.6	26.0	58.0	0.5	35	16.0	5.7	192.1	0.4	0.19	0.08	500	220	198	0.0	1.9
May-10	Clear	odour free	11.0	29.5	8.7	500	330	0.16	2.3	3.1	27.9	182	88	35.2	22.8	23.0	1.2	32	15.3	8.1	171.7	0.4	0.28	0.06	900	13	180	0.0	0.7
Jun-10	Clear	odour free	10.4	29.8	8.9	495	273	0.18	1.7	1.3	18.1	204	120	48.0	20.4	39.0	3.9	33	73.9	12.5	167.1	0.4	0.19	0.06	900	170	180	0.0	1.2
Jul-10	Clear	odour free	12.4	28.0	8.8	543	371	0.18	2.3	2.4	19.9	236	130	52.0	25.8	32.0	0.9	36	30.0	12.4	209.3	0.7	0.20	0.09	130	11	222	0.0	0.9
Aug-10	Clear	odour free	7.0	25.6	8.2	499	311	0.14	3.9	1.7	19.3	166	90	36.0	18.5	43.0	2.2	30	25.0	2.9	197.0	0.5	0.20	0.09	300	170	200	1.0	1.4
Sep-10	Clear	odour free	9.0	27.5	8.4	383	222	0.05	3.8	2.3	30.2	138	78	31.2	14.6	20.0	1.8	21	21.0	3.3	158.6	0.3	0.20	0.09	900	500	162	0.0	0.7
Oct-10	Clear	odour free	11.6	28.2	8.8	544	313	0.15	1.8	3.3	15.2	180	94	37.6	20.9	29.0	2.6	32	15.6	11.6	220.1	0.5	0.25	0.08	1600	33	232	0.4	0.9
Nov-10	Clear	odour free	8.6	25.0	8.5	435	293	0.11	2.2	0.8	10.5	166	104	41.6	15.1	38.0	4.1	29	18.6	5.5	176.4	0.5	0.23	0.07	1600	1600	182	0.0	1.3
Dec-10	Clear	odour free	8.6	25.4	8.4	459	267	0.18	1.6	0.6	7.0	180	110	44.0	17.0	18.0	1.4	24	18.3	4.8	209.1	0.5	0.17	0.05	140	140	214	0.0	0.6
Jan-11	Clear	odour free	10.0	26.3	8.6	523	314	0.10	1.9	1.1	7.2	252	136	54.4	28.2	23.0	1.7	30	30.7	8.2	225.6	0.5	0.17	0.03	50	30	234	0.0	0.6
Feb-11	L.Brown	odour free	5.4	28.8	8.3	490	288	0.08	1.0	3.8	22.8	156	84	33.6	17.5	23.0	1.8	30	57.8	3.4	172.5	0.5	0.18	0.08	1600	280	176	0.0	0.8
Mar-11	L.Brown	odour free	9.2	31.0	8.6	482	386	0.13	2.4	4.2	19.2	204	100	40.0	25.3	65.0	5.5	42	58.1	8.4	225.4	0.6	0.24	0.10	900	140	234	0.0	0.2
Apr-11	Clear	odour free	6.8	29.0	8.4	383	280	0.05	0.8	2.3	9.9	178	96	38.4	19.9	43.0	5.0	32	30.5	4.5	185.4	0.4	0.19	0.08	300	300	190	0.0	1.4
May-11	Clear	odour free	6.0	27.0	8.4	432	285	0.06	4.1	2.8	28.0	190	100	40.0	21.9	41.0	3.0	25	23.0	4.1	183.7	0.5	0.17	0.06	900	110	188	0.0	1.3
Jun-11	Clear	odour free	10.6	27.0	8.6	513	349	0.09	2.5	1.3	12.6	240	124	49.6	28.2	33.0	5.2	39	22.0	7.9	226.9	0.5	0.17	0.07	300	80	235	0.0	0.9
Jul-11	Clear	odour free	8.6	25.0	8.4	498	347	0.07	2.8	2.1	32.0	196	80	32.0	28.2	41.0	4.2	36	48.0	5.2	236.7	0.5	0.23	0.14	300	27	242	0.1	1.3
Aug-11	Clear	odour free	8.2	26.0	8.3	419	276	0.07	2.5	2.2	28.8	168	96	38.4	17.5	34.0	3.3	32	34.0	2.6	137.3	0.5	0.25	0.09	500	30	140	0.0	1.1
Sep-11	Clear	odour free	9.4	27.0	8.6	430	298	0.06	1.7	2.4	32.2	178	100	40.0	19.0	41.0	1.5	30	14.0	7.1	212.7	0.5	0.20	0.16	500	80	220	0.2	1.4
Oct-11	L.Brown	odour free	6.4	25.0	7.7	341	269	0.09	2.2	2.1	22.0	116	72	28.8	10.7	33.0	2.4	24	25.0	0.8	159.2	0.4	0.24	0.15	3000	500	160	0.3	1.3
Nov-11	Clear	odour free	8.8	24.0	8.4	433	263	0.14	2.2	1.6	17.4	218	116	46.4	24.8	31.0	3.0	27	22.6	4.9	207.0	0.4	0.23	0.13	240	50	212	0.0	0.9
Dec-11	Clear	odour free	8.0	22.0	8.5	415	273	0.08	2.3	1.0	11.6	184	106	42.4	18.9	35.1	1.4	23	22.6	5.2	191.0	0.4	0.18	0.05	3000	500	196	0.0	1.1

