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जल गुणवत्ता वर्ष पुस्तिका

WATER QUALITY YEAR BOOK

जून 2016 – मई 2017 June 2016 - May 2017

घाघरा बेसिन

GHAGHRA BASIN

जल विज्ञानीय प्रेक्षण परिमण्डल
HYDROLOGICAL OBSERVATION CIRCLE

केन्द्रीय जल आयोग
CENTRAL WATER COMMISSION

वाराणसी
VARANASI

PREFACE

Water is a prime natural resource and basic human need. The National Water Policy lays stress on planning and development of water resources on a national perspective. The prime requisite of water resources planning is indeed an efficient information system on the quantity and quality of this time and space variable precious natural asset.

The Central Water Commission in its capacity as an apex technical organisation in the field of water resources development endeavours the gigantic task of collection and compilation of Water Quality data incorporating the quality and quantity of available waters in various basins of the country. The Water Quality Books of various river basins of the country are being published by Central Water Commission in order to make its effective and efficient use.

The present volume contains information and trend on various water quality parameters measured at **10 water quality stations on river Ghaghra** and its tributaries for the year 2016-2017.

The valuable guidance and inspiration of **Shri Pradeep Kumar, Member**, **RM**, CWC, New Delhi and **Shri S.K.Sibal, Chief Engineer**, Upper Ganga Basin Organisation, CWC, Lucknow is gratefully acknowledged.

I would like to place on record the special contribution made by **officers and staff** of **Hydrological Observation Circle, Varanasi and Middle Ganga Division-I, Lucknow** in compilation of information and publication of the report in present form.

It is hoped that this publication will be found useful for the planners, managers and users in the field of water resources.

(Anupam Prasad)
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September, 2017

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1. INTRODUCTION

1.1. Scope

1.1.1. Rapidly increasing population, rising standard of living ,exponential growth of industrialized and urbanization have exposed the Water Resources in general and rivers in particular to various form of degradation. It is therefore necessary to keep vigilant watch of quality of available fresh waters whose major sources in our country are rivers.

1.2. Source of Information

Middle Ganga Division No. I, Lucknow under the Hydrological Observation Circle, Central Water Commission, Varanasi is conducting Water Quality observations at nine sites in Ghaghra sub-basin. The finalised data for the year 2016-2017 is presented in the book. The details of the site is given in Table 1 and same has been located in index map .

T A B L E 1

Sl.No	Name of site	Station Code
1.	Ghat at Saryu	GGU63E9
2.	Paliakalan at Sarda	GGU6OI6
3.	Elgin Bridge at Ghaghra	GGUOOS2
4.	Ayodhya at Ghaghra	GGUOOM9
5.	Basti at Kwano	GGU4OJ3
6.	Balrampur at Rapti	GGU3OU4
7.	Regauli at Rapti	GGU3OH1
8.	Birdghat at Rapti	GGU3OF5
9.	Turtipar at Ghaghra	GGUOOF1
10.	Bansi at Rapti	GGU30N9

1.3. Observation Technique

Water samples from all the Water Quality stations are collected on 1st working day of the month and transported to divisional laboratory where systematic analysis is conducted for the determination of constituents like pH, Specific Conductance, Potassium (as K^{+}), Sodium (as Na^{+}), Calcium (as Ca^{++}), Magnesium (as Mg^{++}), Iron (as Fe^{++}), Nitrogen Ammoniacal (as NH_4-N), Carbonate (as CO_3^{--}), Bicarbonate (as HCO_3^{-}), Chloride (as Cl^{-}), Fluoride (as F^{-}), Sulphate (as SO_4^{--}), Nitrate (as NO_3^{-}), Nitrite (as NO_2^{-}), Phosphate (as PO_4^{---}), Silica (as SiO_2) and Boron (as B).

pH and Specific Conductance are determined by digital pH meter and conductivity meter. Cl^{-}, CO_3^{--}, HCO_3^{-} , Ca^{++} and Mg^{++} are estimated by titration method. SO_4^{--} is estimated by turbidimetric method with the help of Nephelometer. Na^{+} and K^{+} estimation is done by the method of flame emission with the help of Flame photometer and rest by the method of colorimetric estimation with the help of U-V Spectrophotometer.

In addition to the above, Dissolved Oxygen is also estimated. Biochemical Oxygen Demand, Chemical Oxygen Demand and Microbiological Parameters such as Total Coliform & Fecal Coliform are determined at selected sites.

2. WATER QUALITY DATA

2.1 Explanatory Notes

The explanatory notes, described hereunder, are designed to assist in the interpretation of various parameters contained in the data presented subsequently.

i) The water samples are collected at a regular frequency of once in a month usually on the 1st working day from the main flowing portion of the stream.

ii) Dissolved Oxygen is measured at the site laboratory/ Divisional Laboratory.

iii) The other water quality parameters are analysed at the divisional laboratory.

iv) Chemical Indices, namely, Hardness Number, Sodium Percentage, Sodium Adsorption Ratio and Residual Sodium Carbonate are calculated as follows :

a. Hardness Number (HAR) is calculated by adding the total Ca^{++} and Mg^{++} in the sample expressed as equivalent parts of $CaCO_3$.

b. Sodium Percentage (S.P.) is given by

$$S.P.= (Na^{+} x100) / (Ca^{++} + Mg^{++} + Na^{+} + K^{+})$$

Ionic concentrations being in meq/litre.

c. Sodium Adsorption Ratio (S.A.R.) is given by

$$S.A.R. = Na^{+} / \{(Ca^{++} + Mg^{++})/2\}^{½}$$

Where the ionic concentration being in meq/litre.

d. Residual Sodium Carbonate (R.S.C.) is given by

$$R.S.C. = (CO_3^{--} + HCO_3^{-}) - (Ca^{++} + Mg^{++})$$

Where concentration of all the ions being in meq/litre.

v) Water year ranges from June 1st of one calendar year to May 31st of the next calendar year and covers one complete hydrological cycle.

vi) The gauging station code number is a unique seven column alpha-numeric reference number which facilitates storage and retrieval of water quality data in data banks. The first column is identifier of either an integral river basin or for convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either have one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries respectively from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

2.2 Method of Presentation

In the succeeding pages, station-wise water quality data and its trend is presented, comprising history sheet and water quality analysis tables.

History sheet gives concise description of the water quality observation station. The water quality analysis tables are given season-wise (flood, winter, summer) for the river water. The samples of water quality analysis are collected once a month as already mentioned in para 2.1 above.

3. WATER QUALITY TOLERANCE AND CLASSIFICATION

As per ISI-IS: 2296-1982, the tolerance limits of parameters are specified as per classified use of water (Table 1,2,3,4,5 Annexed) depending on various uses of water. The following classifications have been adopted in India.

Classification	Type of use
Class A	Drinking water source without conventional treatment but After disinfection.
Class B	Outdoor bathing.
Class C	Drinking water source with conventional treatment followed by disinfection.
Class D	Fish culture and wild life propagation .
Class E	Irrigation , Industrial cooling or controlled waste disposal.

TABLE-1

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – A

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S. No.	Characteristic	Tolerance
(i)	pH value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l, ((Min))	6.0
(iii)	Bio-chemical Oxygen Demand ((Max))	2.0
(iv)	Total Coliform Organisms, MPN/100 ml,((Max))	50
(v)	Colour, Hazen units, ((Max))	10
(vi)	Odour	unobjectionable
(Vii)	Taste	Agreeable taste
(viii)	Total Dissolved Solids, mg/l, (Max)	500
(ix)	Total Hardness (as CaCO3), mg/l ,(Max)	300
(x)	Calcium Hardness (as CaCO3), mg/l, (Max)	200
(xi)	Magnesium (as CaCO3), mg/l,(Max)	100
(xii)	Copper (as Cu), mg/l, (Max)	1.5
(xiii)	Iron (as Fe), mg/l,(Max)	0.3
(xiv)	Manganese (as Mn), mg/l,(Max)	0.5
(xv)	Chlorides (as Cl), mg/l,(Max)	250
(xvi)	Sulphate (as SO4), mg/l ,(Max)	400
(xvii)	Nitrates (as NO2), mg/l,(Max)	20
(xviii)	Fluorides (as F,) mg/l,(Max)	1.5
(xix)	Phenolic compounds(as C6H5OH), mg/l,(Max)	0.002
(xx)	Mercury (as Hg), mg/l ,(Max)	0.001
(xxi)	Cadmium (as Cd), mg/l,(Max)	0.01
(xxii)	Selenium (as Se), mg/l ,(Max)	0.01
(xxiii)	Arsenic (as As), mg/l,(Max)	0.05
(xxiv)	Cyanides (as CN), mg/l, (Max)	0.05
(xxv)	Lead (as Pb), mg/l, (Max)	0.1
(xxvi)	Zinc (as Zn), mg/l, (Max)	15
(xxvii)	Chromium (asCr6+), mg/l,(Max)	0.05
(xxviii)	Anionic detergents, (as MBAS), mg/l ,(Max) .	0.2
(xxix)	Poly-nuclear aromatic hydrocarbons (PAH),	0.2
(xxx)	Barium (as Ba), mg/l ,(Max)	1.0
(xxxi)	Silver (as Ag), mg/l (Max)	0.05
(xxxii)	Pesticides	Absent
(xxxiii)	Alpha emitters, µc/ml, (Max)	10^{-9}
(xxxiv)	Beta emitters, µc/ml, (Max)	10^{-8}

TABLE- 2

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – B

S. No.	Characteristic	Tolerance
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l,(Min)	5.0
(iii)	Biochemical Oxygen Demand (5 days at 20 °C), (Max)	3.0
(iv)	Total Coliform Organisms, MPN/100 ml, (Max)	500
(v)	Fluorides (as F)<mg/l, (Max)	1.5
(vi)	Colour, Hazen units, (Max)	300
(vii)	Cyanides (as CN), mg/l, (Max)	0.05
(viii)	Arsenic (as As), mg/l, (Max)	0.2
(ix)	Phenolic Compounds (as C_6H_5OH) mg/l, (Max)	0.005
(x)	Chromium (as Cr6+), mg/l, (Max)	1.0
(xi)	Anionic detergents (as MBAS), mg/l, (Max)	1.0
(xii)	Alpha emitters, µc/ml, (Max)	10^{-8}

TABLE- 3

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – C

S. No.	Characteristic	Tolerance
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l (Min)imum	4.0
(iii)	Biochemical Oxygen Demand	3.0
(iv)	Total coliform organisms, MPN/100 ml, (Max)	5000
(v)	Colour, Hazen units, (Max)	300
(vi)	Fluorides (as F), mg/l ,(Max)	1.5
(vii)	Cadmium (as Cd), mg/l, (Max)	0.01
(viii)	Chlorides (as Cl), mg/l, (Max)	600
(ix)	Chromium (as Cr6+), mg/l, (Max)	0.05
(x)	Cyanides (as CN), mg/l, (Max)	0.05
(xi)	Total Dissolved Solids, mg/l, (Max)	1500
(xii)	Selenium (as Se), mg/l, (Max)	0.05
(xiii)	Sulphates (as SO4), mg/l, (Max)	400
(xiv)	Lead (as Pb), mg/l, (Max)	0.1
(xv)	Copper (as Cu),mg/l,(Max)	1.5
(xvi)	Arsenic (as As), mg/l, (Max)	0.2
(xvii)	Iron (as Fe), mg/l, (Max)	50
(xviii)	Phenolic compounds (as C6H5OH), mg/l, (Max)	0.005
(xix)	Zinc (as Zn), mg/l, (Max)	15
(xx)	Insecticides, mg/l, (Max)	Absent
(xxi)	Anionic detergents (as MBAS), mg/l, (Max)	1.0
(xxii)	Oils and grease, mg/l, (Max)	0.1
(xxiii)	Nitrates (as NO3), mg/l,(Max)	50
(xxiv)	Alpha emititers, µc/mg, (Max)	10-9
(xxv)	Beta emitters, µc/ml, (Max)	10-8

TABLE-4

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS -D

S. No.	Characteristic	Tolerance
(i)	pH value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l, (Min).	4.0
(iii)	Free Ammonia (as N), mg/l, (Max).	1.2
(iv)	Electrical Conductance at 25 °C, µ S, (Max)	1000
(v)	Free Carbon Dioxide (as C02),mg/l, (Max)	6.0
(vi)	Oils and Grease, mg/l, (Max)	0.1
(vii)	Alpha emitters, µ c/ml, (Max)	10^{-9}
(viii)	Beta emitters, µ c/ml, (Max)	10^{-8}

TABLE- 5

TOLERANCE LIMITS FOR INLAND SURFACE WATERS,CLASS -E

S. No.	Characteristic	Tolerance
(i)	pH value	6.0 to 8.5
(ii)	Electrical Conductance at 25°C, μ S, (Max)	2250
(iii)	Sodium Adsorption Ratio, (Max)	26
(iv)	Boron (as B), mg/l, (Max)	2.0
(v)	Total Dissolved Solids, (inorganic), mg/l, (Max)	2100
(vi)	Sulphates (as SO4), mg/l, (Max)	1000
(vii)	Chlorides (as Cl), Mg/l, (Max)	600
(viii)	Sodium Percentage, (Max)	60
(ix)	Alpha emitters, μ c/ml, (Max)	10^{-9}
(x)	Beta emitters, μ c/ml, (Max)	10^{-8}

4.0 TREND ANAYSIS / SCENARIO IN GHAGHRA BASIN

The river Ghaghra rises in the southern slopes of the Himalayas in Tibet, in the glaciers of Mapchachungo. The river flows south through Nepal as the Karnali River and flows through one of the most deserted and least explored area of Nepal. Seti River is a 202 km long stream feeding this river and drains the western part of the catchment, and joins the Karnali River in Doti north of Dundras Hill. Another feeder stream is the Bheri river that is 264 km long and drains in the eastern part of the catchment and converges with the Karnali River near Kuineghat in Surkhet. Moving southwards across the Siwalik Hills, it splits into two branches, first Geruva on the left bank and Kauraliaon the right bank near downstream Chisapani to rejoin south of the Indian border and form the Ghaghra proper.

Middle Ganga Division-1, Lucknow, Central Water Commission, under Hydrological Observation Circle, Varanasi has established a network of three monitoring stations on river Ghaghra. Starting from up-stream, there are three Water Quality monitoring stations at the Ghaghra river named Elginbridge, Ayodhya and Turtipar. Ghaghra basin map showing various sites on Ghaghra and Rapti, other tributaries like Sharda, Kwano and Sarju is given below.

Major Rivers : River Ghaghra is the major river in Middle Ganga Division –I, Lucknow. Middle Ganga Division -I, Lucknow has established a network of 10 Water quality monitoring stations in Ghaghra Basin & Rapti Basin under it's jurisdiction. This division is monitoring the water quality of Ghaghra at 3 site namely Elginbridge,Ayodhya and Turtipar and sites Balrampur, Bansi, Regauli and Birdghat at Rapti, Paliakalan at Sharda, Basti at Kwano and Ghat at Sarju The monitoring of surface waters is done on monthly basis. Water samples are analysed for physico-chemical and bacteriological parameters apart from the field observations.

W.Q. Network : Details of water quality station under jurisdiction of Middle Ganga Division – I , Lucknow are tabulated below.

S.No.	Name of Site	River	Classification
1	Elginbridge	Ghaghra	Trend
2	Ayodhya	Ghaghra	Flux
3	Turtipar	Ghaghra	Flux
4	Balrampur	Rapti	Trend
5	Bansi *	Rapti	Trend
6	Regauli	Rapti	Trend
7	Birdghat	Rapti	Flux
8	Paliakalan	Sharda	Trend
9	Basti	Kwano	Flux
10	Ghat	Sarju	Trend

* Bansi Site opened on 01/07/2014.

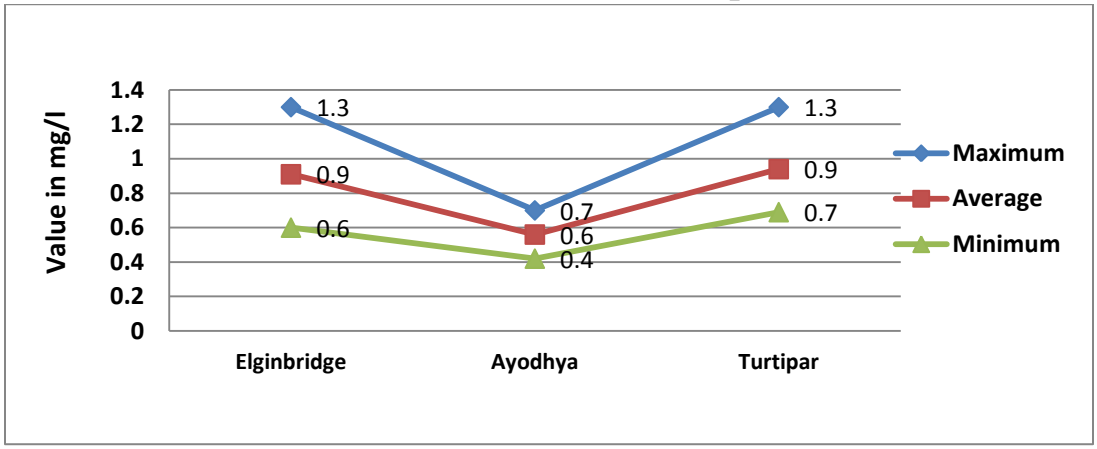
Analysis : To study the water quality / scenario in river Ghaghra, BOD, DO, fluoride and TDS parameters have been considered. Average value of these parameter for the period since inception(Inception to May 2016), last 10 years (Jun 2006 to May 2016) and last one year (Jun 2015 to May 2016) has been depicted in tables and figures below.

4.1 River : GHAGHRA (River 1) :

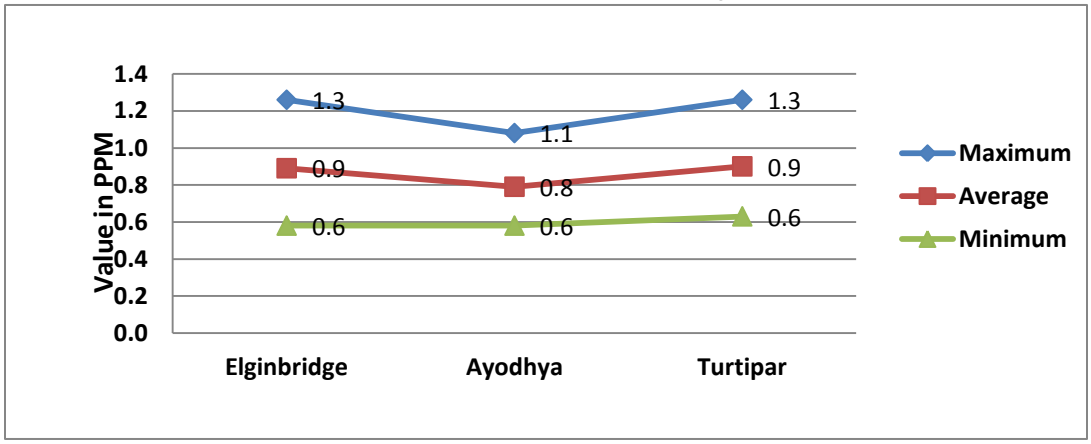
4.1.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	Past 10 year	Current year	Since inception	Past 10 year	Current year	Since inception	Past 10 year	Current year
Site 1 Elginbridge	15.03.1969	1.3	1.3	1.6	0.6	0.6	0.8	0.9	0.9	1.1
Site 2 Ayodhya	01.07.1983	0.7	1.1	2.2	0.4	0.6	1.0	0.6	0.8	1.4
Site 3 Turtipar	01.07.1983	1.3	1.3	1.8	0.7	0.6	1.2	0.9	0.9	1.3

Parameter : BOD since inception



Parameter : BOD last 10 year



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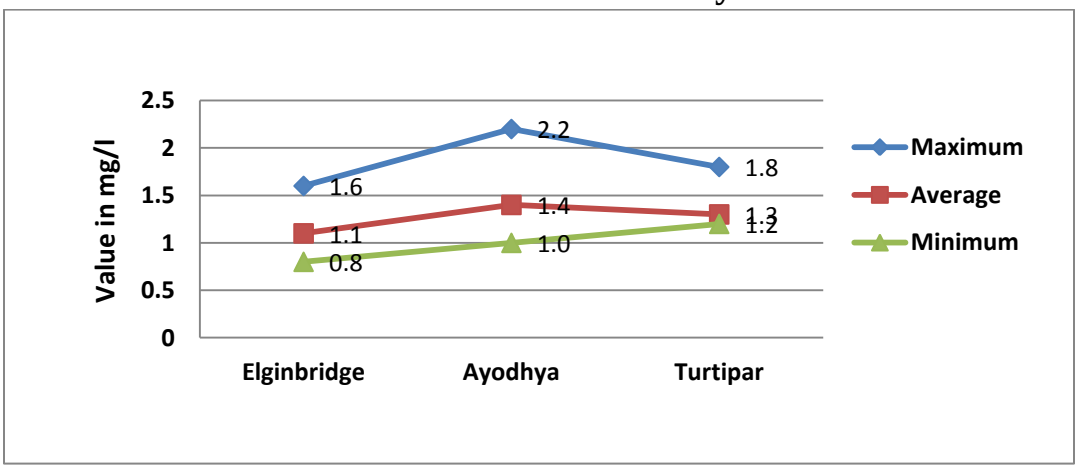
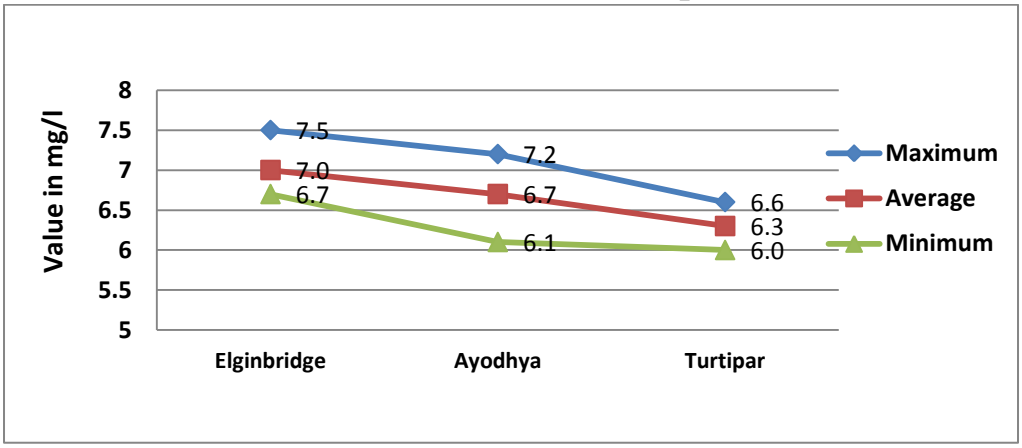


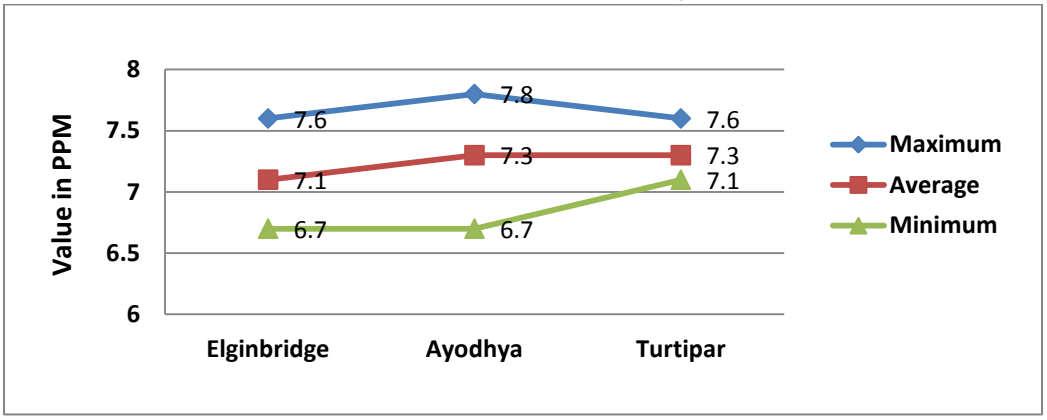
4.1.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Elginbridge	15.03.1969	7.5	7.6	7.5	6.7	6.7	6.5	7.0	7.1	7.1
Site 2 Ayodhya	01.07.1983	7.2	7.8	7.6	6.1	6.7	6.5	6.7	7.3	7.0
Site 3 Turtipar	01.07.1983	6.6	7.6	7.3	6.0	7.1	6.7	6.3	7.3	6.9

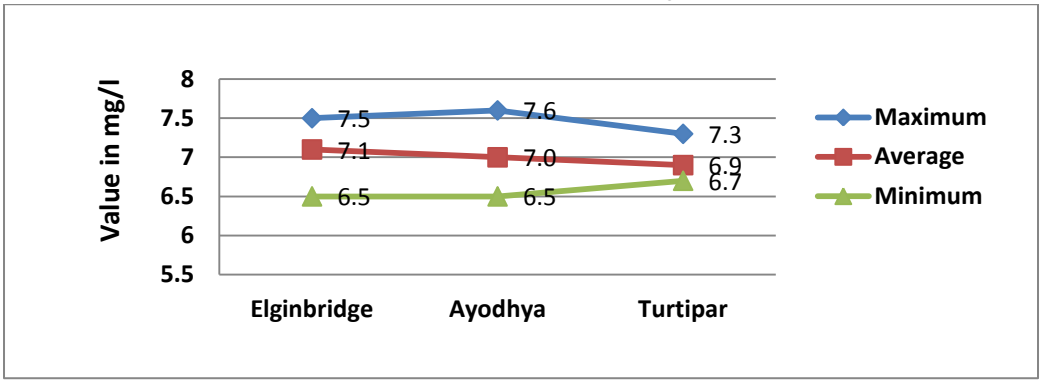
Parameter : DO since inception



Parameter : DO last 10 year



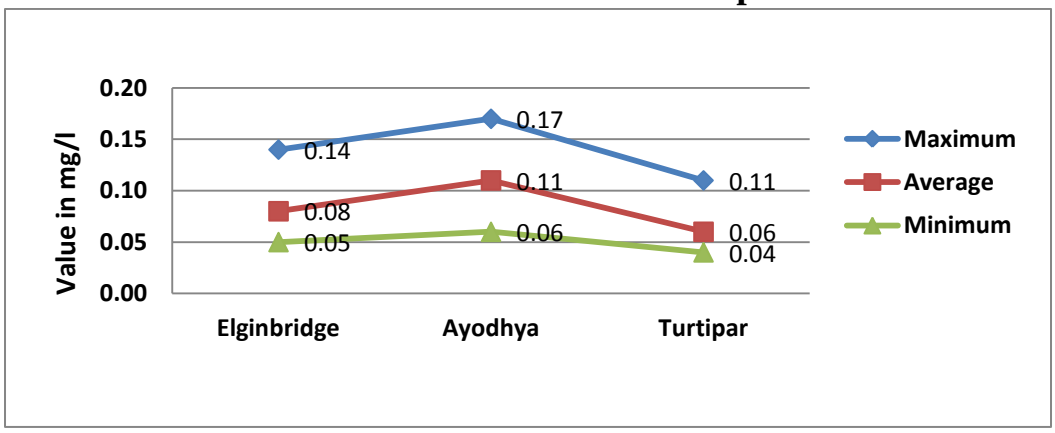
Parameter : DO last 1 year



4.1.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Elginbridge	15.03.1969	0.14	0.24	0.34	0.05	0.11	0.18	0.08	0.17	0.24
Site 2 Ayodhya	01.07.1983	0.17	0.24	0.32	0.06	0.12	0.21	0.11	0.17	0.25
Site 3 Turtipar	01.07.1983	0.11	0.27	0.40	0.04	0.13	0.21	0.06	0.18	0.26

Parameter : Fluoride since inception



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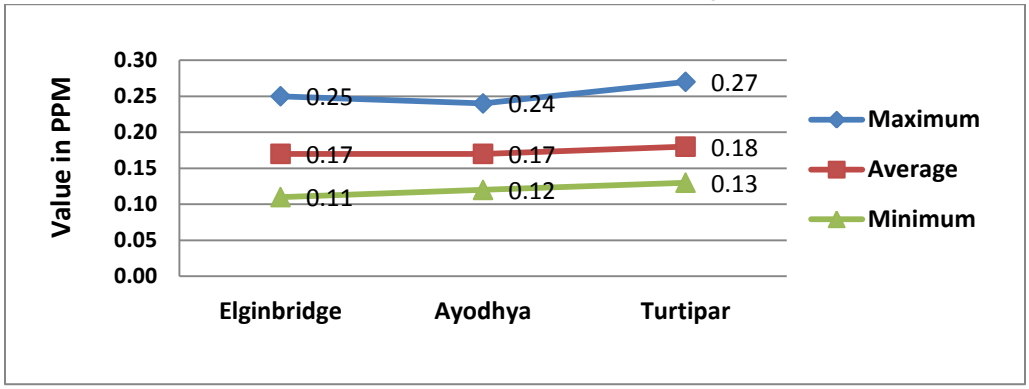

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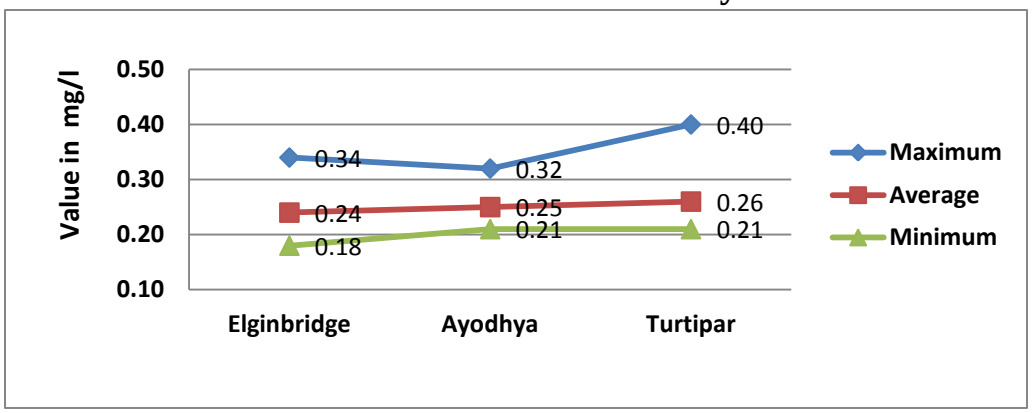
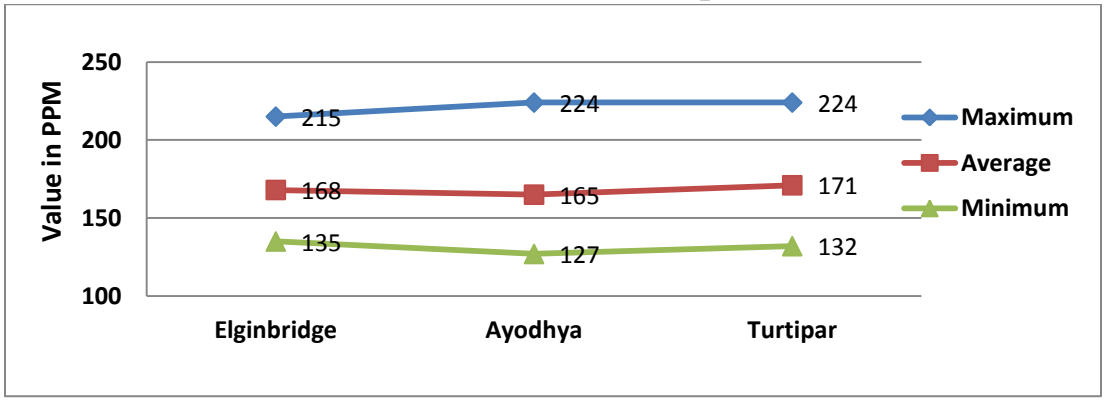


4.1.4 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Elginbridge	15.03.1969	215	221	171	135	125	102	168	165	129
Site 2 Ayodhya	01.07.1983	224	229	184	127	130	109	165	169	136
Site 3 Turtipar	01.07.1983	224	230	175	132	135	107	171	175	137

.

Parameter : TDS since inception



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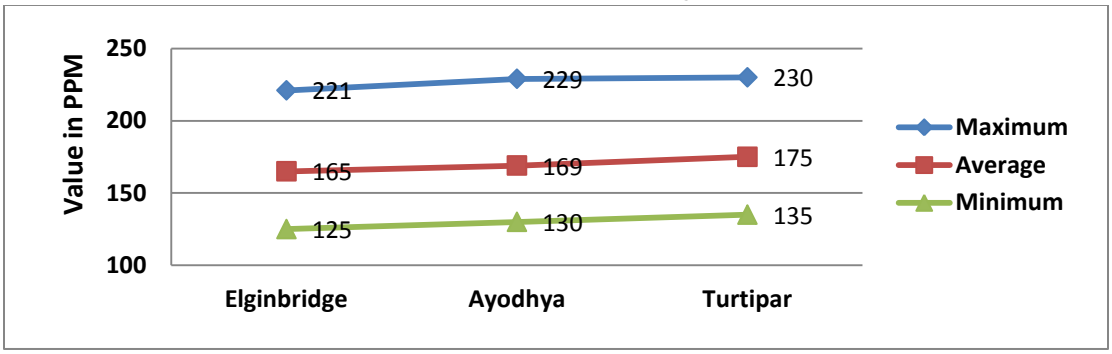
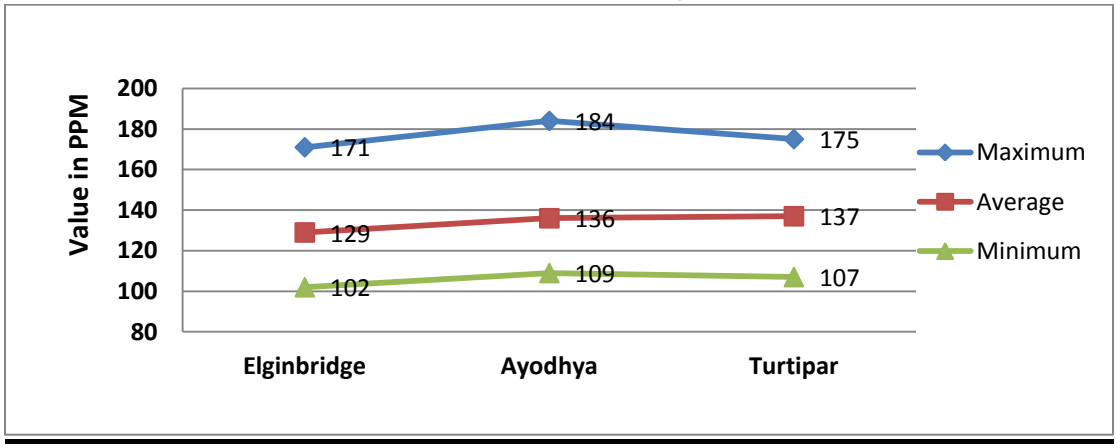


Parameter : TDS last 1 year

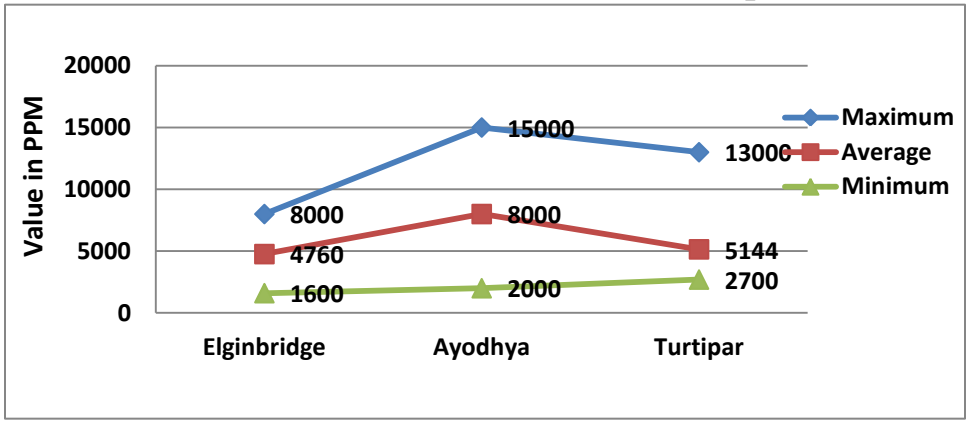


4.1.4 TOTAL COLIFORM IN MPN/100 ML

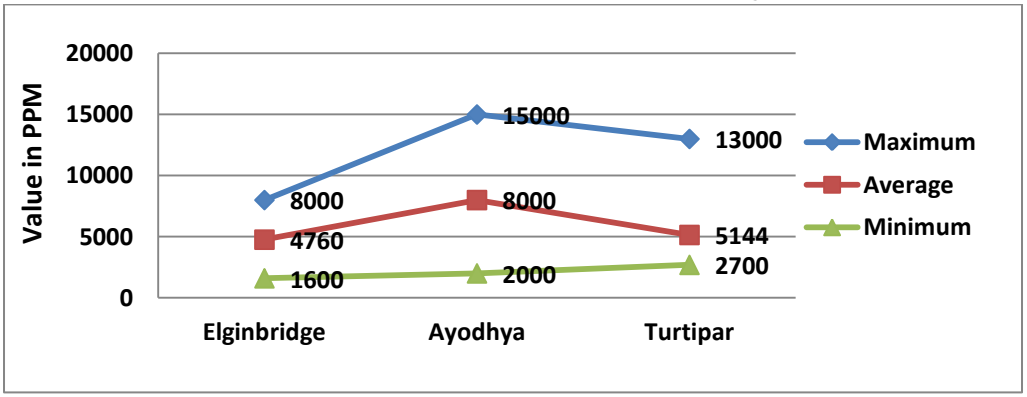
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Elginbridge	15.03.1969	8000	8000	8000	1600	1600	1600	4760	4760	4760
Site 2 Ayodhya	01.07.1983	15000	15000	15000	2000	2000	2000	8000	8000	8000
Site 3 Turtipar	01.07.1983	13000	13000	13000	2700	2700	2700	5144	5144	5144

***Analysis of total coliform started from 01.08.2016.

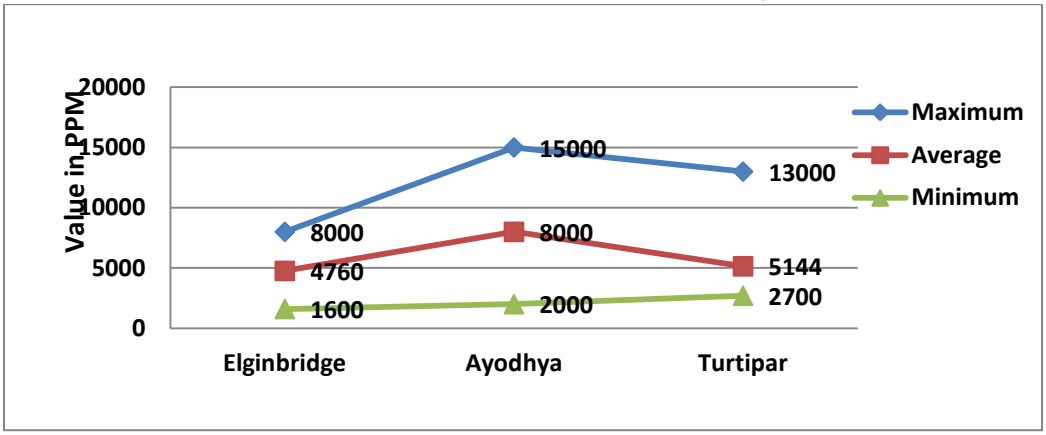
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 years



Parameter : Total Coliform last 1 year



4.2 River : RAPTI (River 2) : The Rapti's headwaters descent south from rugged highlands populated by Kham Magar. The western tributary Madi Khola rises in northwestern Rolpa and is joined by Lungri Khola draining northeastern Rolpa. The Mardi then crosses into Pyuthan. It is joined by east-flowing Arun Khola at Devithan where it enters a gorge through the Mahabharat Range. Jhimruk Khola east of the Mardi mainly drains Pyuthan. Below the upper highlands, an alluvial valley opens where Bahun and Chhetri rice farmers irrigate paddy fields. At Cherneta, Pyuthan the Jhimruk approaches within 1.5 km of the Mardi. Below Chernetathe Jhimruk loop east, becoming the border between Pyuthan and Arghakhanchi district. Its valley narrows and steepens as it enters the Mahabharat Range. Partway through it joins the Mardi and the combined flow is then named the Rapti.

The Rapti flows to the north of Behraich district. After traversing about 130 km, it enters to the northern portion of the Gonda district. River Rapti is important left bank tributary of river Ghaghra.

At present water quality is being monitored at four stations namely Balrampur, Bansi, Regauli and Birdghat on this river.

W.Q. Network :

S.No.	Name of Site	River	Class
1	Balrampur	Rapti	Trend
2	Bansi *	Rapti	Trend
3	Regauli	Rapti	Trend
4.	Birdghat	Rapti	Flux

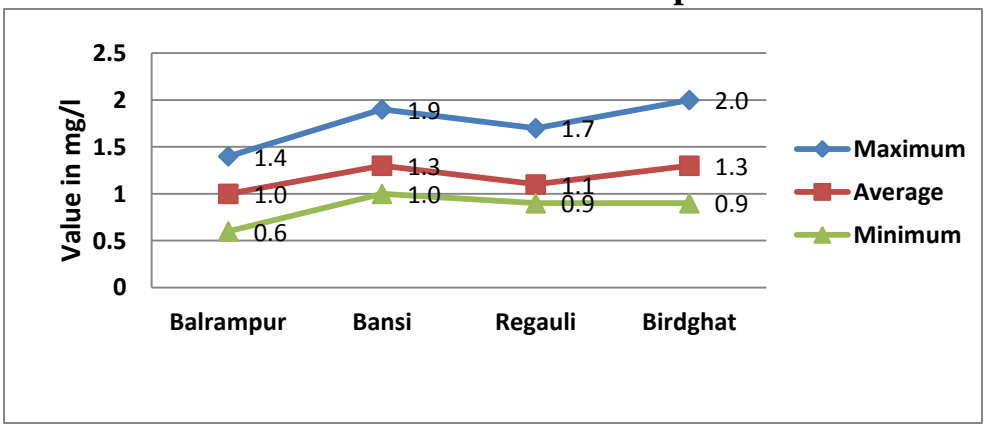
*Bansi site opened on 01/07/2014.

4.2.1 BOD in mg/l

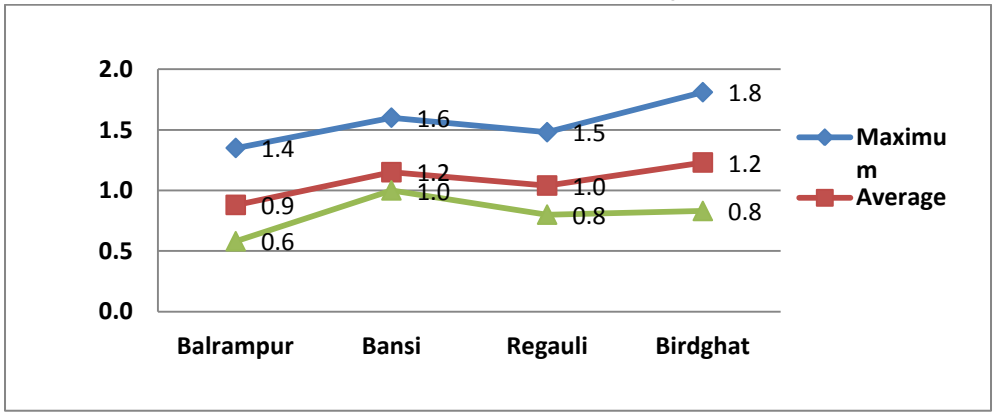
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	1.4	1.4	2.2	0.6	0.6	1.0	1.0	0.9	1.6
Site 2 Bansi*	01.07.2014	1.9	1.6	2.4	1.0	1.0	1.0	1.3	1.2	1.6
Site 3 Regauli	01.11.1980	1.7	1.5	3.9	0.9	0.8	1.4	1.1	1.0	2.0
Site 4 Birdghat	01.11.1980	2.0	1.8	3.5	0.9	0.8	1.2	1.3	1.2	2.1

***Bansi site opened on 01/07/2014.**

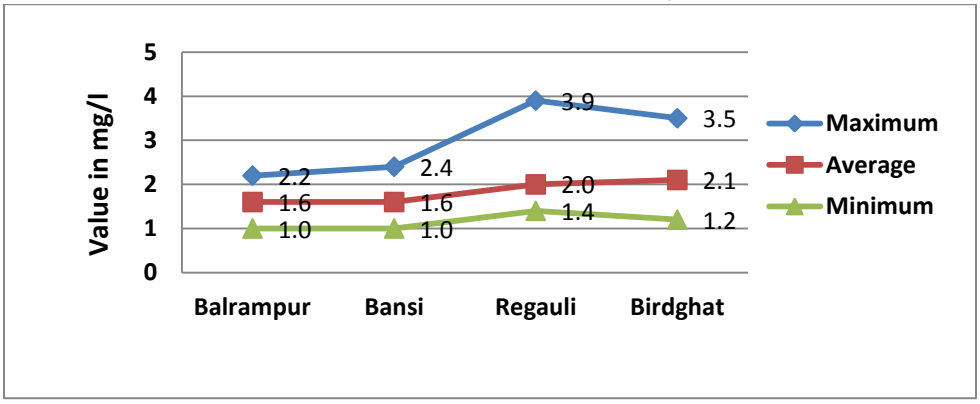
Parameter : BOD since inception



Parameter : BOD last 10 year



Parameter : BOD last one year

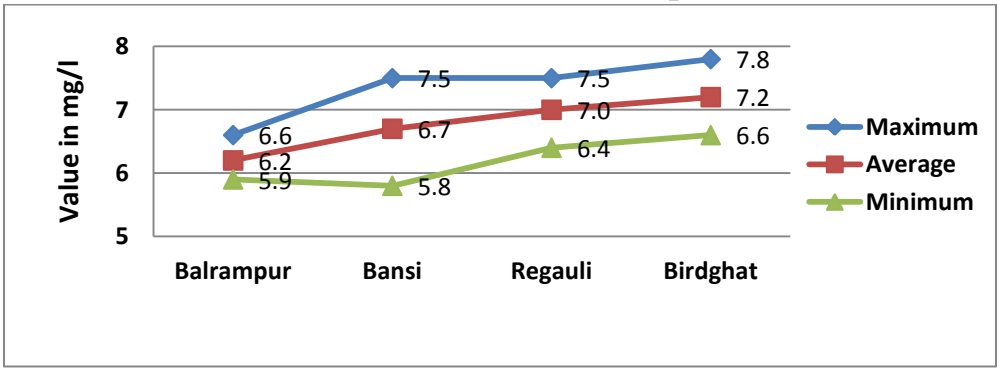


4.2.2 DO in mg/l

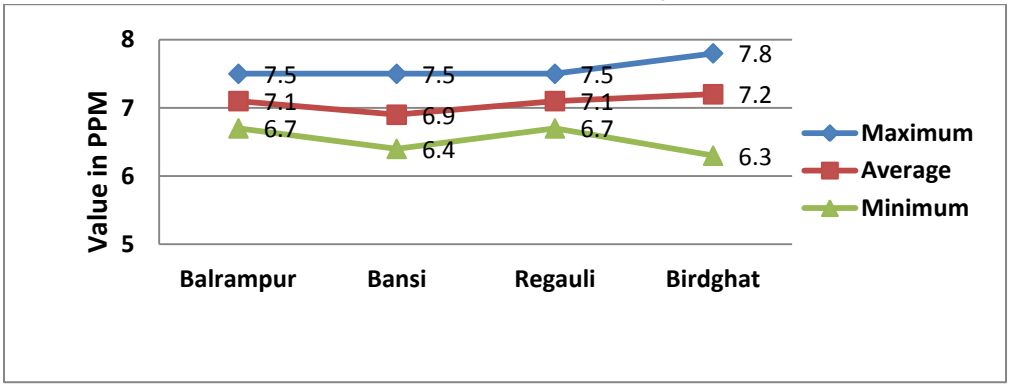
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	6.6	7.5	7.3	5.9	6.7	6.3	6.2	7.1	6.8
Site 2 Bansi*	01.07.2014	7.5	7.5	7.5	5.8	6.4	4.7	6.7	6.9	6.5
Site 3 Regauli	01.11.1980	7.5	7.5	7.5	6.4	6.7	4.1	7.0	7.1	6.5
Site 4 Birdghat	01.11.1980	7.8	7.8	6.9	6.6	6.3	4.3	7.2	7.2	6.1

***Bansi site opened on 01/07/2014.**

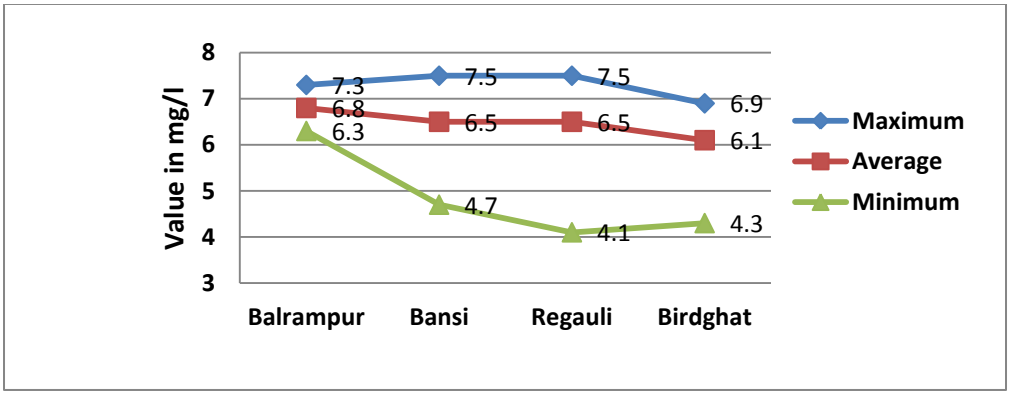
Parameter : DO since inception



Parameter : DO last 10 year



Parameter : DO last one year

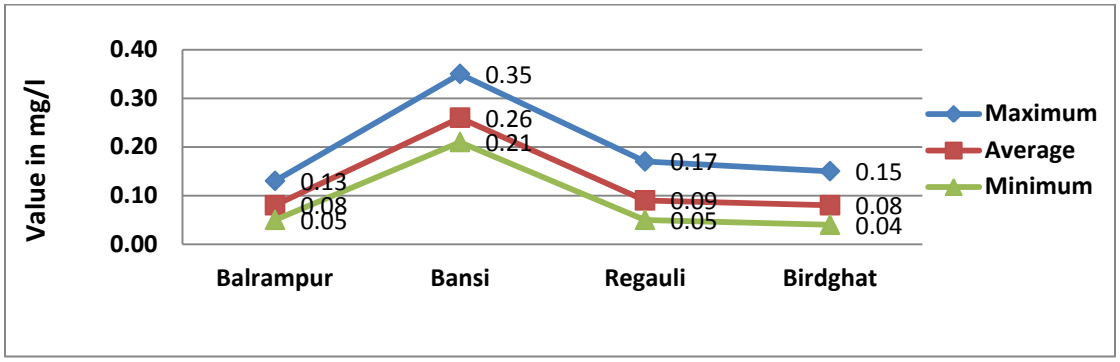


4.2.3 Fluoride in mg/l

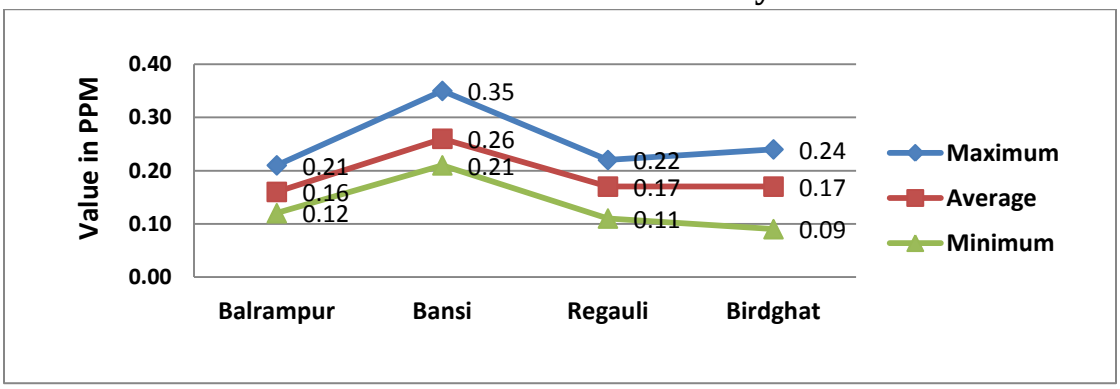
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	0.13	0.21	0.36	0.05	0.12	0.19	0.08	0.16	0.30
Site 2 Bansi*	01.07.2014	0.35	0.35	0.36	0.21	0.21	0.21	0.26	0.26	0.30
Site 3 Regauli	01.11.1980	0.17	0.22	0.40	0.05	0.11	0.21	0.09	0.17	0.29
Site 4 Birdghat	01.11.1980	0.15	0.24	0.44	0.04	0.09	0.21	0.08	0.17	0.30

***Bansi site opened on 01/07/2014.**

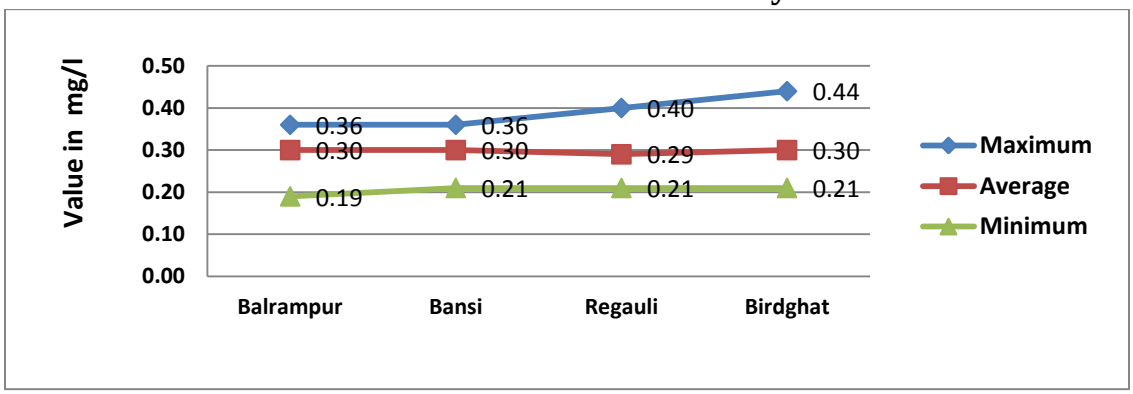
Parameter : Fluoride since inception



Parameter : Fluoride last 10 year



Parameter : Fluoride last one year

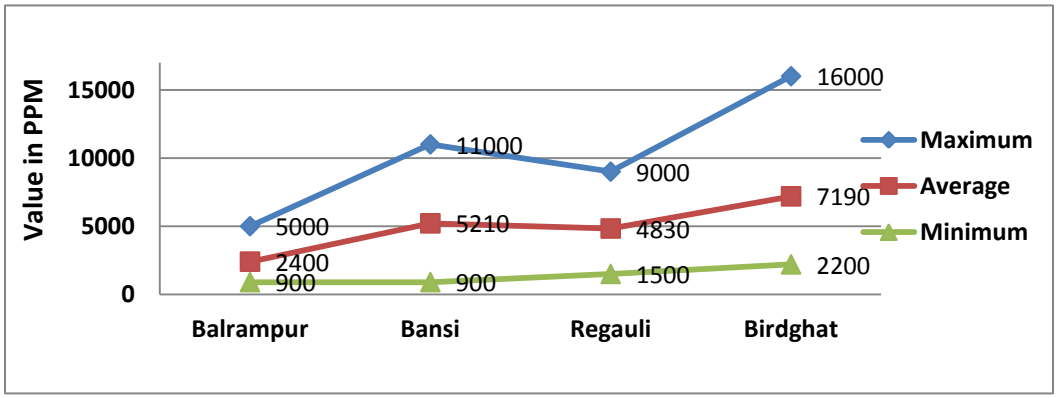


4.2.4 TOTAL COLIFORM IN MPN/100 ML

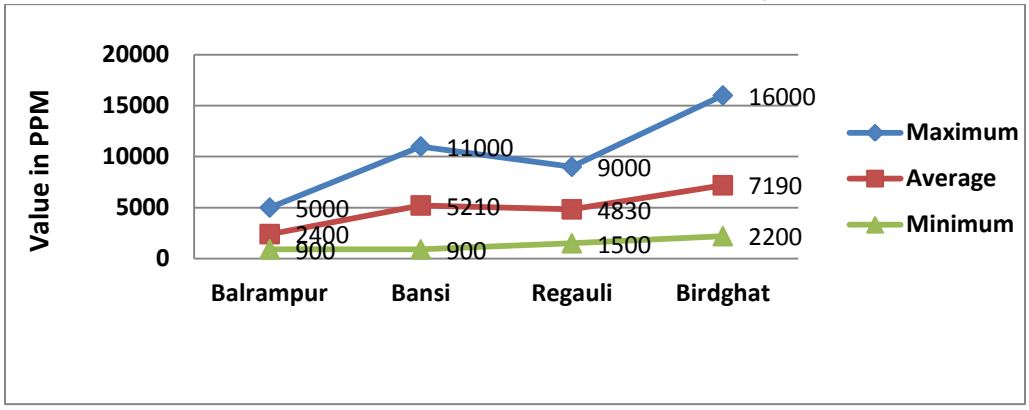
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	5000	5000	5000	900	900	900	2400	2400	2400
Site 2 Bansi*	01.07.2014	11000	11000	11000	900	900	900	5210	5210	5210
Site 3 Regauli	01.11.1980	9000	9000	9000	1500	1500	1500	4830	4830	4830
Site 4 Birdghat	01.11.1980	16000	16000	16000	2200	2200	2200	7190	7190	7190

*Analysis of total coliform started from 01.08.2016.

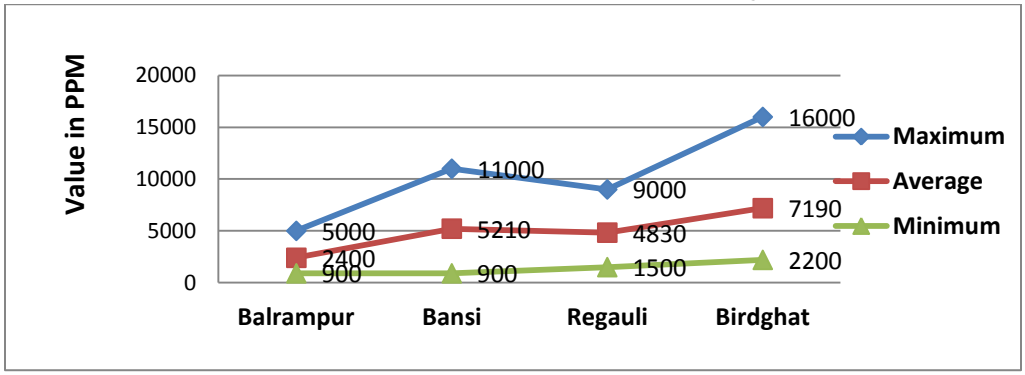
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 year



Parameter : Total Coliform last 1 year

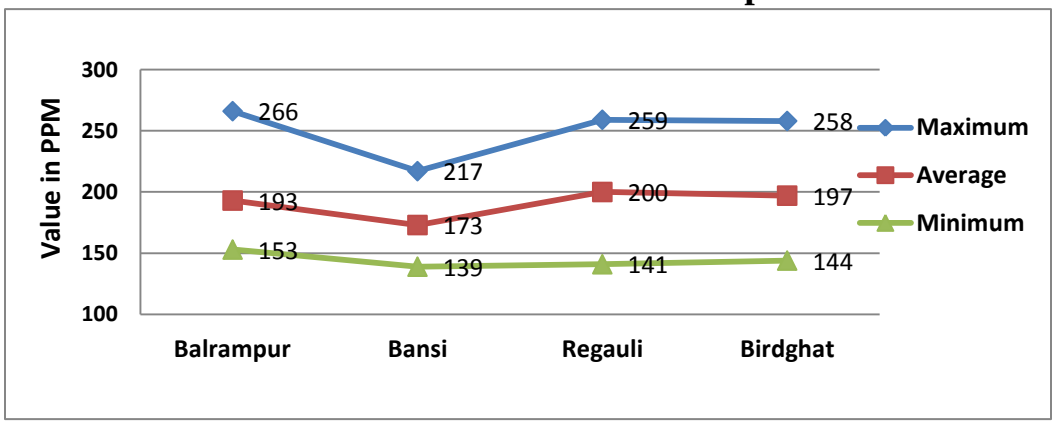


4.2.5 TDS in mg/l

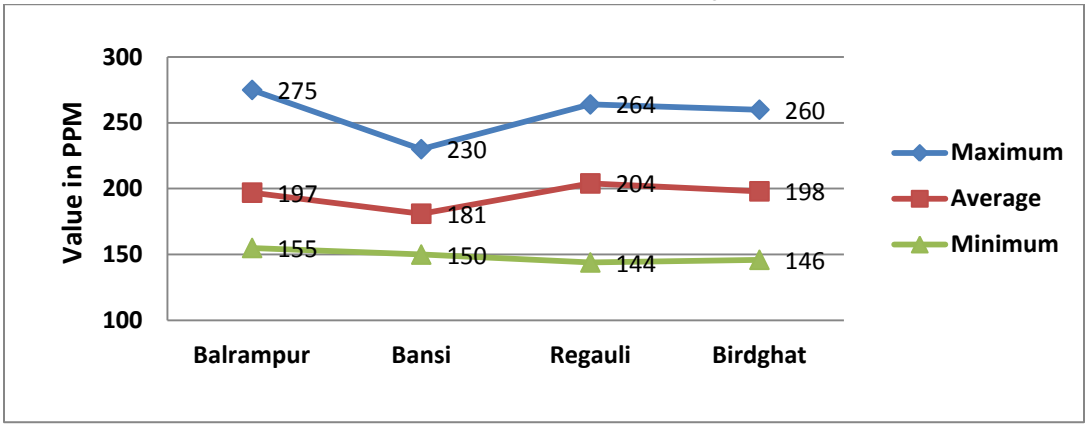
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	266	275	193	153	155	132	193	197	161
Site 2 Bansi*	01.07.2014	217	230	190	139	150	117	173	181	157
Site 3 Regauli	01.11.1980	259	264	220	141	144	120	200	204	172
Site 4 Birdghat	01.11.1980	258	260	231	144	146	121	197	198	185

***Bansi site opened on 01/07/2014.**

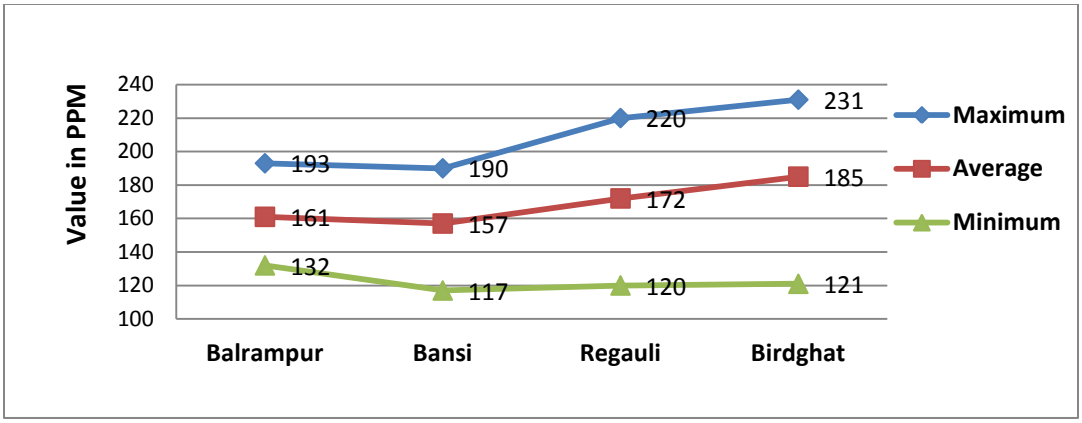
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last one year



4.3 River : SHARDA (River 3) : The river Sharda is known as river Maha Kali in origin. The traditional source of the Maha Kali is Lipmpiya Dhura in Pithoragarh district Uttarakhand. The geographic sources, however, are some five kms further north and some thousand meters higher streams emerging from glacier along the watershed. India's border with China's Tibet Autonomous Region follows this watershed. The Kali receives the right bank Dhauliganga. It passes a town Dharchula and receives the Gori Ganga at Jauljibi, exiting the high mountains that reach into alpine zone. The first important left bank tributary from Nepal, the Chameliya joins after flowing southwest from Nepal's Gurans Himal. A bazaar town Jhulaghat is on both sides of the river. Then the Kali receives the Sarju river.

The Kali exits hill region at Jogbudha Valley and receives two tributaries Ladhiya and Ramgun, then it enters the lower Siwalik hills. Tanakpur town is just above dam of Sharda Reservoir where water is diverted into an irrigation canal. The river exit the last hills into the Terai plains, passing town Banbasa and Mahendranagar. The international boder then turns

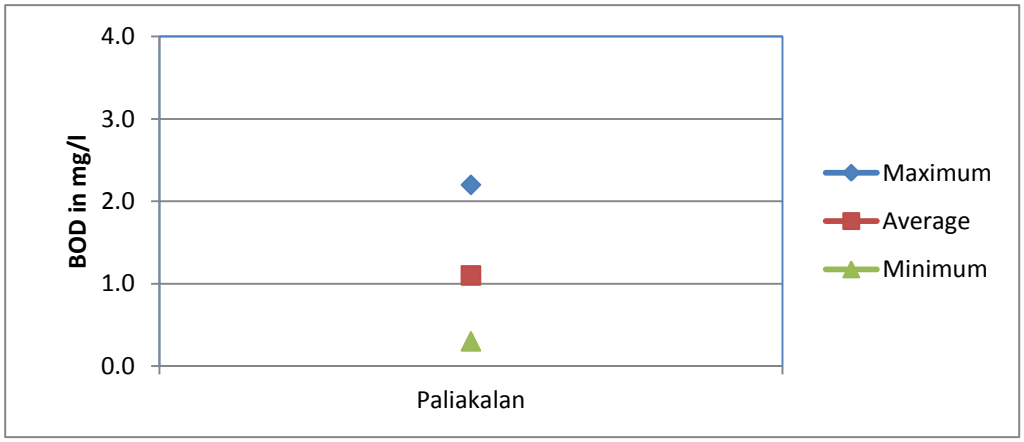
west of the river to follow a previous channel for some 10 km. here the river leaves Uttarakhand and crosses into Uttar Pradesh. Now the river's name changes to Sharda.

W.Q. Network :Water quality is being monitored on river Sharda at Paliakalan only.

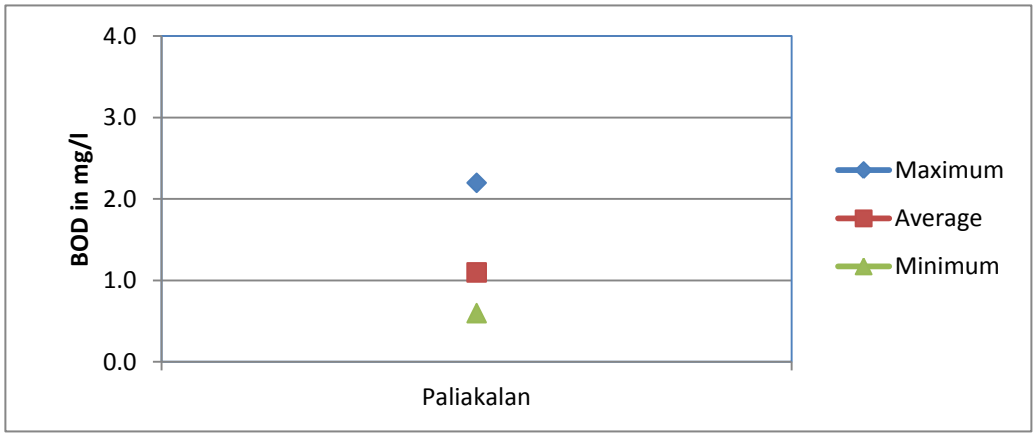
4.3.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Paliakalan	01.01.1969	2.2	2.2	1.8	0.3	0.6	1.1	1.1	1.1	1.5

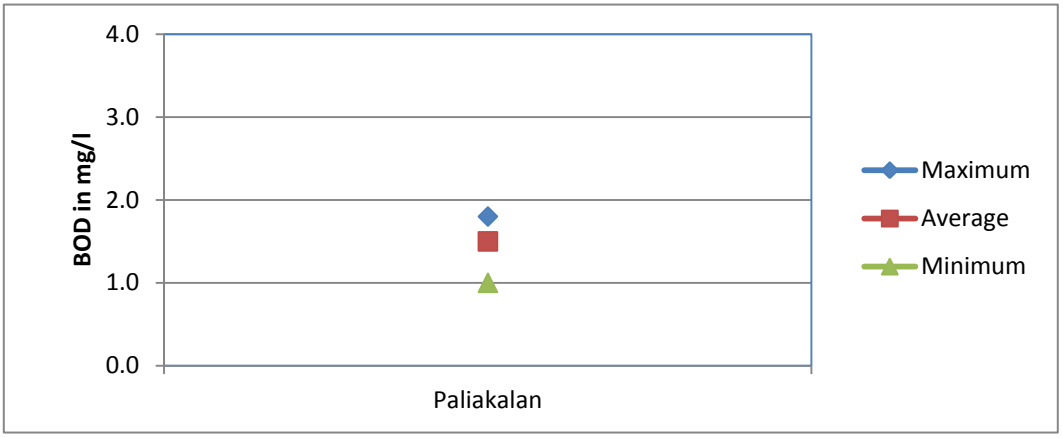
Parameter : BOD since inception



Parameter : BOD 10 year



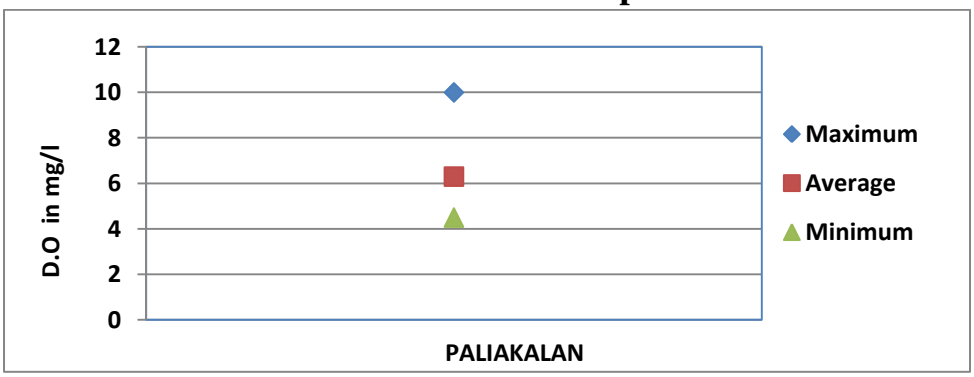
Parameter : BOD One year



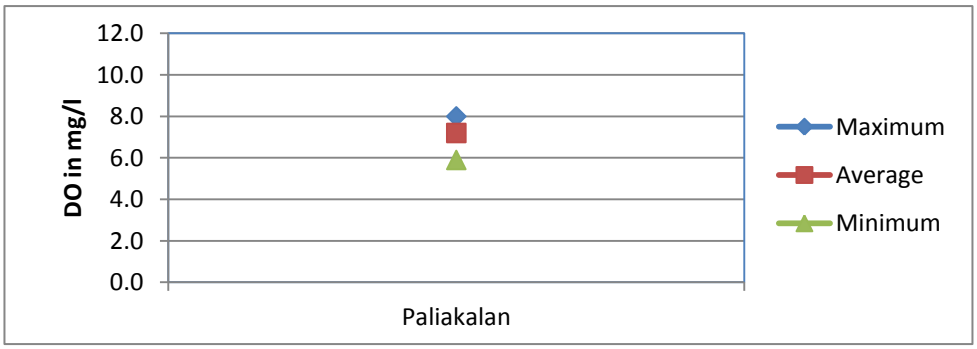
4.3.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Paliakalan	01.01.1969	10.0	8.0	7.1	4.5	5.9	6.3	7.3	7.2	6.8

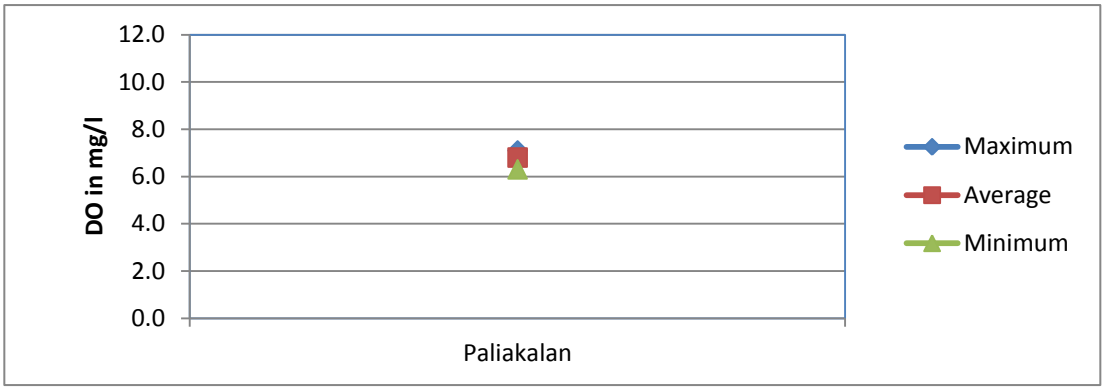
Parameter : DO since inception



Parameter : DO 10 Year



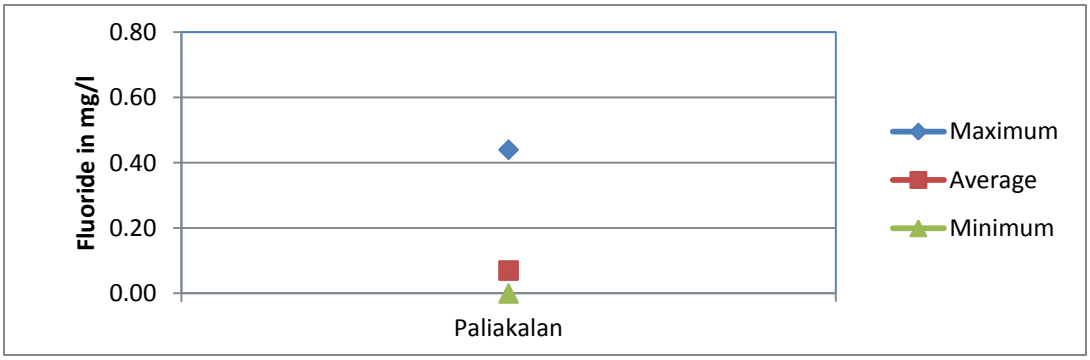
Parameter : DO One Year



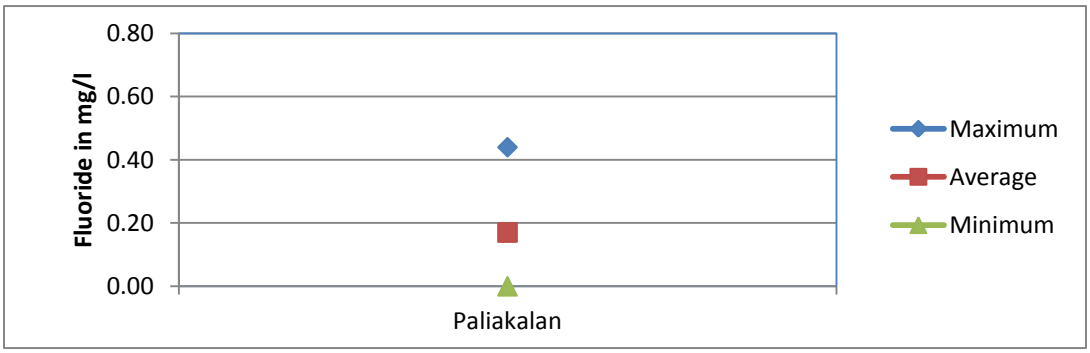
4.3.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Paliakalan	01.01.1969	0.44	0.44	0.36	0.00	0.00	0.25	0.07	0.17	0.30

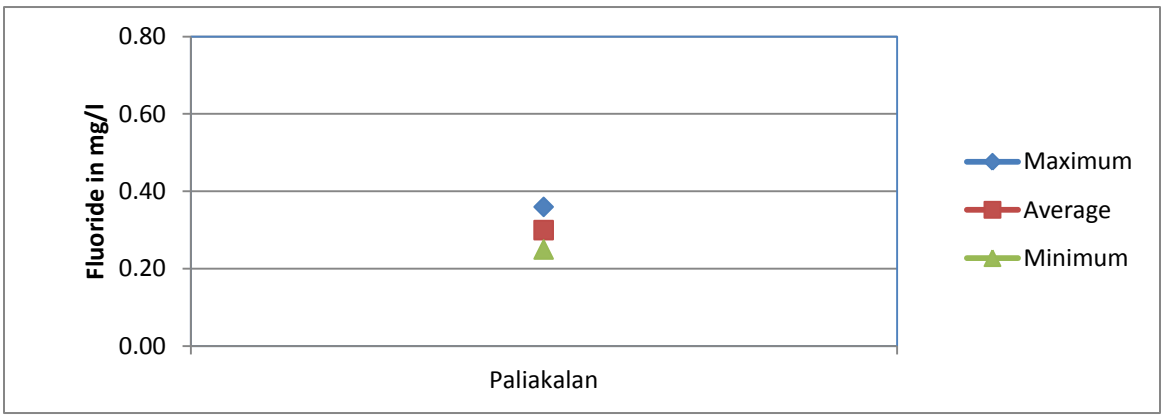
Parameter : Fluoride since inception



Parameter : Fluoride 10 Year



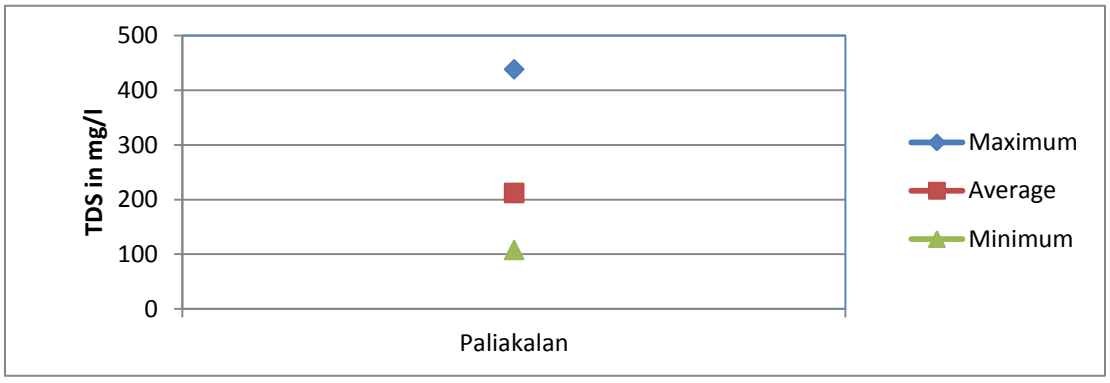
Parameter : Fluoride One Year



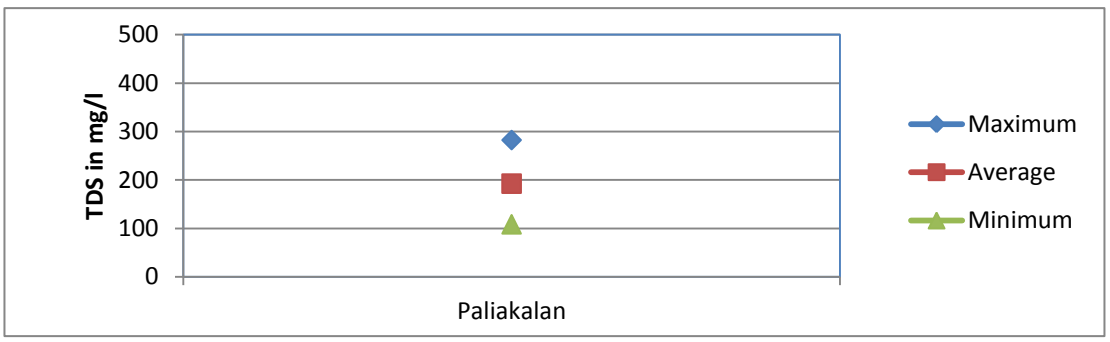
4.3.4 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Paliakalan	01.01.1969	438	282	270	108	108	130	212	192	190

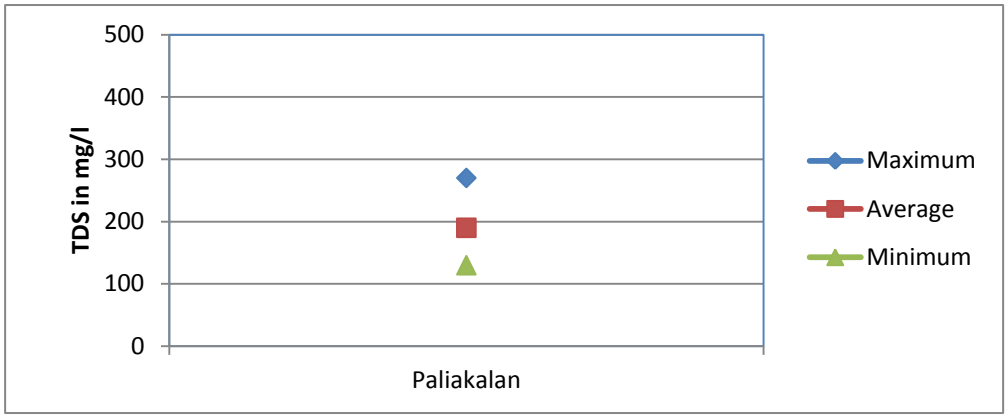
Parameter : TDS since inception



Parameter : TDS 10 year



Parameter : TDS one year



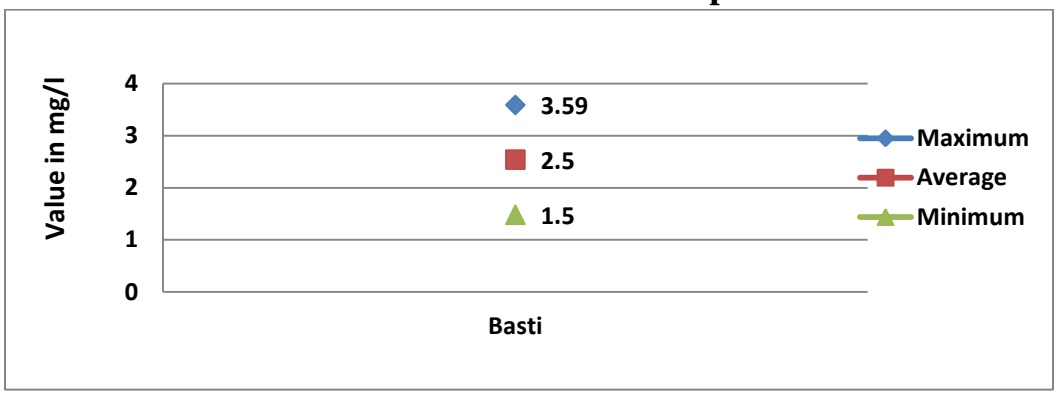
4.4 River : Kwano (River 4) : The river Kwano is a rain fed river and originates from Kwano hills in the district Bahraich of Uttar Pradesh. It passes though Gonda, Basti and Sant Kabir Nagar district. It joins Ghaghra near the place Raunapur in the midway of the boundary of districts Azamgarh and Sant Kabir Nagar.

W.Q. Network : Water quality is being monitored on river Kwano at Basti.

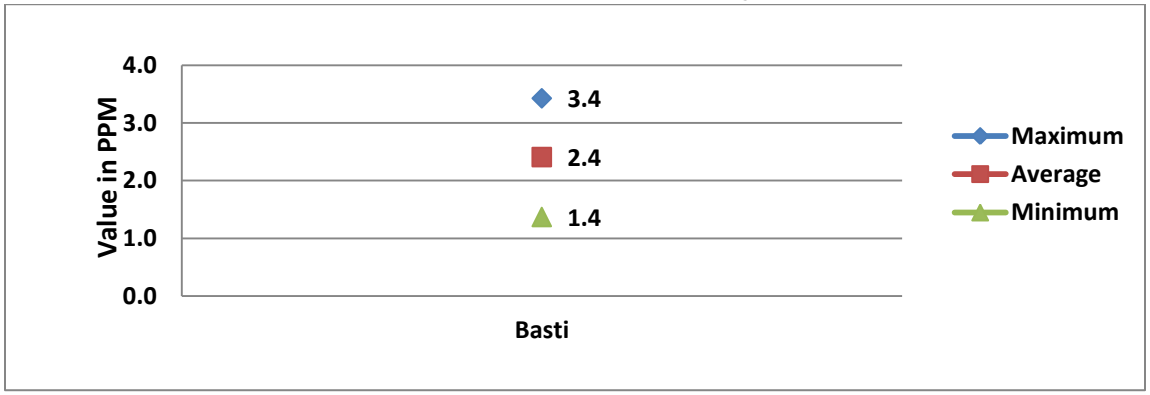
4.4.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	3.6	3.4	4.7	1.5	1.4	2.2	2.5	2.4	3.4

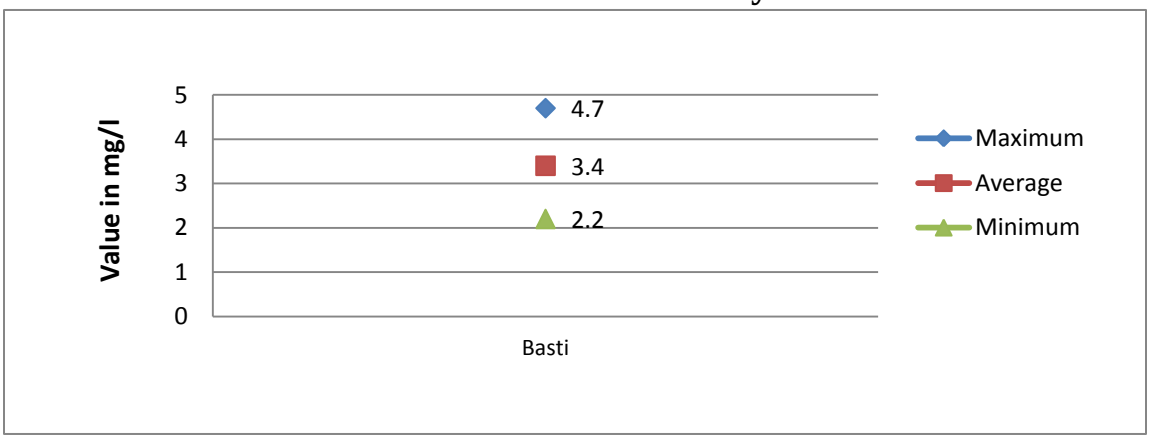
Parameter : BOD since inception



Parameter : BOD last 10 year



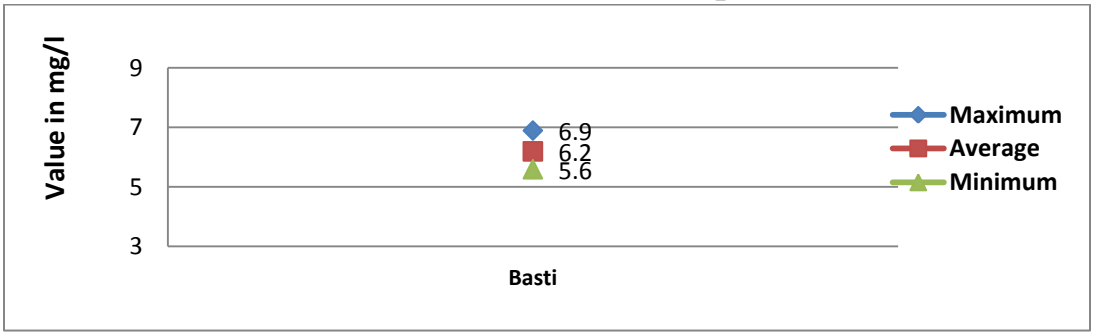
Parameter : BOD last one year



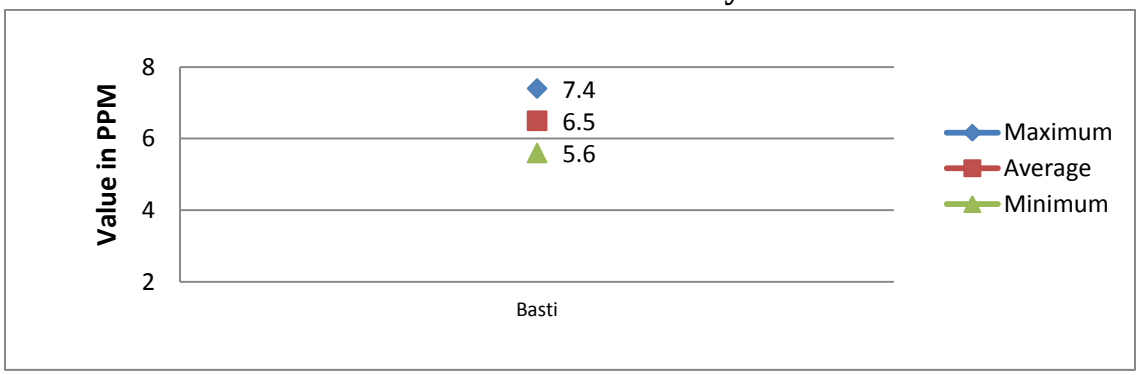
4.4.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	6.9	7.4	6.5	5.6	5.6	2.0	6.2	6.5	5.1

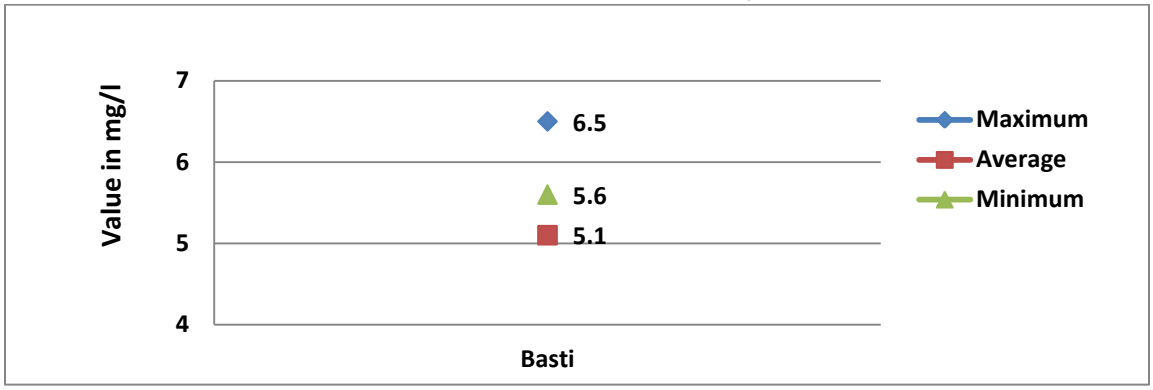
Parameter : DO since inception



Parameter : DO last 10 year



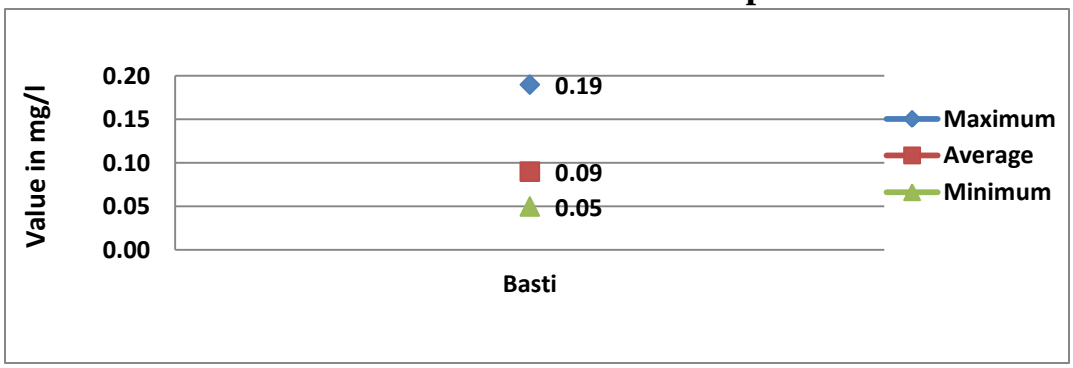
Parameter : DO last one year



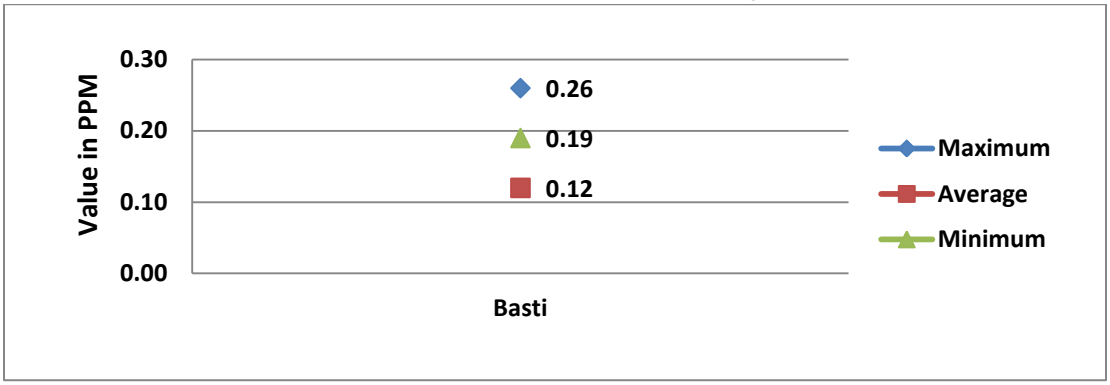
4.4.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	0.19	0.26	0.49	0.05	0.12	0.19	0.09	0.19	0.34

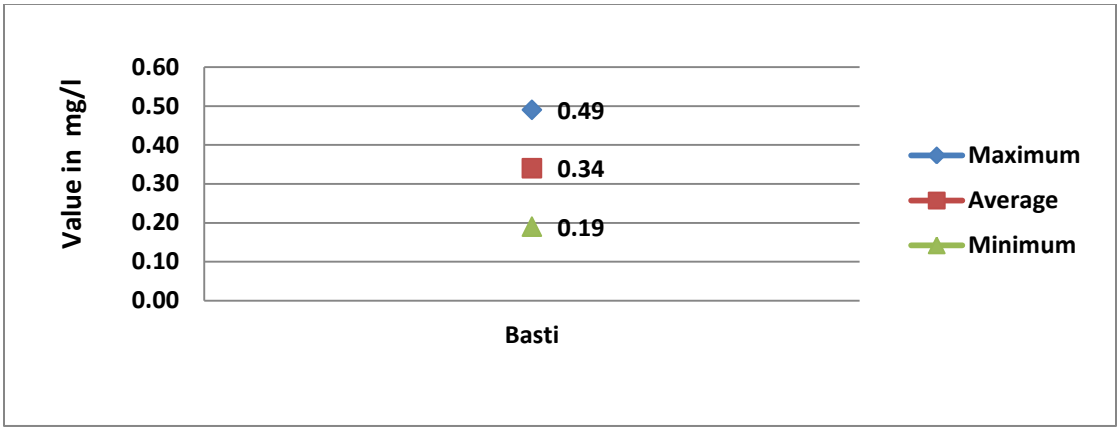
Parameter : Fluoride since inception



Parameter : Fluoride last 10 year



Parameter : Fluoride last 1 year

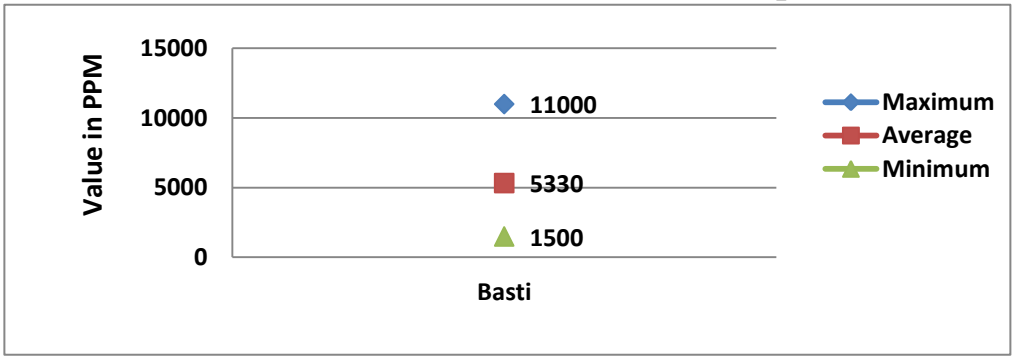


4.4.4 TOTAL COLIFORM IN MPN/100 ML

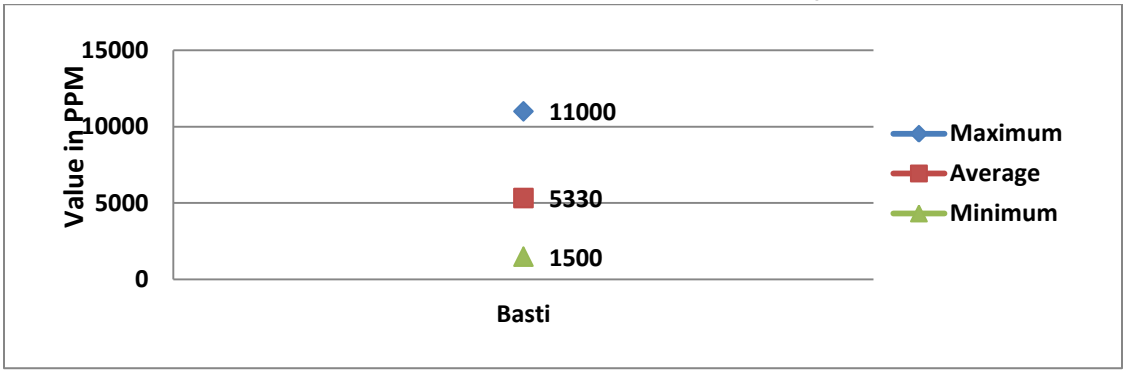
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti*	01.11.1980	11000	11000	11000	1500	1500	1500	5330	5330	5330

*Analysis of total coliform started from 01.08.2016.

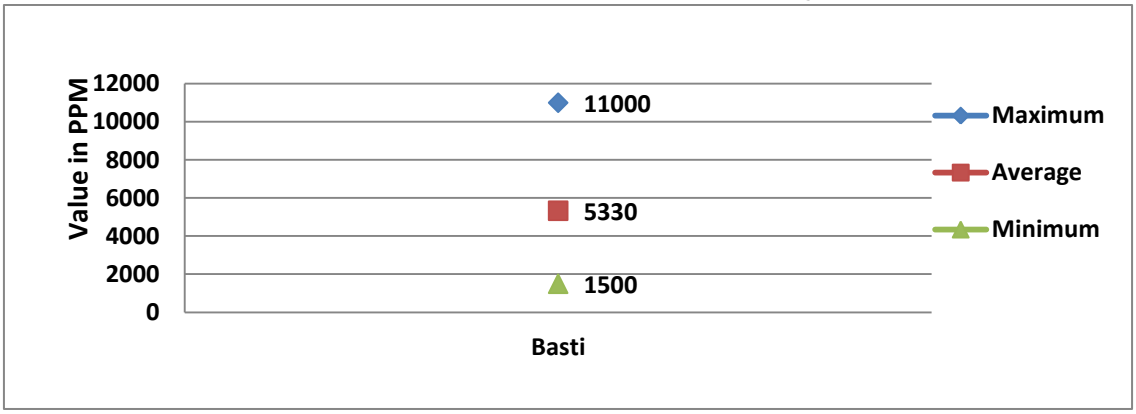
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 year



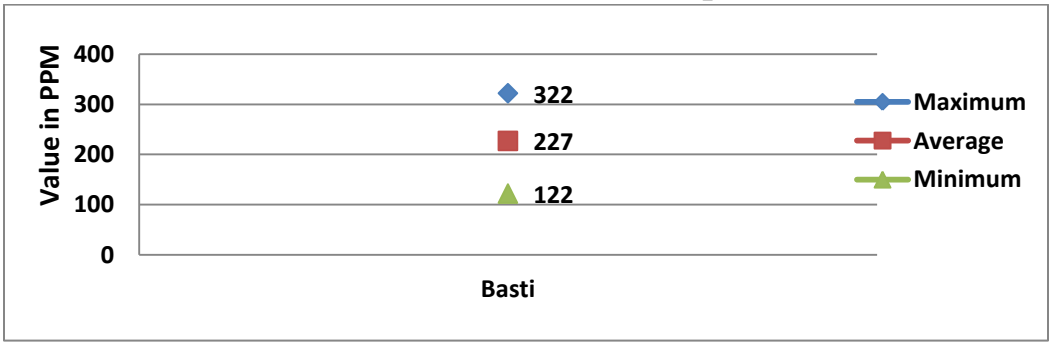
Parameter : Total Coliform last 1 year



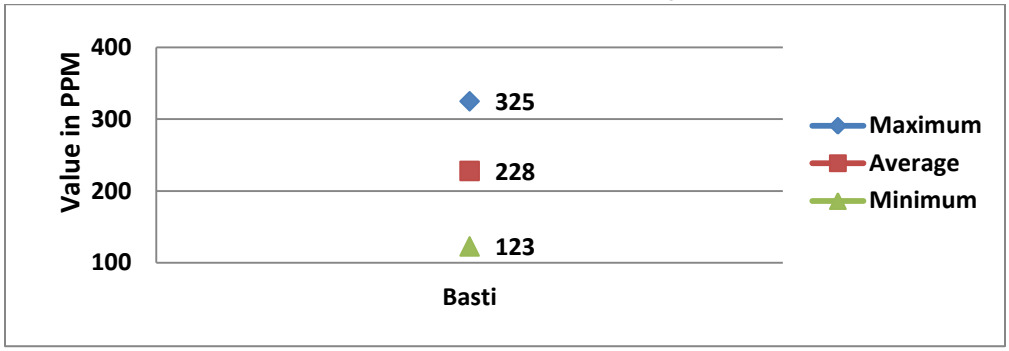
4.4.5 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	322	325	305	122	123	115	227	228	215

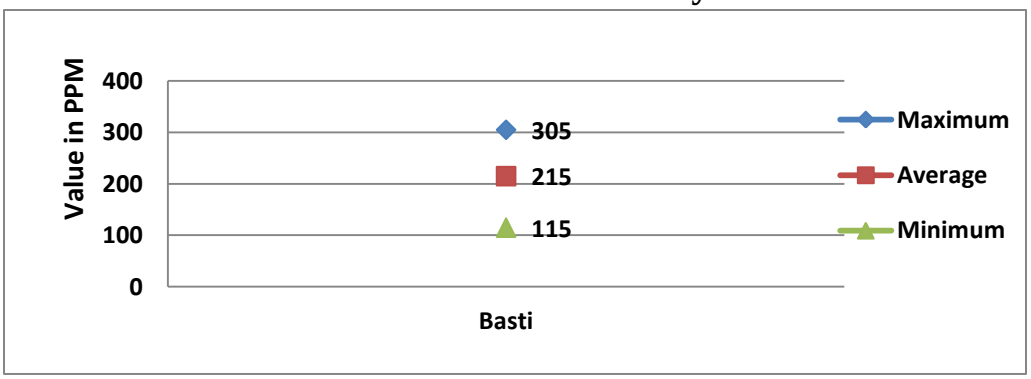
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last one year



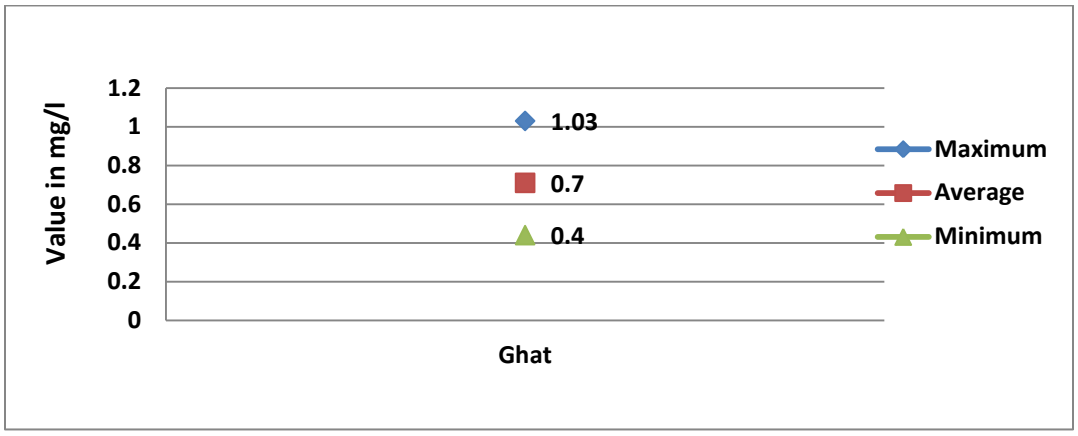
4.5 River : Sarju (River 5) : Originating from the extreme south of adjacent Almora district, the sarju makes south west boundary between Pithoragarh and Almora. Ramganga East river joins Sarju at Rameshwar near Ghat of Pithoragarh. Finally, at a point at Pancheswar, it joins Kali (Sharda) alongwith Panar river.