Lokapavani near Srinivasa agrahara

Month	Colour	odour	DO	Temp	pH_GEN	EC_GEN	TDS	NH3-N	NO2+NO3	BOD3-27	COD	Har_Total	Har_Ca	Ca	Mg	Na	K	Cl	SO4	CO3	HCO3	F	B	Fe	TCol-MPN	FCol-MPN	Alk-TOT	RSC	SAR
Dec-09	Clear	odour free	7.6	25.0	8.5	349	223	0.10	2.5	1.5	8.0	153	89	35.6	15.6	21.0	1.8	14	9.0	4.5	150.4	0.3		0.04			155	0.0	0.7
Jan-10	Clear	odour free	8.7	23.0	8.3	333	185	0.13	2.3	2.5	4.0	146	85	34.0	14.8	14.0	2.0	14	8.4	2.7	142.2	0.3		0.05			145	0.0	0.5
Feb-10	Clear	odour free	6.8	25.0	8.3	365	209	0.10	2.7	1.5	18.1	167	103	41.2	15.6	16.0	2.0	18	7.0	2.9	155.0	0.4		0.03	900	900	158	0.0	0.5
Mar-10	Clear	odour free	7.2	29.0	8.5	409	230	0.18	2.4	1.6	15.1	159	112	44.8	11.4	11.0	2.1	14	2.8	4.1	138.7	0.5	0.18	0.10	1600	1600	143	0.0	0.4
Apr-10	Clear	odour free	7.0	27.8	8.3	348	221	0.17	2.1	2.4	12.1	165	95	38.0	17.0	18.0	1.3	16	2.0	2.6	141.3	0.2	0.18	0.12	1600	1600	144	0.0	0.6
May-10	Clear	odour free	5.6	28.5	8.3	398	250	0.18	2.2	0.5	6.0	167	100	40.0	16.3	11.0	1.6	19	10.1	2.5	134.4	0.3	0.18	0.09	1600	17	137	0.0	0.4
Jun-10	Clear	odour free	10	28.4	8.4	519	288	0.17	3.0	1.7	25.9	268	165	66.0	25.0	13.0	1.5	22	14.6	5.1	216.8	0.4	0.18	0.09	1600	1600	222	0.0	0.3
Jul-10	Clear	odour free	9.0	28.0	8.4	493	325	0.10	3.0	1.5	15.4	264	148	59.2	28.2	11.0	0.1	22	15.8	4.9	208.9	0.4	0.18	0.08	1600	170	214	0.0	0.3
Aug-10	L.Brown	odour free	7.0	25.0	8.2	351	215	0.07	3.6	2.3	26.1	150	84	33.6	16.0	18.0	1.3	13	12.0	2.2	145.8	0.3	0.19	0.06	1600	350	148	0.0	0.6
Sep-10	Clear	odour free	8.4	27.6	8.3	336	200	0.18	2.1	1.9	21.5	152	84	33.6	16.5	13.0	1.1	14	47.0	2.9	157.0	0.3	0.20	0.06	1600	900	160	0.0	0.5
Oct-10	Clear	odour free	8.0	27.4	8.5	428	245	0.15	1.9	3.3	18.7	142	85	34.0	13.9	7.0	0.5	14	11.8	4.6	155.2	0.4	0.22	0.06	1600	280	160	0.0	1.0
Nov-10	L.Brown	odour free	8.2	24.9	8.5	360	231	0.12	2.3	1.9	18.6	160	90	36.0	17.0	20.0	1.9	15	16.0	4.2	156.6	0.6	0.26	0.05	1600	1600	161	0.0	0.7
Dec-10	Clear	odour free	7.0	25.5	8.4	435	256	0.18	2.7	0.8	7.0	190	120	48.0	17.0	14.0	1.3	20	20.2	4.2	201.7	0.4	0.20	0.05	1600	1600	206	0.0	0.5