W.Q. Network : Water quality is being monitored on river Sarju at Ghat.

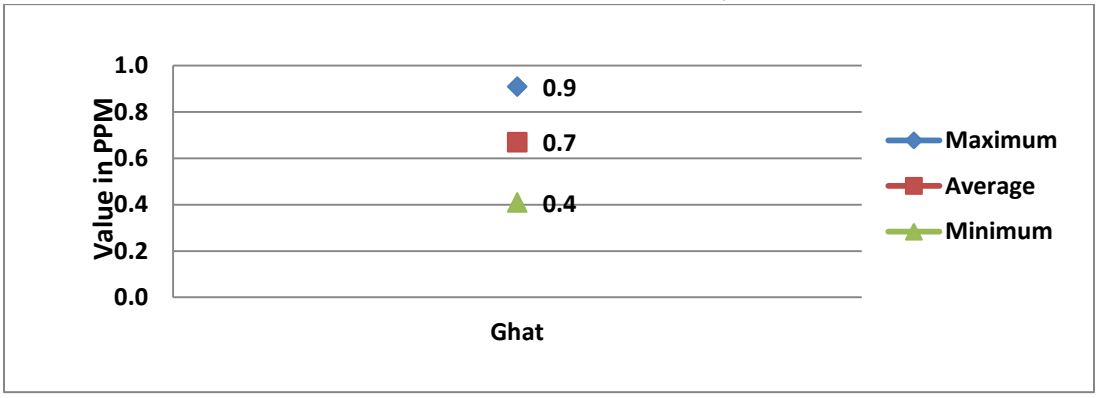
4.5.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	1.0	0.9	1.8	0.4	0.4	0.6	0.7	0.7	1.0

Parameter : BOD since inception



Parameter : BOD last 10 year

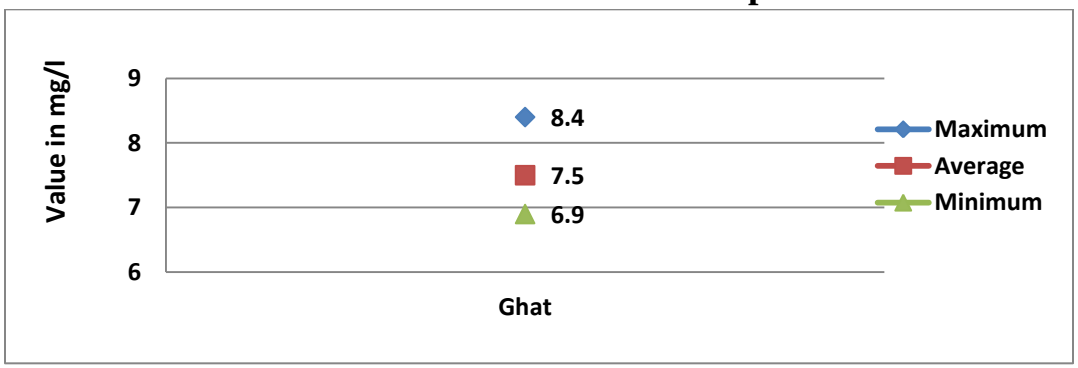


Parameter : BOD last one year

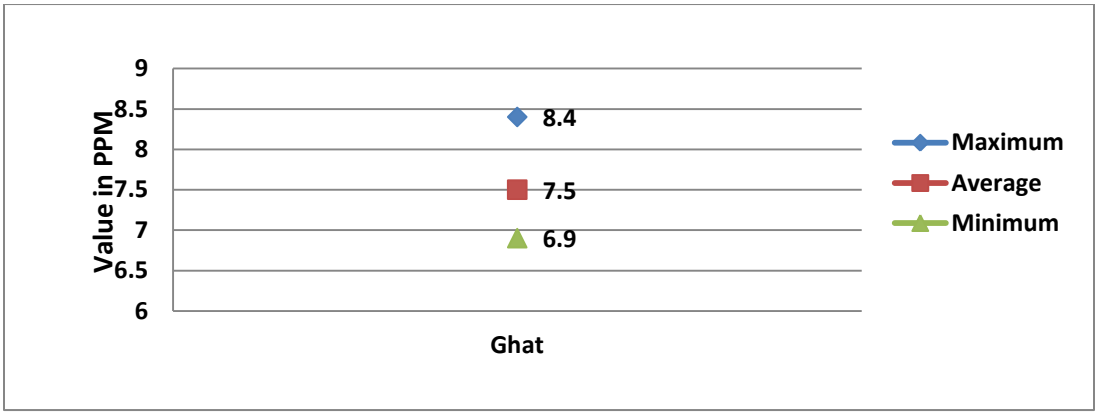
4.5.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	8.4	8.4	8.8	6.9	6.9	6.7	7.5	7.5	7.4

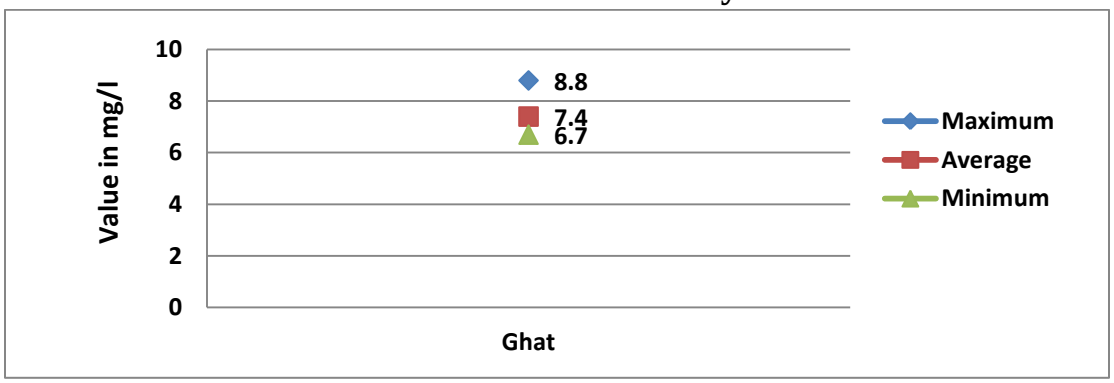
Parameter : DO since inception



Parameter : DO last 10 year



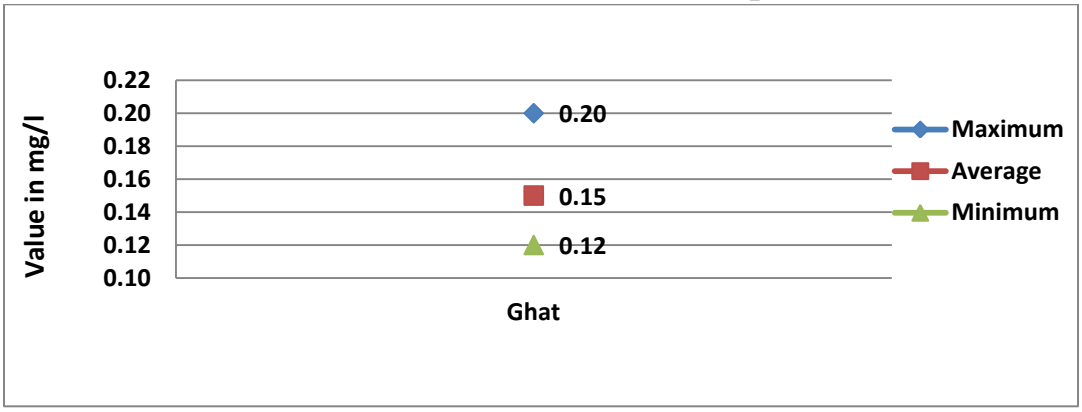
Parameter : DO last one year



4.5.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	0.20	0.18	0.30	0.12	0.11	0.13	0.15	0.14	0.19

Parameter : Fluoride since inception



Parameter : Fluoride last 10 year

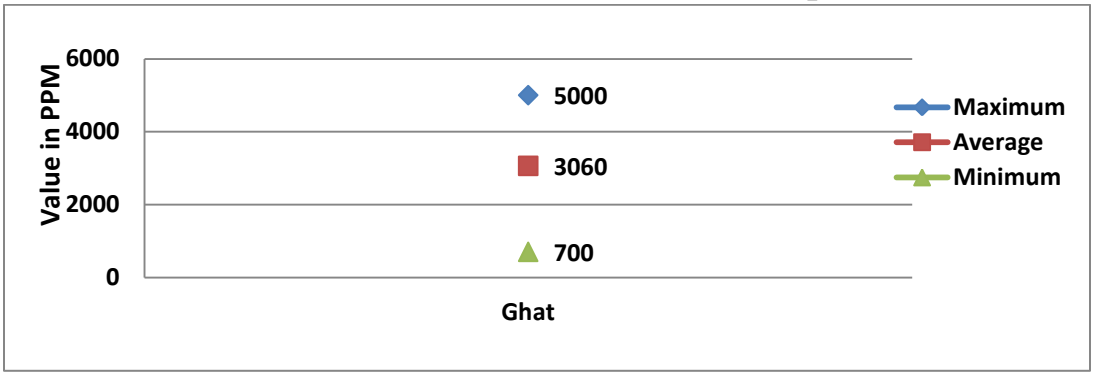
Parameter : Fluoride last one year

4.5.4 TOTAL COLIFORM IN MPN/100 ML

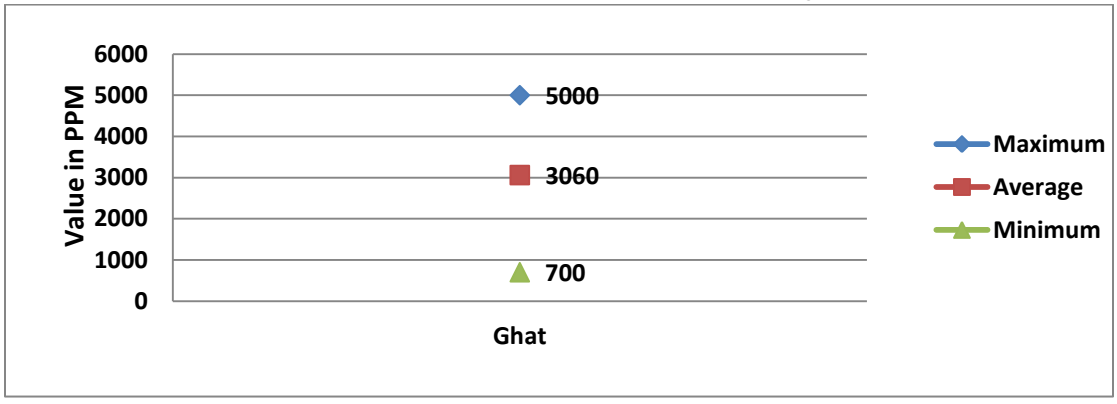
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	5000	5000	5000	700	700	700	3060	3060	3060

*Analysis of total coliform started from 01.08.2016.

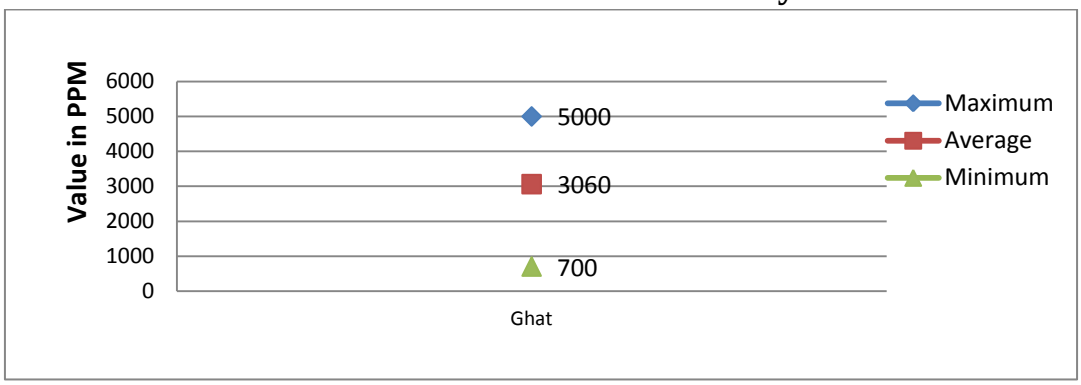
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 year



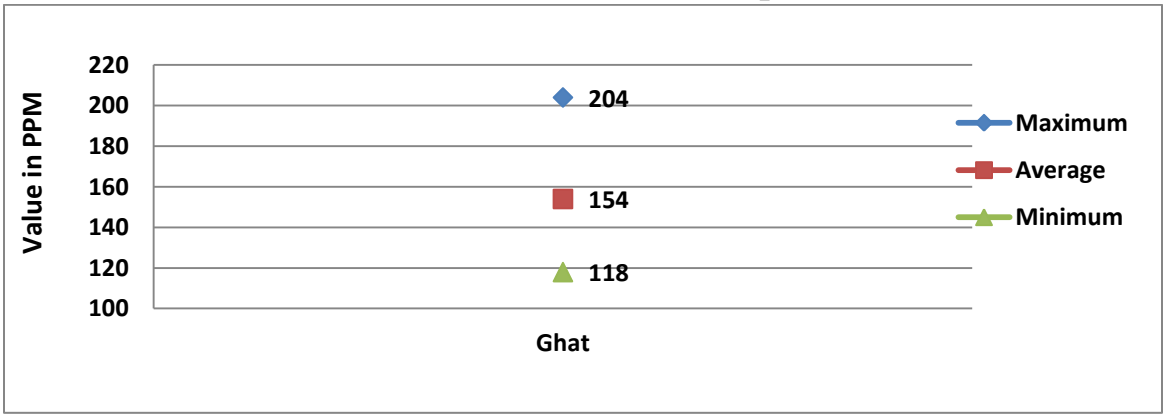
Parameter : Total Coliform last 1 year



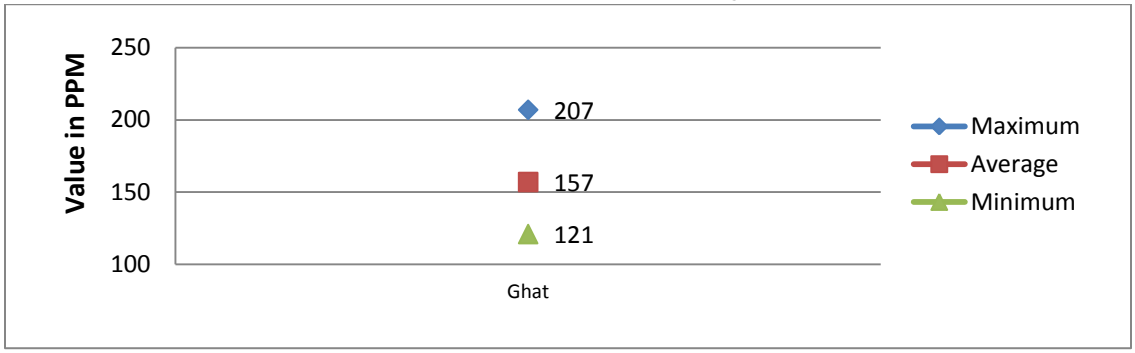
4.5.5 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	204	207	180	118	121	96	154	157	129

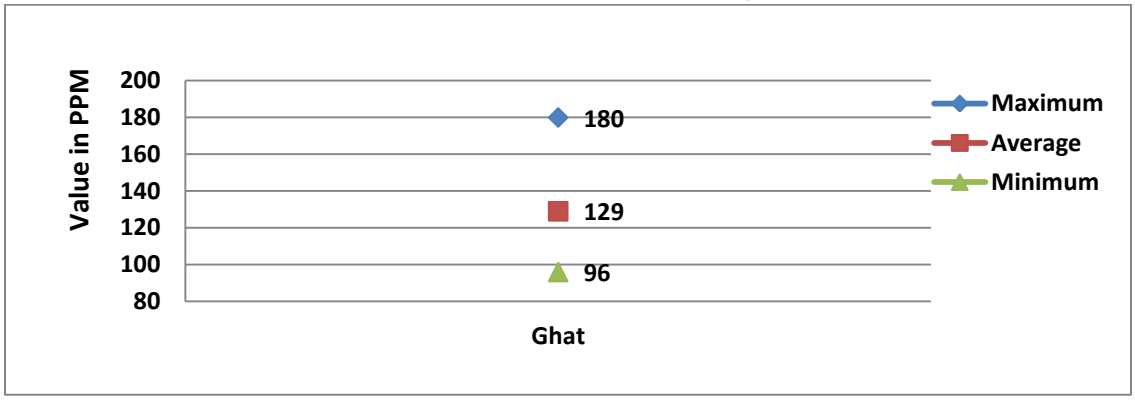
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last one year



5. General Remark / Conclusion about W.Q. trend – River 1 Ghaghra :

The BOD value ranges from 0.4 – 2.2 mg/l and DO value is more than 6.0 mg/l which is within tolerance limit for Class A water.

The fluoride value ranged 0.05 - 0.34 mg/l , with maximum recorded during 2016-17 and the water is safe for human consumption with respect to fluoride.

The TDS value ranged between 107-230 mg/l .Tolerance limit for Class A is 500 mg/l.

The Total Coliform ranges between 1600 to 15000 and the maximum T. Coliform reported at Ayodhyay due to obvious reasons.

River 2 Rapti :

The BOD value ranges from 0.6 – 3.9 mg/l. However the average BOD is less than 2.0 mg/l for all sites.

The DO value ranged between 4.1 to 7.8 with average DO value mre than 6.1 mg/l., which is within tolerance limit for Class A water.

The fluoride value ranged 0.05 – 0.44 mg/l and water is safe for human consumption with respect to fluoride.

The TDS value ranged between 117 – 266 mg/l.Tolerance limit for Class A is 500 mg/l.

Total Coliform ranges between 900 to 16000 MPN with highest being recorded at Birdghat site along which the city of Gorakhpur is lovcated.

River 3 Sharda :

There is only one Water Quality monitoring Station on river Sharda at Paliakalan.
The BOD value ranges from 0.3 –2.2 mg/l which is within tolerance limit for Class A water.
The DO value ranged between 4.5 to 10.0 mg/l with this years average being 6.8 mg/l.
The fluoride value range is observed to be in between 0.00 to 0.44 mg/l and water is safe for human consumption with respect to fluoride.
Average TDS value ranged between 108 – 438 mg/l with this years average value being 190 mg/l and is within the tolerance limit for Class A is 500 mg/l.

River 4 Kwano :

The BOD value ranged between 1.4 to 4.7 mg/l with this Years average BOD being 3.4 mg/l onl, which is slightly higher than Class A waters..
The DO value lies in between 2.0 to 7.4 mg/l.
The fluoride levels vary in between 0.05 to 0.49 mg/l and water is safe for human consumption with respect to fluoride.
TDS value lies in the range of 115 to 325 mg/l and is within the tolerance limit for Class A is 500 mg/l.
Total Coliform in the river waters were found to be in the range of 1500-11000 MPN.

River 5 Sarju :

The BOD value lies in between 0.4 to 1.8 mg/l which is within tolerance limit for Class A water.
The Average DO value is about 7.4 mg/l which is within tolerance limit for Class A water.
The range of Fluoride values is between 0.11- 0.30 mg/l and water is safe for human consumption with respect to fluoride.
TDS value varied between 96 - 207 mg/l. Tolerance limit for TDS for Class A is 500 mg/l.
The Total Coliform values lies in between 700 – 5000 MPN.

In general the water quality of Ghaghra and its tribuatries are till now within permissible limits /slightly above permissible limits for BOD, DO, TDC, Fluoride. The Total Coliform at all stations were found to be much above the permissible limits and is the only matter of concern for Ghaghra river/its Tributaries.

History Sheet

&

WQ Data

2016-17

केवल सरकारी उपयोग हेतु
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जल गुणवत्ता वर्ष पुस्तिका

WATER QUALITY YEAR BOOK

जून 2016 – मई 2017 June 2016 - May 2017

घाघरा बेसिन

GHAGHRA BASIN

जल विज्ञानीय प्रेक्षण परिमण्डल
HYDROLOGICAL OBSERVATION CIRCLE

केन्द्रीय जल आयोग
CENTRAL WATER COMMISSION

वाराणसी
VARANASI

PREFACE

Water is a prime natural resource and basic human need. The National Water Policy lays stress on planning and development of water resources on a national perspective. The prime requisite of water resources planning is indeed an efficient information system on the quantity and quality of this time and space variable precious natural asset.

The Central Water Commission in its capacity as an apex technical organisation in the field of water resources development endeavours the gigantic task of collection and compilation of Water Quality data incorporating the quality and quantity of available waters in various basins of the country. The Water Quality Books of various river basins of the country are being published by Central Water Commission in order to make its effective and efficient use.

The present volume contains information and trend on various water quality parameters measured at **10 water quality stations on river Ghaghra** and its tributaries for the year 2016-2017.

The valuable guidance and inspiration of **Shri Pradeep Kumar, Member**, **RM**, CWC, New Delhi and **Shri S.K.Sibal, Chief Engineer**, Upper Ganga Basin Organisation, CWC, Lucknow is gratefully acknowledged.

I would like to place on record the special contribution made by **officers and staff** of **Hydrological Observation Circle, Varanasi and Middle Ganga Division-I, Lucknow** in compilation of information and publication of the report in present form.

It is hoped that this publication will be found useful for the planners, managers and users in the field of water resources.

(Anupam Prasad)
SUPERINTENDING ENGINEER
CENTRAL WATER COMMISSION
HYDROLOGICAL OBSERVATION CIRCLE
VARANASI

September, 2017

CONTENTS

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1. INTRODUCTION

1.1. Scope

1.1.1. Rapidly increasing population, rising standard of living ,exponential growth of industrialized and urbanization have exposed the Water Resources in general and rivers in particular to various form of degradation. It is therefore necessary to keep vigilant watch of quality of available fresh waters whose major sources in our country are rivers.

1.2. Source of Information

Middle Ganga Division No. I, Lucknow under the Hydrological Observation Circle, Central Water Commission, Varanasi is conducting Water Quality observations at nine sites in Ghaghra sub-basin. The finalised data for the year 2016-2017 is presented in the book. The details of the site is given in Table 1 and same has been located in index map .

T A B L E 1

Sl.No	Name of site	Station Code
1.	Ghat at Saryu	GGU63E9
2.	Paliakalan at Sarda	GGU6OI6
3.	Elgin Bridge at Ghaghra	GGUOOS2
4.	Ayodhya at Ghaghra	GGUOOM9
5.	Basti at Kwano	GGU4OJ3
6.	Balrampur at Rapti	GGU3OU4
7.	Regauli at Rapti	GGU3OH1
8.	Birdghat at Rapti	GGU3OF5
9.	Turtipar at Ghaghra	GGUOOF1
10.	Bansi at Rapti	GGU30N9

1.3. Observation Technique

Water samples from all the Water Quality stations are collected on 1st working day of the month and transported to divisional laboratory where systematic analysis is conducted for the determination of constituents like pH, Specific Conductance, Potassium (as K^{+}), Sodium (as Na^{+}), Calcium (as Ca^{++}), Magnesium (as Mg^{++}), Iron (as Fe^{++}), Nitrogen Ammoniacal (as NH_4-N), Carbonate (as CO_3^{--}), Bicarbonate (as HCO_3^{-}), Chloride (as Cl^{-}), Fluoride (as F^{-}), Sulphate (as SO_4^{--}), Nitrate (as NO_3^{-}), Nitrite (as NO_2^{-}), Phosphate (as PO_4^{---}), Silica (as SiO_2) and Boron (as B).

pH and Specific Conductance are determined by digital pH meter and conductivity meter. Cl^{-}, CO_3^{--}, HCO_3^{-} , Ca^{++} and Mg^{++} are estimated by titration method. SO_4^{--} is estimated by turbidimetric method with the help of Nephelometer. Na^{+} and K^{+} estimation is done by the method of flame emission with the help of Flame photometer and rest by the method of colorimetric estimation with the help of U-V Spectrophotometer.

In addition to the above, Dissolved Oxygen is also estimated. Biochemical Oxygen Demand, Chemical Oxygen Demand and Microbiological Parameters such as Total Coliform & Fecal Coliform are determined at selected sites.

2. WATER QUALITY DATA

2.1 Explanatory Notes

The explanatory notes, described hereunder, are designed to assist in the interpretation of various parameters contained in the data presented subsequently.

i) The water samples are collected at a regular frequency of once in a month usually on the 1st working day from the main flowing portion of the stream.

ii) Dissolved Oxygen is measured at the site laboratory/ Divisional Laboratory.

iii) The other water quality parameters are analysed at the divisional laboratory.

iv) Chemical Indices, namely, Hardness Number, Sodium Percentage, Sodium Adsorption Ratio and Residual Sodium Carbonate are calculated as follows :

a. Hardness Number (HAR) is calculated by adding the total Ca^{++} and Mg^{++} in the sample expressed as equivalent parts of $CaCO_3$.

b. Sodium Percentage (S.P.) is given by

$$S.P.= (Na^{+} x100) / (Ca^{++} + Mg^{++} + Na^{+} + K^{+})$$

Ionic concentrations being in meq/litre.

c. Sodium Adsorption Ratio (S.A.R.) is given by

$$S.A.R. = Na^{+} / \{(Ca^{++} + Mg^{++})/2\}^{½}$$

Where the ionic concentration being in meq/litre.

d. Residual Sodium Carbonate (R.S.C.) is given by

$$R.S.C. = (CO_3^{--} + HCO_3^{-}) - (Ca^{++} + Mg^{++})$$

Where concentration of all the ions being in meq/litre.

v) Water year ranges from June 1st of one calendar year to May 31st of the next calendar year and covers one complete hydrological cycle.

vi) The gauging station code number is a unique seven column alpha-numeric reference number which facilitates storage and retrieval of water quality data in data banks. The first column is identifier of either an integral river basin or for convenience, a region having several contiguous river catchments. This is followed by a column which identifies an independent river system which either have one or more outlets to the sea or crosses international border to enter another country. The third, fourth and fifth column spaces denote first, second and third order tributaries respectively from the mouth upstream. The sixth and seventh column spaces indicate the location of the gauging station in one of the 225 slots earmarked on the river. The blank column spaces are filled by zero.

2.2 Method of Presentation

In the succeeding pages, station-wise water quality data and its trend is presented, comprising history sheet and water quality analysis tables.

History sheet gives concise description of the water quality observation station. The water quality analysis tables are given season-wise (flood, winter, summer) for the river water. The samples of water quality analysis are collected once a month as already mentioned in para 2.1 above.

3. WATER QUALITY TOLERANCE AND CLASSIFICATION

As per ISI-IS: 2296-1982, the tolerance limits of parameters are specified as per classified use of water (Table 1,2,3,4,5 Annexed) depending on various uses of water. The following classifications have been adopted in India.

Classification	Type of use
Class A	Drinking water source without conventional treatment but After disinfection.
Class B	Outdoor bathing.
Class C	Drinking water source with conventional treatment followed by disinfection.
Class D	Fish culture and wild life propagation .
Class E	Irrigation , Industrial cooling or controlled waste disposal.

TABLE-1

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – A

`

S. No.	Characteristic	Tolerance
(i)	pH value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l, ((Min))	6.0
(iii)	Bio-chemical Oxygen Demand ((Max))	2.0
(iv)	Total Coliform Organisms, MPN/100 ml,((Max))	50
(v)	Colour, Hazen units, ((Max))	10
(vi)	Odour	unobjectionable
(Vii)	Taste	Agreeable taste
(viii)	Total Dissolved Solids, mg/l, (Max)	500
(ix)	Total Hardness (as CaCO3), mg/l ,(Max)	300
(x)	Calcium Hardness (as CaCO3), mg/l, (Max)	200
(xi)	Magnesium (as CaCO3), mg/l,(Max)	100
(xii)	Copper (as Cu), mg/l, (Max)	1.5
(xiii)	Iron (as Fe), mg/l,(Max)	0.3
(xiv)	Manganese (as Mn), mg/l,(Max)	0.5
(xv)	Chlorides (as Cl), mg/l,(Max)	250
(xvi)	Sulphate (as SO4), mg/l ,(Max)	400
(xvii)	Nitrates (as NO2), mg/l,(Max)	20
(xviii)	Fluorides (as F,) mg/l,(Max)	1.5
(xix)	Phenolic compounds(as C6H5OH), mg/l,(Max)	0.002
(xx)	Mercury (as Hg), mg/l ,(Max)	0.001
(xxi)	Cadmium (as Cd), mg/l,(Max)	0.01
(xxii)	Selenium (as Se), mg/l ,(Max)	0.01
(xxiii)	Arsenic (as As), mg/l,(Max)	0.05
(xxiv)	Cyanides (as CN), mg/l, (Max)	0.05
(xxv)	Lead (as Pb), mg/l, (Max)	0.1
(xxvi)	Zinc (as Zn), mg/l, (Max)	15
(xxvii)	Chromium (asCr6+), mg/l,(Max)	0.05
(xxviii)	Anionic detergents, (as MBAS), mg/l ,(Max) .	0.2
(xxix)	Poly-nuclear aromatic hydrocarbons (PAH),	0.2
(xxx)	Barium (as Ba), mg/l ,(Max)	1.0
(xxxi)	Silver (as Ag), mg/l (Max)	0.05
(xxxii)	Pesticides	Absent
(xxxiii)	Alpha emitters, µc/ml, (Max)	10^{-9}
(xxxiv)	Beta emitters, µc/ml, (Max)	10^{-8}

TABLE- 2

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – B

S. No.	Characteristic	Tolerance
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l,(Min)	5.0
(iii)	Biochemical Oxygen Demand (5 days at 20 °C), (Max)	3.0
(iv)	Total Coliform Organisms, MPN/100 ml, (Max)	500
(v)	Fluorides (as F)<mg/l, (Max)	1.5
(vi)	Colour, Hazen units, (Max)	300
(vii)	Cyanides (as CN), mg/l, (Max)	0.05
(viii)	Arsenic (as As), mg/l, (Max)	0.2
(ix)	Phenolic Compounds (as C_6H_5OH) mg/l, (Max)	0.005
(x)	Chromium (as Cr6+), mg/l, (Max)	1.0
(xi)	Anionic detergents (as MBAS), mg/l, (Max)	1.0
(xii)	Alpha emitters, µc/ml, (Max)	10^{-8}

TABLE- 3

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS – C

S. No.	Characteristic	Tolerance
(i)	pH Value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l (Min)imum	4.0
(iii)	Biochemical Oxygen Demand	3.0
(iv)	Total coliform organisms, MPN/100 ml, (Max)	5000
(v)	Colour, Hazen units, (Max)	300
(vi)	Fluorides (as F), mg/l ,(Max)	1.5
(vii)	Cadmium (as Cd), mg/l, (Max)	0.01
(viii)	Chlorides (as Cl), mg/l, (Max)	600
(ix)	Chromium (as Cr6+), mg/l, (Max)	0.05
(x)	Cyanides (as CN), mg/l, (Max)	0.05
(xi)	Total Dissolved Solids, mg/l, (Max)	1500
(xii)	Selenium (as Se), mg/l, (Max)	0.05
(xiii)	Sulphates (as SO4), mg/l, (Max)	400
(xiv)	Lead (as Pb), mg/l, (Max)	0.1
(xv)	Copper (as Cu),mg/l,(Max)	1.5
(xvi)	Arsenic (as As), mg/l, (Max)	0.2
(xvii)	Iron (as Fe), mg/l, (Max)	50
(xviii)	Phenolic compounds (as C6H5OH), mg/l, (Max)	0.005
(xix)	Zinc (as Zn), mg/l, (Max)	15
(xx)	Insecticides, mg/l, (Max)	Absent
(xxi)	Anionic detergents (as MBAS), mg/l, (Max)	1.0
(xxii)	Oils and grease, mg/l, (Max)	0.1
(xxiii)	Nitrates (as NO3), mg/l,(Max)	50
(xxiv)	Alpha emititers, µc/mg, (Max)	10-9
(xxv)	Beta emitters, µc/ml, (Max)	10-8

TABLE-4

TOLERANCE LIMITS FOR INLAND SURFACE WATERS, CLASS -D

S. No.	Characteristic	Tolerance
(i)	pH value	6.5 to 8.5
(ii)	Dissolved Oxygen, mg/l, (Min).	4.0
(iii)	Free Ammonia (as N), mg/l, (Max).	1.2
(iv)	Electrical Conductance at 25 °C, µ S, (Max)	1000
(v)	Free Carbon Dioxide (as C02),mg/l, (Max)	6.0
(vi)	Oils and Grease, mg/l, (Max)	0.1
(vii)	Alpha emitters, µ c/ml, (Max)	10^{-9}
(viii)	Beta emitters, µ c/ml, (Max)	10^{-8}

TABLE- 5

TOLERANCE LIMITS FOR INLAND SURFACE WATERS,CLASS -E

S. No.	Characteristic	Tolerance
(i)	pH value	6.0 to 8.5
(ii)	Electrical Conductance at 25°C, μ S, (Max)	2250
(iii)	Sodium Adsorption Ratio, (Max)	26
(iv)	Boron (as B), mg/l, (Max)	2.0
(v)	Total Dissolved Solids, (inorganic), mg/l, (Max)	2100
(vi)	Sulphates (as SO4), mg/l, (Max)	1000
(vii)	Chlorides (as Cl), Mg/l, (Max)	600
(viii)	Sodium Percentage, (Max)	60
(ix)	Alpha emitters, μ c/ml, (Max)	10^{-9}
(x)	Beta emitters, μ c/ml, (Max)	10^{-8}

4.0 TREND ANAYSIS / SCENARIO IN GHAGHRA BASIN

The river Ghaghra rises in the southern slopes of the Himalayas in Tibet, in the glaciers of Mapchachungo. The river flows south through Nepal as the Karnali River and flows through one of the most deserted and least explored area of Nepal. Seti River is a 202 km long stream feeding this river and drains the western part of the catchment, and joins the Karnali River in Doti north of Dundras Hill. Another feeder stream is the Bheri river that is 264 km long and drains in the eastern part of the catchment and converges with the Karnali River near Kuineghat in Surkhet. Moving southwards across the Siwalik Hills, it splits into two branches, first Geruva on the left bank and Kauraliaon the right bank near downstream Chisapani to rejoin south of the Indian border and form the Ghaghra proper.

Middle Ganga Division-1, Lucknow, Central Water Commission, under Hydrological Observation Circle, Varanasi has established a network of three monitoring stations on river Ghaghra. Starting from up-stream, there are three Water Quality monitoring stations at the Ghaghra river named Elginbridge, Ayodhya and Turtipar. Ghaghra basin map showing various sites on Ghaghra and Rapti, other tributaries like Sharda, Kwano and Sarju is given below.

Major Rivers : River Ghaghra is the major river in Middle Ganga Division –I, Lucknow. Middle Ganga Division -I, Lucknow has established a network of 10 Water quality monitoring stations in Ghaghra Basin & Rapti Basin under it's jurisdiction. This division is monitoring the water quality of Ghaghra at 3 site namely Elginbridge,Ayodhya and Turtipar and sites Balrampur, Bansi, Regauli and Birdghat at Rapti, Paliakalan at Sharda, Basti at Kwano and Ghat at Sarju The monitoring of surface waters is done on monthly basis. Water samples are analysed for physico-chemical and bacteriological parameters apart from the field observations.

W.Q. Network : Details of water quality station under jurisdiction of Middle Ganga Division – I , Lucknow are tabulated below.

S.No.	Name of Site	River	Classification
1	Elginbridge	Ghaghra	Trend
2	Ayodhya	Ghaghra	Flux
3	Turtipar	Ghaghra	Flux
4	Balrampur	Rapti	Trend
5	Bansi *	Rapti	Trend
6	Regauli	Rapti	Trend
7	Birdghat	Rapti	Flux
8	Paliakalan	Sharda	Trend
9	Basti	Kwano	Flux
10	Ghat	Sarju	Trend

* Bansi Site opened on 01/07/2014.

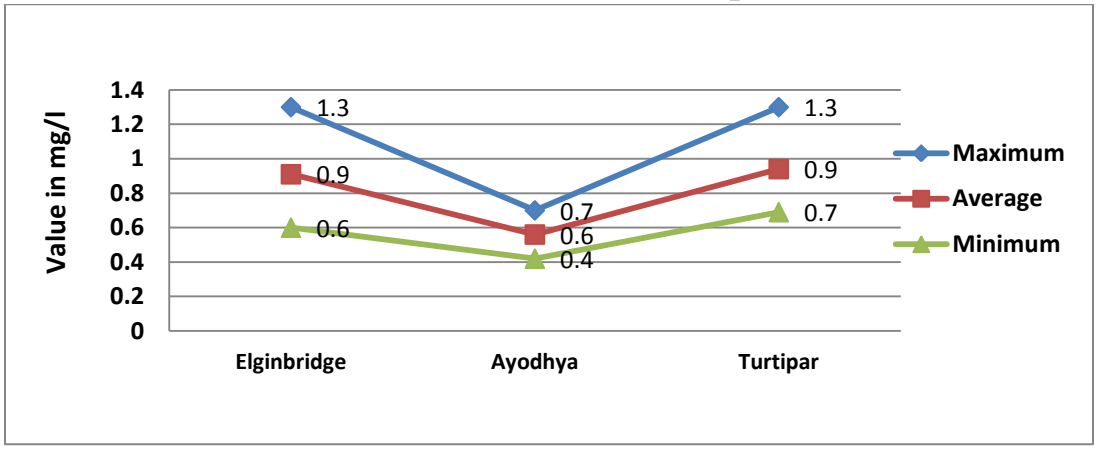
Analysis : To study the water quality / scenario in river Ghaghra, BOD, DO, fluoride and TDS parameters have been considered. Average value of these parameter for the period since inception(Inception to May 2016), last 10 years (Jun 2006 to May 2016) and last one year (Jun 2015 to May 2016) has been depicted in tables and figures below.

4.1 River : GHAGHRA (River 1) :

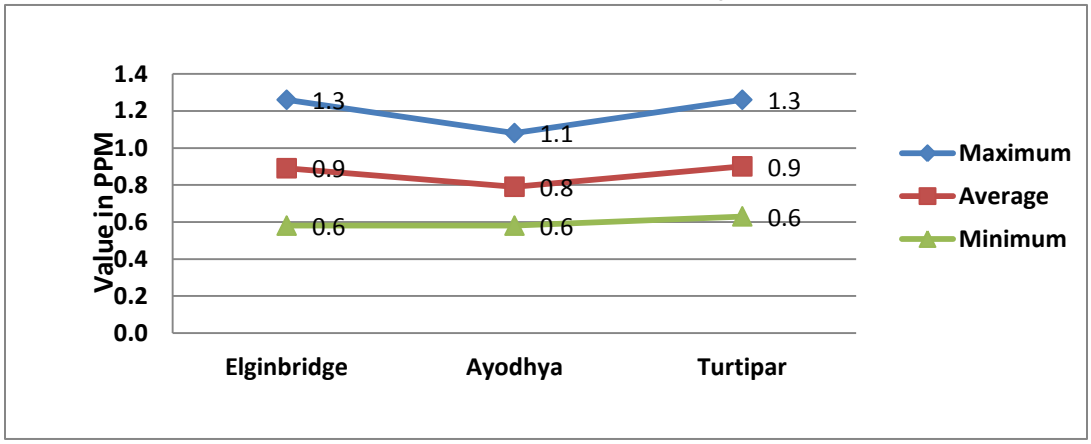
4.1.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	Past 10 year	Current year	Since inception	Past 10 year	Current year	Since inception	Past 10 year	Current year
Site 1 Elginbridge	15.03.1969	1.3	1.3	1.6	0.6	0.6	0.8	0.9	0.9	1.1
Site 2 Ayodhya	01.07.1983	0.7	1.1	2.2	0.4	0.6	1.0	0.6	0.8	1.4
Site 3 Turtipar	01.07.1983	1.3	1.3	1.8	0.7	0.6	1.2	0.9	0.9	1.3

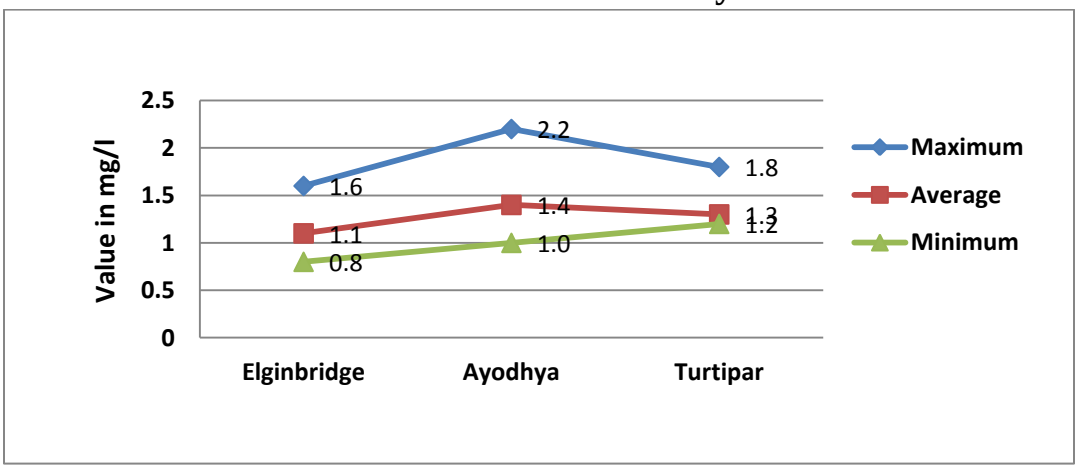
Parameter : BOD since inception



Parameter : BOD last 10 year



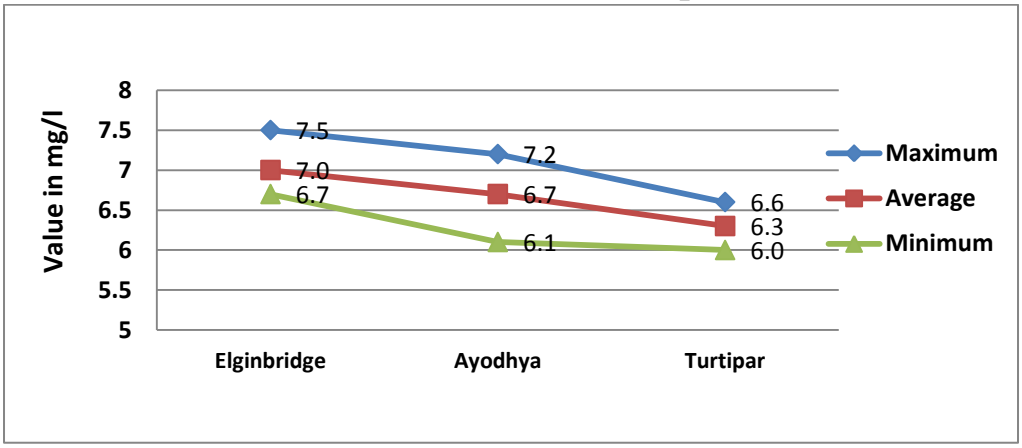
Parameter : BOD last one year



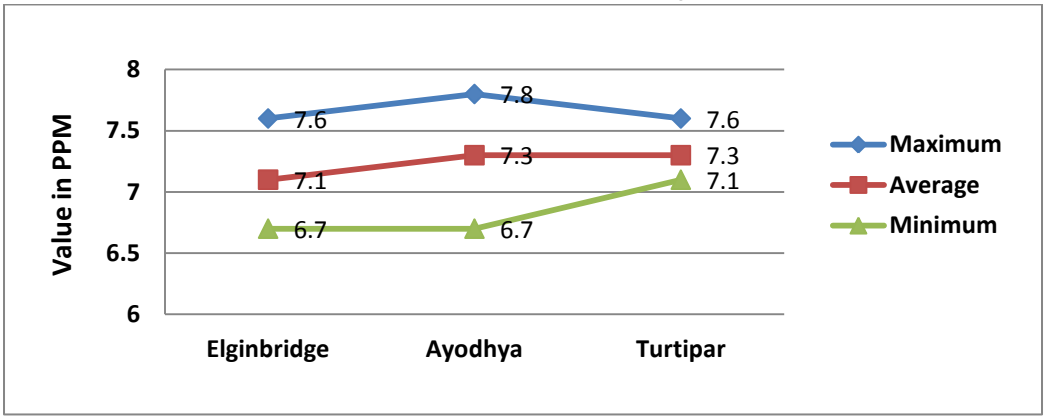
4.1.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Elginbridge	15.03.1969	7.5	7.6	7.5	6.7	6.7	6.5	7.0	7.1	7.1
Site 2 Ayodhya	01.07.1983	7.2	7.8	7.6	6.1	6.7	6.5	6.7	7.3	7.0
Site 3 Turtipar	01.07.1983	6.6	7.6	7.3	6.0	7.1	6.7	6.3	7.3	6.9

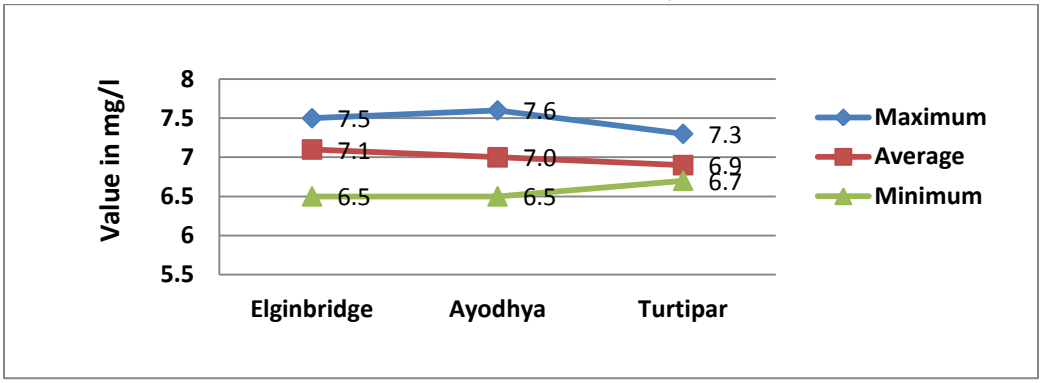
Parameter : DO since inception



Parameter : DO last 10 year



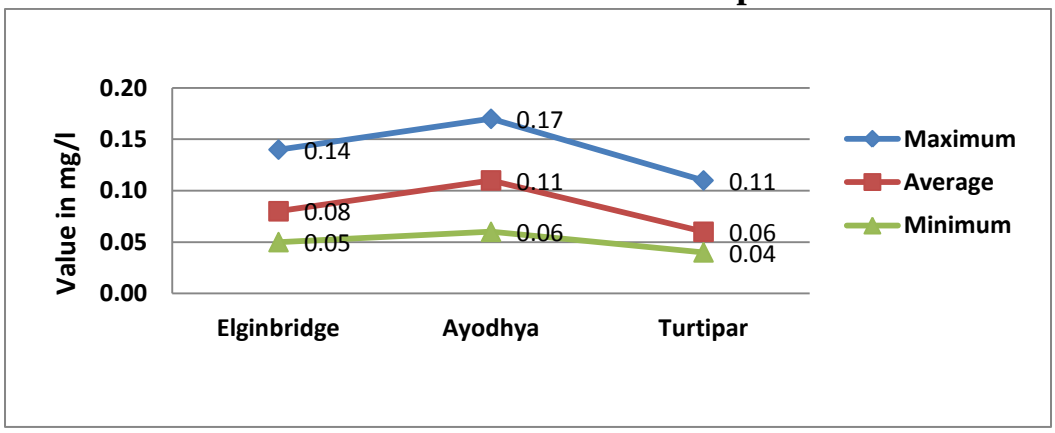
Parameter : DO last 1 year



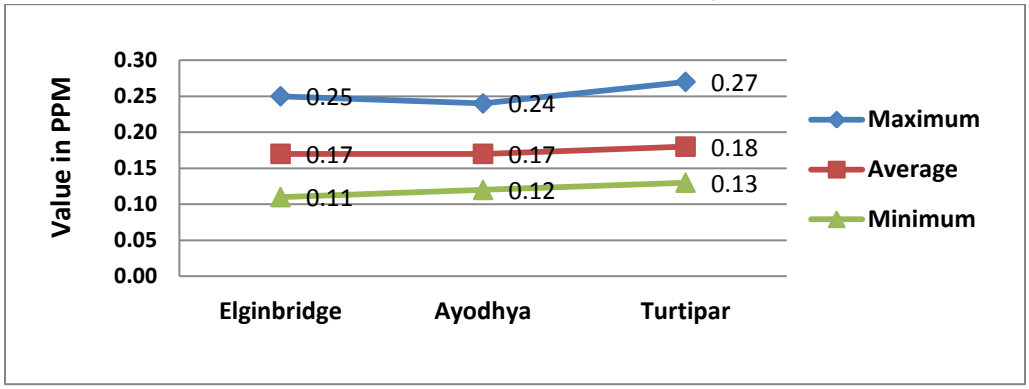
4.1.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Elginbridge	15.03.1969	0.14	0.24	0.34	0.05	0.11	0.18	0.08	0.17	0.24
Site 2 Ayodhya	01.07.1983	0.17	0.24	0.32	0.06	0.12	0.21	0.11	0.17	0.25
Site 3 Turtipar	01.07.1983	0.11	0.27	0.40	0.04	0.13	0.21	0.06	0.18	0.26

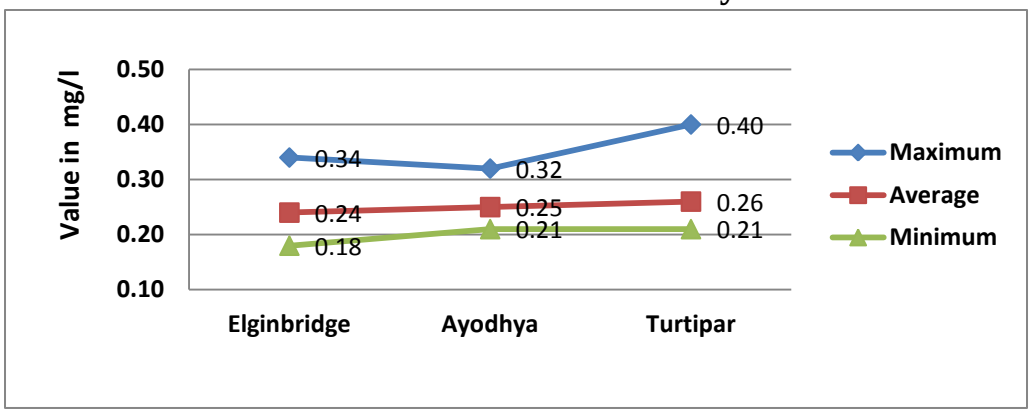
Parameter : Fluoride since inception



Parameter : Fluoride last 10 year



Parameter : Fluoride last one year

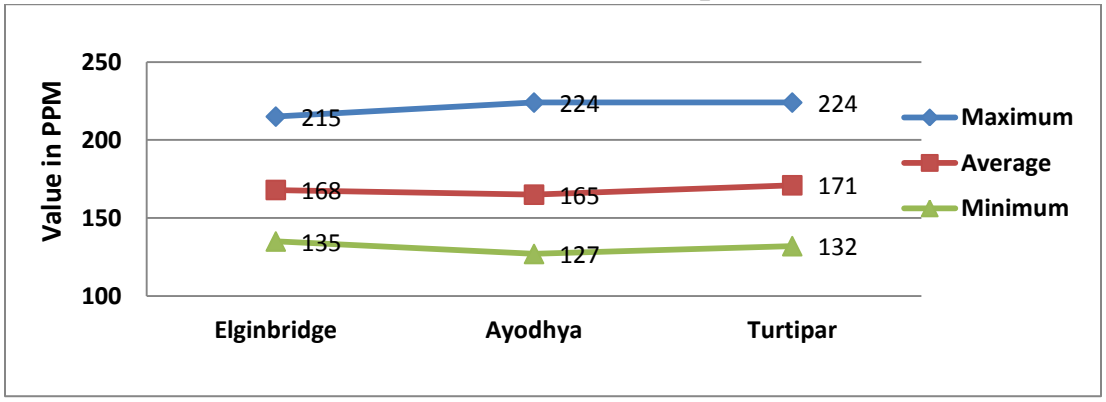


4.1.4 TDS in mg/l

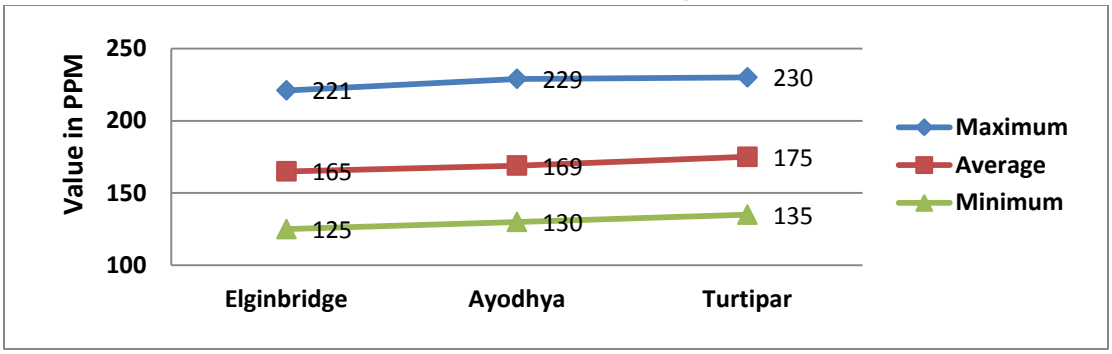
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Elginbridge	15.03.1969	215	221	171	135	125	102	168	165	129
Site 2 Ayodhya	01.07.1983	224	229	184	127	130	109	165	169	136
Site 3 Turtipar	01.07.1983	224	230	175	132	135	107	171	175	137

.

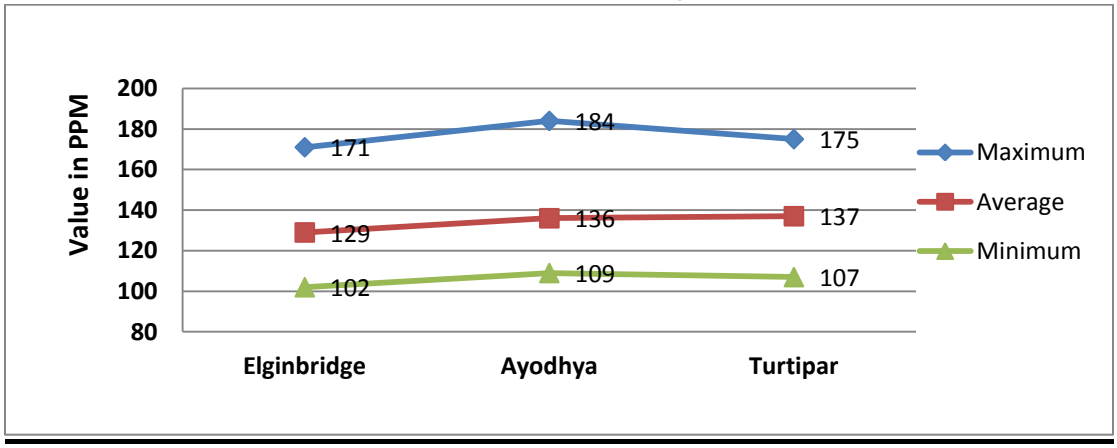
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last 1 year

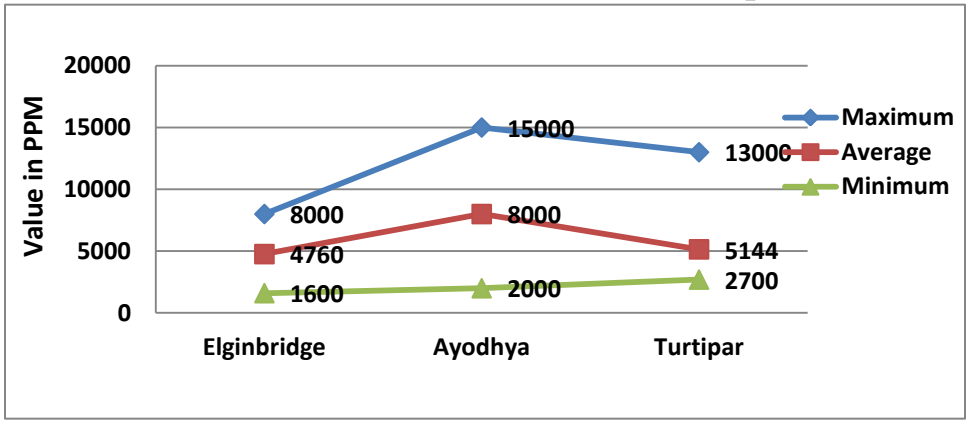


4.1.4 TOTAL COLIFORM IN MPN/100 ML

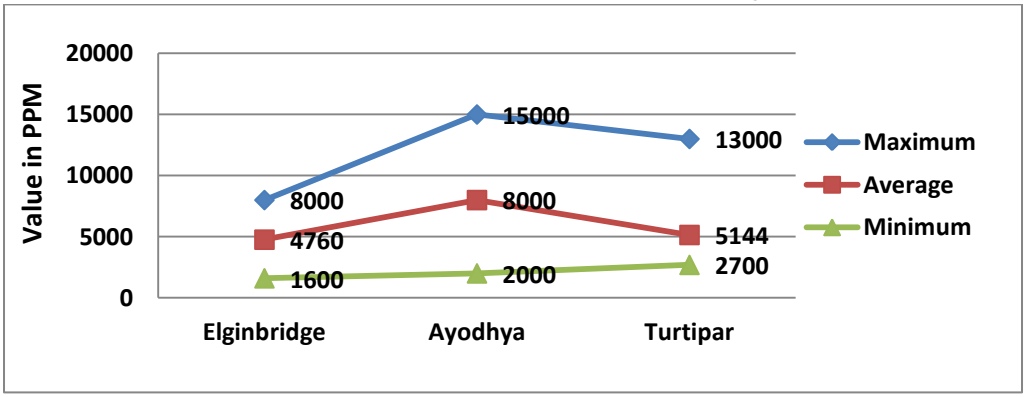
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Elginbridge	15.03.1969	8000	8000	8000	1600	1600	1600	4760	4760	4760
Site 2 Ayodhya	01.07.1983	15000	15000	15000	2000	2000	2000	8000	8000	8000
Site 3 Turtipar	01.07.1983	13000	13000	13000	2700	2700	2700	5144	5144	5144

***Analysis of total coliform started from 01.08.2016.

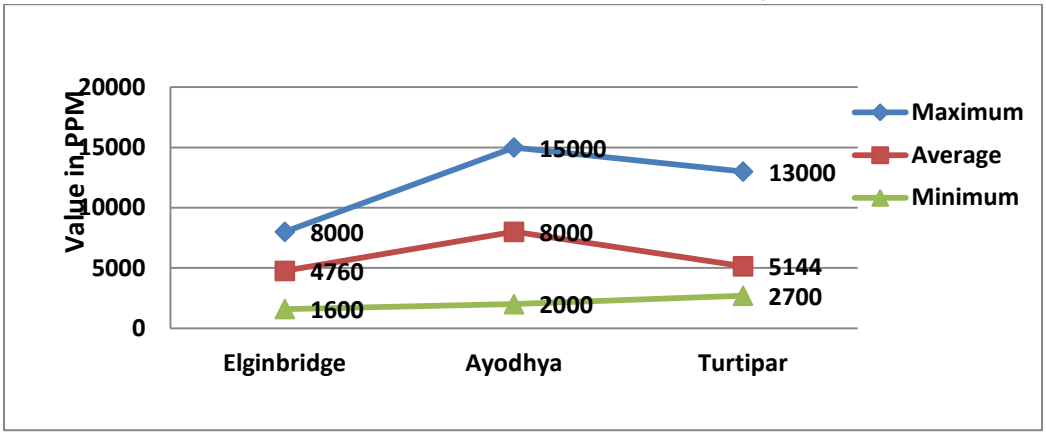
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 years



Parameter : Total Coliform last 1 year



4.2 River : RAPTI (River 2) : The Rapti's headwaters descent south from rugged highlands populated by Kham Magar. The western tributary Madi Khola rises in northwestern Rolpa and is joined by Lungri Khola draining northeastern Rolpa. The Mardi then crosses into Pyuthan. It is joined by east-flowing Arun Khola at Devithan where it enters a gorge through the Mahabharat Range. Jhimruk Khola east of the Mardi mainly drains Pyuthan. Below the upper highlands, an alluvial valley opens where Bahun and Chhetri rice farmers irrigate paddy fields. At Cherneta, Pyuthan the Jhimruk approaches within 1.5 km of the Mardi. Below Chernetathe Jhimruk loop east, becoming the border between Pyuthan and Arghakhanchi district. Its valley narrows and steepens as it enters the Mahabharat Range. Partway through it joins the Mardi and the combined flow is then named the Rapti.

The Rapti flows to the north of Behraich district. After traversing about 130 km, it enters to the northern portion of the Gonda district. River Rapti is important left bank tributary of river Ghaghra.

At present water quality is being monitored at four stations namely Balrampur, Bansi, Regauli and Birdghat on this river.

W.Q. Network :

S.No.	Name of Site	River	Class
1	Balrampur	Rapti	Trend
2	Bansi *	Rapti	Trend
3	Regauli	Rapti	Trend
4.	Birdghat	Rapti	Flux

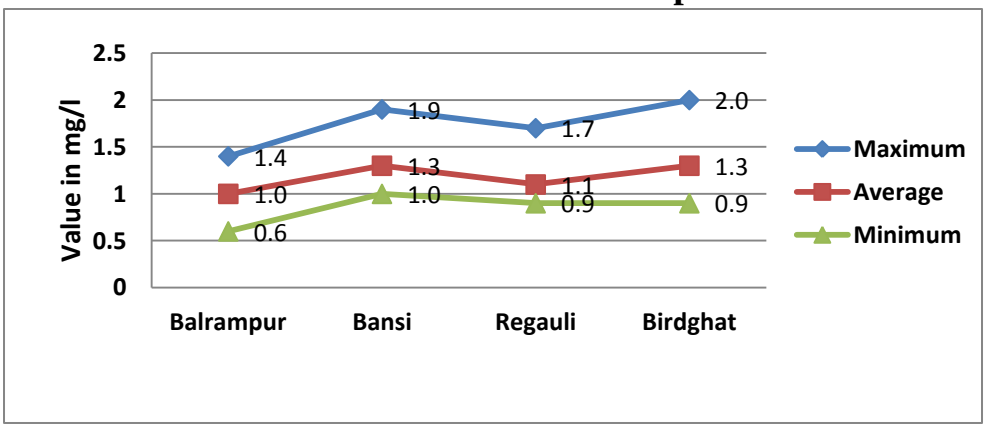
*Bansi site opened on 01/07/2014.

4.2.1 BOD in mg/l

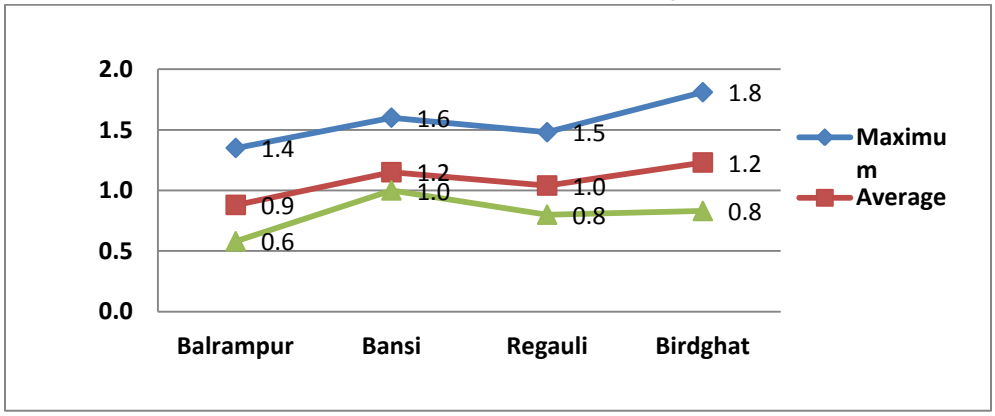
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	1.4	1.4	2.2	0.6	0.6	1.0	1.0	0.9	1.6
Site 2 Bansi*	01.07.2014	1.9	1.6	2.4	1.0	1.0	1.0	1.3	1.2	1.6
Site 3 Regauli	01.11.1980	1.7	1.5	3.9	0.9	0.8	1.4	1.1	1.0	2.0
Site 4 Birdghat	01.11.1980	2.0	1.8	3.5	0.9	0.8	1.2	1.3	1.2	2.1

***Bansi site opened on 01/07/2014.**

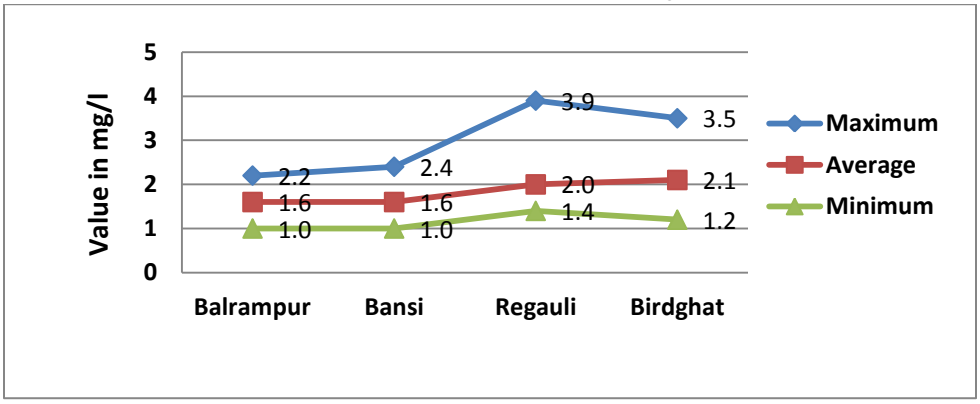
Parameter : BOD since inception



Parameter : BOD last 10 year



Parameter : BOD last one year

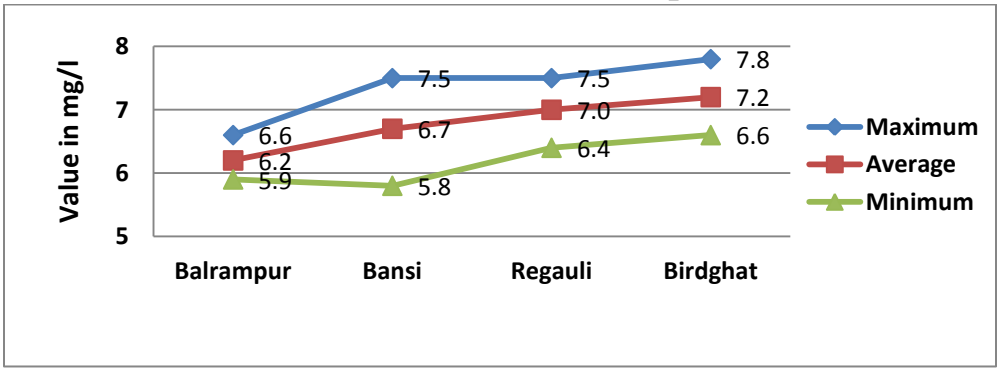


4.2.2 DO in mg/l

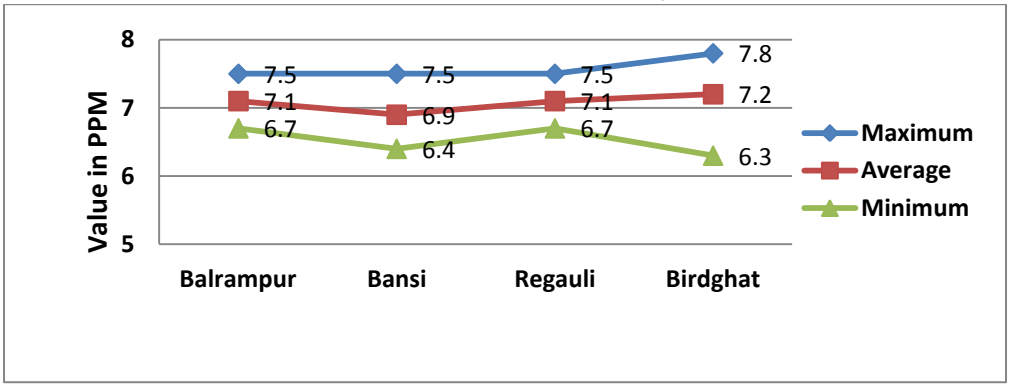
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	6.6	7.5	7.3	5.9	6.7	6.3	6.2	7.1	6.8
Site 2 Bansi*	01.07.2014	7.5	7.5	7.5	5.8	6.4	4.7	6.7	6.9	6.5
Site 3 Regauli	01.11.1980	7.5	7.5	7.5	6.4	6.7	4.1	7.0	7.1	6.5
Site 4 Birdghat	01.11.1980	7.8	7.8	6.9	6.6	6.3	4.3	7.2	7.2	6.1

***Bansi site opened on 01/07/2014.**

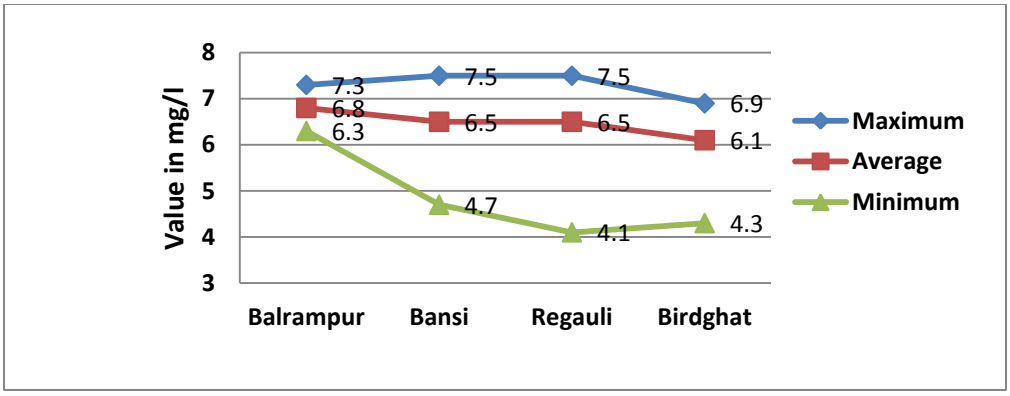
Parameter : DO since inception



Parameter : DO last 10 year



Parameter : DO last one year

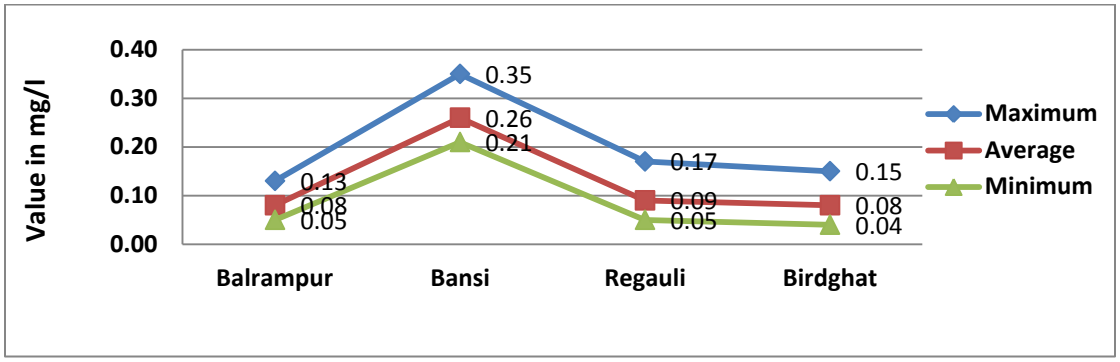


4.2.3 Fluoride in mg/l

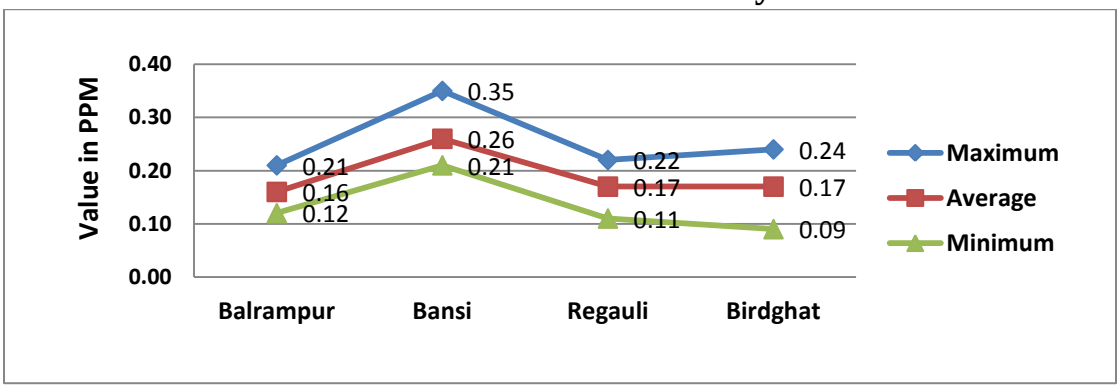
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	0.13	0.21	0.36	0.05	0.12	0.19	0.08	0.16	0.30
Site 2 Bansi*	01.07.2014	0.35	0.35	0.36	0.21	0.21	0.21	0.26	0.26	0.30
Site 3 Regauli	01.11.1980	0.17	0.22	0.40	0.05	0.11	0.21	0.09	0.17	0.29
Site 4 Birdghat	01.11.1980	0.15	0.24	0.44	0.04	0.09	0.21	0.08	0.17	0.30

***Bansi site opened on 01/07/2014.**

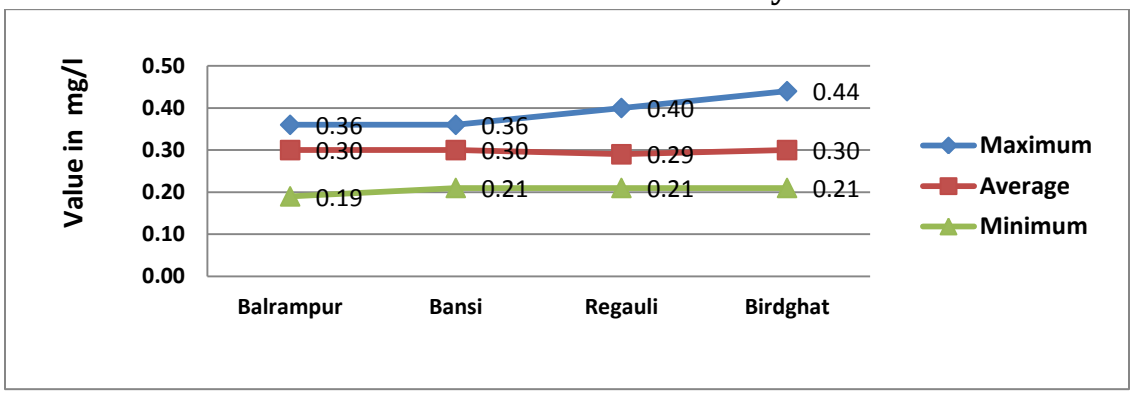
Parameter : Fluoride since inception



Parameter : Fluoride last 10 year



Parameter : Fluoride last one year

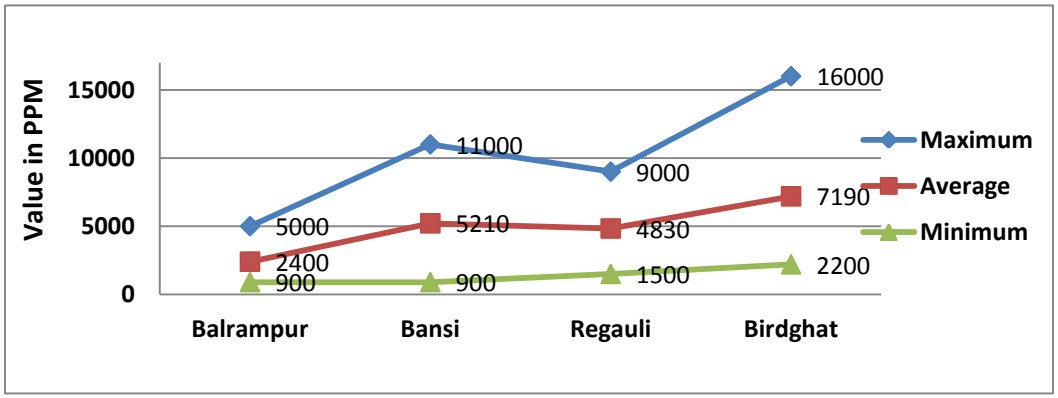


4.2.4 TOTAL COLIFORM IN MPN/100 ML

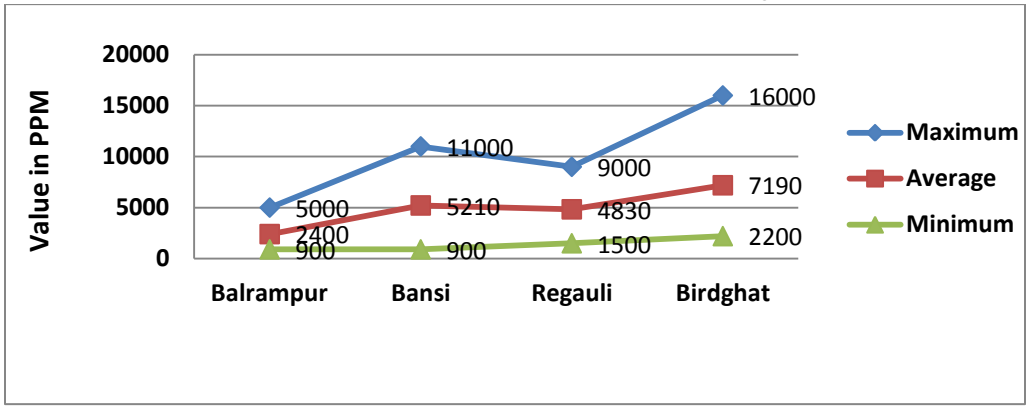
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	5000	5000	5000	900	900	900	2400	2400	2400
Site 2 Bansi*	01.07.2014	11000	11000	11000	900	900	900	5210	5210	5210
Site 3 Regauli	01.11.1980	9000	9000	9000	1500	1500	1500	4830	4830	4830
Site 4 Birdghat	01.11.1980	16000	16000	16000	2200	2200	2200	7190	7190	7190

*Analysis of total coliform started from 01.08.2016.

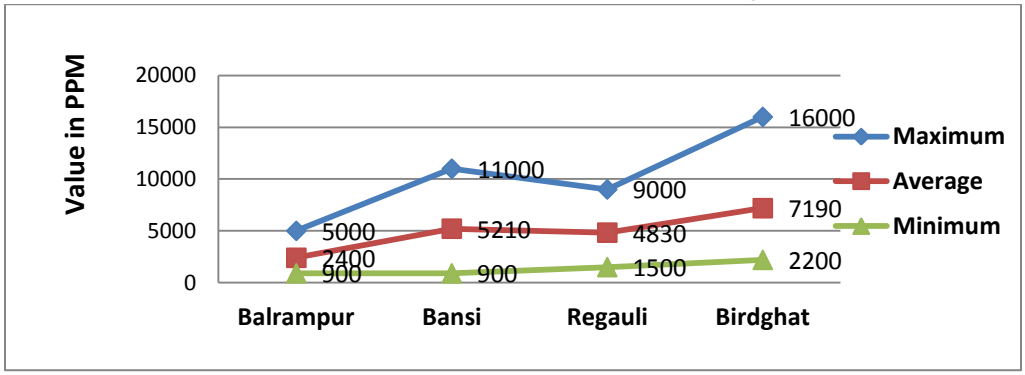
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 year



Parameter : Total Coliform last 1 year

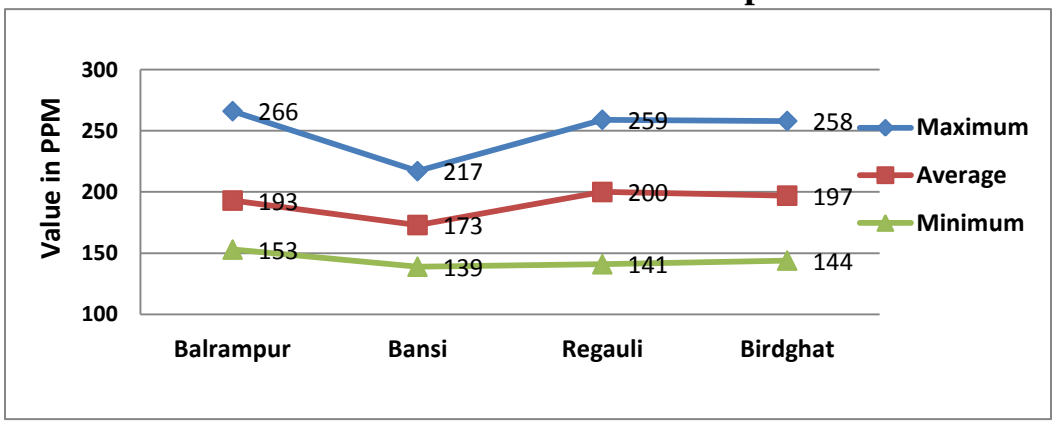


4.2.5 TDS in mg/l

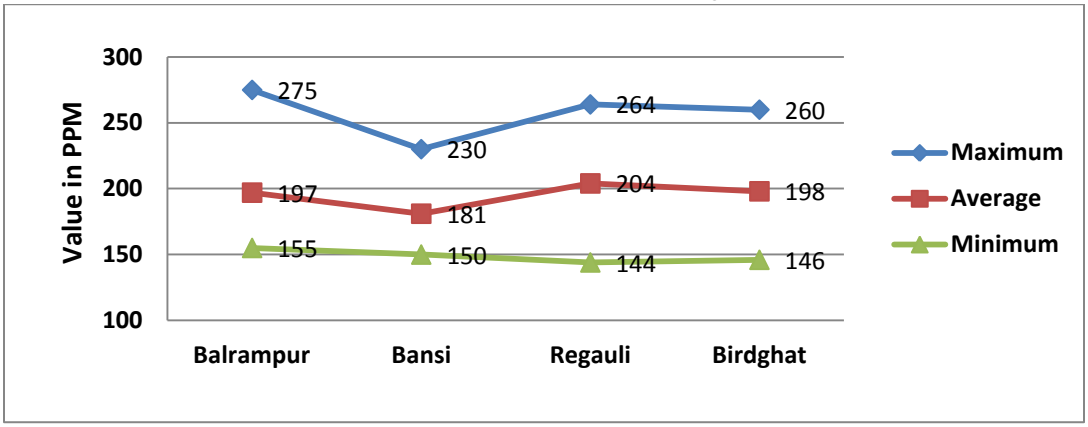
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Balrampur	01.11.1980	266	275	193	153	155	132	193	197	161
Site 2 Bansi*	01.07.2014	217	230	190	139	150	117	173	181	157
Site 3 Regauli	01.11.1980	259	264	220	141	144	120	200	204	172
Site 4 Birdghat	01.11.1980	258	260	231	144	146	121	197	198	185

***Bansi site opened on 01/07/2014.**

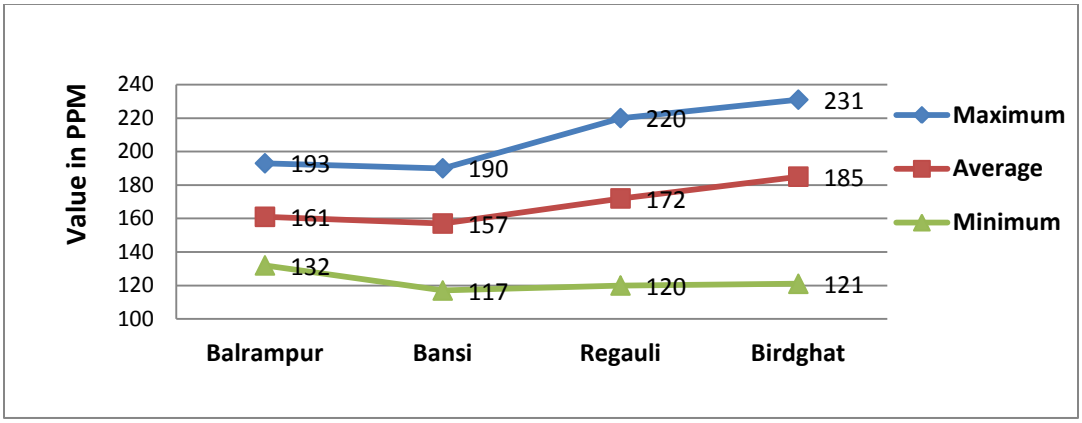
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last one year



4.3 River : SHARDA (River 3) : The river Sharda is known as river Maha Kali in origin. The traditional source of the Maha Kali is Lipmpiya Dhura in Pithoragarh district Uttarakhand. The geographic sources, however, are some five kms further north and some thousand meters higher streams emerging from glacier along the watershed. India's border with China's Tibet Autonomous Region follows this watershed. The Kali receives the right bank Dhauliganga. It passes a town Dharchula and receives the Gori Ganga at Jauljibi, exiting the high mountains that reach into alpine zone. The first important left bank tributary from Nepal, the Chameliya joins after flowing southwest from Nepal's Gurans Himal. A bazaar town Jhulaghat is on both sides of the river. Then the Kali receives the Sarju river.

The Kali exits hill region at Jogbudha Valley and receives two tributaries Ladhiya and Ramgun, then it enters the lower Siwalik hills. Tanakpur town is just above dam of Sharda Reservoir where water is diverted into an irrigation canal. The river exit the last hills into the Terai plains, passing town Banbasa and Mahendranagar. The international boder then turns

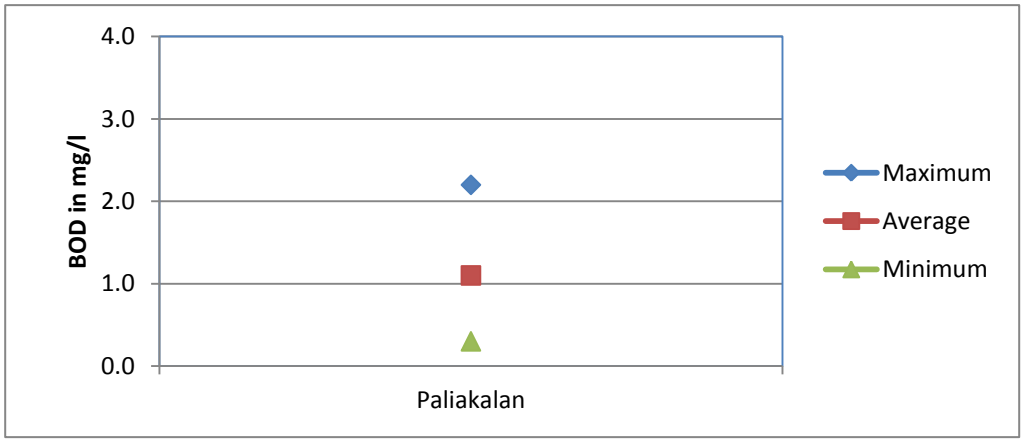
west of the river to follow a previous channel for some 10 km. here the river leaves Uttarakhand and crosses into Uttar Pradesh. Now the river's name changes to Sharda.

W.Q. Network :Water quality is being monitored on river Sharda at Paliakalan only.

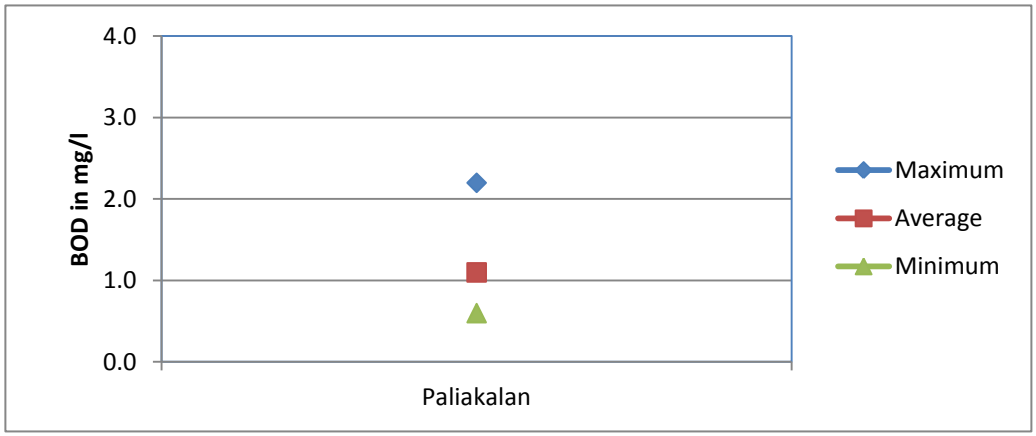
4.3.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Paliakalan	01.01.1969	2.2	2.2	1.8	0.3	0.6	1.1	1.1	1.1	1.5

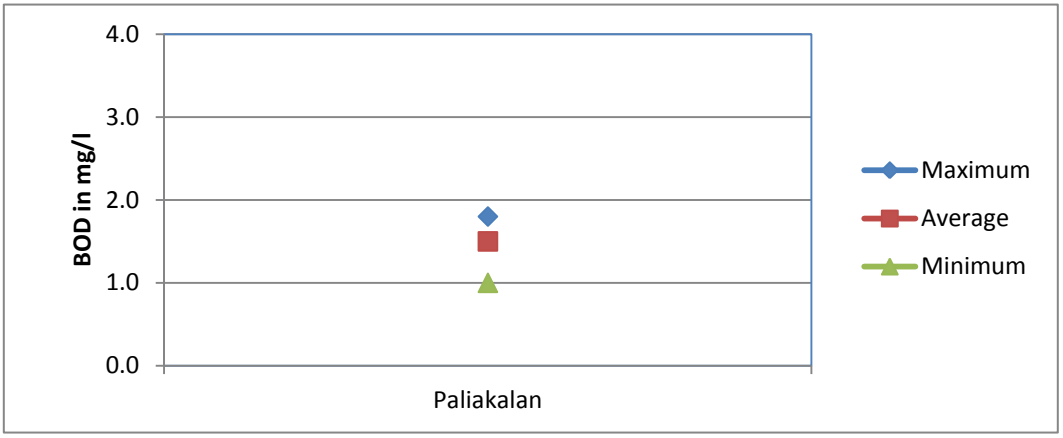
Parameter : BOD since inception



Parameter : BOD 10 year



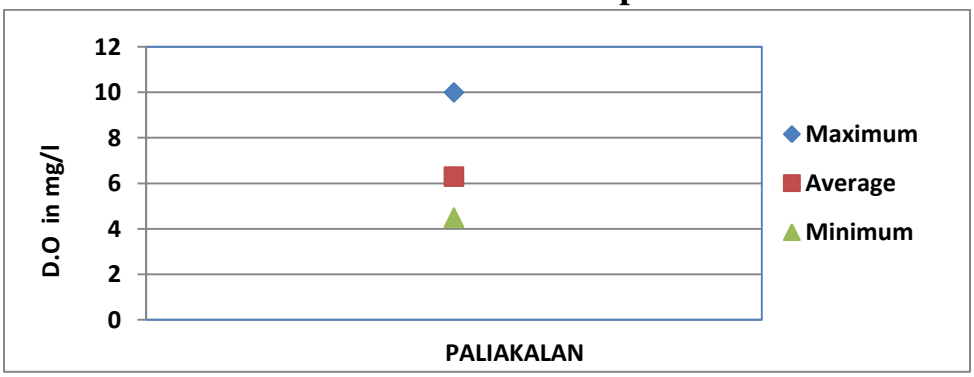
Parameter : BOD One year



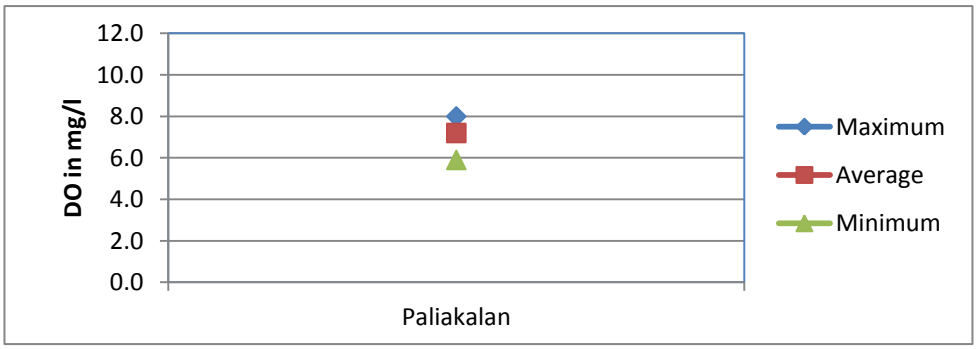
4.3.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Paliakalan	01.01.1969	10.0	8.0	7.1	4.5	5.9	6.3	7.3	7.2	6.8

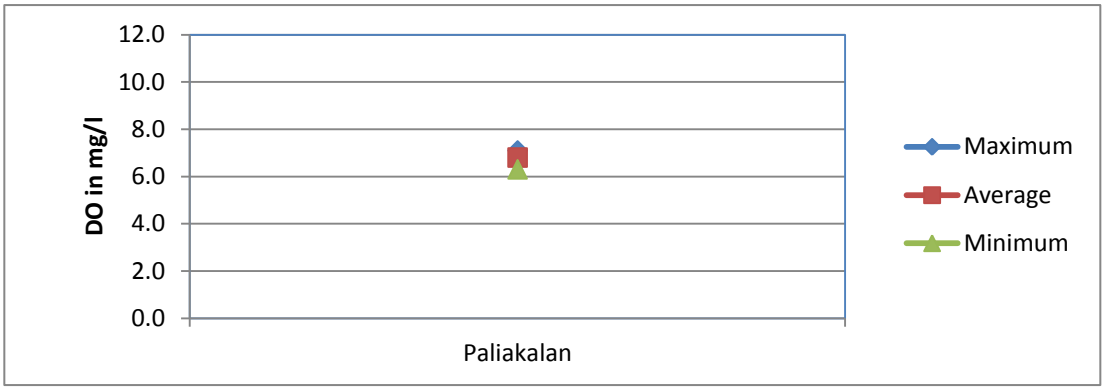
Parameter : DO since inception



Parameter : DO 10 Year



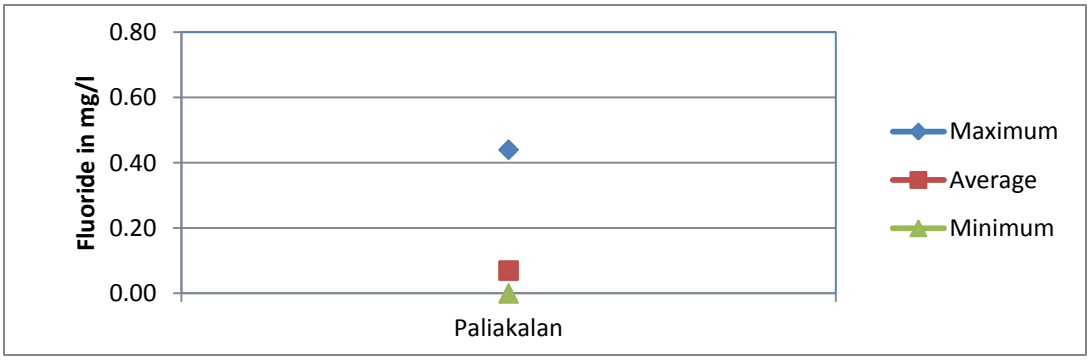
Parameter : DO One Year



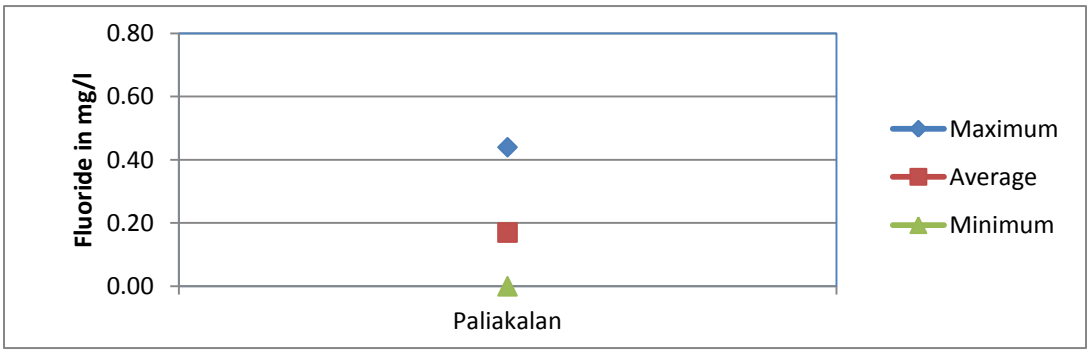
4.3.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Paliakalan	01.01.1969	0.44	0.44	0.36	0.00	0.00	0.25	0.07	0.17	0.30

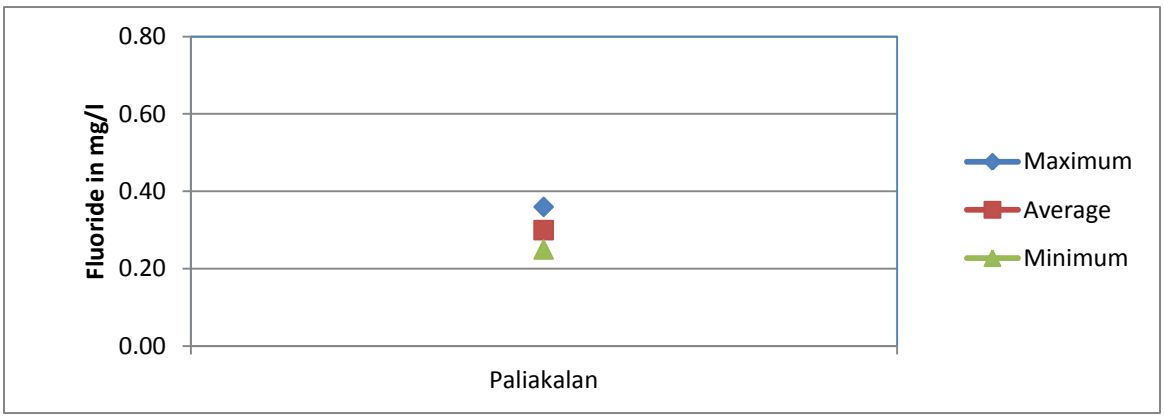
Parameter : Fluoride since inception



Parameter : Fluoride 10 Year



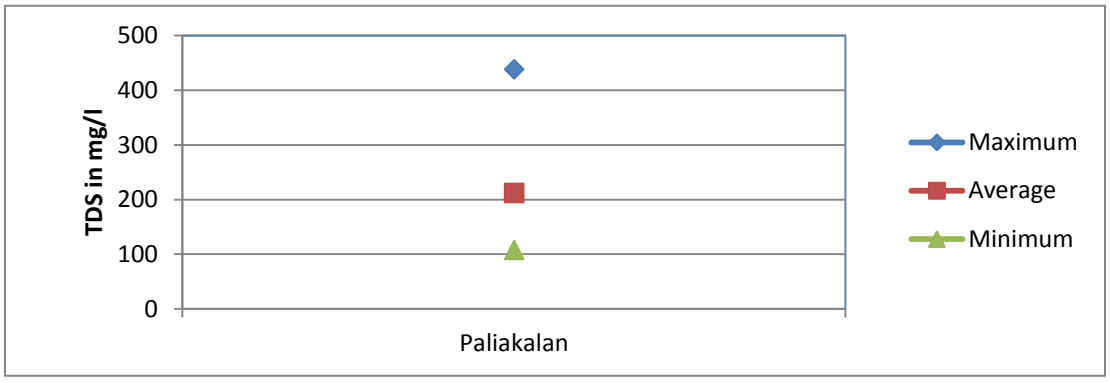
Parameter : Fluoride One Year



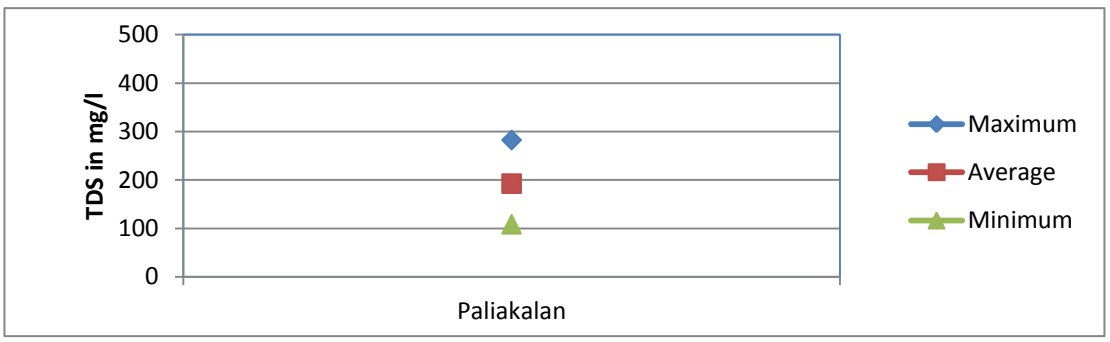
4.3.4 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception	10 year	One year	Since inception	10 year	One year	Since inception	10 year	One year
Site 1 Paliakalan	01.01.1969	438	282	270	108	108	130	212	192	190

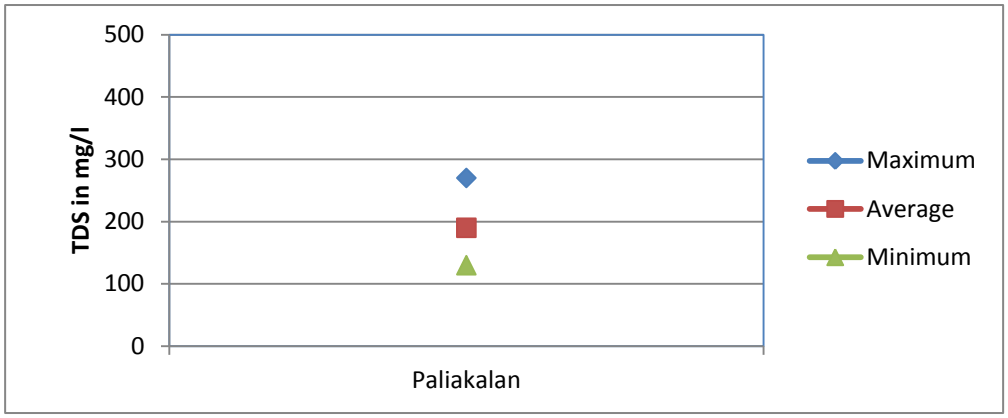
Parameter : TDS since inception



Parameter : TDS 10 year



Parameter : TDS one year



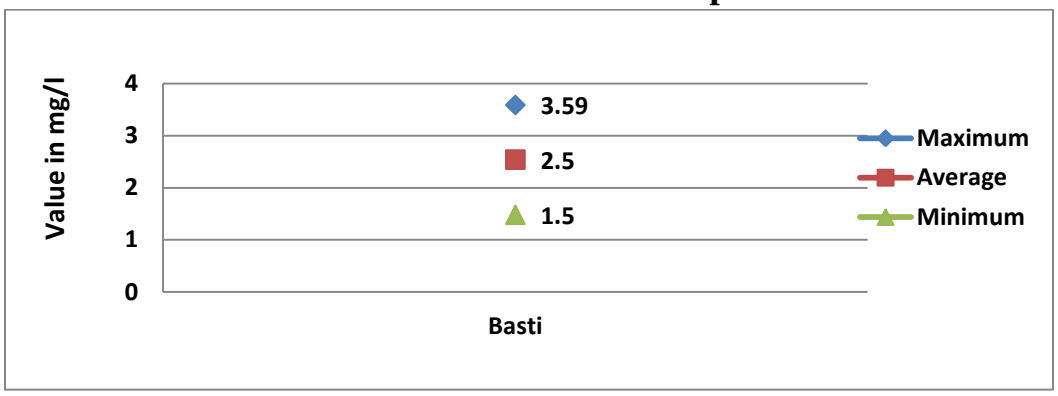
4.4 River : Kwano (River 4) : The river Kwano is a rain fed river and originates from Kwano hills in the district Bahraich of Uttar Pradesh. It passes though Gonda, Basti and Sant Kabir Nagar district. It joins Ghaghra near the place Raunapur in the midway of the boundary of districts Azamgarh and Sant Kabir Nagar.