Jan-11	Clear	odour free	8.4	26.0	8.4	362	224	0.11	3.3	2.4	7.2	234	104	41.6	31.6	9.0	1.5	14	15.3	4.3	197.6	0.4	0.25	0.04	1600	1600	202	0.0	0.2
Feb-11	L.Brown	odour free	7.4	27.4	8.3	363	230	0.08	1.2	2.5	14.4	172	98	39.2	18.0	9.0	1.5	14	26.6	3.2	165.7	0.5	0.23	0.05	1600	350	169	0.0	0.3
Mar-11	Clear	odour free	6.4	28.0	8.5	291	227	0.13	2.1	1.2	12.0	164	86	34.4	19.0	19.0	2.4	21	18.8	4.7	165.2	0.5	0.19	0.13	1600	350	170	0.0	0.6
Apr-11	Clear	odour free	7.4	26.0	8.4	343	274	0.06	1.4	2.6	6.3	196	114	45.6	19.9	30.0	3.1	22	21.4	4.7	185.2	0.5	0.17	0.12	1600	1600	190	0.0	1.0
May-11	Clear	odour free	7.4	26.0	8.4	337	235	0.06	1.5	2.6	22.6	160	110	44.0	12.2	22.0	2.1	19	16.0	3.7	156.2	0.4	0.17	0.07	1600	240	160	0.0	0.8
Jun-11	Clear	odour free	7.6	25.0	8.3	338	242	0.08	1.7	2.1	4.5	170	104	41.6	16.0	20.0	2.1	21	14.0	3.2	164.7	0.5	0.17	0.14	11000	5000	168	0.0	0.7
Jul-11	Clear	odour free	7.4	24.0	8.3	280	205	0.07	2.6	1.7	24.0	134	70	28.0	15.6	16.0	1.5	14	19.0	2.6	127.3	0.4	0.19	0.14	11000	1400	130	0.0	0.6
Aug-11	Clear	odour free	7.0	24.0	8.4	253	152	0.06	1.9	1.9	19.2	126	66	26.4	14.6	14.0	1.9	14	19.0	3.5	164.4	0.4	0.18	0.08	5000	500	168	0.3	0.5
Sep-11	Clear	odour free	7.2	26.0	7.5	248	137	0.07	2.3	1.7	24.0	126	66	26.4	14.6	11.0	1.6	10	12.0	0.3	127.6	0.4	0.21	0.08	11000	1700	128	0.0	0.4
Oct-11	Clear	odour free	7.0	25.0	8.3	304	170	0.11	2.0	1.5	7.7	80	32	12.8	11.7	15.0	1.9	14	17.0	13.2	90.3	0.3	0.24	0.08	9000	7000	170	0.3	0.7
Nov-11	Clear	odour free	7.6	22.0	8.2	279	195	0.20	2.2	1.2	13.5	164	90	36.0	18.0	11.0	2.2	14	16.5	2.1	133.8	0.2	0.22	0.06	5000	1100	136	0.0	0.4
Dec-11	Clear	odour free	7.4	22.0	8.3	328	201	0.07	3.2	1.4	11.6	194	104	41.6	21.9	12.9	1.0	16	20.4	2.4	152.0	0.3	0.18	0.05	9000	700	154	0.0	0.4

ANNEXURE –X

EXPENDITURE STATEMENT

Sl. No.	Component	Expenditure in Rs.
1	Procurement of Equipments	31,065.00
2	Procurement of Glassware	72,985.00
3	Procurement of Chemicals	99,909.00
4	Maintenance of Equipments	36,290.00
5	Electricity charges	29,735.00
6	Transportation Charges (Fuel etc.)	3,24,030.00
7	Other Consumables	13,784.00
TOTAL EXPENDITURE		6,07,798.00