W.Q. Network : Water quality is being monitored on river Kwano at Basti.

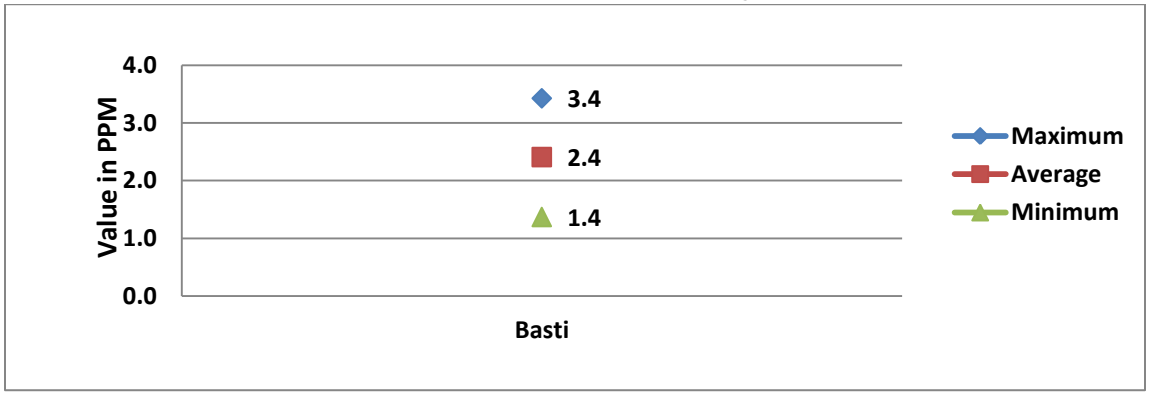
4.4.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	3.6	3.4	4.7	1.5	1.4	2.2	2.5	2.4	3.4

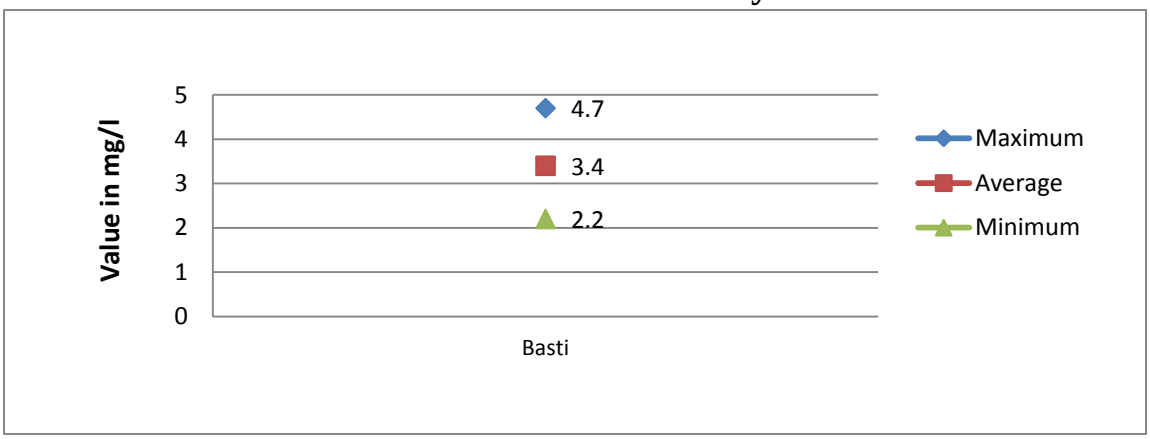
Parameter : BOD since inception



Parameter : BOD last 10 year



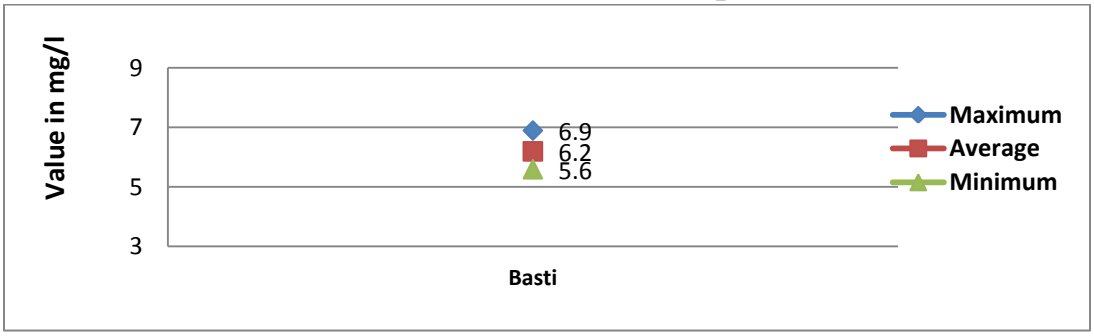
Parameter : BOD last one year



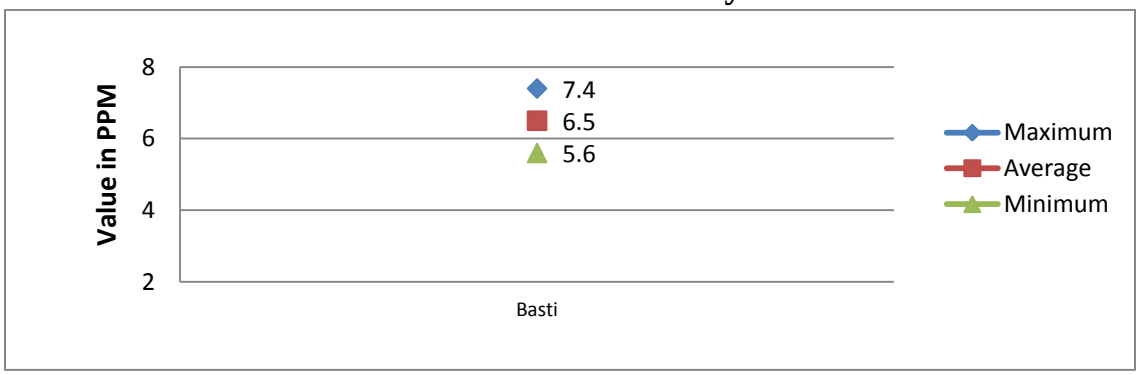
4.4.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	6.9	7.4	6.5	5.6	5.6	2.0	6.2	6.5	5.1

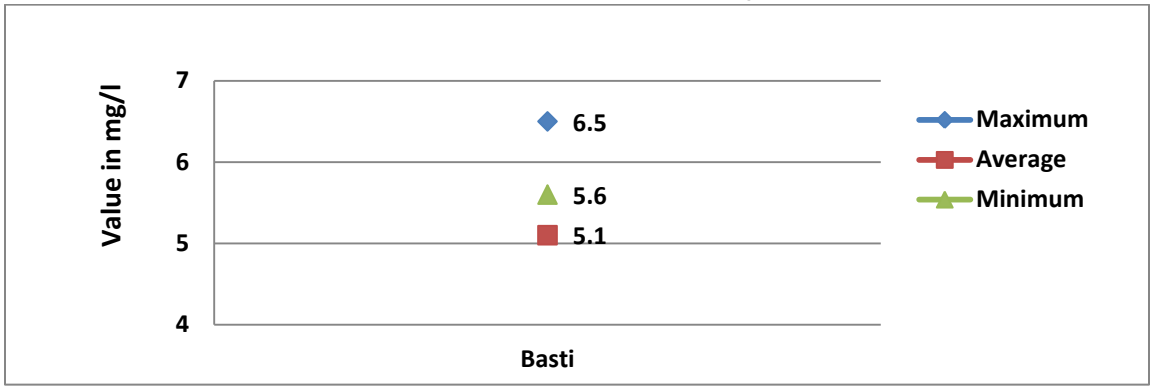
Parameter : DO since inception



Parameter : DO last 10 year



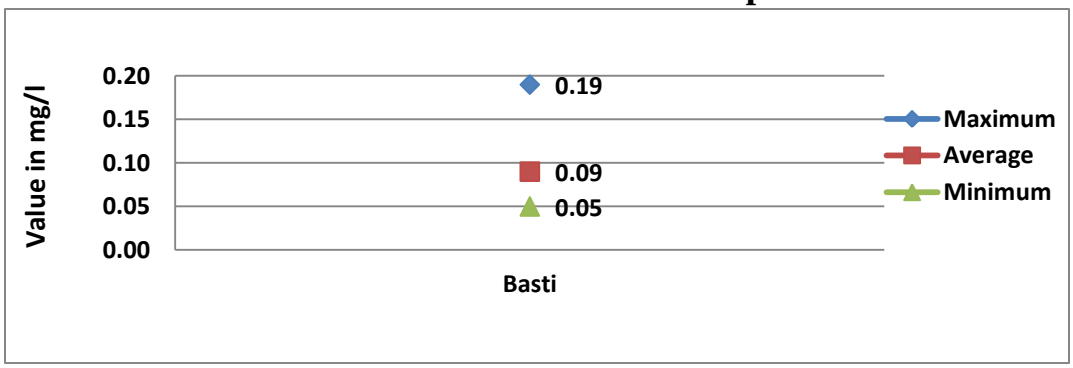
Parameter : DO last one year



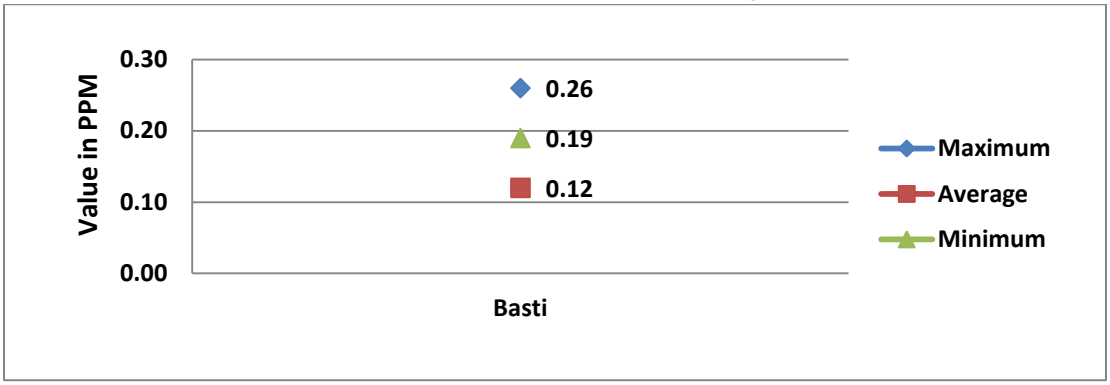
4.4.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	0.19	0.26	0.49	0.05	0.12	0.19	0.09	0.19	0.34

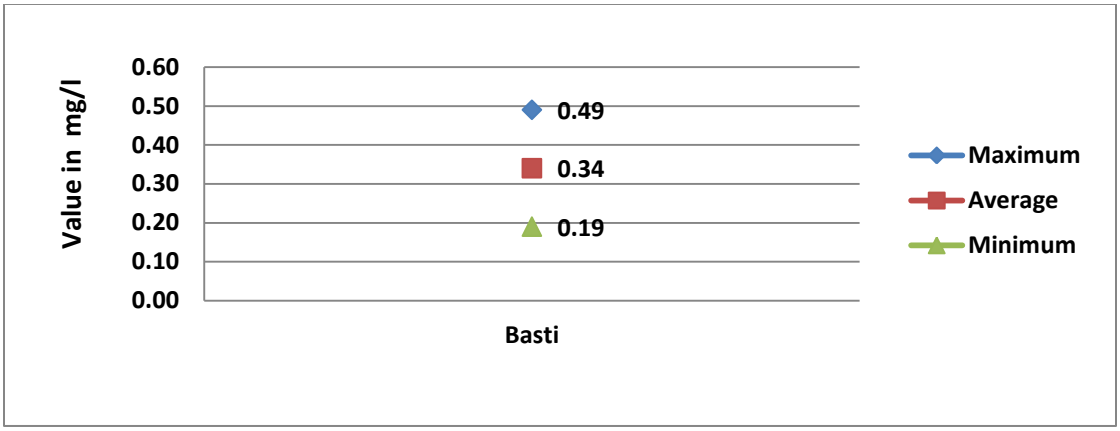
Parameter : Fluoride since inception



Parameter : Fluoride last 10 year



Parameter : Fluoride last 1 year

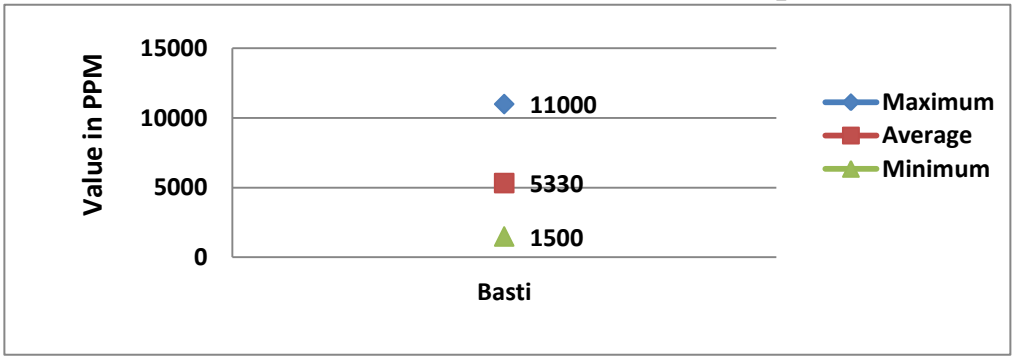


4.4.4 TOTAL COLIFORM IN MPN/100 ML

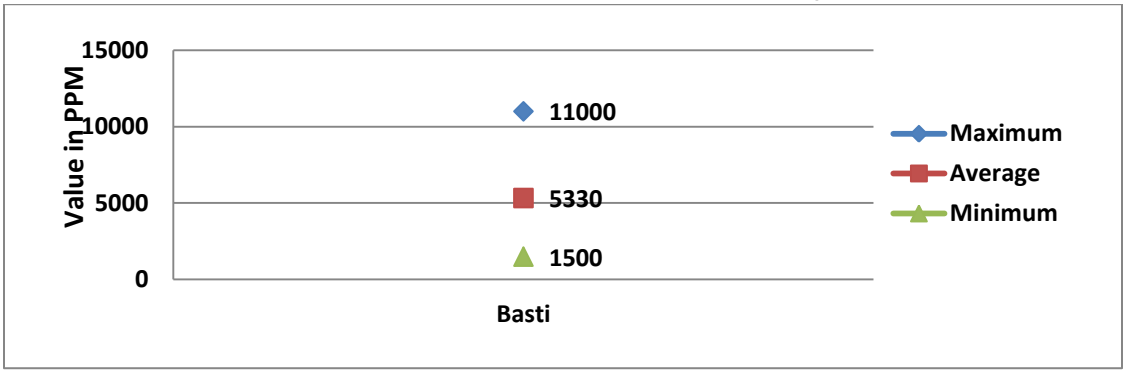
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti*	01.11.1980	11000	11000	11000	1500	1500	1500	5330	5330	5330

*Analysis of total coliform started from 01.08.2016.

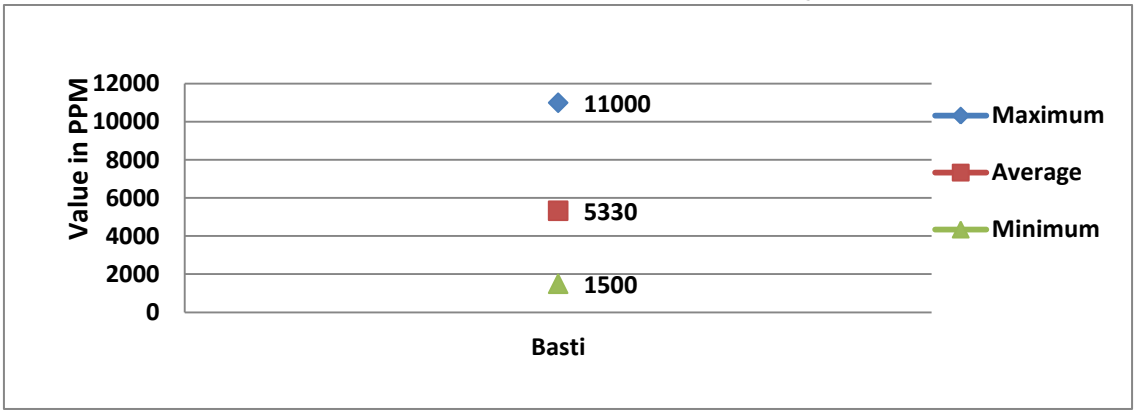
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 year



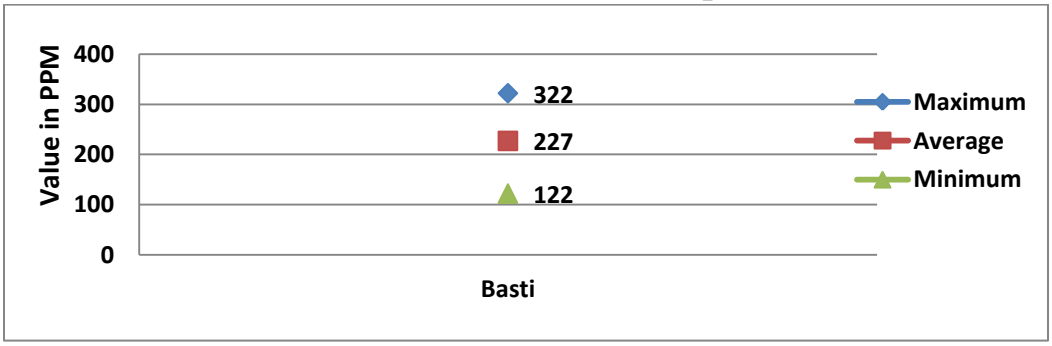
Parameter : Total Coliform last 1 year



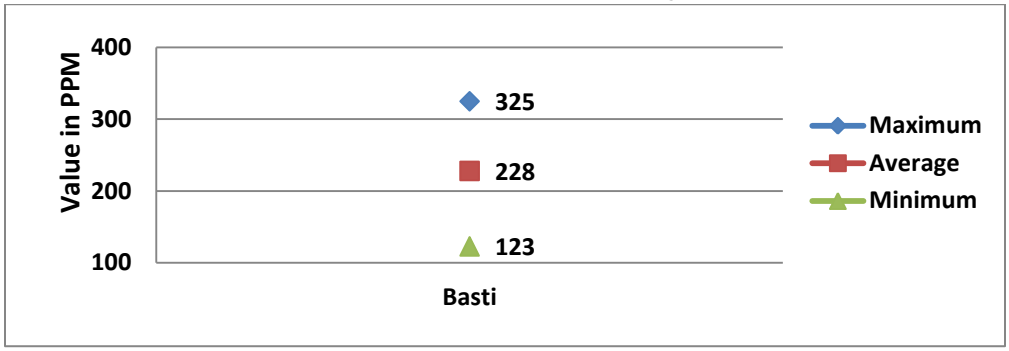
4.4.5 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Basti	01.11.1980	322	325	305	122	123	115	227	228	215

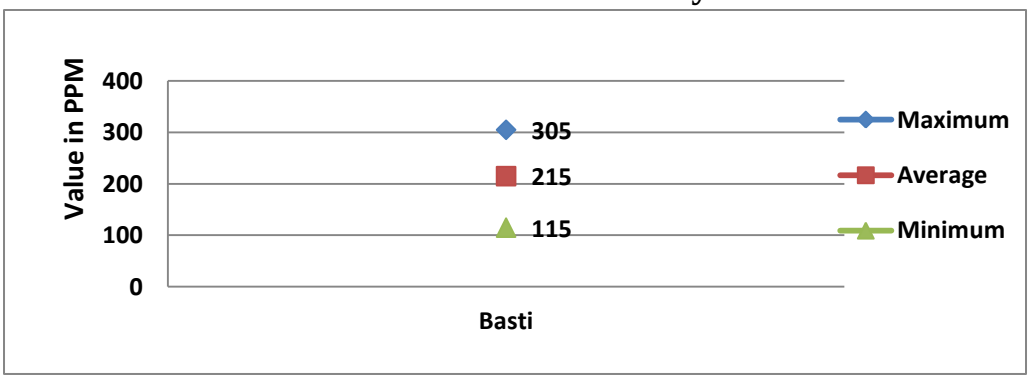
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last one year



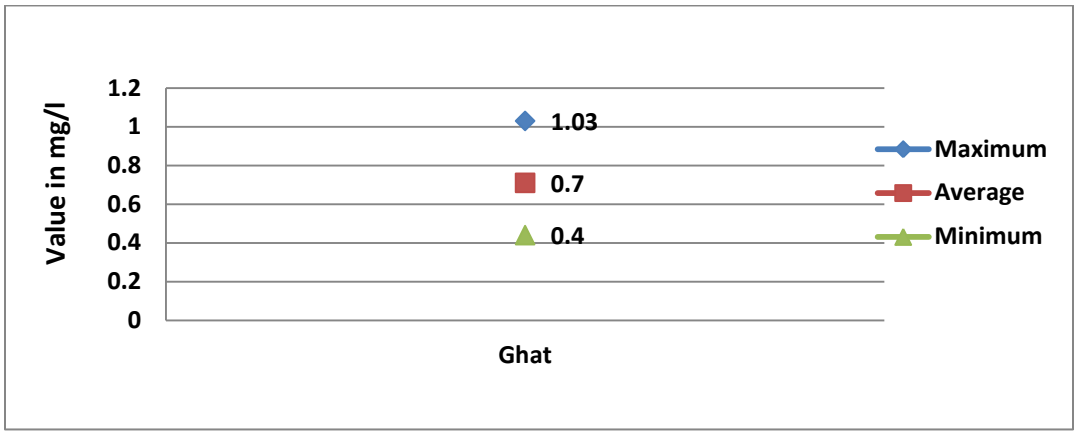
4.5 River : Sarju (River 5) : Originating from the extreme south of adjacent Almora district, the sarju makes south west boundary between Pithoragarh and Almora. Ramganga East river joins Sarju at Rameshwar near Ghat of Pithoragarh. Finally, at a point at Pancheswar, it joins Kali (Sharda) alongwith Panar river.

W.Q. Network : Water quality is being monitored on river Sarju at Ghat.

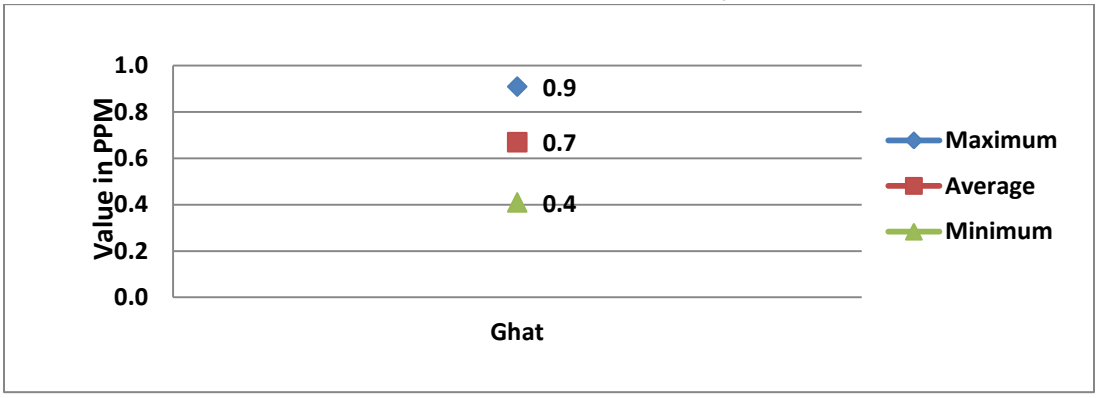
4.5.1 BOD in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	1.0	0.9	1.8	0.4	0.4	0.6	0.7	0.7	1.0

Parameter : BOD since inception



Parameter : BOD last 10 year

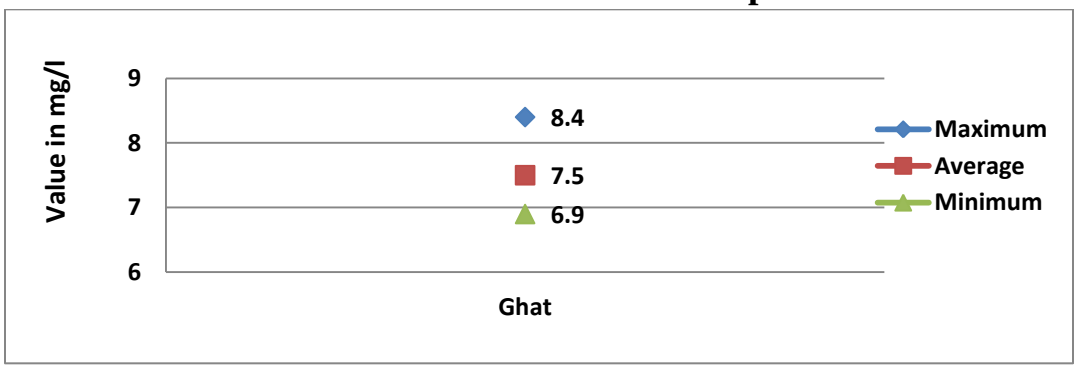


Parameter : BOD last one year

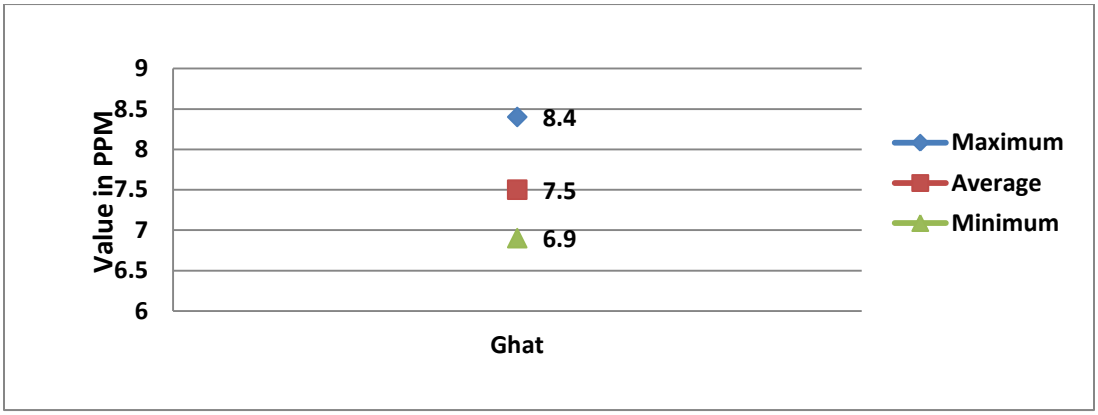
4.5.2 DO in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	8.4	8.4	8.8	6.9	6.9	6.7	7.5	7.5	7.4

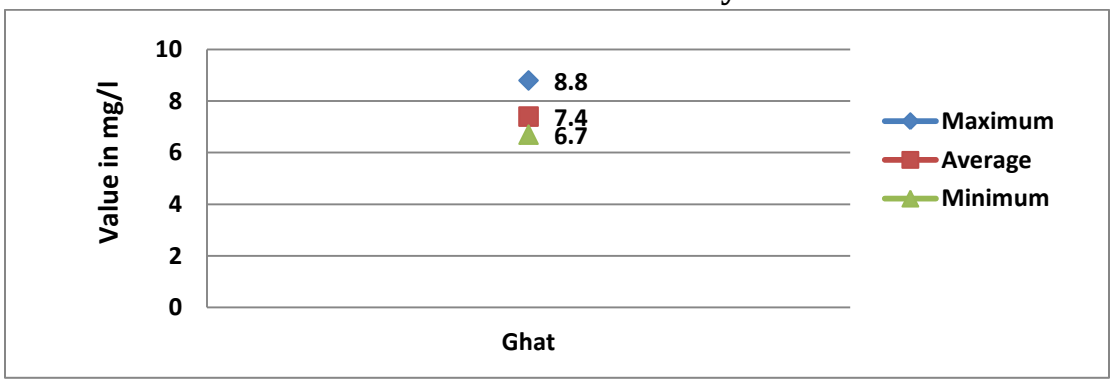
Parameter : DO since inception



Parameter : DO last 10 year



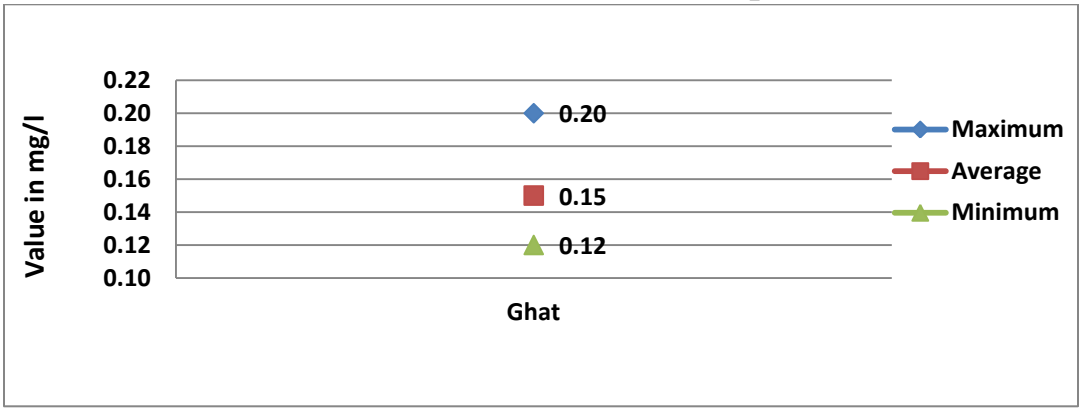
Parameter : DO last one year



4.5.3 Fluoride in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	0.20	0.18	0.30	0.12	0.11	0.13	0.15	0.14	0.19

Parameter : Fluoride since inception



Parameter : Fluoride last 10 year

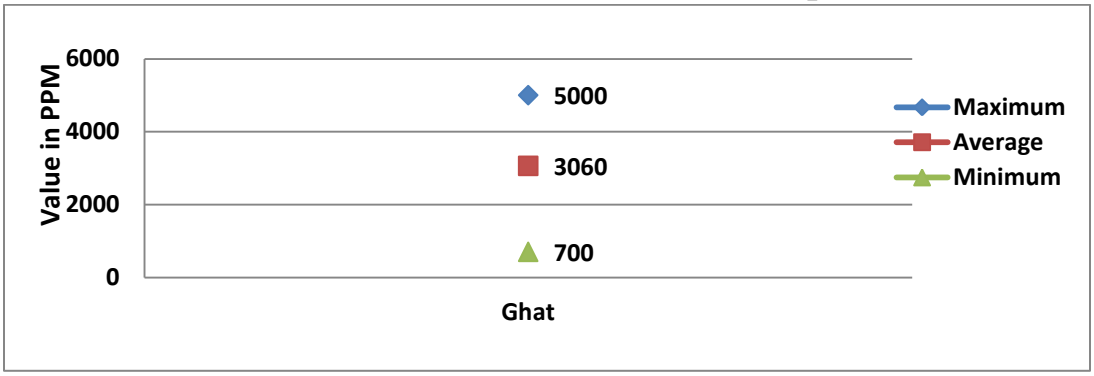
Parameter : Fluoride last one year

4.5.4 TOTAL COLIFORM IN MPN/100 ML

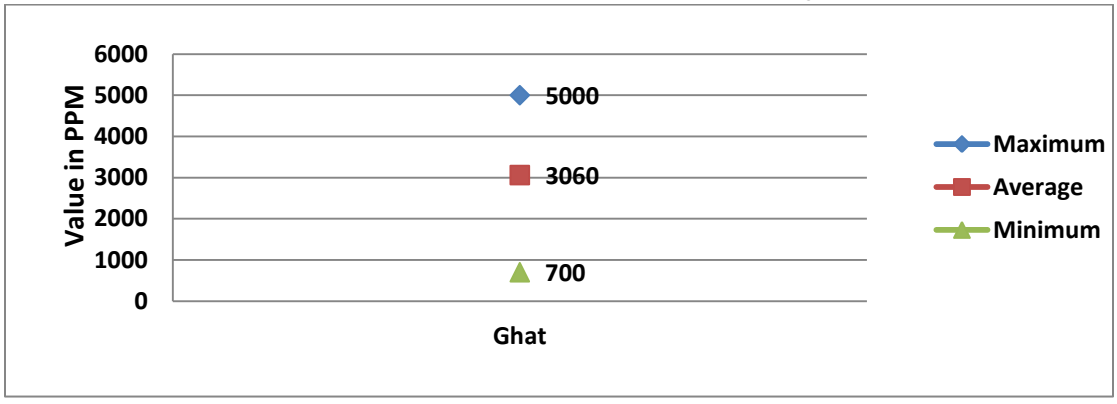
Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	5000	5000	5000	700	700	700	3060	3060	3060

*Analysis of total coliform started from 01.08.2016.

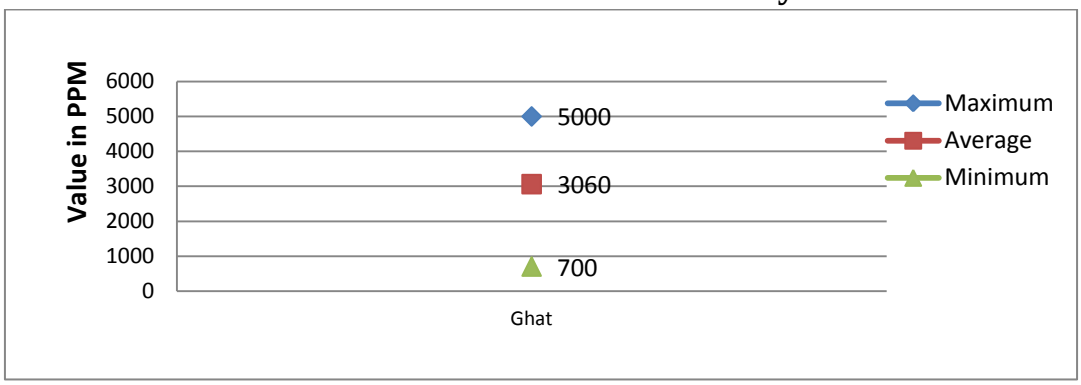
Parameter : Total Coliform since inception



Parameter : Total Coliform last 10 year



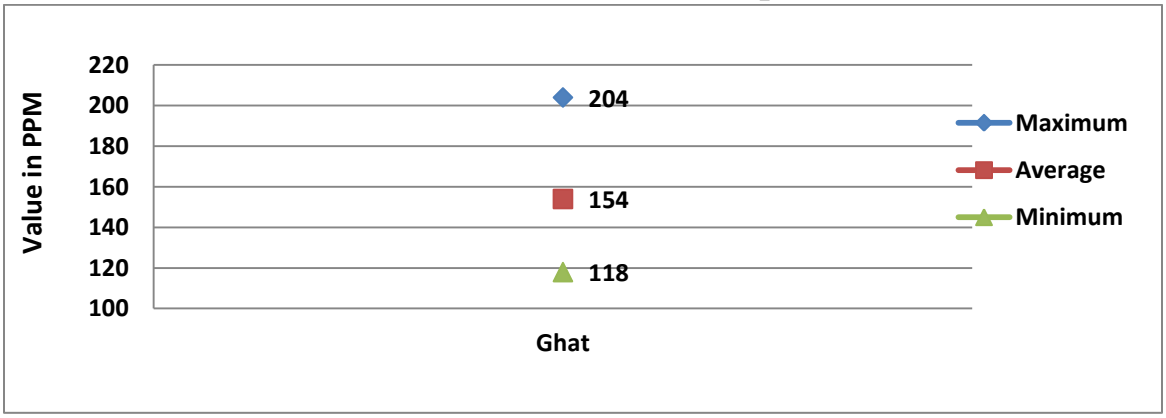
Parameter : Total Coliform last 1 year



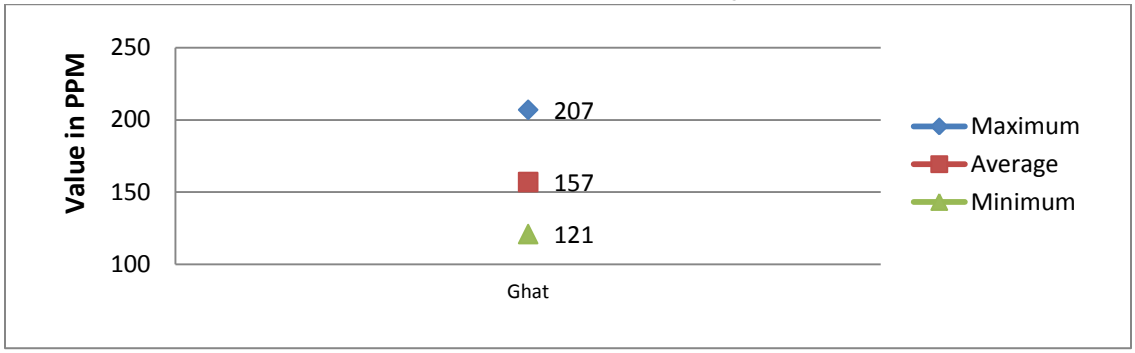
4.5.5 TDS in mg/l

Site Name (From U/S to D/S)	Inception Date	Avg. of Yearly Maximum			Avg. of Yearly Minimum			Annual Average		
		Since inception from	10 year	One year	Since inception from	10 year	One year	Since inception from	10 year	One year
Site 1 Ghat	01.06.2006	204	207	180	118	121	96	154	157	129

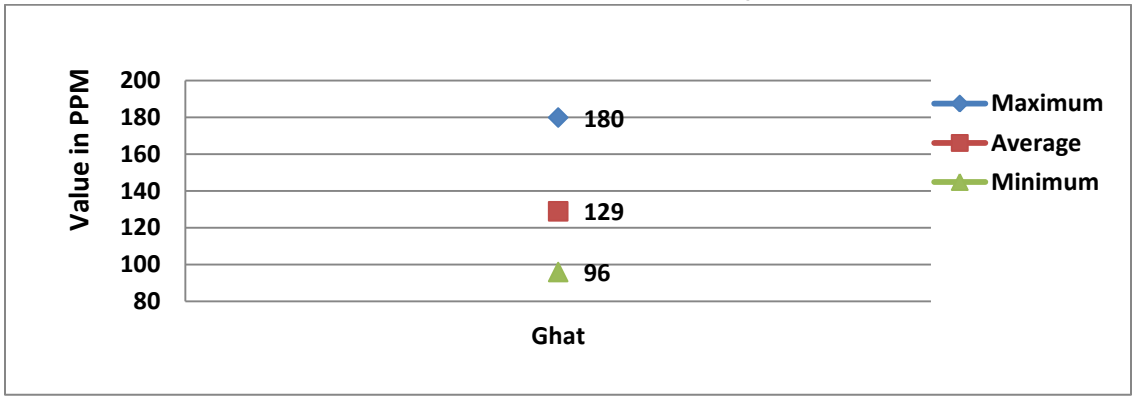
Parameter : TDS since inception



Parameter : TDS last 10 year



Parameter : TDS last one year



5. General Remark / Conclusion about W.Q. trend – River 1 Ghaghra :

The BOD value ranges from 0.4 – 2.2 mg/l and DO value is more than 6.0 mg/l which is within tolerance limit for Class A water.

The fluoride value ranged 0.05 - 0.34 mg/l , with maximum recorded during 2016-17 and the water is safe for human consumption with respect to fluoride.

The TDS value ranged between 107-230 mg/l .Tolerance limit for Class A is 500 mg/l.

The Total Coliform ranges between 1600 to 15000 and the maximum T. Coliform reported at Ayodhyay due to obvious reasons.

River 2 Rapti :

The BOD value ranges from 0.6 – 3.9 mg/l. However the average BOD is less than 2.0 mg/l for all sites.

The DO value ranged between 4.1 to 7.8 with average DO value mre than 6.1 mg/l., which is within tolerance limit for Class A water.

The fluoride value ranged 0.05 – 0.44 mg/l and water is safe for human consumption with respect to fluoride.

The TDS value ranged between 117 – 266 mg/l.Tolerance limit for Class A is 500 mg/l.

Total Coliform ranges between 900 to 16000 MPN with highest being recorded at Birdghat site along which the city of Gorakhpur is lovcated.

River 3 Sharda :

There is only one Water Quality monitoring Station on river Sharda at Paliakalan.
The BOD value ranges from 0.3 –2.2 mg/l which is within tolerance limit for Class A water.
The DO value ranged between 4.5 to 10.0 mg/l with this years average being 6.8 mg/l.
The fluoride value range is observed to be in between 0.00 to 0.44 mg/l and water is safe for human consumption with respect to fluoride.
Average TDS value ranged between 108 – 438 mg/l with this years average value being 190 mg/l and is within the tolerance limit for Class A is 500 mg/l.

River 4 Kwano :

The BOD value ranged between 1.4 to 4.7 mg/l with this Years average BOD being 3.4 mg/l onl, which is slightly higher than Class A waters..
The DO value lies in between 2.0 to 7.4 mg/l.
The fluoride levels vary in between 0.05 to 0.49 mg/l and water is safe for human consumption with respect to fluoride.
TDS value lies in the range of 115 to 325 mg/l and is within the tolerance limit for Class A is 500 mg/l.
Total Coliform in the river waters were found to be in the range of 1500-11000 MPN.

River 5 Sarju :

The BOD value lies in between 0.4 to 1.8 mg/l which is within tolerance limit for Class A water.
The Average DO value is about 7.4 mg/l which is within tolerance limit for Class A water.
The range of Fluoride values is between 0.11- 0.30 mg/l and water is safe for human consumption with respect to fluoride.
TDS value varied between 96 - 207 mg/l. Tolerance limit for TDS for Class A is 500 mg/l.
The Total Coliform values lies in between 700 – 5000 MPN.

In general the water quality of Ghaghra and its tribuatries are till now within permissible limits /slightly above permissible limits for BOD, DO, TDC, Fluoride. The Total Coliform at all stations were found to be much above the permissible limits and is the only matter of concern for Ghaghra river/its Tributaries.

History Sheet

&

WQ Data

2016-17

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**GHAT**	**Code**	:	**GGU63E9**
State	:	Uttarakhand	District		Chamoli
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ramganga	Sub Tributary	:	
Sub-Sub Tributary	:	-	Local River	:	Saryu
Division	:	MGD-I, Lucknow	Sub-Division	:	U Sarda SD, Haldwani
Drainage Area	:	Sq. Km.	Bank	:	Right
Latitude	:	$29^0 30' 30"$	Longitude	:	$80^0 07' 07"$
		Opening Date	Closing Date		
Gauge	:	11/17/1976			
Discharge	:	11/17/1976			
Sediment	:	6/1/2010			
Water Quality	:	6/1/2006			

Water Quality Datasheet for the period : 2016-2017

Station Name : GHAT (GGU63E9) | **Division :MGD-I, Lucknow**

Local River : Saryu | **River Water Analysis** | **Sub-Division :U Sarda SD, Haldwani**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Light Brown	Brown	Light Brown	Brown	Brown	Clear	Light Brown	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	200	154	166	169	200	220	220	240	220	190	299	228
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.5	8.0	8.0	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
6	pH_GEN (pH units)	8.5	8.2	8.3	8.6	8.3	8.5	8.1	8.6	8.7	8.6	8.2	8.1
7	TDS (mg/L)	121	96	101	109	123	135	140	150	128	122	180	141
8	Temp (deg C)	24.0	24.0	23.0	23.0	22.0	19.0	14.0	7.0	6.0	11.0	18.0	23.0
9	Turb (NTU)	1.0	4.8	2.7	4.8	5.4	1.4	2.5	0.9	0.8	0.7	0.6	0.6
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	8.0	0.0	0.0	4.0	0.0	8.0	0.0	4.0	4.0	4.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	132	92	72	72	104	128	108	108	116	116	132	116
3	B (mg/L)	0.17	0.17	0.15	0.15	0.16	0.15	0.15	0.15	0.13	0.12	0.15	0.14
4	Ca (mg/L)	29	21	17	21	29	34	28	28	26	22	24	22
5	Cl (mg/L)	8.2	6.0	3.9	6.0	6.0	8.0	8.0	8.0	6.0	6.0	7.1	6.4
6	CO3 (mg/L)	9.6	0.0	0.0	4.8	0.0	9.6	0.0	4.8	4.8	4.8	0.0	0.0
7	F (mg/L)	0.30	0.25	0.15	0.17	0.16	0.13	0.17	0.22	0.18	0.14	0.23	0.16
8	Fe (mg/L)			0.2				0.8				0.4	
9	HCO3 (mg/L)	142	112	88	78	127	137	132	122	132	132	161	142
10	K (mg/L)	3.5	2.7	2.3	2.6	2.9	3.1	3.2	4.2	4.5	4.7	5.2	4.8
11	Mg (mg/L)	15.4	12.4	8.3	9.3	11.4	15.5	14.5	14.5	13.4	14.5	22.2	19.6
12	Na (mg/L)	6.0	4.1	3.2	3.3	4.0	5.5	4.7	5.1	4.2	3.9	5.1	4.2
13	NH3-N (mg N/L)	0.32	0.25	0.27	0.27	0.30	0.24	0.22	0.33	0.25	0.23	0.27	0.24
14	NO2+NO3 (mg N/L)	0.43	0.42	0.29	0.32	0.33	0.30	0.30	0.32	0.25	0.27	0.44	0.40
15	NO2-N (mgN/L)	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.10
16	NO3-N (mgN/L)	0.43	0.29	0.29	0.32	0.33	0.30	0.30	0.32	0.25	0.27	0.32	0.30
17	P-Tot (mgP/L)	0.280	0.260	0.210	0.200	0.210	0.240	0.240	0.380	0.250	0.175	0.270	0.210
18	SO4 (mg/L)	15.8	13.4	13.4	13.0	13.6	14.1	13.5	13.0	13.5	12.8	21.1	14.2
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	1.2	1.0	0.6	0.8	0.6	1.4	1.0	1.2	0.6	0.8	1.8	1.4

Water Quality Datasheet for the period : 2016-2017

Station Name : GHAT (GGU63E9) | **Division :MGD-I, Lucknow**

Local River : Saryu | **River Water Analysis** | **Sub-Division :U Sarda SD, Haldwani**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
2	COD (mg/L)	7.0	6.0	3.0	3.0	3.0	8.0	5.0	5.0	3.0	4.0	5.0	9.0
3	DO (mg/L)	7.5	6.9	7.5	7.5	7.3	7.5	7.3	7.8	8.8	7.7	6.7	6.7
4	DO_SAT% (%)	89	81	87	87	83	80	70			69	70	78
5	FCol-MPN (MPN/100mL)			300	1800	2200	4000	2100	2500	500	800	1400	1700
6	Tcol-MPN (MPN/100mL)			800	4000	5000	5000	4000	4600	700	1000	2900	2600
	TRACE & TOXIC												
1	As (µg/L)			0.8				1.8				2.0	
2	Cr (µg/L)			16.6				1.7				84.0	
3	Cu (µg/L)			27.2				4.9				54.0	
4	Ni (µg/L)			5.7				2.0				16.0	
5	Pb (µg/L)			0.9				1.9				1.0	
6	Zn (µg/L)			5.7				10.1				1.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	73	52	43	52	73	86	69	69	65	56	60	56
2	HAR_Total (mgCaCO3/L)	137	103	77	90	120	151	129	129	120	116	153	138
3	Na% (%)	8	8	8	7	7	7	7	8	7	7	7	6
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PESTICIDES												

Water Quality Summary for the period : 2016-2017

Station Name : GHAT (GGU63E9) | **Division :MGD-I, Lucknow**

Local River : Saryu | **Sub-Division :U Sarda SD, Haldwani**

River Water Summary

S.No	Parameters	Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	299	154	209
3	pH_FLD (pH units)	12	8.5	8.0	8.1
4	pH_GEN (pH units)	12	8.7	8.1	8.4
5	TDS (mg/L)	12	180	96	129
6	Temp (deg C)	12	24.0	6.0	17.8
7	Turb (NTU)	12	5.4	0.6	2.2
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	2.7
2	ALK-TOT (mgCaCO3/L)	12	132	72	108
3	B (mg/L)	12	0.17	0.12	0.15
4	Ca (mg/L)	12	34	17	25
5	Cl (mg/L)	12	8.2	3.9	6.6
6	CO3 (mg/L)	12	9.6	0.0	3.2
7	F (mg/L)	12	0.30	0.13	0.19
8	Fe (mg/L)	3	0.8	0.2	0.4
9	HCO3 (mg/L)	12	161	78	125
10	K (mg/L)	12	5.2	2.3	3.7
11	Mg (mg/L)	12	22.2	8.3	14.2
12	Na (mg/L)	12	6.0	3.2	4.4
13	NH3-N (mg N/L)	12	0.33	0.22	0.27
14	NO2+NO3 (mg N/L)	12	0.44	0.25	0.34
15	NO2-N (mgN/L)	12	0.12	0.00	0.03
16	NO3-N (mgN/L)	12	0.43	0.25	0.31
17	P-Tot (mgP/L)	12	0.380	0.175	0.244
18	SO4 (mg/L)	12	21.1	12.8	14.3
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	1.8	0.6	1
2	COD (mg/L)	12	9.0	3.0	5.1
3	DO (mg/L)	12	8.8	6.7	7.4
4	DO_SAT% (%)	10	89	69	79
5	FCol-MPN (MPN/100mL)	10	4000	300	1730
6	Tcol-MPN (MPN/100mL)	10	5000	700	3060
	TRACE & TOXIC				
1	As (µg/L)	3	2.0	0.8	1.5
2	Cr (µg/L)	3	84.0	1.7	34.1
3	Cu (µg/L)	3	54.0	4.9	28.7
4	Ni (µg/L)	3	16.0	2.0	7.9
5	Pb (µg/L)	3	1.9	0.9	1.3
6	Zn (µg/L)	3	10.1	1.0	5.6
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	86	43	63
2	HAR_Total (mgCaCO3/L)	12	153	77	122
3	Na% (%)	12	8	6	7
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.2	0.2	0.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : GHAT (GGU63E9) | **Division :MGD-I, Lucknow**

Local River : Saryu | **River Water** | **Sub-Division :U Sarda SD, Haldwani**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)					384.1					223.8	
2	EC_FLD (µmho/cm)							200				
3	EC_GEN (µmho/cm)	261	238	301	223	248	206	188	246	238	232	178
4	pH_FLD (pH units)					7.7	7.4	7.5				8.2
5	pH_GEN (pH units)	8.0	8.2	8.2	8.1	8.1	7.7	8.3	8.3	8.6	8.3	8.4
6	TDS (mg/L)			203	161	150	122	115	159	149	139	110
7	Temp (deg C)	22.0	19.8	21.6	21.6	22.4	21.6	22.2	23.0	22.8	23.0	23.2
8	Turb (NTU)											3.7
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	3.2	4.8	5.7	0.0	4.8	0.0	6.4	4.8	5.6	2.0	2.4
2	ALK-TOT (mgCaCO3/L)	113	169	268	146	131	109	106	132	94	92	94
3	B (mg/L)	0.03	0.06	0.15	0.13	0.12	0.13	0.13	0.16	0.18	0.16	0.16
4	Ca (mg/L)	26	26	38	33	29	26	27	29	23	24	23
5	Cl (mg/L)	13.8	7.6	11.9	12.4	10.5	9.7	12.1	13.6	15.7	6.5	6.0
6	CO3 (mg/L)	3.8	5.8	6.9	0.0	5.8	0.0	7.7	5.8	6.7	1.9	2.9
7	F (mg/L)	0.08	0.13	0.12	0.13	0.12	0.10	0.12	0.16	0.17	0.24	0.21
8	Fe (mg/L)	0.1	0.1				0.1					0.2
9	HCO3 (mg/L)	130	141	156	178	148	133	114	149	102	102	109
10	K (mg/L)	10.1	3.5	3.6	3.7	2.7	2.9	3.4	3.6	2.3	2.5	2.8
11	Mg (mg/L)	8.2	16.2	8.7	17.7	16.9	15.3	17.5	17.8	16.5	11.7	11.3
12	Na (mg/L)	18.2	7.5	7.7	8.6	3.9	3.8	4.5	9.0	3.0	3.7	4.1
13	NH3-N (mg N/L)				0.06	0.14	0.38	0.51	0.25	0.33	0.28	0.28
14	NO2+NO3 (mg N/L)			0.06	0.04	0.08	0.75	0.57	0.56	0.43	0.42	0.36
15	NO2-N (mgN/L)	0.02	0.04	0.05	0.03	0.03	0.12	0.14	0.21	0.10	0.00	0.02
16	NO3-N (mgN/L)			0.01	0.02	0.04	0.63	0.43	0.35	0.33	0.42	0.33
17	o-PO4-P (mg P/L)	0.002	0.010	0.012	0.036	0.064	0.074	0.254	0.285	0.395	0.242	
18	P-Tot (mgP/L)				0.077							0.232
19	SiO2 (mg/L)	5.9	7.1	7.5	5.4	5.0						
20	SO4 (mg/L)	24.2	14.2	14.8	14.8	15.4	9.8	14.9	16.2	14.1	15.2	13.9
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				0.8	0.6	0.5	0.7	0.6	0.8	0.7	0.8
2	COD (mg/L)					1.0	6.2	3.4	4.0	3.4	3.8	4.4
3	DO (mg/L)				7.2	8.7	7.6	7.0	7.0	7.0	7.1	7.3
4	DO_SAT% (%)				82	100	87	81	82	81	83	85
5	FCol-MPN (MPN/100mL)											1433
6	Tcol-MPN (MPN/100mL)											3267
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											16.6
4	Cu (µg/L)											27.2
5	Ni (µg/L)											5.7
6	Pb (µg/L)											
7	Zn (µg/L)											5.7
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	66	66	94	83	72	65	68	71	57	59	58
2	HAR_Total (mgCaCO3/L)	101	133	130	156	143	128	141	146	125	108	106
3	Na% (%)	27	11	11	10	6	6	6	11	5	7	8
4	RSC (-)	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.9	0.3	0.3	0.3	0.1	0.1	0.2	0.3	0.1	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : GHAT (GGU63E9) | **Division :MGD-I, Lucknow**

Local River : Saryu | **River Water** | **Sub-Division :U Sarda SD, Haldwani**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)			35.17		55.97					35.19	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	284	252	274	265	270	255	258	295	283	235	225
4	pH_FLD (pH units)				8.0	7.5	7.5	6.9				8.0
5	pH_GEN (pH units)	8.1	8.4	8.2	8.3	8.0	8.2	8.2	8.3	8.6	8.6	8.5
6	TDS (mg/L)			211	166	161	155	161	191	161	149	138
7	Temp (deg C)	12.0	11.3	13.3	12.3	12.1	13.3	11.5	12.6	13.0	13.8	11.5
8	Turb (NTU)											1.4
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	3.0	9.7	0.0	5.0	0.0	5.0	0.0	4.0	11.0	4.0	4.0
2	ALK-TOT (mgCaCO3/L)	119	167	338	141	111	162	124	111	136	124	115
3	B (mg/L)	0.02	0.14	0.10	0.13	0.14	0.13	0.15	0.15	0.19	0.16	0.14
4	Ca (mg/L)	30	38	29	35	26	33	28	26	36	28	29
5	Cl (mg/L)	18.5	13.7	10.6	12.1	12.1	12.1	13.0	13.0	9.5	7.1	7.5
6	CO3 (mg/L)	3.6	11.7	0.0	6.0	0.0	6.0	0.0	4.8	13.2	6.0	4.8
7	F (mg/L)	0.13	0.11	0.14	0.14	0.13	0.14	0.15	0.15	0.21	0.25	0.18
8	Fe (mg/L)	0.1	0.2									0.8
9	HCO3 (mg/L)	138	180	238	160	135	185	151	126	139	131	131
10	K (mg/L)	5.5	3.9	1.6	2.1	3.5	3.4	4.4	2.7	1.5	2.7	3.7
11	Mg (mg/L)	10.6	15.6	9.6	17.5	15.7	21.7	17.3	17.0	19.6	15.5	14.4
12	Na (mg/L)	10.7	7.8	3.1	8.9	5.0	5.3	6.3	4.3	5.0	4.1	4.9
13	NH3-N (mg N/L)				0.06	0.15	0.62	0.46	0.32	0.31	0.29	0.26
14	NO2+NO3 (mg N/L)			0.06	0.07	0.07	0.50	0.43	0.52	0.35	0.43	0.29
15	NO2-N (mgN/L)	0.06	0.05	0.04	0.03	0.04	0.09	0.10	0.23	0.00	0.00	0.00
16	NO3-N (mgN/L)			0.01	0.04	0.04	0.41	0.33	0.28	0.35	0.43	0.29
17	o-PO4-P (mg P/L)	0.010	0.010	0.007	0.114	0.124	0.106	0.359	0.282	0.328	0.279	
18	P-Tot (mgP/L)			0.007	0.135							0.277
19	SiO2 (mg/L)	7.4	7.9	6.8	5.5	5.3						
20	SO4 (mg/L)	20.5	13.0	7.8	15.5	15.6	11.4	16.3	15.4	18.2	17.0	13.5
	BIOLOGICAL/BACTERIOL											
1	BOD3-27 (mg/L)				0.4	0.7	0.4	1.0	0.6	0.8	0.8	1.0
2	COD (mg/L)					1.5	2.3	9.0	4.0	4.3	4.8	5.3
3	DO (mg/L)				8.0	9.0	7.5	7.1	7.4	7.7	7.6	7.8
4	DO_SAT% (%)				74	89	72	66	75	73	73	75
5	FCol-MPN (MPN/100mL)											2275
6	Tcol-MPN (MPN/100mL)											3575
	TRACE & TOXIC											
1	As (µg/L)											1.8
2	Cd (µg/L)											
3	Cr (µg/L)											
4	Cu (µg/L)											4.9
5	Ni (µg/L)											2.0
6	Pb (µg/L)											1.9
7	Zn (µg/L)											10.1
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	75	95	74	88	65	82	69	66	89	71	72
2	HAR_Total (mgCaCO3/L)	119	160	114	161	130	172	141	137	171	135	132
3	Na% (%)	16	9	6	10	8	6	9	6	6	6	7
4	RSC (-)	0.0	0.2	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	0.3	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : GHAT (GGU63E9) | **Division :MGD-I, Lucknow**

Local River : Saryu | **River Water** | **Sub-Division :U Sarda SD, Haldwani**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)			29.88		28.12					17.61	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	223	263	250	283	257	280	370	287	247	250	239
4	pH_FLD (pH units)				7.5	7.2	7.8	6.8				8.0
5	pH_GEN (pH units)	7.9	8.5	8.1	8.2	8.1	8.2	8.3	8.5	8.7	8.5	8.3
6	TDS (mg/L)			190	172	155	167	243	186	144	161	148
7	Temp (deg C)	17.7	17.3	17.0	19.0	17.0	17.0	17.3	16.0	21.0	20.0	17.3
8	Turb (NTU)											0.6
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.7	9.7	8.3	4.0	2.7	4.0	9.3	10.6	2.0	4.0	1.3
2	ALK-TOT (mgCaCO3/L)	243	188	198	141	113	156	175	131	134	132	121
3	B (mg/L)	0.01	0.20	0.05	0.12	0.15	0.15	0.18	0.18	0.17	0.16	0.14
4	Ca (mg/L)	29	39	25	30	26	33	32	30	30	32	23
5	Cl (mg/L)	15.4	21.5	10.1	14.7	14.7	17.3	20.0	13.4	8.6	8.0	6.5
6	CO3 (mg/L)	3.2	11.7	10.0	4.8	3.2	4.8	11.2	12.8	8.0	4.8	1.6
7	F (mg/L)	0.08	0.13	0.11	0.16	0.12	0.13	0.16	0.17	0.18	0.28	0.18
8	Fe (mg/L)	0.1	0.2								0.0	0.4
9	HCO3 (mg/L)	145	205	221	162	132	181	190	133	140	151	145
10	K (mg/L)	4.3	4.6	1.7	3.9	3.5	5.5	5.7	2.3	1.8	3.6	4.9
11	Mg (mg/L)	13.7	13.6	10.7	20.3	16.5	21.3	20.5	19.9	18.3	16.5	18.8
12	Na (mg/L)	8.1	8.6	3.4	5.9	6.1	7.9	12.6	4.4	4.0	5.0	4.4
13	NH3-N (mg N/L)				0.10	0.15	0.58	0.40	0.34	0.33	0.29	0.25
14	NO2+NO3 (mg N/L)			0.05	0.07	0.23	0.61	0.63	0.52	0.42	0.41	0.37
15	NO2-N (mgN/L)	0.05	0.08	0.02	0.02	0.11	0.13	0.18	0.19	0.00	0.00	0.07
16	NO3-N (mgN/L)			0.02	0.04	0.13	0.48	0.45	0.32	0.42	0.41	0.29
17	o-PO4-P (mg P/L)	0.010	0.014		0.176	0.145	0.214	0.372	0.227	0.255	0.307	
18	P-Tot (mgP/L)			0.017	0.177							0.218
19	SiO2 (mg/L)	7.5	8.4	4.7	5.7	5.9						
20	SO4 (mg/L)	21.1	18.9	10.1	13.8	17.0	14.1	18.9	17.9	11.7	15.7	16.0
	BIOLOGICAL/BACTERIOLO											
1	BOD3-27 (mg/L)			0.4	0.5	0.6	0.5	0.6	0.7	0.9	0.9	1.3
2	COD (mg/L)					4.3	5.0	5.0	3.7	4.7	5.0	6.0
3	DO (mg/L)			7.4	8.2	8.0	7.3	6.8	7.2	7.7	7.2	7.0
4	DO_SAT% (%)			80	89	83	76	71	73	86	79	72
5	FCol-MPN (MPN/100mL)											1300
6	Tcol-MPN (MPN/100mL)											2167
	TRACE & TOXIC											
1	As (µg/L)										1.0	2.0
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	84.0
4	Cu (µg/L)										1.0	54.0
5	Ni (µg/L)										1.0	16.0
6	Pb (µg/L)										1.0	1.0
7	Zn (µg/L)										1.0	1.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	72	98	62	76	66	83	79	75	76	79	57
2	HAR_Total (mgCaCO3/L)	129	155	106	160	135	172	164	158	152	148	135
3	Na% (%)	12	11	6	7	9	9	14	6	5	7	6
4	RSC (-)	0.0	0.7	1.9	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.3	0.1	0.2	0.2	0.3	0.4	0.2	0.1	0.2	0.2
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**PALIAKALAN**	**Code**	:	**GGU60I6**
State	:	Uttar Pradesh	District		Kheri
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	Sarda
Sub-Sub Tributary	:	-	Local River	:	Sarda
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	U Sarda SD, Haldwani
Drainage Area	:	17676 Sq. Km.	Bank	:	Left
Latitude	:	28°23'23"	Longitude	:	80°33'33"
		Opening Date	Closing Date		
Gauge	:	4/24/1959			
Discharge	:	4/24/1959			
Sediment	:	6/6/1961			
Water Quality	:	1/8/1964			

Water Quality Datasheet for the period : 2016-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **River Water Analysis** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	137.5	655.0	3081									
2	Colour_Cod (-)	Clear	Brown	Brown	Brown	Brown	Brown	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	240	195	192	270	250	260	300	350	300	300	387	296
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	8.0	8.0	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
6	pH_GEN (pH units)	8.0	7.9	7.9	8.6	8.0	8.2	8.1	8.4	8.3	8.3	8.2	8.1
7	TDS (mg/L)	153	122	120	171	158	161	185	220	189	186	232	181
8	Temp (deg C)	28.0	27.5	25.0	28.0	29.0	22.5	19.0	18.0	16.0	19.0	27.0	30.0
9	Turb (NTU)	1.0	5.1	5.4	5.9	4.8	5.5	1.5	1.3	1.1	1.0	0.8	0.9
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	0.0	0.0	0.0	12.0	0.0	0.0	0.0	12.0	4.0	4.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	140	132	100	136	140	152	152	160	176	192	196	180
3	B (mg/L)	0.19	0.18	0.16	0.18	0.19	0.18	0.19	0.20	0.19	0.20	0.20	0.16
4	Ca (mg/L)	36	31	29	34	36	41	34	36	36	40	46	40
5	Cl (mg/L)	12.1	12.1	6.0	10.0	10.0	10.0	12.0	12.0	12.0	14.0	19.0	15.0
6	CO3 (mg/L)	0.0	0.0	0.0	14.4	0.0	0.0	0.0	14.4	4.8	4.8	0.0	0.0
7	F (mg/L)	0.38	0.30	0.17	0.25	0.20	0.23	0.29	0.31	0.31	0.31	0.38	0.34
8	Fe (mg/L)			0.4				0.3				0.3	
9	HCO3 (mg/L)	171	161	122	137	171	185	185	166	205	224	239	220
10	K (mg/L)	4.7	5.1	3.5	4.3	3.9	4.2	4.6	5.6	6.3	7.0	7.8	6.2
11	Mg (mg/L)	17.5	16.5	12.4	16.5	17.5	18.6	21.7	23.7	20.6	20.6	24.8	20.6
12	Na (mg/L)	7.6	6.7	3.9	5.5	5.7	6.5	7.0	7.0	7.8	8.4	12.2	9.1
13	NH3-N (mg N/L)	0.37	0.29	0.28	0.31	0.32	0.31	0.31	0.32	0.32	0.32	0.35	0.28
14	NO2+NO3 (mg N/L)	0.63	0.57	0.46	0.50	0.56	0.44	0.43	0.52	0.58	0.60	0.48	0.56
15	NO2-N (mgN/L)	0.15	0.18	0.12	0.13	0.19	0.12	0.09	0.13	0.16	0.15	0.19	0.16
16	NO3-N (mgN/L)	0.48	0.39	0.34	0.37	0.37	0.32	0.34	0.39	0.42	0.45	0.29	0.40
17	P-Tot (mgP/L)	0.300	0.300	0.230	0.290	0.315	0.365	0.360	0.350	0.395	0.405	0.430	0.400
18	SO4 (mg/L)	16.8	14.4	13.9	15.2	15.4	15.2	15.6	15.0	15.9	16.7	21.1	16.0
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **River Water Analysis** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	2.4	1.4	1.4	1.8	2.4	1.4	2.0	1.6	1.2	2.4	3.5	2.0
2	COD (mg/L)	12.0	8.0	6.0	7.0	12.0	7.0	10.0	8.0	5.0	8.0	14.0	5.0
3	DO (mg/L)	6.5	6.5	6.7	6.7	6.7	6.7	6.7	6.9	6.5	6.3	3.3	3.3
4	DO_SAT% (%)	83	81	81	85	87	76	72	72	66	68	41	44
5	FCol-MPN (MPN/100mL)			300	4000	5000	5000	2000	7000	9000	1800	1300	2500
6	Tcol-MPN (MPN/100mL)			1800	15000	11000	11000	4000	8000	12000	2500	2000	5500
	TRACE & TOXIC												
1	As (µg/L)			0.9				1.4				1.0	
2	Cr (µg/L)			520.0				54.3				2.0	
3	Cu (µg/L)			7.3				4.0				2.0	
4	Ni (µg/L)			4.4				0.1				49.0	
5	Pb (µg/L)			32.7				2.3				1.2	
6	Zn (µg/L)			4.4				14.3				23.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	91	78	73	86	90	103	86	90	90	99	115	99
2	HAR_Total (mgCaCO3/L)	163	146	125	155	163	181	176	189	176	185	218	185
3	Na% (%)	9	9	6	7	7	7	8	7	8	9	10	9
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : PALIAKALAN (GGU60I6)

Local River : Sarda | **Well Water Analysis** | **Division : M Ganga Div. I, Lucknow**

Sub-Division : U Sarda SD, Haldwani

S.No	Parameters	11/1/2016	5/1/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Green	Clear
2	EC_GEN (µmho/cm)	780	741
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	8.0	8.0
5	pH_GEN (pH units)	8.3	7.3
6	TDS (mg/L)	460	445
7	Temp (deg C)	24.0	27.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	248	236
3	B (mg/L)	0.24	0.20
4	Ca (mg/L)	57	52
5	Cl (mg/L)	76.0	73.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.33	0.28
8	HCO3 (mg/L)	303	288
9	K (mg/L)	58.1	54.4
10	Mg (mg/L)	36.1	33.0
11	Na (mg/L)	53.7	50.2
12	NH3-N (mg N/L)	0.56	0.50
13	NO2+NO3 (mg N/L)	1.42	1.23
14	NO2-N (mgN/L)	0.32	0.28
15	NO3-N (mgN/L)	1.10	0.95
16	P-Tot (mgP/L)	0.425	0.390
17	SO4 (mg/L)	143.0	138.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	142	129
2	HAR_Total (mgCaCO3/L)	292	267
3	Na% (%)	24	25
4	RSC (-)	0.0	0.0
5	SAR (-)	1.4	1.3
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **River Water Summary** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)	92	3988	100.3	1446
2	EC_GEN (µmho/cm)	12	387	192	278
3	pH_FLD (pH units)	12	8.5	8.0	8
4	pH_GEN (pH units)	12	8.6	7.9	8.2
5	TDS (mg/L)	12	232	120	173
6	Temp (deg C)	12	30.0	16.0	24.1
7	Turb (NTU)	12	5.9	0.8	2.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	12.0	0.0	2.7
2	ALK-TOT (mgCaCO3/L)	12	196	100	155
3	B (mg/L)	12	0.20	0.16	0.18
4	Ca (mg/L)	12	46	29	37
5	Cl (mg/L)	12	19.0	6.0	12
6	CO3 (mg/L)	12	14.4	0.0	3.2
7	F (mg/L)	12	0.38	0.17	0.29
8	Fe (mg/L)	3	0.4	0.3	0.3
9	HCO3 (mg/L)	12	239	122	182
10	K (mg/L)	12	7.8	3.5	5.3
11	Mg (mg/L)	12	24.8	12.4	19.3
12	Na (mg/L)	12	12.2	3.9	7.3
13	NH3-N (mg N/L)	12	0.37	0.28	0.31
14	NO2+NO3 (mg N/L)	12	0.63	0.43	0.53
15	NO2-N (mgN/L)	12	0.19	0.09	0.15
16	NO3-N (mgN/L)	12	0.48	0.29	0.38
17	P-Tot (mgP/L)	12	0.430	0.230	0.345
18	SO4 (mg/L)	12	21.1	13.9	15.9
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	3.5	1.2	1.9
2	COD (mg/L)	12	14.0	5.0	8.5
3	DO (mg/L)	12	6.9	3.3	6
4	DO_SAT% (%)	12	87	41	71
5	FCol-MPN (MPN/100mL)	10	9000	300	3790
6	Tcol-MPN (MPN/100mL)	10	15000	1800	7280
	TRACE & TOXIC				
1	As (µg/L)	3	1.4	0.9	1.1
2	Cr (µg/L)	3	520.0	2.0	192.1
3	Cu (µg/L)	3	7.3	2.0	4.4
4	Ni (µg/L)	3	49.0	0.1	17.8
5	Pb (µg/L)	3	32.7	1.2	12.1
6	Zn (µg/L)	3	23.0	4.4	13.9
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	115	73	92
2	HAR_Total (mgCaCO3/L)	12	218	125	172
3	Na% (%)	12	10	6	8
4	RSC (-)	12	0.2	0.0	0
5	SAR (-)	12	0.4	0.2	0.2
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **Well Water Summary** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	780	741	761
2	pH_FLD (pH units)	2	8.0	8.0	8.0
3	pH_GEN (pH units)	2	8.3	7.3	7.8
4	TDS (mg/L)	2	460	445	453
5	Temp (deg C)	2	27.0	24.0	25.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	248	236	242
3	B (mg/L)	2	0.24	0.20	0.22
4	Ca (mg/L)	2	57	52	54
5	Cl (mg/L)	2	76.0	73.0	74.5
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.33	0.28	0.31
8	HCO3 (mg/L)	2	303	288	295
9	K (mg/L)	2	58.1	54.4	56.3
10	Mg (mg/L)	2	36.1	33.0	34.6
11	Na (mg/L)	2	53.7	50.2	52.0
12	NH3-N (mg N/L)	2	0.56	0.50	0.53
13	NO2+NO3 (mg N/L)	2	1.42	1.23	1.33
14	NO2-N (mgN/L)	2	0.32	0.28	0.30
15	NO3-N (mgN/L)	2	1.10	0.95	1.03
16	P-Tot (mgP/L)	2	0.425	0.390	0.407
17	SO4 (mg/L)	2	143.0	138.0	140.5
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	142	129	135
2	HAR_Total (mgCaCO3/L)	2	292	267	279
3	Na% (%)	2	25	24	24
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.4	1.3	1.4
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **River Water** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	916.2	1300	1195	974.4	1102	910.4	511.5	1215	812.6	649.4	1291
2	EC_FLD (µmho/cm)	356						199				
3	EC_GEN (µmho/cm)	309	307	390	252	264	199	203	248	254	280	229
4	pH_FLD (pH units)	7.5	7.5	8.0				7.5	7.7			8.1
5	pH_GEN (pH units)	8.3	8.0	7.8	8.0	7.8	7.9	8.2	8.3	8.5	8.3	8.1
6	TDS (mg/L)			266	184	160	121	124	162	155	169	145
7	Temp (deg C)	28.0	24.6	22.8	21.1	20.8	18.1	25.0	26.4	28.7	27.1	27.5
8	Turb (NTU)											4.4
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	3.8	5.7	1.0	4.0	1.3	3.2	3.2	4.8	3.2	2.4
2	ALK-TOT (mgCaCO3/L)	126	175	153	151	126	116	119	142	102	121	130
3	B (mg/L)	0.03	0.08	0.16	0.13	0.12	0.14	0.14	0.18	0.21	0.18	0.18
4	Ca (mg/L)	28	31	35	38	30	26	31	31	24	34	33
5	Cl (mg/L)	9.4	10.2	10.9	14.3	13.6	9.7	13.6	13.6	16.0	10.0	10.0
6	CO3 (mg/L)	4.8	4.6	6.9	1.2	4.8	1.0	3.8	3.8	5.8	3.8	2.9
7	F (mg/L)	0.12	0.21	0.13	0.16	0.14	0.10	0.13	0.17	0.16	0.28	0.26
8	Fe (mg/L)	0.2	0.2				0.1					0.4
9	HCO3 (mg/L)	143	149	173	182	143	134	138	165	113	140	152
10	K (mg/L)	7.9	3.5	3.8	4.5	4.2	4.1	4.6	4.4	4.0	3.8	4.3
11	Mg (mg/L)	12.8	13.7	8.7	18.4	17.9	14.8	20.0	18.6	15.3	14.8	16.1
12	Na (mg/L)	17.8	8.1	8.2	11.2	6.6	4.1	5.1	9.5	4.7	5.7	5.9
13	NH3-N (mg N/L)				0.07	0.15	0.71	0.54	0.26	0.38	0.31	0.31
14	NO2+NO3 (mg N/L)			0.28	0.09	0.09	0.75	0.63	0.57	0.43	0.48	0.54
15	NO2-N (mgN/L)	0.03	0.10	0.06	0.04	0.04	0.14	0.14	0.19	0.13	0.03	0.16
16	NO3-N (mgN/L)			0.22	0.05	0.05	0.61	0.49	0.38	0.30	0.45	0.39
17	o-PO4-P (mg P/L)	0.014	0.058	0.045	0.041	0.072	0.097	0.262	0.291	0.428	0.275	
18	P-Tot (mgP/L)				0.107							0.287
19	SiO2 (mg/L)	10.4	8.8	8.7	6.9	5.6						
20	SO4 (mg/L)	66.0	37.6	18.3	21.2	20.2	8.8	17.0	17.5	16.4	18.4	15.1
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.0	0.8	0.8	1.0	0.9	0.8	1.4	1.8
2	COD (mg/L)					2.0	16.4	7.3	4.2	4.4	8.6	9.0
3	DO (mg/L)	7.5	7.2	7.2	6.9	7.4	7.6	7.4	7.1	7.0	6.7	6.6
4	DO_SAT% (%)	95	86	83	78	83	81	89	88	90	84	83
5	FCol-MPN (MPN/100mL)											3100
6	Tcol-MPN (MPN/100mL)											9267
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											520.0
4	Cu (µg/L)											7.3
5	Ni (µg/L)											4.4
6	Pb (µg/L)											32.7
7	Zn (µg/L)											4.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	69	78	88	96	75	64	77	77	59	84	83
2	HAR_Total (mgCaCO3/L)	122	135	124	172	149	126	160	154	123	146	151
3	Na% (%)	23	12	13	12	8	6	6	11	8	8	8
4	RSC (-)	0.2	0.1	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.3	0.3	0.4	0.2	0.2	0.2	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : PALIAKALAN (GGU60I6) | **River Water** | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	195.2	277.8	299.7	471.2	719.0	254.4	80.15	127.4	230.5	110.3	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	359	258	384	365	315	298	320	360	342	310	303
4	pH_FLD (pH units)			8.1			8.0	7.1				8.0
5	pH_GEN (pH units)	8.4	8.1	7.9	8.3	8.0	7.9	8.0	8.4	8.5	8.3	8.2
6	TDS (mg/L)			257	221	190	177	201	233	186	193	189
7	Temp (deg C)	19.8	15.3	14.0	10.8	14.1	14.6	19.1	18.9	17.3	19.1	18.9
8	Turb (NTU)											2.3
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.0	9.7	6.2	6.7	0.0	0.0	0.0	8.0	14.9	6.0	4.0
2	ALK-TOT (mgCaCO3/L)	117	180	185	150	115	155	134	132	141	183	160
3	B (mg/L)	0.02	0.15	0.14	0.15	0.14	0.15	0.16	0.16	0.21	0.18	0.19
4	Ca (mg/L)	33	42	39	37	27	36	29	33	42	45	37
5	Cl (mg/L)	18.5	18.6	17.9	15.5	14.0	15.0	13.0	12.1	13.9	11.4	11.5
6	CO3 (mg/L)	2.4	11.7	7.5	8.1	0.0	0.0	0.0	9.6	18.0	7.2	4.8
7	F (mg/L)	0.14	0.18	0.15	0.16	0.14	0.15	0.16	0.18	0.33	0.30	0.29
8	Fe (mg/L)	0.2	0.3									0.3
9	HCO3 (mg/L)	138	195	210	166	140	189	163	142	135	209	185
10	K (mg/L)	5.3	3.9	5.3	5.0	4.8	3.9	4.7	4.2	3.9	5.2	5.2
11	Mg (mg/L)	13.9	11.4	17.4	16.3	17.3	19.8	19.1	19.1	16.0	21.7	21.2
12	Na (mg/L)	11.9	8.2	7.2	10.8	6.9	5.5	7.0	6.1	8.1	6.7	7.1
13	NH3-N (mg N/L)				0.13	0.17	0.64	0.44	0.37	0.33	0.33	0.31
14	NO2+NO3 (mg N/L)			0.27	0.08	0.08	0.86	0.43	0.56	0.43	0.49	0.49
15	NO2-N (mgN/L)	0.13	0.12	0.07	0.03	0.04	0.46	0.10	0.25	0.05	0.03	0.12
16	NO3-N (mgN/L)			0.21	0.05	0.04	0.41	0.33	0.30	0.38	0.46	0.36
17	o-PO4-P (mg P/L)	0.080	0.059	0.072	0.132	0.127	0.114	0.393	0.274	0.351	0.326	
18	P-Tot (mgP/L)			0.272	0.155							0.368
19	SiO2 (mg/L)	11.6	9.7	7.6	6.8	5.9						
20	SO4 (mg/L)	80.2	23.3	23.9	16.6	18.1	12.5	18.8	16.9	31.3	19.0	15.4
	BIOLOGICAL/BACTERIOL											
1	BOD3-27 (mg/L)				1.6	1.1	0.8	1.0	0.9	1.0	1.4	1.5
2	COD (mg/L)					1.0	10.8	6.3	4.3	5.3	8.8	7.5
3	DO (mg/L)	7.5	7.3	7.2	7.0	7.7	7.7	7.2	7.0	7.1	6.9	6.7
4	DO_SAT% (%)	82	73	70	66	75	76	77	75	73	75	72
5	FCol-MPN (MPN/100mL)											5750
6	Tcol-MPN (MPN/100mL)											8750
	TRACE & TOXIC											
1	As (µg/L)											1.4
2	Cd (µg/L)											
3	Cr (µg/L)											54.3
4	Cu (µg/L)											4.0
5	Ni (µg/L)											
6	Pb (µg/L)											2.3
7	Zn (µg/L)											14.3
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	82	105	98	92	67	89	73	82	105	112	92
2	HAR_Total (mgCaCO3/L)	140	153	170	160	139	172	153	161	172	202	181
3	Na% (%)	15	10	9	12	9	6	9	7	9	7	8
4	RSC (-)	0.0	0.6	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	0.3	0.2	0.4	0.3	0.2	0.2	0.2	0.3	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **River Water** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	100.1	65.03	42.20	85.20	147.3	84.10	58.09	100.9	239.4	26.21	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	393	269	324	383	317	360	323	360	307	330	328
4	pH_FLD (pH units)			8.1		7.9	7.8	7.4				8.0
5	pH_GEN (pH units)	7.9	8.2	8.3	8.2	8.2	8.2	8.2	8.4	8.8	8.3	8.2
6	TDS (mg/L)			245	233	185	209	222	223	171	204	200
7	Temp (deg C)	23.3	22.3	23.2	21.3	18.0	20.3	24.8	23.5	25.3	24.2	25.3
8	Turb (NTU)											0.9
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	9.7	10.0	2.7	5.3	2.7	5.3	8.0	17.3	2.7	1.3
2	ALK-TOT (mgCaCO3/L)	121	217	179	161	133	174	159	156	144	172	189
3	B (mg/L)	0.02	0.20	0.13	0.15	0.17	0.15	0.17	0.18	0.21	0.19	0.18
4	Ca (mg/L)	33	43	32	38	32	35	33	35	39	41	42
5	Cl (mg/L)	17.4	20.2	15.3	18.6	17.3	14.7	18.6	17.3	12.0	13.4	16.0
6	CO3 (mg/L)	4.8	11.7	12.0	3.2	6.4	3.2	6.4	9.6	20.8	3.2	1.6
7	F (mg/L)	0.18	0.17	0.14	0.15	0.14	0.14	0.18	0.22	0.30	0.34	0.34
8	Fe (mg/L)	0.2	0.3								1.0	0.3
9	HCO3 (mg/L)	138	241	194	190	150	206	181	171	133	203	228
10	K (mg/L)	4.2	4.8	6.1	6.1	5.6	6.5	5.6	5.3	5.0	5.7	7.0
11	Mg (mg/L)	15.5	14.5	14.8	20.0	17.2	27.0	22.0	20.6	17.2	22.0	22.0
12	Na (mg/L)	8.9	9.0	9.6	11.9	9.6	10.7	10.6	9.0	6.6	8.4	9.9
13	NH3-N (mg N/L)				0.29	0.16	0.66	0.38	0.38	0.35	0.34	0.31
14	NO2+NO3 (mg N/L)			0.19	0.10	0.27	0.78	0.60	0.55	0.51	0.48	0.55
15	NO2-N (mgN/L)	0.13	0.14	0.08	0.05	0.13	0.14	0.20	0.18	0.05	0.04	0.17
16	NO3-N (mgN/L)			0.11	0.05	0.14	0.64	0.40	0.37	0.46	0.44	0.38
17	o-PO4-P (mg P/L)	0.079	0.062		0.245	0.134	0.200	0.382	0.251	0.248	0.372	
18	P-Tot (mgP/L)			0.158	0.240							0.412
19	SiO2 (mg/L)	11.4	10.2	7.4	6.6	6.5						
20	SO4 (mg/L)	76.5	28.6	23.8	18.1	19.5	12.2	20.3	18.6	19.2	17.4	17.9
	BIOLOGICAL/BACTERIOL											
1	BOD3-27 (mg/L)			0.6	1.1	0.8	0.8	1.0	0.9	1.4	1.5	2.6
2	COD (mg/L)					9.3	8.0	24.7	6.0	7.3	9.0	9.0
3	DO (mg/L)	7.7	7.3	7.0	7.1	7.9	7.3	7.7	6.7	7.1	6.9	4.3
4	DO_SAT% (%)	89	84	82	80	83	80	93	79	86	82	51
5	FCol-MPN (MPN/100mL)											1867
6	Tcol-MPN (MPN/100mL)											3333
	TRACE & TOXIC											
1	As (µg/L)										1.0	1.0
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	2.0
4	Cu (µg/L)										1.0	2.0
5	Ni (µg/L)										1.0	49.0
6	Pb (µg/L)										1.0	
7	Zn (µg/L)										1.0	23.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	83	107	79	95	79	87	82	88	98	102	104
2	HAR_Total (mgCaCO3/L)	147	167	141	178	151	200	173	173	169	193	196
3	Na% (%)	11	10	12	12	12	10	11	10	8	9	10
4	RSC (-)	0.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.3	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **Well Water** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1179	1169	1505								
2	pH_FLD (pH units)											
3	pH_GEN (pH units)	8.1	7.6	8.6								
4	TDS (mg/L)			601								
5	Temp (deg C)	24.7	24.2	24.5								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.8	12.0	56.8								
2	ALK-TOT (mgCaCO3/L)	783	663	843								
3	B (mg/L)	0.15	0.11									
4	Ca (mg/L)	69	84	108								
5	Cl (mg/L)	74.0	72.2	129.9								
6	CO3 (mg/L)	5.8	14.5	68.4								
7	F (mg/L)		0.04	0.24								
8	Fe (mg/L)	0.4	0.4									
9	HCO3 (mg/L)	471	390	444								
10	K (mg/L)	86.3	118.7	132.4								
11	Mg (mg/L)	30.1	22.7	24.1								
12	Na (mg/L)	47.2	59.6	93.5								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)											
15	NO2-N (mgN/L)	0.49	0.68	0.79								
16	NO3-N (mgN/L)											
17	o-PO4-P (mg P/L)	0.461	0.517	0.465								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	31.6	34.8	46.0								
20	SO4 (mg/L)	23.9	35.8	58.1								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	173	210	270								
2	HAR_Total (mgCaCO3/L)	298	305	370								
3	Na% (%)	20	22	27								
4	RSC (-)	2.0	0.8	2.2								
5	SAR (-)	1.2	1.5	2.1								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **Well Water** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1356	1037	1080		1000	760	710	950	900	820	780
2	pH_FLD (pH units)											8.0
3	pH_GEN (pH units)	7.8	7.6	8.6		7.8	7.4	7.5	7.8	8.4	7.9	8.3
4	TDS (mg/L)			588		610	460	420	600	500	510	460
5	Temp (deg C)	21.6	16.5	19.0		18.5	17.0	24.0	21.0	24.0	25.0	24.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	10.0	13.3	13.9		0.0	0.0	27.9	0.0	12.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	778	706	300		295	224	324	256	396	304	248
3	B (mg/L)	0.06	0.17			0.20	0.18	0.19	0.28	0.31	0.22	0.23
4	Ca (mg/L)	77	102	49		62	84	50	65	112	74	57
5	Cl (mg/L)	81.0	76.2	123.9		132.1	128.2	70.0	56.1	60.0	57.9	76.0
6	CO3 (mg/L)	12.0	16.0	16.8		0.0	0.0	33.6	0.0	14.4	0.0	0.0
7	F (mg/L)			0.22		0.23	0.11	0.21	0.21	0.65	0.63	0.33
8	Fe (mg/L)	0.5	0.4									
9	HCO3 (mg/L)	462	414	166		360	273	327	312	454	371	303
10	K (mg/L)	101.0	129.4	56.3		92.3	43.4	32.3	42.2	70.5	63.7	58.1
11	Mg (mg/L)	35.1	15.6	24.1		29.9	35.1	39.2	48.5	13.4	21.6	36.1
12	Na (mg/L)	50.1	67.0	310.0		95.9	28.1	23.2	30.6	39.1	35.9	53.7
13	NH3-N (mg N/L)					0.18	0.62	1.08	1.21	1.43	1.43	0.56
14	NO2+NO3 (mg N/L)					0.18	0.61	0.57	2.81	2.37	2.19	1.42
15	NO2-N (mgN/L)	0.70	0.69	0.72		0.12	0.28	0.28	0.29	0.00	0.43	0.32
16	NO3-N (mgN/L)					0.06	0.34	0.29	2.52	2.37	1.77	1.10
17	o-PO4-P (mg P/L)	0.584	0.491	0.351		0.382	0.176	0.500	0.527	1.064	1.064	
18	P-Tot (mgP/L)											0.425
19	SiO2 (mg/L)	39.0	36.5	42.0		28.0						
20	SO4 (mg/L)	36.0	42.0	49.9		117.1	61.4	49.2	142.1	2.0	26.4	143.0
	BIOLOGICAL/BACTERIOLO											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	194	255	123		155	211	125	164	280	185	142
2	HAR_Total (mgCaCO3/L)	340	320	223		280	357	288	365	335	275	292
3	Na% (%)	19	23	70		35	13	13	14	17	18	24
4	RSC (-)	1.2	0.9	0.0		0.3	0.0	0.8	0.0	1.2	0.6	0.0
5	SAR (-)	1.2	1.6	9.1		2.5	0.6	0.6	0.7	0.9	0.9	1.4
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : PALIAKALAN (GGU60I6) | **Division : M Ganga Div. I, Lucknow**

Local River : Sarda | **Well Water** | **Sub-Division : U Sarda SD, Haldwani**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1340	1060	1470	1220	1130	1090	1070	1420	940	1040	741
2	pH_FLD (pH units)						8.0					8.0
3	pH_GEN (pH units)	7.7	7.7	8.1	7.9	7.5	7.8	7.9	8.2	9.1	7.8	7.3
4	TDS (mg/L)			472	750	680	620	660	880	540	660	445
5	Temp (deg C)	23.7	24.0	28.5	24.5	27.0	23.0	29.0	26.0	22.5	26.0	27.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	22.6	29.0	0.0	0.0	0.0	35.9	19.9	0.0	27.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	795	809	576	348	212	572	408	232	260	220	236
3	B (mg/L)	0.07	0.24	0.20	0.21	0.18	0.13	0.27	0.28	0.28	0.24	0.20
4	Ca (mg/L)	81	111	74	79	81	79	52	53	36	55	52
5	Cl (mg/L)	86.7	110.1	73.8	176.1	172.2	423.9	136.0	160.1	76.0	104.0	73.0
6	CO3 (mg/L)	27.2	34.9	0.0	0.0	0.0	43.2	24.0	0.0	33.6	0.0	0.0
7	F (mg/L)	0.04		0.15	0.23	0.32	0.11	0.21	0.28	0.27	0.36	0.28
8	Fe (mg/L)	0.5	0.5									
9	HCO3 (mg/L)	457	458	703	425	259	610	449	283	249	268	288
10	K (mg/L)	109.6	138.4	60.6	95.4	117.3	140.8	86.8	103.2	71.2	71.2	54.4
11	Mg (mg/L)	35.1	21.6	36.1	54.7	40.2	51.6	52.6	32.0	58.8	29.9	33.0
12	Na (mg/L)	55.4	76.0	90.4	71.1	233.9	72.4	94.3	101.0	47.4	69.7	50.2
13	NH3-N (mg N/L)				0.21	0.21	1.24	1.25	1.47	0.52	1.02	0.50
14	NO2+NO3 (mg N/L)			0.19	0.21	0.81	2.77	3.04	3.63	1.35	1.73	1.23
15	NO2-N (mgN/L)	0.75	0.75	0.11	0.11	0.46	0.26	0.33	0.87	0.00	0.33	0.28
16	NO3-N (mgN/L)			0.08	0.10	0.35	2.51	2.70	2.76	1.35	1.40	0.95
17	o-PO4-P (mg P/L)	0.613	0.537		0.517	0.341	0.444	0.465	0.672	0.579	0.599	
18	P-Tot (mgP/L)			0.810	0.520							0.390
19	SiO2 (mg/L)	42.0	42.0	36.0	21.0	24.7						
20	SO4 (mg/L)	40.6	53.4	11.0	68.2	550.1	37.4	60.0	156.0	132.5	155.0	138.0
	BIOLOGICAL/BACTERIOLO											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	202	277	185	198	202	198	129	134	91	138	129
2	HAR_Total (mgCaCO3/L)	348	367	335	426	370	413	348	267	336	262	267
3	Na% (%)	20	23	32	22	50	21	31	36	20	30	25
4	RSC (-)	1.5	1.4	4.9	0.0	0.0	3.2	1.3	0.0	0.0	0.0	0.0
5	SAR (-)	1.3	1.7	2.2	1.5	5.3	1.6	2.2	2.7	1.1	1.9	1.3
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**ELGINBRIDGE**	**Code**	:	**GGU00S2**
State	:	Uttar Pradesh	District		Bara Banki
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Ghagra
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	U Rapti SD, Gonda
Drainage Area	:	74713 Sq. Km.	Bank	:	Right
Latitude	:	27°05'05"	Longitude	:	81°29'29"
		Opening Date	Closing Date		
Gauge	:	5/1/1959			
Discharge	:	5/1/1959			
Sediment	:	8/29/1961			
Water Quality	:	1/13/1964			

Water Quality Datasheet for the period : 2016-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	163.6	1193	6156	3197	1626							
2	Colour_Cod (-)	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Clear	Clear	Clear	Clear	Light Brown
3	EC_GEN (µmho/cm)	210	164	167	183	210	210	230	270	280	290	265	232
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	7.5	7.5	8.0	8.0	8.0	8.0	8.0	8.5	8.5	8.0	7.5
6	pH_GEN (pH units)	8.3	8.1	8.0	8.5	8.1	8.2	8.0	8.2	8.5	8.4	8.2	7.9
7	TDS (mg/L)	134	102	104	114	133	129	143	171	175	180	163	142
8	Temp (deg C)	27.0	30.0	27.0	29.0	29.5	26.5	21.0	17.5	17.0	21.5	28.0	29.0
9	Turb (NTU)	1.4	1.5	1.8	1.5	1.6	1.9	1.7	1.2	0.8	0.8	0.7	1.8
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	4.0	4.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	136	120	88	104	116	124	124	132	140	164	128	120
3	B (mg/L)	0.18	0.17	0.16	0.16	0.17	0.18	0.17	0.17	0.19	0.18	0.16	0.14
4	Ca (mg/L)	34	29	26	29	31	34	31	29	31	34	32	31
5	Cl (mg/L)	12.1	8.2	6.0	6.0	8.0	8.0	8.0	10.0	10.0	9.9	6.7	7.0
6	CO3 (mg/L)	4.8	0.0	0.0	9.6	0.0	0.0	0.0	0.0	4.8	4.8	0.0	0.0
7	F (mg/L)	0.34	0.27	0.19	0.21	0.22	0.18	0.26	0.23	0.24	0.26	0.25	0.22
8	Fe (mg/L)			0.4				0.4				0.3	
9	HCO3 (mg/L)	156	146	107	107	142	151	151	161	161	190	156	146
10	K (mg/L)	4.3	3.5	2.7	3.3	3.5	3.6	4.0	4.7	5.2	4.7	4.3	3.6
11	Mg (mg/L)	17.5	15.4	10.3	12.4	14.5	15.5	17.5	18.6	16.5	19.6	14.8	14.5
12	Na (mg/L)	6.9	5.8	3.5	4.0	5.1	5.7	5.5	5.8	6.2	6.4	3.9	4.0
13	NH3-N (mg N/L)	0.34	0.28	0.27	0.28	0.31	0.28	0.28	0.29	0.27	0.29	0.28	0.26
14	NO2+NO3 (mg N/L)	0.46	0.47	0.40	0.33	0.36	0.34	0.33	0.35	0.39	0.40	0.46	0.36
15	NO2-N (mgN/L)	0.00	0.14	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00
16	NO3-N (mgN/L)	0.46	0.34	0.31	0.33	0.36	0.34	0.33	0.35	0.39	0.40	0.36	0.36
17	P-Tot (mgP/L)	0.320	0.330	0.230	0.240	0.265	0.245	0.280	0.310	0.330	0.355	0.330	0.320
18	SO4 (mg/L)	16.3	13.9	13.4	13.7	14.8	15.0	14.8	14.3	14.6	15.8	10.8	9.2
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	1.6	1.6	0.8	1.0	0.8	1.0	1.2	1.0	1.4	1.2	1.6	3.5
2	COD (mg/L)	9.0	8.0	4.0	4.0	6.0	6.0	6.0	5.0	6.0	5.0	5.0	6.0
3	DO (mg/L)	7.3	6.5	6.9	7.3	7.1	7.5	7.1	7.3	7.5	7.3	4.3	4.7
4	DO_SAT% (%)	91	86	86	94	92	92	79	75	77	81	55	61
5	FCol-MPN (MPN/100mL)			500	2500	3000	2000	1800	2500	4000	2000	1000	2000
6	Tcol-MPN (MPN/100mL)			2500	7000	8000	5000	4500	5000	6000	3000	1600	5000
	TRACE & TOXIC												
1	As (µg/L)			0.3				1.5				0.0	
2	Cd (µg/L)			0.2				0.1				0.0	
3	Cr (µg/L)			183.0				43.0				4.0	
4	Cu (µg/L)			3.2				3.6				10.0	
5	Ni (µg/L)			6.7				0.3				7.0	
6	Pb (µg/L)			2.0				2.0				1.0	
7	Zn (µg/L)			6.7				13.5				19.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	86	73	65	73	77	86	77	73	77	86	80	77
2	HAR_Total (mgCaCO3/L)	159	137	108	125	138	151	150	151	146	168	142	138
3	Na% (%)	8	8	6	6	7	7	7	8	8	8	5	6
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	11/1/2016	5/1/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Brown	Clear
2	EC_GEN (µmho/cm)	1480	1520
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	8.0	8.0
5	pH_GEN (pH units)	8.2	8.2
6	TDS (mg/L)	900	918
7	Temp (deg C)	25.5	25.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	212	224
3	B (mg/L)	0.23	0.28
4	Ca (mg/L)	88	95
5	Cl (mg/L)	132.0	135.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.43	0.48
8	HCO3 (mg/L)	259	273
9	K (mg/L)	37.2	40.3
10	Mg (mg/L)	55.7	60.9
11	Na (mg/L)	81.6	86.2
12	NH3-N (mg N/L)	1.03	1.20
13	NO2+NO3 (mg N/L)	1.86	2.10
14	NO2-N (mgN/L)	0.34	0.40
15	NO3-N (mgN/L)	1.52	1.70
16	P-Tot (mgP/L)	0.705	0.810
17	SO4 (mg/L)	246.0	254.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	219	237
2	HAR_Total (mgCaCO3/L)	452	490
3	Na% (%)	26	26
4	RSC (-)	0.0	0.0
5	SAR (-)	1.7	1.7
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)	153	6245	145.6	2572
2	EC_GEN (µmho/cm)	12	290	164	226
3	pH_FLD (pH units)	12	8.5	7.5	8
4	pH_GEN (pH units)	12	8.5	7.9	8.2
5	TDS (mg/L)	12	180	102	141
6	Temp (deg C)	12	30.0	17.0	25.3
7	Turb (NTU)	12	1.9	0.7	1.4
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	1.7
2	ALK-TOT (mgCaCO3/L)	12	164	88	125
3	B (mg/L)	12	0.19	0.14	0.17
4	Ca (mg/L)	12	34	26	31
5	Cl (mg/L)	12	12.1	6.0	8.3
6	CO3 (mg/L)	12	9.6	0.0	2
7	F (mg/L)	12	0.34	0.18	0.24
8	Fe (mg/L)	3	0.4	0.3	0.4
9	HCO3 (mg/L)	12	190	107	148
10	K (mg/L)	12	5.2	2.7	4
11	Mg (mg/L)	12	19.6	10.3	15.6
12	Na (mg/L)	12	6.9	3.5	5.2
13	NH3-N (mg N/L)	12	0.34	0.26	0.28
14	NO2+NO3 (mg N/L)	12	0.47	0.33	0.39
15	NO2-N (mgN/L)	12	0.14	0.00	0.03
16	NO3-N (mgN/L)	12	0.46	0.31	0.36
17	P-Tot (mgP/L)	12	0.355	0.230	0.296
18	SO4 (mg/L)	12	16.3	9.2	13.9
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	3.5	0.8	1.4
2	COD (mg/L)	12	9.0	4.0	5.8
3	DO (mg/L)	12	7.5	4.3	6.7
4	DO_SAT% (%)	12	94	55	81
5	FCol-MPN (MPN/100mL)	10	4000	500	2130
6	Tcol-MPN (MPN/100mL)	10	8000	1600	4760
	TRACE & TOXIC				
1	As (µg/L)	3	1.5	0.0	0.6
2	Cd (µg/L)	3	0.2	0.0	0.1
3	Cr (µg/L)	3	183.0	4.0	76.7
4	Cu (µg/L)	3	10.0	3.2	5.6
5	Ni (µg/L)	3	7.0	0.3	4.7
6	Pb (µg/L)	3	2.0	1.0	1.7
7	Zn (µg/L)	3	19.0	6.7	13.1
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	86	65	78
2	HAR_Total (mgCaCO3/L)	12	168	108	143
3	Na% (%)	12	8	5	7
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.2	0.1	0.2
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	1520	1480	1500
2	pH_FLD (pH units)	2	8.0	8.0	8.0
3	pH_GEN (pH units)	2	8.2	8.2	8.2
4	TDS (mg/L)	2	918	900	909
5	Temp (deg C)	2	25.5	25.0	25.3
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	224	212	218
3	B (mg/L)	2	0.28	0.23	0.25
4	Ca (mg/L)	2	95	88	91
5	Cl (mg/L)	2	135.0	132.0	133.5
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.48	0.43	0.45
8	HCO3 (mg/L)	2	273	259	266
9	K (mg/L)	2	40.3	37.2	38.8
10	Mg (mg/L)	2	60.9	55.7	58.3
11	Na (mg/L)	2	86.2	81.6	83.9
12	NH3-N (mg N/L)	2	1.20	1.03	1.11
13	NO2+NO3 (mg N/L)	2	2.10	1.86	1.98
14	NO2-N (mgN/L)	2	0.40	0.34	0.37
15	NO3-N (mgN/L)	2	1.70	1.52	1.61
16	P-Tot (mgP/L)	2	0.810	0.705	0.757
17	SO4 (mg/L)	2	254.0	246.0	250.0
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	237	219	228
2	HAR_Total (mgCaCO3/L)	2	490	452	471
3	Na% (%)	2	26	26	26
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.7	1.7	1.7
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	4398	8364	5927	2899	5127	5491	6945	9127	3021	3042	2467
2	EC_FLD (µmho/cm)							163				
3	EC_GEN (µmho/cm)	292	279	289	224	221	180	173	220	234	245	187
4	pH_FLD (pH units)	7.0	7.0	7.0	7.0	8.0	8.2	8.2	8.2			7.8
5	pH_GEN (pH units)	8.2	8.2	8.1	7.9	7.9	7.9	8.2	8.4	8.4	8.3	8.2
6	TDS (mg/L)			190	167	132	109	104	145	144	146	117
7	Temp (deg C)	29.1	28.6	27.3	28.3	28.4	28.4	29.1	26.5	29.5	29.1	28.5
8	Turb (NTU)											1.6
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	0.8	6.0	4.7	1.0	3.2	0.0	1.6	5.6	4.0	1.6	2.4
2	ALK-TOT (mgCaCO3/L)	128	162	148	120	117	113	118	128	107	102	113
3	B (mg/L)	0.02	0.06	0.15	0.13	0.12	0.16	0.14	0.17	0.21	0.17	0.17
4	Ca (mg/L)	22	32	32	37	30	27	29	28	27	31	30
5	Cl (mg/L)	6.5	8.4	10.9	13.5	13.6	8.9	12.9	13.6	16.4	8.4	8.1
6	CO3 (mg/L)	1.0	5.8	5.7	1.2	3.8	0.0	1.9	6.7	4.8	1.9	2.9
7	F (mg/L)	0.04	0.13	0.10	0.15	0.13	0.12	0.14	0.15	0.19	0.27	0.25
8	Fe (mg/L)	0.2	0.2				0.1					0.4
9	HCO3 (mg/L)	127	147	169	144	135	138	141	142	121	120	132
10	K (mg/L)	7.5	3.8	3.5	4.1	4.2	3.6	4.1	4.0	3.9	3.2	3.5
11	Mg (mg/L)	8.2	7.2	5.8	18.4	16.5	15.3	19.6	16.3	15.3	10.5	14.0
12	Na (mg/L)	16.1	9.1	8.4	9.4	8.9	4.2	5.2	9.4	5.7	4.9	5.0
13	NH3-N (mg N/L)				0.21	0.15	0.48	0.55	0.28	0.36	0.30	0.29
14	NO2+NO3 (mg N/L)			0.11	0.08	0.08	0.87	0.59	0.57	0.58	0.46	0.41
15	NO2-N (mgN/L)	0.02	0.04	0.06	0.04	0.04	0.15	0.14	0.22	0.19	0.02	0.05
16	NO3-N (mgN/L)			0.04	0.04	0.04	0.73	0.45	0.35	0.39	0.44	0.36
17	o-PO4-P (mg P/L)	0.033	0.019	0.054	0.052	0.083	0.091	0.316	0.285	0.430	0.267	
18	P-Tot (mgP/L)				0.127							0.277
19	SiO2 (mg/L)	10.6	9.4	8.7	6.4	5.5						
20	SO4 (mg/L)	48.9	36.0	21.2	18.9	21.2	12.0	17.6	15.6	15.4	17.7	14.4
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				0.7	0.8	0.6	0.9	0.9	0.9	1.1	1.1
2	COD (mg/L)					7.0	3.4	4.4	5.0	4.0	6.0	6.2
3	DO (mg/L)	7.1	7.3	7.1	7.3	7.1	7.3	7.3	7.1	6.9	6.8	7.0
4	DO_SAT% (%)	92	93	90	93	91	94	95	88	91	88	90
5	FCol-MPN (MPN/100mL)											2000
6	Tcol-MPN (MPN/100mL)											5833
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											183.0
4	Cu (µg/L)											3.2
5	Ni (µg/L)											6.7
6	Pb (µg/L)											
7	Zn (µg/L)											6.7
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	54	81	81	94	75	68	73	70	69	78	75
2	HAR_Total (mgCaCO3/L)	88	111	105	170	144	132	155	138	132	122	133
3	Na% (%)	25	15	15	10	11	6	6	12	8	8	7
4	RSC (-)	0.4	0.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.8	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	480.6	626.0	930.5	997.4	1036	884.8	1181	2838	1173	981.6	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	463	262	300	303	280	243	298	305	308	283	248
4	pH_FLD (pH units)		7.0	7.0	8.3	8.0	8.2	8.2	8.4			8.1
5	pH_GEN (pH units)	8.3	8.4	8.1	8.4	8.0	8.0	8.0	8.3	8.5	8.3	8.3
6	TDS (mg/L)			198	178	171	149	189	199	170	175	155
7	Temp (deg C)	20.5	20.4	22.1	20.0	20.5	19.6	20.4	21.3	20.0	20.9	20.5
8	Turb (NTU)											1.4
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	3.0	7.2	7.5	1.0	0.0	2.0	0.0	6.0	12.0	5.0	1.0
2	ALK-TOT (mgCaCO3/L)	126	162	158	139	116	166	128	123	145	167	130
3	B (mg/L)	0.01	0.13	0.14	0.14	0.15	0.15	0.16	0.17	0.21	0.17	0.18
4	Ca (mg/L)	28	40	30	36	31	35	28	30	48	40	31
5	Cl (mg/L)	11.0	11.2	11.8	12.1	13.1	14.0	14.0	13.0	11.5	10.0	9.0
6	CO3 (mg/L)	3.6	8.7	9.0	1.2	0.0	2.4	0.0	7.2	14.4	6.0	1.2
7	F (mg/L)	0.08	0.12	0.11	0.17	0.14	0.15	0.16	0.16	0.30	0.29	0.23
8	Fe (mg/L)	0.2	0.2									0.4
9	HCO3 (mg/L)	146	180	174	167	140	198	156	135	148	192	156
10	K (mg/L)	5.3	4.1	3.2	5.7	5.0	4.1	4.5	3.2	2.5	4.6	4.4
11	Mg (mg/L)	11.8	7.2	9.0	18.3	16.5	21.9	18.8	18.3	17.0	19.6	17.0
12	Na (mg/L)	13.1	9.3	7.0	8.9	6.7	6.0	6.8	6.2	6.6	6.0	5.8
13	NH3-N (mg N/L)				0.20	0.16	0.63	0.44	0.35	0.32	0.32	0.28
14	NO2+NO3 (mg N/L)			0.10	0.09	0.06	0.58	0.45	0.53	0.55	0.46	0.35
15	NO2-N (mgN/L)	0.06	0.06	0.06	0.04	0.03	0.13	0.10	0.23	0.13	0.01	0.00
16	NO3-N (mgN/L)			0.05	0.05	0.03	0.44	0.36	0.29	0.42	0.45	0.35
17	o-PO4-P (mg P/L)	0.041	0.021	0.070	0.235	0.145	0.119	0.403	0.284	0.354	0.320	
18	P-Tot (mgP/L)				0.197	0.114						0.291
19	SiO2 (mg/L)	9.9	9.9	8.3	6.0	6.0						
20	SO4 (mg/L)	61.7	24.7	20.8	21.0	18.7	11.5	18.5	16.3	36.8	18.6	14.7
	BIOLOGICAL/BACTERIOL											
1	BOD3-27 (mg/L)				1.1	0.5	0.7	0.9	1.2	0.8	1.3	1.1
2	COD (mg/L)					2.0	7.8	4.3	4.5	3.8	7.5	5.8
3	DO (mg/L)	6.8	7.1	7.2	7.2	7.4	7.4	7.3	7.0	7.2	7.1	7.3
4	DO_SAT% (%)	75	78	82	79	81	81	80	79	79	79	81
5	FCol-MPN (MPN/100mL)											2575
6	Tcol-MPN (MPN/100mL)											5125
	TRACE & TOXIC											
1	As (µg/L)											1.5
2	Cd (µg/L)											0.1
3	Cr (µg/L)											43.0
4	Cu (µg/L)											3.6
5	Ni (µg/L)											
6	Pb (µg/L)											2.0
7	Zn (µg/L)											13.5
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	70	100	76	89	77	88	71	75	120	100	78
2	HAR_Total (mgCaCO3/L)	119	130	113	165	145	180	149	151	191	182	149
3	Na% (%)	19	13	12	10	9	7	9	8	7	7	8
4	RSC (-)	0.2	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	372.1	249.8	211.2	385.5	279.3	235.9	1100	547.8	782.1	166.1	
2	EC_FLD (µmho/cm)							8				
3	EC_GEN (µmho/cm)	338	275	312	290	273	297	290	330	283	273	262
4	pH_FLD (pH units)			7.0	8.4	8.5	7.8	8.2	8.1			8.0
5	pH_GEN (pH units)	7.9	8.5	8.2	8.4	8.2	8.0	8.2	8.2	8.8	8.3	8.2
6	TDS (mg/L)			237	176	164	176	188	197	157	170	162
7	Temp (deg C)	23.3	24.8	24.8	25.8	24.3	24.7	23.7	26.3	25.7	25.8	26.2
8	Turb (NTU)											1.1
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.7	8.1	14.9	6.6	2.7	5.3	5.3	8.0	13.3	1.3	1.3
2	ALK-TOT (mgCaCO3/L)	136	181	169	145	129	171	143	156	137	155	137
3	B (mg/L)	0.01	0.19	0.11	0.15	0.16	0.17	0.19	0.20	0.20	0.17	0.16
4	Ca (mg/L)	31	43	30	36	30	35	32	33	38	41	32
5	Cl (mg/L)	9.3	14.9	12.7	17.3	16.0	16.0	18.6	16.0	10.6	11.2	7.9
6	CO3 (mg/L)	3.2	9.7	18.0	8.0	3.2	6.4	6.4	9.6	16.0	1.6	1.6
7	F (mg/L)	0.22	0.11	0.15	0.17	0.13	0.16	0.18	0.23	0.28	0.31	0.24
8	Fe (mg/L)	0.2	0.3								1.0	0.3
9	HCO3 (mg/L)	159	201	169	161	151	195	161	171	135	185	164
10	K (mg/L)	4.0	4.7	3.4	5.2	5.6	5.3	5.6	3.9	2.6	5.0	4.2
11	Mg (mg/L)	14.4	9.6	13.4	18.6	17.2	22.0	18.6	21.7	14.4	17.2	16.3
12	Na (mg/L)	10.3	10.0	7.7	10.6	8.4	10.1	9.6	8.8	6.5	7.1	4.8
13	NH3-N (mg N/L)				0.24	0.16	0.64	0.39	0.41	0.34	0.31	0.28
14	NO2+NO3 (mg N/L)			0.10	0.09	0.24	0.71	0.62	0.54	0.52	0.46	0.41
15	NO2-N (mgN/L)	0.06	0.08	0.05	0.04	0.11	0.15	0.22	0.22	0.03	0.05	0.03
16	NO3-N (mgN/L)			0.05	0.05	0.13	0.56	0.41	0.32	0.49	0.42	0.37
17	o-PO4-P (mg P/L)	0.021	0.021	0.034	0.171	0.155	0.251	0.389	0.265	0.265	0.331	
18	P-Tot (mgP/L)				0.235	0.176						0.335
19	SiO2 (mg/L)	10.2	10.5	7.1	6.3	6.4						
20	SO4 (mg/L)	60.5	28.6	23.8	15.1	19.8	13.6	19.5	18.1	17.9	16.5	11.9
	BIOLOGICAL/BACTERIOL											
1	BOD3-27 (mg/L)			0.8	1.1	0.7	0.9	0.9	1.0	0.9	1.2	2.1
2	COD (mg/L)					6.3	13.7	11.0	6.0	4.7	7.3	5.3
3	DO (mg/L)	6.5	6.3	7.1	7.1	7.4	7.3	7.4	6.7	7.2	6.9	5.4
4	DO_SAT% (%)	77	76	85	87	89	88	87	83	88	84	66
5	FCol-MPN (MPN/100mL)											1667
6	Tcol-MPN (MPN/100mL)											3200
	TRACE & TOXIC											
1	As (µg/L)										1.0	
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	4.0
4	Cu (µg/L)										1.0	10.0
5	Ni (µg/L)										1.0	7.0
6	Pb (µg/L)										1.0	
7	Zn (µg/L)										1.0	19.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	78	107	75	89	76	87	79	83	96	103	81
2	HAR_Total (mgCaCO3/L)	138	147	130	166	147	179	156	173	156	175	149
3	Na% (%)	14	12	11	12	11	11	11	10	8	8	6
4	RSC (-)	0.0	0.7	0.8	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1192	953	965								
2	pH_FLD (pH units)			7.0								
3	pH_GEN (pH units)	8.2	7.9	7.3								
4	TDS (mg/L)			520								
5	Temp (deg C)	26.8	26.6	27.0								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	20.7	14.1	42.0								
2	ALK-TOT (mgCaCO3/L)	951	717	844								
3	B (mg/L)	0.12	0.10	0.23								
4	Ca (mg/L)	105	103	152								
5	Cl (mg/L)	30.5	40.3	69.9								
6	CO3 (mg/L)	25.0	17.0	50.6								
7	F (mg/L)	0.04	0.04	0.00								
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	554	420	463								
10	K (mg/L)	9.8	65.1	37.9								
11	Mg (mg/L)	32.4	23.9	24.1								
12	Na (mg/L)	6.3	32.5	60.4								
13	NH3-N (mg N/L)		0.00									
14	NO2+NO3 (mg N/L)			0.08								
15	NO2-N (mgN/L)	0.03	0.03	0.08								
16	NO3-N (mgN/L)			0.00								
17	o-PO4-P (mg P/L)	0.153	0.211	0.217								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	27.8	31.2	22.3								
20	SO4 (mg/L)	50.2	91.1	25.9								
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	263	258	380								
2	HAR_Total (mgCaCO3/L)	398	357	480								
3	Na% (%)	3	11	20								
4	RSC (-)	2.0	1.5	0.4								
5	SAR (-)	0.1	1.0	1.2								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1114	905	980	1030	930	960	920	1200	1270	750	1480
2	pH_FLD (pH units)											8.0
3	pH_GEN (pH units)	7.9	8.5	7.3	7.9	7.7	9.3	8.1	7.5	8.7	7.8	8.1
4	TDS (mg/L)			530	630	570	570	550	780	710	470	900
5	Temp (deg C)	22.0	21.9	26.0	24.0	25.0	24.5	25.0	26.0	25.5	29.0	25.5
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	23.9	12.1		0.0	0.0	0.0	55.8	0.0	35.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1119	641		344	263	440	348	432	524	308	212
3	B (mg/L)	0.07	0.15	0.22	0.19	0.13	0.20	0.18	0.24	0.29	0.25	0.22
4	Ca (mg/L)	121	134	70	108	88	131	53	76	139	64	88
5	Cl (mg/L)	30.9	36.3	63.9	144.1	104.0	100.1	62.0	63.9	82.0	60.0	132.0
6	CO3 (mg/L)	28.8	14.5	16.8	0.0	0.0	0.0	67.2	0.0	43.2	0.0	0.0
7	F (mg/L)				0.13	0.19	0.15	0.19	0.23	0.55	0.47	0.43
8	Fe (mg/L)	0.3	0.2									
9	HCO3 (mg/L)	653	376	132	420	321	537	288	527	551	376	259
10	K (mg/L)	13.4	31.1	39.5	28.9	24.2	28.9	30.2	40.3	70.4	45.0	37.2
11	Mg (mg/L)	35.1	24.0	28.8	38.2	58.8	55.8	38.2	94.9	31.0	29.9	55.7
12	Na (mg/L)	8.0	17.3	62.3	36.3	35.9	39.6	32.4	43.5	59.3	41.4	81.6
13	NH3-N (mg N/L)				0.26	0.24	0.62	0.93	0.93	0.93	0.94	1.02
14	NO2+NO3 (mg N/L)				0.14		0.63	0.51	2.11	1.98	1.90	1.86
15	NO2-N (mgN/L)	0.04	0.04	0.07	0.07		0.28	0.20	0.34	0.63	0.51	0.34
16	NO3-N (mgN/L)				0.07		0.35	0.31	1.77	1.35	1.39	1.52
17	o-PO4-P (mg P/L)	0.217	0.209	0.217	0.320		0.165	0.470	0.465	0.775	0.827	
18	P-Tot (mgP/L)				0.320	0.279						0.705
19	SiO2 (mg/L)	35.5	34.5	40.0	31.0	23.0						
20	SO4 (mg/L)	63.0	13.0	20.2	27.4	149.8	94.1	41.5	194.9	20.2	24.0	246.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	302	335	174	271	220	327	133	189	349	159	219
2	HAR_Total (mgCaCO3/L)	448	435	294	430	465	559	292	584	478	284	452
3	Na% (%)	4	7	28	15	14	13	18	13	19	21	26
4	RSC (-)	2.7	0.0	0.0	0.0	0.0	0.0	1.2	0.0	1.0	0.5	0.0
5	SAR (-)	0.2	0.4	1.6	0.8	0.7	0.7	0.8	0.8	1.2	1.1	1.7
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : ELGINBRIDGE (GGU00S2) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1130	933	1050	2900	2900	890	1570	970	2200	880	1520
2	pH_FLD (pH units)			9.0			8.0					8.0
3	pH_GEN (pH units)	7.9	8.6	8.1	7.8	7.2	7.9	7.8	8.2	8.6	7.8	8.2
4	TDS (mg/L)			512	1800	1700	540	980	620	1300	560	918
5	Temp (deg C)	23.7	25.2	25.5	28.0	28.5	27.0	29.0	29.0	27.5	26.5	25.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	19.9	21.0	4.0	0.0	0.0	27.9	0.0	0.0	8.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1187	748	312	408	172	360	640	192	388	164	224
3	B (mg/L)	0.06	0.22	0.17	0.23	0.15	0.12	0.21	0.31	0.34	0.24	0.28
4	Ca (mg/L)	118	148	53	165	117	60	105	60	127	67	95
5	Cl (mg/L)	35.3	60.0	54.0	208.0	363.9	167.9	123.9	79.9	133.8	94.1	135.0
6	CO3 (mg/L)	24.0	25.3	4.8	0.0	0.0	33.6	0.0	0.0	9.6	0.0	0.0
7	F (mg/L)	0.04		0.08	0.25	0.18	0.13	0.23	0.30	0.34	0.40	0.48
8	Fe (mg/L)	0.2	0.3									
9	HCO3 (mg/L)	698	430	371	498	210	371	781	234	454	200	273
10	K (mg/L)	17.7	38.7	45.0	97.4	85.2	98.5	108.3	61.8	177.5	24.6	40.3
11	Mg (mg/L)	34.4	24.1	25.8	64.0	43.4	40.2	94.9	36.1	26.9	44.3	60.9
12	Na (mg/L)	8.1	22.7	63.9	63.0	75.0	98.0	66.2	52.2	74.3	63.5	86.2
13	NH3-N (mg N/L)				0.25	0.28	1.01	1.24	0.87	1.04	1.07	1.20
14	NO2+NO3 (mg N/L)			0.14			2.39	2.31	2.12	1.94	2.28	2.10
15	NO2-N (mgN/L)	0.04	0.07	0.04			0.25	0.36	0.70	0.28	0.47	0.40
16	NO3-N (mgN/L)			0.10			2.14	1.95	1.42	1.67	1.81	1.70
17	o-PO4-P (mg P/L)	0.251	0.241				0.424	0.424	0.548	0.703	0.506	
18	P-Tot (mgP/L)				42.000	0.310						0.810
19	SiO2 (mg/L)	38.0	40.0	33.0	27.0	27.0						
20	SO4 (mg/L)	67.4	20.2	54.2	155.0	53.3	51.8	121.4	177.1	260.2	225.6	254.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)					0.5						
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	295	370	134	413	293	151	263	151	318	168	237
2	HAR_Total (mgCaCO3/L)	439	470	241	679	473	318	658	301	430	352	490
3	Na% (%)	4	9	32	15	22	33	15	23	20	27	26
4	RSC (-)	3.5	0.0	1.5	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.2	0.5	1.8	1.1	1.5	2.4	1.1	1.3	1.6	1.5	1.7
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**AYODHYA**	**Code**	:	**GGU00M9**
State	:	Uttar Pradesh	District		Faizabad
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	-
Sub-Sub Tributary	:	-	Local River	:	Ghagra
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	U Rapti SD, Gonda
Drainage Area	:	80889 Sq. Km.	Bank	:	Right
Latitude	:	26°47'47"	Longitude	:	82°12'12"
		Opening Date	Closing Date		
Gauge	:	7/7/1970			
Discharge	:	7/7/1970			
Sediment	:	3/1/1977			
Water Quality	:	12/1/1977			

Water Quality Datasheet for the period : 2016-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	173.7	1628	8199	2451								
2	Colour_Cod (-)	Light Brown	Brown	Brown	Brown	Brown	Brown	Brown	Light Brown	Light Brown	Clear	Clear	Light Brown
3	EC_GEN (µmho/cm)	200	175	192	190	210	230	240	290	290	280	313	203
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	8.0	8.0	8.0	8.0	7.5	8.0	8.0	8.0	8.0	8.0	7.5
6	pH_GEN (pH units)	8.2	8.0	8.1	8.4	8.2	8.2	8.1	8.2	8.4	8.2	8.1	8.0
7	TDS (mg/L)	131	109	118	118	131	141	156	184	180	174	198	124
8	Temp (deg C)	28.0	28.5	24.0	26.0	24.5	22.0	17.5	15.0	13.0	20.0	25.0	25.0
9	Turb (NTU)	1.4	4.4	5.6	6.8	5.7	4.4	4.8	1.6	2.2	0.7	0.8	1.9
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	132	116	96	112	120	136	144	144	152	148	156	128
3	B (mg/L)	0.18	0.18	0.16	0.16	0.17	0.18	0.18	0.18	0.19	0.18	0.20	0.12
4	Ca (mg/L)	34	28	28	31	33	36	38	34	36	38	43	31
5	Cl (mg/L)	9.9	9.9	8.2	8.0	8.0	10.0	10.0	10.0	10.0	12.0	16.0	10.0
6	CO3 (mg/L)	4.8	0.0	0.0	9.6	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0
7	F (mg/L)	0.32	0.27	0.21	0.24	0.23	0.22	0.25	0.28	0.26	0.24	0.32	0.22
8	Fe (mg/L)			0.3				0.4				0.3	
9	HCO3 (mg/L)	151	142	117	117	146	166	176	176	166	181	190	156
10	K (mg/L)	3.9	3.9	3.1	3.4	3.4	3.4	4.3	4.9	5.5	5.6	5.9	4.7
11	Mg (mg/L)	16.5	14.5	12.4	13.4	14.5	16.5	18.6	19.6	19.6	18.6	22.7	17.5
12	Na (mg/L)	6.4	6.0	3.9	4.3	5.0	6.2	5.8	6.1	6.7	7.2	9.9	6.6
13	NH3-N (mg N/L)	0.34	0.29	0.28	0.29	0.32	0.29	0.30	0.30	0.29	0.29	0.31	0.20
14	NO2+NO3 (mg N/L)	0.57	0.52	0.43	0.35	0.35	0.33	0.33	0.36	0.58	0.40	0.55	0.30
15	NO2-N (mgN/L)	0.12	0.15	0.12	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.14	0.00
16	NO3-N (mgN/L)	0.45	0.36	0.31	0.35	0.35	0.33	0.33	0.36	0.40	0.40	0.41	0.30
17	P-Tot (mgP/L)	0.300	0.350	0.240	0.250	0.270	0.265	0.310	0.315	0.380	0.325	0.350	0.260
18	SO4 (mg/L)	16.3	13.9	13.9	13.9	15.0	15.4	15.2	14.7	14.8	15.6	17.8	12.6
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	2.0	1.0	1.4	1.2	1.0	1.6	1.4	2.2	1.8	1.6	4.7	1.2
2	COD (mg/L)	11.0	7.0	5.0	5.0	6.0	7.0	8.0	9.0	7.0	6.0	8.0	6.0
3	DO (mg/L)	6.9	6.7	6.5	7.1	7.1	7.1	7.1	7.6	6.9	7.1	4.5	5.7
4	DO_SAT% (%)	88	85	77	87	84	81	73	76	65	78	54	69
5	FCol-MPN (MPN/100mL)			400	4000	4000	1000	2500	3500	4500	1000	1300	3000
6	Tcol-MPN (MPN/100mL)			2000	15000	6000	6000	8000	9000	8000	4000	7000	15000
	TRACE & TOXIC												
1	As (µg/L)			0.6				1.2				0.0	
2	Cd (µg/L)			0.1				0.5				0.0	
3	Cr (µg/L)			96.9				45.6				4.0	
4	Cu (µg/L)			3.4				21.1				10.0	
5	Ni (µg/L)			6.1				0.1				7.0	
6	Pb (µg/L)			0.2				1.5				0.0	
7	Zn (µg/L)			6.1				16.5				19.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	86	69	69	77	82	90	95	86	90	95	108	77
2	HAR_Total (mgCaCO3/L)	155	129	121	133	142	159	172	168	172	172	202	150
3	Na% (%)	8	9	6	6	7	8	7	7	8	8	9	8
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : AYODHYA (GGU00M9)

Local River : Ghagra | **Well Water Analysis** | **Division : M Ganga Div. I, Lucknow**

Sub-Division : U Rapti SD, Gonda

S.No	Parameters	11/1/2016	5/1/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Brown	Clear
2	EC_GEN (µmho/cm)	1970	2239
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	7.5	8.0
5	pH_GEN (pH units)	7.1	8.0
6	TDS (mg/L)	1210	1346
7	Temp (deg C)	23.0	22.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	332	404
3	B (mg/L)	0.27	0.36
4	Ca (mg/L)	107	131
5	Cl (mg/L)	142.0	164.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.36	0.48
8	HCO3 (mg/L)	405	493
9	K (mg/L)	74.6	86.8
10	Mg (mg/L)	57.8	74.3
11	Na (mg/L)	96.2	110.5
12	NH3-N (mg N/L)	1.39	1.52
13	NO2+NO3 (mg N/L)	2.19	2.56
14	NO2-N (mgN/L)	0.35	0.46
15	NO3-N (mgN/L)	1.84	2.10
16	P-Tot (mgP/L)	0.770	0.960
17	SO4 (mg/L)	288.0	296.3
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	267	327
2	HAR_Total (mgCaCO3/L)	507	636
3	Na% (%)	26	24
4	RSC (-)	0.0	0.0
5	SAR (-)	1.9	1.9
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)	102	8492	140.3	3641
2	EC_GEN (µmho/cm)	12	313	175	234
3	pH_FLD (pH units)	12	8.0	7.5	7.9
4	pH_GEN (pH units)	12	8.4	8.0	8.2
5	TDS (mg/L)	12	198	109	147
6	Temp (deg C)	12	28.5	13.0	22.4
7	Turb (NTU)	12	6.8	0.7	3.4
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	1.7
2	ALK-TOT (mgCaCO3/L)	12	156	96	132
3	B (mg/L)	12	0.20	0.12	0.17
4	Ca (mg/L)	12	43	28	34
5	Cl (mg/L)	12	16.0	8.0	10.2
6	CO3 (mg/L)	12	9.6	0.0	2
7	F (mg/L)	12	0.32	0.21	0.25
8	Fe (mg/L)	3	0.4	0.3	0.3
9	HCO3 (mg/L)	12	190	117	157
10	K (mg/L)	12	5.9	3.1	4.3
11	Mg (mg/L)	12	22.7	12.4	17
12	Na (mg/L)	12	9.9	3.9	6.2
13	NH3-N (mg N/L)	12	0.34	0.20	0.29
14	NO2+NO3 (mg N/L)	12	0.58	0.30	0.42
15	NO2-N (mgN/L)	12	0.18	0.00	0.06
16	NO3-N (mgN/L)	12	0.45	0.30	0.36
17	P-Tot (mgP/L)	12	0.380	0.240	0.301
18	SO4 (mg/L)	12	17.8	12.6	14.9
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	4.7	1.0	1.7
2	COD (mg/L)	12	11.0	5.0	7.1
3	DO (mg/L)	12	7.6	4.5	6.7
4	DO_SAT% (%)	12	88	54	76
5	FCol-MPN (MPN/100mL)	10	4500	400	2520
6	Tcol-MPN (MPN/100mL)	10	15000	2000	8000
	TRACE & TOXIC				
1	As (µg/L)	3	1.2	0.0	0.6
2	Cd (µg/L)	3	0.5	0.0	0.2
3	Cr (µg/L)	3	96.9	4.0	48.8
4	Cu (µg/L)	3	21.1	3.4	11.5
5	Ni (µg/L)	3	7.0	0.1	4.4
6	Pb (µg/L)	3	1.5	0.0	1.5
7	Zn (µg/L)	3	19.0	6.1	13.9
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	108	69	85
2	HAR_Total (mgCaCO3/L)	12	202	121	156
3	Na% (%)	12	9	6	8
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.3	0.2	0.2
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	2239	1970	2105
2	pH_FLD (pH units)	2	8.0	7.5	7.8
3	pH_GEN (pH units)	2	8.0	7.1	7.5
4	TDS (mg/L)	2	1346	1210	1278
5	Temp (deg C)	2	23.0	22.0	22.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	404	332	368
3	B (mg/L)	2	0.36	0.27	0.32
4	Ca (mg/L)	2	131	107	119
5	Cl (mg/L)	2	164.0	142.0	153.0
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.48	0.36	0.42
8	HCO3 (mg/L)	2	493	405	449
9	K (mg/L)	2	86.8	74.6	80.7
10	Mg (mg/L)	2	74.3	57.8	66.0
11	Na (mg/L)	2	110.5	96.2	103.3
12	NH3-N (mg N/L)	2	1.52	1.39	1.45
13	NO2+NO3 (mg N/L)	2	2.56	2.19	2.38
14	NO2-N (mgN/L)	2	0.46	0.35	0.41
15	NO3-N (mgN/L)	2	2.10	1.84	1.97
16	P-Tot (mgP/L)	2	0.960	0.770	0.865
17	SO4 (mg/L)	2	296.3	288.0	292.2
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	327	267	297
2	HAR_Total (mgCaCO3/L)	2	636	507	572
3	Na% (%)	2	26	24	25
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.9	1.9	1.9
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood										
							Jun - Oct					
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL		2007									
1	Q (cumec)	3972	9105	6367	2850	5487	5490	3614	4089	3051	3350	3113
2	EC_FLD (µmho/cm)							162				
3	EC_GEN (µmho/cm)	282	285	295	237	223	185	180	226	278	238	193
4	pH_FLD (pH units)	7.5	7.3	7.9	8.8	8.5	8.4	8.3	8.0			8.0
5	pH_GEN (pH units)	8.1	8.0	7.9	8.0	7.9	7.9	8.0	8.4	8.2	8.3	8.2
6	TDS (mg/L)			195	170	134	112	109	149	162	141	121
7	Temp (deg C)	28.2	27.6	27.1	28.5	28.7	27.1	27.8	25.5	24.2	24.4	26.2
8	Turb (NTU)											4.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.0	4.7	5.7	2.0	3.2	0.8	3.2	7.0	1.6	4.0	2.4
2	ALK-TOT (mgCaCO3/L)	119	136	149	137	122	114	120	123	106	101	115
3	B (mg/L)	0.04	0.06	0.15	0.13	0.13	0.32	0.15	0.17	0.21	0.17	0.17
4	Ca (mg/L)	24	33	34	37	31	26	30	29	24	30	31
5	Cl (mg/L)	18.0	9.4	10.9	14.7	13.6	9.7	13.6	13.6	13.6	8.5	8.8
6	CO3 (mg/L)	2.4	7.0	6.9	2.4	3.8	1.0	3.8	9.6	1.9	4.8	2.9
7	F (mg/L)	0.12	0.07	0.13	0.15	0.16	0.13	0.13	0.16	0.19	0.27	0.25
8	Fe (mg/L)	0.1	0.1				0.1					0.3
9	HCO3 (mg/L)	141	137	168	162	141	137	139	136	125	113	135
10	K (mg/L)	8.2	3.4	3.6	4.0	4.1	3.5	4.0	4.3	3.0	3.1	3.5
11	Mg (mg/L)	9.9	8.7	5.3	18.2	17.1	15.6	19.0	17.6	15.7	12.0	14.2
12	Na (mg/L)	16.2	8.0	8.5	10.0	7.1	4.5	5.4	9.3	5.8	4.9	5.1
13	NH3-N (mg N/L)				0.20	0.15	0.47	0.57	0.27	0.36	0.30	0.30
14	NO2+NO3 (mg N/L)			0.10	0.08	0.09	0.70	0.59	0.59	0.56	0.47	0.44
15	NO2-N (mgN/L)	0.09	0.05	0.05	0.03	0.04	0.15	0.15	0.23	0.17	0.02	0.08
16	NO3-N (mgN/L)			0.05	0.05	0.05	0.55	0.44	0.36	0.39	0.45	0.36
17	o-PO4-P (mg P/L)	0.002	0.010	0.012		0.081	0.095	0.308	0.300	0.498	0.267	
18	P-Tot (mgP/L)				0.121							0.282
19	SiO2 (mg/L)	9.2	9.7	8.9	6.8	5.4						
20	SO4 (mg/L)	49.1	34.2	19.7	20.2	21.3	11.5	18.0	18.0	15.6	18.0	14.6
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	0.5	0.5	0.6	0.9	0.8	0.7	0.9	1.1	0.9	1.0	1.3
2	COD (mg/L)					3.5	13.6	4.6	5.0	4.2	5.2	6.8
3	DO (mg/L)	7.2	7.6	7.2	7.5	7.3	7.6	7.6	7.3	6.8	6.8	6.8
4	DO_SAT% (%)	92	96	90	97	95	95	97	88	81	81	84
5	FCol-MPN (MPN/100mL)											2800
6	Tcol-MPN (MPN/100mL)											7667
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											96.9
4	Cu (µg/L)											3.4
5	Ni (µg/L)											6.1
6	Pb (µg/L)											
7	Zn (µg/L)											6.1
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	61	83	84	92	78	66	74	71	60	75	77
2	HAR_Total (mgCaCO3/L)	102	119	106	168	149	131	153	145	126	125	136
3	Na% (%)	24	12	15	11	9	7	7	12	9	8	7
4	RSC (-)	0.4	0.1	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.3	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	445.4	824.2	834.5	1061	839.9	531.8	723.8	921.1	912.4	309.4	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	280	374	309	303	290	260	283	320	300	285	263
4	pH_FLD (pH units)		9.3	8.5	8.5	8.5	8.8	8.9	7.0			7.9
5	pH_GEN (pH units)	8.3	8.0	8.0	8.4	8.0	8.0	8.1	8.4	8.5	8.3	8.2
6	TDS (mg/L)			197	182	180	158	187	207	167	174	165
7	Temp (deg C)	20.4	20.4	18.9	17.4	18.8	18.8	16.4	17.1	14.3	16.4	16.9
8	Turb (NTU)											3.3
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	9.6	8.3	1.0	0.0	0.0	0.0	6.0	10.0	3.0	2.0
2	ALK-TOT (mgCaCO3/L)	128	199	153	150	121	157	128	127	133	166	144
3	B (mg/L)	0.03	0.13	0.15	0.14	0.16	0.16	0.16	0.18	0.21	0.18	0.18
4	Ca (mg/L)	29	45	32	38	30	36	30	31	44	40	36
5	Cl (mg/L)	19.0	37.5	12.5	15.0	14.0	14.0	15.0	14.0	11.4	10.0	10.0
6	CO3 (mg/L)	4.8	12.6	10.5	1.2	0.0	0.0	0.0	7.2	12.0	3.6	2.4
7	F (mg/L)	0.16	0.12	0.14	0.18	0.14	0.15	0.17	0.18	0.26	0.29	0.25
8	Fe (mg/L)	0.1	0.2									0.4
9	HCO3 (mg/L)	146	179	171	181	148	192	156	140	138	195	171
10	K (mg/L)	5.6	80.5	3.3	5.6	4.9	4.1	4.6	3.4	2.9	4.8	4.5
11	Mg (mg/L)	12.1	9.6	11.2	20.6	16.0	20.1	18.3	19.1	17.3	20.1	18.6
12	Na (mg/L)	11.3	49.3	8.2	8.5	6.7	6.2	7.1	6.8	7.2	6.1	6.2
13	NH3-N (mg N/L)				0.20	0.18	0.62	0.45	0.34	0.33	0.32	0.29
14	NO2+NO3 (mg N/L)			0.11	0.08	0.09	0.68	0.44	0.57	0.54	0.46	0.40
15	NO2-N (mgN/L)	0.08	0.06	0.05	0.04	0.04	0.13	0.09	0.24	0.11	0.00	0.05
16	NO3-N (mgN/L)			0.06	0.04	0.04	0.55	0.35	0.33	0.42	0.45	0.36
17	o-PO4-P (mg P/L)	0.010	0.074	0.023	0.163	0.127	0.119	0.408	0.274	0.364	0.313	
18	P-Tot (mgP/L)				0.188							0.317
19	SiO2 (mg/L)	10.2	17.7	6.9	6.5	6.1						
20	SO4 (mg/L)	63.5	58.6	19.3	23.4	18.8	12.0	18.2	16.8	26.9	18.5	15.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	0.5	0.5	0.4	0.9	0.5	0.7	1.0	1.4	0.8	1.4	1.7
2	COD (mg/L)					3.3	10.3	6.3	8.0	4.3	7.8	7.8
3	DO (mg/L)	7.1	7.7	7.6	7.9	7.8	7.6	7.4	6.3	7.0	7.1	7.2
4	DO_SAT% (%)	79	81	81	82	83	81	75	65	68	72	74
5	FCol-MPN (MPN/100mL)											2875
6	Tcol-MPN (MPN/100mL)											7750
	TRACE & TOXIC											
1	As (µg/L)											1.2
2	Cd (µg/L)											0.5
3	Cr (µg/L)											45.6
4	Cu (µg/L)											21.1
5	Ni (µg/L)											
6	Pb (µg/L)											1.5
7	Zn (µg/L)											16.5
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	73	112	80	95	74	90	74	76	110	99	90
2	HAR_Total (mgCaCO3/L)	124	152	126	181	141	174	150	156	182	183	168
3	Na% (%)	16	20	12	9	9	7	9	9	8	7	7
4	RSC (-)	0.1	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	1.6	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	318.3	214.9	221.1	299.7	267.8	373.6	658.6	251.0	533.9	108.4	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	334	277	325	320	287	300	293	340	287	300	265
4	pH_FLD (pH units)			9.0	8.5	8.7	7.8	9.0	7.0			7.8
5	pH_GEN (pH units)	8.0	8.2	8.1	8.2	8.2	8.2	8.0	8.3	8.8	8.4	8.1
6	TDS (mg/L)			235	189	168	173	192	204	158	187	165
7	Temp (deg C)	24.3	24.2	22.8	24.3	21.0	24.0	23.3	20.5	20.0	21.8	23.3
8	Turb (NTU)											1.1
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.7	7.2		5.3	4.0	6.6	12.0	9.3	13.3	4.0	0.0
2	ALK-TOT (mgCaCO3/L)	136	194		151	128	171	151	161	135	161	144
3	B (mg/L)	0.01	0.19	0.13	0.15	0.16	0.17	0.18	0.19	0.20	0.18	0.17
4	Ca (mg/L)	32	43	31	35	31	33	31	34	39	40	37
5	Cl (mg/L)	16.0	16.6	13.4	17.3	17.3	18.6	19.9	14.7	11.4	11.4	12.7
6	CO3 (mg/L)	3.2	9.7	6.0	6.4	4.8	8.0	14.4	11.2	16.0	4.8	0.0
7	F (mg/L)	0.16	0.09	0.16	0.18	0.14	0.16	0.19	0.21	0.27	0.34	0.26
8	Fe (mg/L)	0.1	0.3								1.0	0.3
9	HCO3 (mg/L)	159	221	190	171	146	192	155	174	132	187	176
10	K (mg/L)	4.3	4.6	4.0	5.3	5.9	6.6	5.6	4.0	2.9	5.2	5.4
11	Mg (mg/L)	14.4	9.6	14.1	20.3	17.5	23.4	19.9	22.4	16.8	19.2	19.6
12	Na (mg/L)	8.8	9.2	9.4	10.5	8.1	10.5	10.1	8.8	6.8	7.2	7.9
13	NH3-N (mg N/L)				0.22	0.16	0.66	0.39	0.37	0.35	0.32	0.27
14	NO2+NO3 (mg N/L)			0.10	0.81	0.31	0.56	0.59	0.59	0.52	0.44	0.42
15	NO2-N (mgN/L)	0.08	0.08	0.05	0.04	0.13	0.14	0.21	0.19	0.04	0.00	0.05
16	NO3-N (mgN/L)			0.05	0.77	0.18	0.42	0.39	0.40	0.48	0.43	0.37
17	o-PO4-P (mg P/L)	0.010	0.021	0.062	0.248	0.155	0.241	0.379	0.282	0.265	0.358	
18	P-Tot (mgP/L)				0.250							0.312
19	SiO2 (mg/L)	10.5	10.5	7.1	6.5	6.6						
20	SO4 (mg/L)	58.2	28.6	27.7	22.2	20.3	13.3	19.8	18.4	17.8	16.6	15.3
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)	0.6	0.5	0.4	1.0	0.9	0.9	1.0	1.0	1.0	1.3	2.5
2	COD (mg/L)						23.0	12.0	14.0	6.3	5.3	7.3	6.7
3	DO (mg/L)	6.8	7.4	7.4	7.4	7.6	7.4	7.8	6.5	7.2	6.9	5.7
4	DO_SAT% (%)	82	88	86	88	85	88	91	72	79	79	67
5	FCol-MPN (MPN/100mL)											1767
6	Tcol-MPN (MPN/100mL)											8667
	TRACE & TOXIC											
1	As (µg/L)										1.0	
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	4.0
4	Cu (µg/L)										1.0	10.0
5	Ni (µg/L)										1.0	7.0
6	Pb (µg/L)										1.0	
7	Zn (µg/L)										1.0	19.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	79	107	78	88	77	83	77	85	98	99	93
2	HAR_Total (mgCaCO3/L)	139	147	136	172	150	181	160	178	168	179	175
3	Na% (%)	12	12	13	11	10	11	12	10	8	8	9
4	RSC (-)	0.0	1.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.2	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood										
		Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1845	1692	648								
2	pH_FLD (pH units)			7.5								
3	pH_GEN (pH units)	8.1	7.6	7.3								
4	TDS (mg/L)			534								
5	Temp (deg C)	25.9	26.7	25.3								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	12.5	12.1								
2	ALK-TOT (mgCaCO3/L)	938	557	738								
3	B (mg/L)	0.12	0.10	0.23								
4	Ca (mg/L)	68	58	60								
5	Cl (mg/L)	151.7	115.4	159.9								
6	CO3 (mg/L)	4.8	15.1	14.6								
7	F (mg/L)		0.04	0.00								
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	567	324	435								
10	K (mg/L)	174.9	229.7	230.7								
11	Mg (mg/L)	76.4	34.5	24.1								
12	Na (mg/L)	94.2	121.6	190.1								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)			0.10								
15	NO2-N (mgN/L)	0.43	0.03	0.10								
16	NO3-N (mgN/L)			0.00								
17	o-PO4-P (mg P/L)	0.151	0.205	0.217								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	28.8	32.8	44.0								
20	SO4 (mg/L)	446.3	345.7	150.2								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	171	146	150								
2	HAR_Total (mgCaCO3/L)	489	289	250								
3	Na% (%)	22	32	43								
4	RSC (-)	0.0	0.4	2.6								
5	SAR (-)	1.9	3.5	5.2								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter										
		Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	2447	605	640	2200	2000	1990	1960	2300	2200	2000	1970
2	pH_FLD (pH units)						8.5					7.5
3	pH_GEN (pH units)	7.6	7.9	7.3	7.4	7.8	7.3	7.3	7.5	8.8	7.7	7.1
4	TDS (mg/L)			534	1400	1210	1200	1180	1500	1200	1200	1210
5	Temp (deg C)	22.3	22.8	25.0	25.5	25.0	24.5	24.5	23.0	22.0	22.0	23.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	13.9	14.4	4.0	0.0	0.0	0.0	19.9	0.0	27.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1014	378	328	496	221	440	436	472	468	432	332
3	B (mg/L)	0.07	0.17	0.22	0.22	0.17	0.23	0.23	0.29	0.30	0.33	0.27
4	Ca (mg/L)	79	54	56	93	86	119	77	86	88	98	107
5	Cl (mg/L)	158.0	95.1	148.0	428.1	448.0	451.9	230.0	226.1	215.8	193.8	142.0
6	CO3 (mg/L)	16.8	17.4	4.8	0.0	0.0	0.0	24.0	0.0	33.6	0.0	0.0
7	F (mg/L)			0.00	0.23	0.27	0.15	0.21	0.30	0.13	0.53	0.36
8	Fe (mg/L)	0.3	0.2									
9	HCO3 (mg/L)	601	213	195	605	269	537	483	576	503	527	405
10	K (mg/L)	197.5	237.5	109.1	174.8	176.3	156.0	174.8	169.3	171.6	106.4	74.6
11	Mg (mg/L)	79.7	18.0	7.2	87.7	68.2	105.2	37.1	101.1	34.0	41.3	57.8
12	Na (mg/L)	105.5	137.0	239.9	134.6	123.3	113.4	122.2	141.0	148.0	129.9	96.2
13	NH3-N (mg N/L)				0.22	0.18	0.58	1.03	1.25	1.35	1.35	1.39
14	NO2+NO3 (mg N/L)			0.08	0.18	0.15	0.53	0.60	1.81	3.12	2.40	2.19
15	NO2-N (mgN/L)	0.04	0.05	0.08	0.07	0.08	0.30	0.22	0.50	1.99	0.90	0.35
16	NO3-N (mgN/L)			0.00	0.11	0.07	0.22	0.38	1.32	1.13	1.50	1.84
17	o-PO4-P (mg P/L)	0.217	0.207	0.196	0.248	0.351	0.176	0.500	0.362	0.734	1.044	
18	P-Tot (mgP/L)				0.130							0.770
19	SiO2 (mg/L)	36.5	36.0	40.0	28.0	13.0						
20	SO4 (mg/L)	645.8	132.0	140.2	16.8	131.5	91.2	63.6	354.2	85.9	92.6	288.0
	BIOLOGICAL/BACTERIOLOGIC											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	197	135	141	232	215	297	194	215	220	245	267
2	HAR_Total (mgCaCO3/L)	529	210	171	598	499	735	348	636	361	417	507
3	Na% (%)	23	37	63	26	27	21	32	27	36	34	26
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	2.2	0.3	0.0
5	SAR (-)	2.0	4.1	8.0	2.4	2.4	1.8	2.9	2.4	3.4	2.8	1.9
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : AYODHYA (GGU00M9) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghagra | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer										
		Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	2463	509	1680	760	990	620	760	1490	1220	1080	2239
2	pH_FLD (pH units)					7.5	8.0					8.0
3	pH_GEN (pH units)	7.5	8.1	7.8	7.8	7.5	7.9	7.7	8.2	9.1	7.2	8.0
4	TDS (mg/L)			412	450	600	380	500	930	710	690	1346
5	Temp (deg C)	23.8	22.4	24.5	24.0	23.0	23.0	23.5	23.5	21.5	23.5	22.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	21.2	11.3		0.0	0.0	19.9	27.9	0.0	31.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1030	398		300	116	224	264	136	332	256	404
3	B (mg/L)	0.07	0.19	0.18	0.18	0.14	0.17	0.23	0.30	0.31	0.27	0.36
4	Ca (mg/L)	76	48	40	81	45	40	45	40	19	76	131
5	Cl (mg/L)	162.0	48.3	16.0	91.9	183.9	91.9	95.8	220.1	91.9	132.1	164.0
6	CO3 (mg/L)	25.6	13.6	0.0	0.0	0.0	24.0	33.6	0.0	38.4	0.0	0.0
7	F (mg/L)	0.05		0.11	0.17	0.18	0.11	0.27	0.23	0.30	0.34	0.48
8	Fe (mg/L)	0.2	0.3									
9	HCO3 (mg/L)	602	229	210	366	142	224	254	166	327	312	493
10	K (mg/L)	217.5	84.1	91.1	62.2	57.9	80.5	59.0	134.5	87.6	93.8	86.8
11	Mg (mg/L)	78.4	13.6	17.5	33.0	32.0	21.6	55.8	47.5	80.6	40.2	74.3
12	Na (mg/L)	111.6	53.5	120.1	40.7	48.8	46.2	36.6	137.1	67.6	81.9	110.5
13	NH3-N (mg N/L)				0.28	0.21	1.04	1.11	1.42	0.98	1.19	1.52
14	NO2+NO3 (mg N/L)			0.08	0.18	0.63	2.17	2.32	4.52	1.89	2.36	2.56
15	NO2-N (mgN/L)	0.04	0.08	0.00	0.10	0.26	0.25	0.44	3.44	0.43	0.39	0.46
16	NO3-N (mgN/L)			0.08	0.08	0.36	1.92	1.88	1.08	1.46	1.98	2.10
17	o-PO4-P (mg P/L)	0.251	0.086	0.238	0.382	0.372	0.496	0.548	0.465	0.558	0.548	
18	P-Tot (mgP/L)				0.380							0.960
19	SiO2 (mg/L)	40.0	19.7	44.0	11.0	11.8						
20	SO4 (mg/L)	630.1	65.4	35.0	34.6	48.5	35.5	94.1	307.2	150.2	244.8	296.3
	BIOLOGICAL/BACTERIOLOGIC											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	189	120	99	202	112	99	112	99	48	189	327
2	HAR_Total (mgCaCO3/L)	516	177	172	340	245	189	344	297	383	357	636
3	Na% (%)	24	20	48	18	25	26	16	39	23	27	24
4	RSC (-)	0.5	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	2.1	1.6	4.0	1.0	1.4	1.5	0.9	3.5	1.5	1.9	1.9
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**BASTI**	**Code**	:	**GGU40J3**
State	:	Uttar Pradesh	District		Basti
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	Kwano
Sub-Sub Tributary	:	-	Local River	:	Kwano
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	U Rapti SD, Gonda
Drainage Area	:	3005 Sq. Km.	Bank	:	Left
Latitude	:	26°46'46"	Longitude	:	82°42'42"
		Opening Date	Closing Date		
Gauge	:	4/24/1959			
Discharge	:	4/24/1959			
Sediment	:	6/1/2010			
Water Quality	:	5/1/1976			

Water Quality Datasheet for the period : 2016-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Brown	Brown	Brown	Brown	Light Brown	Clear	Clear	Brown	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	400	340	185	280	270	320	370	410	350	330	507	412
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
6	pH_GEN (pH units)	8.3	7.8	8.0	8.4	7.8	8.1	7.8	8.1	8.1	8.0	8.0	8.1
7	TDS (mg/L)	250	210	115	177	170	195	230	250	220	210	305	249
8	Temp (deg C)	29.0	29.0	29.0	29.0	29.0	29.0	25.0	17.0	21.0	21.0	23.0	25.0
9	Turb (NTU)	3.2	3.8	4.6	7.4	3.1	1.3	1.4	6.6	0.9	0.8	0.7	0.9
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	200	164	100	156	160	212	200	160	172	196	252	220
3	B (mg/L)	0.21	0.21	0.16	0.18	0.20	0.19	0.20	0.21	0.21	0.21	0.26	0.24
4	Ca (mg/L)	50	45	29	37	45	53	48	38	41	46	48	43
5	Cl (mg/L)	22.0	18.1	8.2	12.0	12.0	14.0	18.0	18.0	16.0	22.0	26.0	23.0
6	CO3 (mg/L)	4.8	0.0	0.0	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	F (mg/L)	0.46	0.34	0.19	0.28	0.28	0.28	0.34	0.31	0.31	0.36	0.49	0.40
8	Fe (mg/L)			0.6				1.4				0.3	
9	HCO3 (mg/L)	234	200	122	161	195	259	244	195	210	239	307	268
10	K (mg/L)	6.6	9.8	4.7	4.8	4.8	5.4	3.4	6.3	6.8	8.4	10.2	9.5
11	Mg (mg/L)	24.8	18.6	13.4	18.6	18.6	25.8	21.7	21.7	22.7	24.8	27.9	25.8
12	Na (mg/L)	13.8	10.8	4.6	6.3	6.9	8.2	10.2	11.2	10.7	12.8	15.8	13.9
13	NH3-N (mg N/L)	0.41	0.34	0.29	0.32	0.34	0.32	0.29	0.33	0.36	0.36	0.41	0.39
14	NO2+NO3 (mg N/L)	0.73	0.67	0.50	0.54	0.63	0.50	0.43	0.55	0.59	0.70	0.89	0.60
15	NO2-N (mgN/L)	0.22	0.22	0.14	0.16	0.22	0.15	0.08	0.14	0.14	0.18	0.29	0.20
16	NO3-N (mgN/L)	0.50	0.45	0.36	0.38	0.41	0.35	0.35	0.41	0.45	0.52	0.60	0.40
17	P-Tot (mgP/L)	0.340	0.390	0.240	0.300	0.370	0.420	0.410	0.380	0.440	0.520	0.700	0.580
18	SO4 (mg/L)	19.7	16.8	14.9	15.9	16.2	17.0	16.5	16.4	17.0	17.7	22.0	20.4
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	3.1	3.5	2.4	2.2	2.6	2.6	3.9	3.1	3.9	4.7	3.9	4.7
2	COD (mg/L)	15.0	13.0	10.0	9.0	12.0	11.0	13.0	12.0	11.0	13.0	7.0	7.0
3	DO (mg/L)	6.1	3.9	6.1	6.5	6.5	6.1	5.3	5.9	4.5	3.9	2.0	4.3
4	DO_SAT% (%)	79	51	79	84	84	79	64	61	51	44	23	52
5	FCol-MPN (MPN/100mL)			400	6000	5000	1500	1800	7000	4000	5000	1200	1500
6	Tcol-MPN (MPN/100mL)			1500	7000	6000	2500	5600	11000	6000	6500	4200	3000
	TRACE & TOXIC												
1	As (µg/L)			1.5				1.5				8.0	
2	Cr (µg/L)			2.4				11.3				1.0	
3	Cu (µg/L)			4.1				12.5				7.0	
4	Ni (µg/L)			5.4				0.1				14.0	
5	Pb (µg/L)			0.2				5.5				1.0	
6	Zn (µg/L)			5.4				67.4				13.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	125	112	73	91	112	133	120	95	103	116	120	108
2	HAR_Total (mgCaCO3/L)	228	189	129	169	189	241	211	185	198	219	236	215
3	Na% (%)	11	10	7	7	7	7	9	11	10	11	12	12
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1
5	SAR (-)	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.4
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : BASTI (GGU40J3)

Local River : Kwano

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

S.No	Parameters	11/1/2016	5/1/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Brown	Clear
2	EC_GEN (µmho/cm)	970	865
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	8.0	7.5
5	pH_GEN (pH units)	7.9	8.0
6	TDS (mg/L)	600	528
7	Temp (deg C)	29.0	25.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	264	252
3	B (mg/L)	0.23	0.18
4	Ca (mg/L)	79	74
5	Cl (mg/L)	88.0	80.0
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.37	0.30
8	HCO3 (mg/L)	322	307
9	K (mg/L)	23.2	19.6
10	Mg (mg/L)	38.2	34.1
11	Na (mg/L)	60.5	53.7
12	NH3-N (mg N/L)	0.96	0.86
13	NO2+NO3 (mg N/L)	2.07	1.83
14	NO2-N (mgN/L)	0.39	0.31
15	NO3-N (mgN/L)	1.68	1.52
16	P-Tot (mgP/L)	0.520	0.440
17	SO4 (mg/L)	105.0	92.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	198	185
2	HAR_Total (mgCaCO3/L)	357	327
3	Na% (%)	26	25
4	RSC (-)	0.0	0.0
5	SAR (-)	1.4	1.3
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **River Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	507	185	348
3	pH_FLD (pH units)	12	8.0	8.0	8
4	pH_GEN (pH units)	12	8.4	7.8	8
5	TDS (mg/L)	12	305	115	215
6	Temp (deg C)	12	29.0	17.0	25.5
7	Turb (NTU)	12	7.4	0.7	2.9
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	12.0	0.0	1.3
2	ALK-TOT (mgCaCO3/L)	12	252	100	183
3	B (mg/L)	12	0.26	0.16	0.21
4	Ca (mg/L)	12	53	29	44
5	Cl (mg/L)	12	26.0	8.2	17.4
6	CO3 (mg/L)	12	14.4	0.0	1.6
7	F (mg/L)	12	0.49	0.19	0.34
8	Fe (mg/L)	3	1.4	0.3	0.8
9	HCO3 (mg/L)	12	307	122	220
10	K (mg/L)	12	10.2	3.4	6.7
11	Mg (mg/L)	12	27.9	13.4	22
12	Na (mg/L)	12	15.8	4.6	10.4
13	NH3-N (mg N/L)	12	0.41	0.29	0.34
14	NO2+NO3 (mg N/L)	12	0.89	0.43	0.61
15	NO2-N (mgN/L)	12	0.29	0.08	0.18
16	NO3-N (mgN/L)	12	0.60	0.35	0.43
17	P-Tot (mgP/L)	12	0.700	0.240	0.424
18	SO4 (mg/L)	12	22.0	14.9	17.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	4.7	2.2	3.4
2	COD (mg/L)	12	15.0	7.0	11.1
3	DO (mg/L)	12	6.5	2.0	5.1
4	DO_SAT% (%)	12	84	23	63
5	FCol-MPN (MPN/100mL)	10	7000	400	3340
6	Tcol-MPN (MPN/100mL)	10	11000	1500	5330
	TRACE & TOXIC				
1	As (µg/L)	3	8.0	1.5	3.7
2	Cr (µg/L)	3	11.3	1.0	4.9
3	Cu (µg/L)	3	12.5	4.1	7.9
4	Ni (µg/L)	3	14.0	0.1	6.5
5	Pb (µg/L)	3	5.5	0.2	2.2
6	Zn (µg/L)	3	67.4	5.4	28.6
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	133	73	109
2	HAR_Total (mgCaCO3/L)	12	241	129	201
3	Na% (%)	12	12	7	10
4	RSC (-)	12	0.3	0.0	0
5	SAR (-)	12	0.4	0.2	0.3
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **Well Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	970	865	918
2	pH_FLD (pH units)	2	8.0	7.5	7.8
3	pH_GEN (pH units)	2	8.0	7.9	7.9
4	TDS (mg/L)	2	600	528	564
5	Temp (deg C)	2	29.0	25.0	27.0
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	264	252	258
3	B (mg/L)	2	0.23	0.18	0.20
4	Ca (mg/L)	2	79	74	77
5	Cl (mg/L)	2	88.0	80.0	84.0
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.37	0.30	0.34
8	HCO3 (mg/L)	2	322	307	315
9	K (mg/L)	2	23.2	19.6	21.4
10	Mg (mg/L)	2	38.2	34.1	36.1
11	Na (mg/L)	2	60.5	53.7	57.1
12	NH3-N (mg N/L)	2	0.96	0.86	0.91
13	NO2+NO3 (mg N/L)	2	2.07	1.83	1.95
14	NO2-N (mgN/L)	2	0.39	0.31	0.35
15	NO3-N (mgN/L)	2	1.68	1.52	1.60
16	P-Tot (mgP/L)	2	0.520	0.440	0.480
17	SO4 (mg/L)	2	105.0	92.0	98.5
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	198	185	191
2	HAR_Total (mgCaCO3/L)	2	357	327	342
3	Na% (%)	2	26	25	25
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	1.4	1.3	1.3
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)					130.7					38.61	
2	EC_FLD (µmho/cm)							310				
3	EC_GEN (µmho/cm)	258	256	190	432	334	244	254	302	366	354	295
4	pH_FLD (pH units)	9.5	9.0			8.0	8.5	8.6				8.0
5	pH_GEN (pH units)	8.0	7.5	7.1	8.2	8.0	7.7	8.0	7.9	8.4	8.4	8.0
6	TDS (mg/L)			127	273	199	143	149	193	222	212	184
7	Temp (deg C)	29.4	28.3	28.3	29.4	29.3	28.3	31.0	30.3	29.1	29.6	29.0
8	Turb (NTU)											4.4
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.0	5.8	5.7	1.0	11.2	5.6	1.6	1.6	5.6	12.7	3.2
2	ALK-TOT (mgCaCO3/L)	94	141	144	220	154	135	142	141	116	170	156
3	B (mg/L)	0.03	0.07	0.15	0.16	0.14	0.28	0.13	0.17	0.22	0.19	0.19
4	Ca (mg/L)	17	23	38	39	31	29	32	30	25	42	41
5	Cl (mg/L)	9.7	27.1	15.0	15.5	20.9	11.3	13.6	16.0	24.4	26.1	14.5
6	CO3 (mg/L)	2.4	7.0	6.9	1.2	13.4	6.7	1.9	1.9	6.7	15.4	3.8
7	F (mg/L)	0.13	0.13	0.13	0.17	0.15	0.12	0.14	0.17	0.16	0.30	0.31
8	Fe (mg/L)	0.1	0.1				0.1					0.6
9	HCO3 (mg/L)	110	115	161	266	161	151	170	168	128	177	183
10	K (mg/L)	10.2	3.8	3.6	4.6	4.2	4.7	4.9	2.5	4.1	5.5	6.1
11	Mg (mg/L)	14.8	10.0	8.7	19.8	17.8	13.0	19.6	16.5	16.7	19.8	18.8
12	Na (mg/L)	16.8	7.8	8.4	29.0	25.6	16.2	18.1	13.8	16.7	16.7	8.5
13	NH3-N (mg N/L)				0.08	0.18	0.43	0.55	0.25	0.32	0.89	0.34
14	NO2+NO3 (mg N/L)			0.18	0.09	0.22	1.13	0.71	0.56	0.49	0.52	0.61
15	NO2-N (mgN/L)	0.14	0.05	0.05	0.06	0.15	0.14	0.15	0.22	0.15	0.05	0.19
16	NO3-N (mgN/L)			0.13	0.03	0.07	0.99	0.56	0.34	0.34	0.47	0.42
17	o-PO4-P (mg P/L)	0.045	0.180	0.101	0.064	0.103	0.134	0.293	0.260	0.424	0.300	
18	P-Tot (mgP/L)				0.100							0.328
19	SiO2 (mg/L)	8.6	9.7	8.8	5.4	5.4						
20	SO4 (mg/L)	52.0	24.0	26.1	17.9	17.8	13.4	18.0	14.7	11.9	19.3	16.7
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				2.5	2.3	2.1	2.1	1.5	2.8	4.8	2.8
2	COD (mg/L)					12.0	31.4	10.4	9.8	13.2	13.8	11.8
3	DO (mg/L)	6.3	7.5	7.9	6.3	6.4	6.4	6.4	6.2	6.5	4.0	5.8
4	DO_SAT% (%)	83	96	101	82	84	83	85	83	84	52	75
5	FCol-MPN (MPN/100mL)											3800
6	Tcol-MPN (MPN/100mL)											4833
	TRACE & TOXIC											
1	As (µg/L)											1.5
2	Cd (µg/L)											
3	Cr (µg/L)											2.4
4	Cu (µg/L)											4.1
5	Ni (µg/L)											5.4
6	Pb (µg/L)											
7	Zn (µg/L)											5.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	43	57	96	97	77	72	80	76	64	106	103
2	HAR_Total (mgCaCO3/L)	105	99	132	180	151	126	162	144	133	188	181
3	Na% (%)	23	14	12	26	26	20	19	17	20	16	9
4	RSC (-)	0.4	0.2	0.3	0.9	0.2	0.2	0.1	0.1	0.0	0.0	0.0
5	SAR (-)	0.7	0.3	0.3	0.9	0.9	0.6	0.6	0.5	0.6	0.5	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)			9.450		10.12					23.72	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	468	149	299	408	430	368	457	495	455	408	363
4	pH_FLD (pH units)			9.0	8.8	8.3	8.8	9.0				8.0
5	pH_GEN (pH units)	7.9	7.3	8.1	8.4	7.9	7.8	7.9	8.2	8.2	8.1	8.0
6	TDS (mg/L)			155	240	258	202	272	320	246	252	224
7	Temp (deg C)	21.0	20.5	19.1	19.0	19.4	19.1	18.5	20.5	21.0	25.1	23.0
8	Turb (NTU)											2.5
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	9.7	1.2	10.2	0.0	3.0	0.0	9.0	13.9	3.0	0.0
2	ALK-TOT (mgCaCO3/L)	86	160	293	176	137	207	144	144	193	221	186
3	B (mg/L)	0.02	0.13	0.12	0.18	0.18	0.16	0.16	0.18	0.23	0.20	0.20
4	Ca (mg/L)	28	29	40	41	27	42	28	34	59	55	45
5	Cl (mg/L)	19.0	39.8	13.9	15.0	16.0	15.0	18.7	26.0	34.0	21.5	16.5
6	CO3 (mg/L)	4.8	11.7	1.5	12.3	0.0	3.6	0.0	10.8	16.8	3.6	0.0
7	F (mg/L)	0.23	0.15	0.15	0.20	0.18	0.14	0.16	0.18	0.36	0.34	0.31
8	Fe (mg/L)	0.1	0.2									1.4
9	HCO3 (mg/L)	95	172	354	189	167	245	176	154	201	262	227
10	K (mg/L)	5.9	4.1	3.8	2.5	4.5	3.9	3.0	2.2	4.3	6.6	5.5
11	Mg (mg/L)	14.7	13.8	16.9	16.2	14.9	24.3	17.5	19.6	23.7	26.5	23.0
12	Na (mg/L)	11.2	8.3	26.2	23.8	22.6	23.0	18.9	22.6	25.0	13.7	10.1
13	NH3-N (mg N/L)				0.11	0.17	0.62	0.46	0.34	0.31	0.35	0.32
14	NO2+NO3 (mg N/L)			0.17	0.12	0.80	0.86	0.43	0.61	0.51	0.57	0.52
15	NO2-N (mgN/L)	0.07	0.06	0.06	0.05	0.07	0.13	0.09	0.27	0.11	0.07	0.13
16	NO3-N (mgN/L)			0.12	0.07	0.74	0.72	0.35	0.33	0.40	0.50	0.39
17	o-PO4-P (mg P/L)	0.238	0.168	0.041	0.184	0.165	0.114	0.379	0.300	0.336	0.362	
18	P-Tot (mgP/L)			0.047	0.227							0.412
19	SiO2 (mg/L)	10.6	10.5	6.2	6.9	6.3						
20	SO4 (mg/L)	21.0	37.0	2.6	16.2	16.5	13.6	18.7	18.8	55.0	19.9	16.7
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.6	2.0	2.0	2.1	2.6	2.1	3.1	3.4
2	COD (mg/L)					7.0	25.0	20.7	12.0	11.3	12.5	11.8
3	DO (mg/L)	6.9	7.6	6.8	7.2	6.4	6.8	6.2	6.3	6.0	5.9	5.4
4	DO_SAT% (%)	78	85	74	77	69	73	66	69	68	72	64
5	FCol-MPN (MPN/100mL)											3575
6	Tcol-MPN (MPN/100mL)											6275
	TRACE & TOXIC											
1	As (µg/L)											1.5
2	Cd (µg/L)											
3	Cr (µg/L)											11.3
4	Cu (µg/L)											12.5
5	Ni (µg/L)											
6	Pb (µg/L)											5.5
7	Zn (µg/L)											67.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	70	73	101	102	67	105	69	86	148	137	113
2	HAR_Total (mgCaCO3/L)	131	130	171	169	129	206	142	168	247	247	209
3	Na% (%)	15	12	25	23	27	19	22	23	18	10	9
4	RSC (-)	0.0	0.6	2.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	0.3	0.9	0.8	0.9	0.7	0.7	0.8	0.7	0.4	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)			6.283		6.477					3.887	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	446	163	385	480	420	470	433	550	467	403	416
4	pH_FLD (pH units)			9.0	8.5	9.0	7.8	9.0	7.5			8.0
5	pH_GEN (pH units)	7.8	7.4	8.3	8.5	8.2	8.0	8.2	8.3	8.9	8.1	8.0
6	TDS (mg/L)			236	288	253	280	280	347	267	253	255
7	Temp (deg C)	22.2	19.2	24.5	26.0	22.7	23.5	23.3	21.5	24.3	22.5	23.0
8	Turb (NTU)											0.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	9.7	11.6	10.6	4.0	2.7	13.3	8.0	13.3	2.7	0.0
2	ALK-TOT (mgCaCO3/L)	100	184	262	209	157	214	192	177	196	209	223
3	B (mg/L)	0.01	0.19	0.08	0.19	0.20	0.18	0.19	0.23	0.22	0.20	0.24
4	Ca (mg/L)	30	41	32	37	30	38	33	36	44	46	46
5	Cl (mg/L)	18.0	36.8	16.6	19.9	18.6	18.7	25.4	37.2	36.0	23.3	23.7
6	CO3 (mg/L)	4.8	11.7	14.0	12.8	4.8	3.2	16.0	9.6	16.0	3.2	0.0
7	F (mg/L)	0.22	0.14	0.15	0.17	0.15	0.16	0.17	0.23	0.27	0.35	0.42
8	Fe (mg/L)	0.1	0.2								1.0	0.3
9	HCO3 (mg/L)	112	201	291	229	182	254	202	197	207	249	272
10	K (mg/L)	4.3	4.7	3.4	4.2	5.2	6.6	4.0	5.2	5.5	7.2	9.4
11	Mg (mg/L)	15.8	14.4	15.5	22.3	16.5	28.2	22.0	21.0	23.0	26.8	26.2
12	Na (mg/L)	8.7	9.4	32.4	29.1	28.4	19.8	26.7	31.1	29.4	15.1	14.2
13	NH3-N (mg N/L)				0.21	0.16	0.69	0.38	0.37	0.33	0.36	0.38
14	NO2+NO3 (mg N/L)			0.10	0.16	0.28	0.89	0.68	1.11	0.54	0.59	0.73
15	NO2-N (mgN/L)	0.07	0.08	0.03	0.07	0.12	0.16	0.21	0.73	0.06	0.11	0.22
16	NO3-N (mgN/L)			0.08	0.09	0.16	0.74	0.47	0.38	0.48	0.48	0.51
17	o-PO4-P (mg P/L)	0.234	0.169		0.331	0.196	0.241	0.355	0.241	0.296	0.400	
18	P-Tot (mgP/L)			0.050	0.320							0.600
19	SiO2 (mg/L)	10.7	10.8	2.1	6.7	6.5						
20	SO4 (mg/L)	22.1	42.1	20.3	11.0	19.4	12.5	22.6	21.1	17.1	13.1	20.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				2.5	2.2	1.9	1.4	2.9	3.3	2.6	4.5
2	COD (mg/L)					13.0	21.0	29.3	14.7	12.0	13.7	9.0
3	DO (mg/L)	7.3	8.1	5.9	6.5	6.4	6.1	6.2	6.2	5.5	6.2	3.4
4	DO_SAT% (%)	83	88	70	79	74	71	73	70	65	72	40
5	FCol-MPN (MPN/100mL)											2567
6	Tcol-MPN (MPN/100mL)											4567
	TRACE & TOXIC											
1	As (µg/L)										1.0	8.0
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	
4	Cu (µg/L)										1.0	7.0
5	Ni (µg/L)										1.0	14.0
6	Pb (µg/L)										1.0	1.0
7	Zn (µg/L)										1.0	13.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	75	103	79	92	74	95	82	90	109	116	115
2	HAR_Total (mgCaCO3/L)	140	163	143	185	143	212	173	178	205	228	224
3	Na% (%)	12	11	32	25	29	16	25	27	24	12	12
4	RSC (-)	0.0	0.4	2.4	0.5	0.3	0.1	0.4	0.0	0.1	0.0	0.2
5	SAR (-)	0.3	0.3	1.2	0.9	1.0	0.6	0.9	1.0	0.9	0.4	0.4
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood										
		Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1520	912	900								
2	pH_FLD (pH units)											
3	pH_GEN (pH units)	8.1	7.7	7.9								
4	TDS (mg/L)			507								
5	Temp (deg C)	26.3	25.5	25.8								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	6.4	15.6	36.9								
2	ALK-TOT (mgCaCO3/L)	1260	949	813								
3	B (mg/L)	0.17	0.06									
4	Ca (mg/L)	81	83	104								
5	Cl (mg/L)	79.7	54.5	164.9								
6	CO3 (mg/L)	7.7	18.8	44.4								
7	F (mg/L)		0.00	0.23								
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	760	560	450								
10	K (mg/L)	120.0	191.2	235.6								
11	Mg (mg/L)	47.7	26.0	28.8								
12	Na (mg/L)	129.0	199.5	174.0								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)											
15	NO2-N (mgN/L)	0.39	0.53	0.61								
16	NO3-N (mgN/L)											
17	o-PO4-P (mg P/L)	0.666	0.657	0.682								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	22.6	28.8	44.0								
20	SO4 (mg/L)	184.4	52.6	36.0								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	202	207	260								
2	HAR_Total (mgCaCO3/L)	401	315	380								
3	Na% (%)	31	44	32								
4	RSC (-)	5.4	3.6	1.3								
5	SAR (-)	2.9	4.9	3.9								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter										
		Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1021	829	890			790	740	600	1200	1150	970
2	pH_FLD (pH units)											8.0
3	pH_GEN (pH units)	7.8	7.8	7.8			7.8	7.9	8.2	8.9	7.9	7.9
4	TDS (mg/L)			512			470	440	390	700	710	600
5	Temp (deg C)	23.6	21.6	26.0			23.5	22.0	26.0	23.5	25.0	29.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	8.0	28.9	6.0			27.9	19.9	0.0	67.7	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1479	665	308			292	332	200	376	296	264
3	B (mg/L)	0.01	0.15				0.19	0.18	0.21	0.32	0.23	0.22
4	Ca (mg/L)	90	94	55			52	71	33	62	65	79
5	Cl (mg/L)	103.5	28.8	104.0			148.0	0.8	32.0	85.9	104.0	88.0
6	CO3 (mg/L)	9.6	34.9	7.2			33.6	24.0	0.0	81.6	0.0	0.0
7	F (mg/L)			0.22			0.13	0.18	0.21	0.80	0.68	0.37
8	Fe (mg/L)	0.3	0.2									
9	HCO3 (mg/L)	892	370	181			288	356	244	293	361	322
10	K (mg/L)	168.8	200.5	7.4			1.6	0.8	3.1	53.1	47.3	23.2
11	Mg (mg/L)	33.3	25.8	19.2			78.5	53.7	42.3	46.4	32.0	38.2
12	Na (mg/L)	175.0	213.8	44.4			30.4	20.1	26.0	62.9	65.6	60.5
13	NH3-N (mg N/L)						0.65	1.06	1.07	0.94	1.17	0.95
14	NO2+NO3 (mg N/L)						0.52	0.69	2.14	1.83	2.30	2.07
15	NO2-N (mgN/L)	0.59	0.53	0.61			0.21	0.27	0.33	0.15	0.63	0.39
16	NO3-N (mgN/L)						0.31	0.42	1.81	1.68	1.67	1.68
17	o-PO4-P (mg P/L)	0.829	0.643	0.506			0.165	0.400	0.434	0.620	0.796	
18	P-Tot (mgP/L)											0.520
19	SiO2 (mg/L)	30.0	33.0	44.0								
20	SO4 (mg/L)	99.0	21.1	34.1			21.1	37.8	68.2	35.0	38.9	105.0
	BIOLOGICAL/BACTERIOLOGICA											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	225	235	138			129	176	82	155	164	198
2	HAR_Total (mgCaCO3/L)	363	342	218			456	400	258	348	297	357
3	Na% (%)	40	44	30			13	10	18	25	29	26
4	RSC (-)	7.7	0.4	0.0			0.0	0.0	0.0	0.6	0.0	0.0
5	SAR (-)	4.0	5.0	1.3			0.6	0.4	0.7	1.5	1.7	1.4
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BASTI (GGU40J3) | **Division : M Ganga Div. I, Lucknow**

Local River : Kwano | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer										
		Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1013	850				1090	1220	1100	1500	1060	865
2	pH_FLD (pH units)						8.0					7.5
3	pH_GEN (pH units)	7.8	7.9				7.8	7.9	8.7	8.9	7.9	7.9
4	TDS (mg/L)						620	820	690	880	680	528
5	Temp (deg C)	23.3	20.0				23.0	22.0	24.0	24.0	25.0	25.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	14.6	33.9				35.9	23.9	12.0	39.8	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1547	786				572	312	460	404	280	252
3	B (mg/L)	0.02	0.23				0.13	0.22	0.32	0.31	0.31	0.18
4	Ca (mg/L)	87	104				79	48	59	72	74	74
5	Cl (mg/L)	106.0	56.7				423.9	199.9	176.1	114.0	69.9	80.0
6	CO3 (mg/L)	17.6	40.8				43.2	28.8	14.4	48.0	0.0	0.0
7	F (mg/L)	0.00					0.11	0.27	0.27	0.30	0.44	0.30
8	Fe (mg/L)	0.3	0.3									
9	HCO3 (mg/L)	926	438				610	322	532	395	342	307
10	K (mg/L)	186.6	215.3				140.8	13.3	59.8	4.7	11.7	19.6
11	Mg (mg/L)	33.0	29.6				51.6	78.5	87.7	102.2	41.3	34.1
12	Na (mg/L)	187.0	225.3				72.4	76.8	97.5	84.4	47.2	53.7
13	NH3-N (mg N/L)						1.24	1.35	0.95	0.65	1.04	0.86
14	NO2+NO3 (mg N/L)						2.77	2.64	1.69	1.54	2.11	1.83
15	NO2-N (mgN/L)	0.63	0.58				0.26	0.34	0.10	0.00	0.48	0.31
16	NO3-N (mgN/L)						2.51	2.30	1.60	1.54	1.63	1.52
17	o-PO4-P (mg P/L)	0.758	0.692				0.444	0.548	0.455	0.661	0.568	
18	P-Tot (mgP/L)											0.440
19	SiO2 (mg/L)	34.7	40.0									
20	SO4 (mg/L)	101.4	30.1				37.4	32.6	127.2	169.9	112.8	92.0
	BIOLOGICAL/BACTERIOLOGICA											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	218	260				198	121	147	181	185	185
2	HAR_Total (mgCaCO3/L)	355	383				413	448	512	606	357	327
3	Na% (%)	41	43				21	27	27	23	22	25
4	RSC (-)	8.7	0.9				3.2	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	4.3	5.0				1.6	1.6	1.9	1.5	1.1	1.3
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**BALRAMPUR**	**Code**	:	**GGU30U4**
State	:	Uttar Pradesh	District		Gonda
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	Rapti
Sub-Sub Tributary	:	-	Local River	:	Rapti
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	U Rapti SD, Gonda
Drainage Area	:	8219 Sq. Km.	Bank	:	Right
Latitude	:	27°27'27"	Longitude	:	82°12'12"
		Opening Date	Closing Date		
Gauge	:	7/11/1970			
Discharge	:	7/30/1970			
Sediment	:	1/23/1982			
Water Quality	:	5/1/1976			

Water Quality Datasheet for the period : 2016-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)	21.15	66.66	1698									
2	Colour_Cod (-)	Light Brown	Brown	Brown	Brown	Brown	Brown	Brown	Light Brown	Brown	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	230	260	210	240	260	270	300	310	290	260	347	291
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0		8.5	8.0	8.0
6	pH_GEN (pH units)	8.3	8.1	8.2	8.4	7.9	8.2	8.2	8.5	8.5	8.4	8.2	8.1
7	TDS (mg/L)	145	152	132	152	163	165	183	193	178	163	249	178
8	Temp (deg C)	31.5	33.0	29.5	28.5	30.0	26.5	21.0	17.0	17.5	23.5	27.5	30.0
9	Turb (NTU)	1.3	4.2	3.9	5.8	6.4	7.3	5.1	2.8	0.8	0.9	0.7	1.0
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0	8.0	0.0	0.0	0.0	8.0	4.0	8.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	140	148	112	120	136	168	172	148	156	156	160	148
3	B (mg/L)	0.19	0.19	0.17	0.17	0.19	0.19	0.18	0.19	0.17	0.17	0.22	0.18
4	Ca (mg/L)	36	38	31	33	38	43	38	34	36	31	36	33
5	Cl (mg/L)	12.1	12.1	8.2	8.0	10.0	12.0	10.0	10.0	12.0	10.0	16.0	12.0
6	CO3 (mg/L)	4.8	0.0	0.0	9.6	0.0	0.0	0.0	9.6	4.8	9.6	0.0	0.0
7	F (mg/L)	0.36	0.32	0.19	0.25	0.26	0.28	0.26	0.29	0.29	0.23	0.32	0.26
8	Fe (mg/L)			0.3				0.3				0.2	
9	HCO3 (mg/L)	161	181	137	127	166	205	210	161	181	171	195	181
10	K (mg/L)	4.7	5.5	3.9	4.0	4.2	4.5	4.4	5.1	5.6	5.8	7.0	6.2
11	Mg (mg/L)	18.6	17.5	13.4	14.5	15.5	20.6	19.6	21.7	20.6	18.6	26.4	22.7
12	Na (mg/L)	7.8	7.1	4.6	5.0	5.5	6.9	6.6	6.5	7.6	6.8	10.0	7.8
13	NH3-N (mg N/L)	0.35	0.32	0.29	0.30	0.33	0.31	0.30	0.31	0.31	0.28	0.32	0.28
14	NO2+NO3 (mg N/L)	0.64	0.60	0.34	0.48	0.58	0.42	0.45	0.38	0.43	0.35	0.54	0.48
15	NO2-N (mgN/L)	0.15	0.19	0.00	0.12	0.20	0.12	0.11	0.00	0.08	0.00	0.15	0.12
16	NO3-N (mgN/L)	0.49	0.41	0.34	0.36	0.38	0.30	0.34	0.38	0.35	0.35	0.39	0.36
17	P-Tot (mgP/L)	0.320	0.360	0.270	0.280	0.330	0.315	0.350	0.330	0.365	0.315	0.370	0.320
18	SO4 (mg/L)	17.3	15.8	14.4	15.0	15.6	15.7	15.4	15.5	15.4	15.8	16.8	16.0

Water Quality Datasheet for the period : 2016-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Analysis** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	BIOLOGICAL/BACTERIOLOGICAL												
1	BOD3-27 (mg/L)	2.2	1.2	1.0	1.6	2.0	1.6	1.6	2.0	1.2	1.4	1.6	3.9
2	COD (mg/L)	11.0	7.0	5.0	6.0	10.0	9.0	8.0	9.0	5.0	6.0	5.0	6.0
3	DO (mg/L)	6.7	6.7	7.1	6.9	6.9	6.3	6.9	7.3	6.9	7.3	4.7	0.6
4	DO_SAT% (%)	90	93	92	88	91	77	77	75	71	85	59	8
5	FCol-MPN (MPN/100mL)			300	2000	3000	600	900	1200	2500	800	1500	1200
6	Tcol-MPN (MPN/100mL)			900	4000	5000	1200	1500	1800	3500	1400	2700	2000
	TRACE & TOXIC												
1	As (µg/L)			0.6				1.4				0.0	
2	Cr (µg/L)			107.2				53.7				11.0	
3	Cu (µg/L)			3.5				4.4				8.0	
4	Ni (µg/L)			4.4				0.6				20.0	
5	Pb (µg/L)			1.9				5.5				1.0	
6	Zn (µg/L)			4.4				11.4				14.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	91	95	78	82	95	108	95	86	90	77	90	82
2	HAR_Total (mgCaCO3/L)	168	167	133	142	159	194	176	176	176	155	200	176
3	Na% (%)	9	8	7	7	7	7	7	7	8	8	9	8
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : BALRAMPUR (GGU30U4)

Local River : Rapti

Well Water Analysis

Division : M Ganga Div. I, Lucknow

Sub-Division : U Rapti SD, Gonda

S.No	Parameters	11/1/2016	5/1/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Clear	Clear
2	EC_GEN (µmho/cm)	1850	1828
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	8.0	7.5
5	pH_GEN (pH units)	8.1	7.9
6	TDS (mg/L)	1140	1094
7	Temp (deg C)	27.0	28.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	
2	ALK-TOT (mgCaCO3/L)	352	
3	B (mg/L)	0.30	0.27
4	Ca (mg/L)	103	98
5	Cl (mg/L)	178.0	166.0
6	CO3 (mg/L)	0.0	
7	F (mg/L)	0.41	0.38
8	HCO3 (mg/L)	429	415
9	K (mg/L)	92.5	88.1
10	Mg (mg/L)	56.8	53.7
11	Na (mg/L)	112.2	110.5
12	NH3-N (mg N/L)	1.25	1.18
13	NO2+NO3 (mg N/L)	2.25	2.14
14	NO2-N (mgN/L)	0.30	0.26
15	NO3-N (mgN/L)	1.95	1.88
16	P-Tot (mgP/L)	0.790	0.720
17	SO4 (mg/L)	261.0	2.6
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	258	245
2	HAR_Total (mgCaCO3/L)	495	469
3	Na% (%)	29	29
4	RSC (-)	0.0	
5	SAR (-)	2.2	2.2
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)	92	1801	21.15	478.8
2	EC_GEN (µmho/cm)	12	347	210	272
3	pH_FLD (pH units)	11	8.5	8.0	8.1
4	pH_GEN (pH units)	12	8.5	7.9	8.2
5	TDS (mg/L)	12	249	132	171
6	Temp (deg C)	12	33.0	17.0	26.3
7	Turb (NTU)	12	7.3	0.7	3.4
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	2.7
2	ALK-TOT (mgCaCO3/L)	12	172	112	147
3	B (mg/L)	12	0.22	0.17	0.18
4	Ca (mg/L)	12	43	31	36
5	Cl (mg/L)	12	16.0	8.0	11
6	CO3 (mg/L)	12	9.6	0.0	3.2
7	F (mg/L)	12	0.36	0.19	0.28
8	Fe (mg/L)	3	0.3	0.2	0.3
9	HCO3 (mg/L)	12	210	127	173
10	K (mg/L)	12	7.0	3.9	5.1
11	Mg (mg/L)	12	26.4	13.4	19.1
12	Na (mg/L)	12	10.0	4.6	6.9
13	NH3-N (mg N/L)	12	0.35	0.28	0.31
14	NO2+NO3 (mg N/L)	12	0.64	0.34	0.47
15	NO2-N (mgN/L)	12	0.20	0.00	0.1
16	NO3-N (mgN/L)	12	0.49	0.30	0.37
17	P-Tot (mgP/L)	12	0.370	0.270	0.327
18	SO4 (mg/L)	12	17.3	14.4	15.7
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	3.9	1.0	1.7
2	COD (mg/L)	12	11.0	5.0	7.3
3	DO (mg/L)	12	7.3	0.6	6.2
4	DO_SAT% (%)	12	93	8	75
5	FCol-MPN (MPN/100mL)	10	3000	300	1400
6	Tcol-MPN (MPN/100mL)	10	5000	900	2400
	TRACE & TOXIC				
1	As (µg/L)	3	1.4	0.0	0.7
2	Cr (µg/L)	3	107.2	11.0	57.3
3	Cu (µg/L)	3	8.0	3.5	5.3
4	Ni (µg/L)	3	20.0	0.6	8.3
5	Pb (µg/L)	3	5.5	1.0	2.8
6	Zn (µg/L)	3	14.0	4.4	9.9
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	108	77	89
2	HAR_Total (mgCaCO3/L)	12	200	133	169
3	Na% (%)	12	9	7	8
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.3	0.2	0.2
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water Summary** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	1850	1828	1839
2	pH_FLD (pH units)	2	8.0	7.5	7.8
3	pH_GEN (pH units)	2	8.1	7.9	8.0
4	TDS (mg/L)	2	1140	1094	1117
5	Temp (deg C)	2	28.0	27.0	27.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	1	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1	352	352	352
3	B (mg/L)	2	0.30	0.27	0.29
4	Ca (mg/L)	2	103	98	101
5	Cl (mg/L)	2	178.0	166.0	172.0
6	CO3 (mg/L)	1	0.0	0.0	0.0
7	F (mg/L)	2	0.41	0.38	0.39
8	HCO3 (mg/L)	2	429	415	422
9	K (mg/L)	2	92.5	88.1	90.3
10	Mg (mg/L)	2	56.8	53.7	55.2
11	Na (mg/L)	2	112.2	110.5	111.3
12	NH3-N (mg N/L)	2	1.25	1.18	1.21
13	NO2+NO3 (mg N/L)	2	2.25	2.14	2.19
14	NO2-N (mgN/L)	2	0.30	0.26	0.28
15	NO3-N (mgN/L)	2	1.95	1.88	1.92
16	P-Tot (mgP/L)	2	0.790	0.720	0.755
17	SO4 (mg/L)	2	261.0	2.6	131.8
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	258	245	252
2	HAR_Total (mgCaCO3/L)	2	495	469	482
3	Na% (%)	2	29	29	29
4	RSC (-)	1	0.0	0.0	0.0
5	SAR (-)	2	2.2	2.2	2.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	334.1	724.7	496.4	400.9	395.3	387.2	390.6	506.1	266.4	179.9	595.1
2	EC_FLD (µmho/cm)							210				
3	EC_GEN (µmho/cm)	304	292	331	263	274	221	226	366	312	338	240
4	pH_FLD (pH units)	7.0	7.2			7.1	8.0	7.6	7.1			8.1
5	pH_GEN (pH units)	8.0	8.2	8.4	7.9	8.0	7.8	8.1	8.2	8.4	8.4	8.2
6	TDS (mg/L)			223	192	164	132	134	237	189	198	149
7	Temp (deg C)	30.3	30.6	28.8	30.7	30.8	31.2	30.1	30.5	29.9	30.5	30.5
8	Turb (NTU)											4.3
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	5.8	5.7	1.0	5.6	1.6	1.6	0.8	8.3	11.0	2.4
2	ALK-TOT (mgCaCO3/L)	187	196	155	164	140	122	134	146	122	141	131
3	B (mg/L)	0.09	0.09	0.16	0.15	0.13	0.23	0.14	0.19	0.22	0.18	0.18
4	Ca (mg/L)	24	33	34	37	32	27	30	31	25	39	35
5	Cl (mg/L)	12.4	10.5	12.9	14.3	14.4	12.9	13.6	16.0	14.4	10.4	10.1
6	CO3 (mg/L)	1.9	7.0	6.9	1.2	6.7	1.9	1.9	1.0	10.0	10.6	2.9
7	F (mg/L)	0.00	0.14	0.13	0.15	0.16	0.13	0.14	0.17	0.18	0.28	0.28
8	Fe (mg/L)	0.1	0.2				0.1					0.3
9	HCO3 (mg/L)	177	165	175	197	157	144	160	176	129	155	154
10	K (mg/L)	7.5	3.8	4.0	4.8	4.8	4.6	4.8	4.5	4.5	4.7	4.5
11	Mg (mg/L)	13.8	9.6	8.7	17.5	17.5	17.3	20.4	19.4	18.1	16.1	15.9
12	Na (mg/L)	17.0	8.5	8.5	10.7	8.1	7.1	6.5	10.0	5.4	6.5	6.0
13	NH3-N (mg N/L)				0.08	0.15	0.49	0.50	0.28	0.34	0.31	0.32
14	NO2+NO3 (mg N/L)			0.09	0.10	0.08	0.87	0.63	0.61	0.38	0.49	0.53
15	NO2-N (mgN/L)	0.01	0.04	0.05	0.05	0.04	0.15	0.15	0.24	0.02	0.03	0.13
16	NO3-N (mgN/L)			0.04	0.05	0.04	0.71	0.48	0.37	0.35	0.46	0.39
17	o-PO4-P (mg P/L)	0.006	0.031	0.019	0.031	0.072	0.116	0.262	0.320	0.430	0.285	
18	P-Tot (mgP/L)				0.077							0.312
19	SiO2 (mg/L)	12.6	9.9	8.8	6.3	5.6						
20	SO4 (mg/L)	43.0	23.8	15.9	20.6	15.0	14.5	12.1	16.5	15.3	19.0	15.6
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.0	0.9	0.8	0.9	1.0	1.0	1.6	1.6
2	COD (mg/L)					4.5	6.0	5.0	5.6	5.0	7.2	7.8
3	DO (mg/L)	7.1	7.0	7.1	7.0	7.6	7.4	7.3	6.9	6.7	6.6	6.8
4	DO_SAT% (%)	94	93	92	94	101	100	96	91	88	88	91
5	FCol-MPN (MPN/100mL)											1767
6	Tcol-MPN (MPN/100mL)											3300
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											107.2
4	Cu (µg/L)											3.5
5	Ni (µg/L)											4.4
6	Pb (µg/L)											1.9
7	Zn (µg/L)											4.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	60	83	84	92	80	68	75	77	62	98	88
2	HAR_Total (mgCaCO3/L)	118	123	120	165	153	140	160	158	138	165	154
3	Na% (%)	22	13	13	12	10	10	8	12	8	8	8
4	RSC (-)	0.6	0.5	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter (Nov - Feb)										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	53.56	82.62	91.81	97.93	99.86	75.20	70.93	76.20	62.57	50.01	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	344	266	329	338	320	303	328	370	360	288	293
4	pH_FLD (pH units)				7.3	7.1	7.4	6.9	7.2			8.0
5	pH_GEN (pH units)	8.0	8.3	8.1	8.3	8.1	8.1	8.1	8.5	8.6	8.4	8.3
6	TDS (mg/L)			242	210	192	183	203	240	197	180	180
7	Temp (deg C)	19.5	21.9	21.1	19.0	20.3	19.6	20.0	21.6	19.9	21.8	20.5
8	Turb (NTU)											4.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)		8.5	7.5	6.0	0.0	0.0	0.0	7.0	19.9	11.0	3.0
2	ALK-TOT (mgCaCO3/L)		182	208	158	120	181	135	133	161	185	161
3	B (mg/L)	0.02	0.15	0.15	0.14	0.16	0.17	0.17	0.20	0.22	0.18	0.18
4	Ca (mg/L)	34	42	37	38	29	36	29	31	48	42	38
5	Cl (mg/L)	17.0	17.4	13.5	15.4	13.0	15.0	15.0	15.0	13.9	9.5	11.0
6	CO3 (mg/L)	3.6	10.2	9.0	7.2	0.0	0.0	0.0	8.4	24.0	13.2	3.6
7	F (mg/L)	0.00	0.13	0.15	0.16	0.16	0.15	0.16	0.17	0.21	0.30	0.28
8	Fe (mg/L)	0.1	0.3									0.3
9	HCO3 (mg/L)	170	201	235	178	146	221	165	145	148	199	189
10	K (mg/L)	5.2	4.0	3.1	3.1	4.6	4.4	4.5	3.8	2.7	5.1	4.9
11	Mg (mg/L)	12.4	13.9	17.1	18.6	16.8	24.0	19.3	19.1	16.8	21.1	20.6
12	Na (mg/L)	12.7	8.7	8.0	13.4	6.8	8.0	7.3	8.0	7.8	6.2	6.9
13	NH3-N (mg N/L)				0.10	0.16	0.65	0.45	0.36	0.33	0.32	0.31
14	NO2+NO3 (mg N/L)			0.14	0.08	0.09	0.62	0.46	0.57	0.49	0.47	0.42
15	NO2-N (mgN/L)	0.06	0.06	0.05	0.04	0.04	0.14	0.10	0.24	0.10	0.01	0.08
16	NO3-N (mgN/L)			0.09	0.05	0.04	0.48	0.37	0.33	0.39	0.45	0.34
17	o-PO4-P (mg P/L)	0.034	0.031	0.014	0.169	0.134	0.111	0.390	0.297	0.333	0.323	
18	P-Tot (mgP/L)			0.097	0.141							0.340
19	SiO2 (mg/L)	14.8	10.9	7.4	6.4	6.0						
20	SO4 (mg/L)	54.4	13.2	12.7	18.1	17.2	12.0	18.1	14.0	20.8	18.7	15.5
	BIOLOGICAL/BACTERIOLOGI											
1	BOD3-27 (mg/L)				1.2	0.6	0.9	0.7	1.0	1.0	1.2	1.6
2	COD (mg/L)					3.3	8.8	5.8	5.0	3.0	7.5	7.8
3	DO (mg/L)	7.1	7.1	7.1	7.1	7.5	7.4	7.1	6.8	6.8	7.1	6.8
4	DO_SAT% (%)	78	81	80	75	83	80	77	77	74	80	75
5	FCol-MPN (MPN/100mL)											1300
6	Tcol-MPN (MPN/100mL)											2000
	TRACE & TOXIC											
1	As (µg/L)											1.4
2	Cd (µg/L)											
3	Cr (µg/L)											53.7
4	Cu (µg/L)											4.4
5	Ni (µg/L)											
6	Pb (µg/L)											5.5
7	Zn (µg/L)											11.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	85	105	91	95	72	90	73	79	120	105	95
2	HAR_Total (mgCaCO3/L)	136	163	163	172	142	190	154	158	190	193	181
3	Na% (%)	16	10	10	14	9	8	9	10	8	6	7
4	RSC (-)	0.2	0.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.3	0.3	0.4	0.2	0.3	0.3	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	21.13	27.97	26.16	28.96	37.20	29.51	31.73	29.81	37.16	12.83	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	344	279	340	347	313	340	333	400	317	290	299
4	pH_FLD (pH units)				7.5	7.5	8.0	7.5				8.2
5	pH_GEN (pH units)	8.2	8.4	8.1	8.2	8.2	8.1	8.3	8.2	8.8	8.3	8.2
6	TDS (mg/L)			229	208	185	198	223	247	176	182	197
7	Temp (deg C)	25.7	22.7	24.2	25.7	24.0	23.2	23.5	23.2	25.3	25.8	27.0
8	Turb (NTU)											0.9
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.7	8.1	13.3	4.0	2.7	5.3	8.0	6.6	14.6	4.0	2.7
2	ALK-TOT (mgCaCO3/L)	141	217	211	149	123	197	159	153	153	156	155
3	B (mg/L)	0.01	0.21	0.11	0.16	0.18	0.15	0.18	0.21	0.20	0.17	0.19
4	Ca (mg/L)	36	45	33	32	29	33	33	36	36	36	33
5	Cl (mg/L)	16.7	26.6	15.3	18.6	14.7	17.3	21.3	20.1	13.3	12.7	12.7
6	CO3 (mg/L)	3.2	9.7	16.0	4.8	3.2	6.4	9.6	8.0	17.6	4.8	3.2
7	F (mg/L)	0.08	0.14	0.13	0.16	0.16	0.15	0.19	0.19	0.22	0.32	0.27
8	Fe (mg/L)	0.2	0.3								1.0	0.2
9	HCO3 (mg/L)	166	244	225	172	143	228	174	171	151	181	182
10	K (mg/L)	4.0	4.8	3.9	5.1	5.4	6.4	4.5	4.0	3.4	5.2	6.3
11	Mg (mg/L)	14.8	14.4	14.4	22.1	17.2	28.2	21.0	21.7	20.3	19.9	22.6
12	Na (mg/L)	9.3	9.4	10.2	12.0	8.1	10.4	12.2	8.7	7.2	7.7	8.2
13	NH3-N (mg N/L)				0.16	0.15	0.61	0.38	0.33	0.35	0.32	0.29
14	NO2+NO3 (mg N/L)			1.02	0.10	0.27	0.49	0.64	0.57	0.50	0.44	0.46
15	NO2-N (mgN/L)	0.05	0.08	0.06	0.05	0.12	0.15	0.20	0.17	0.04	0.00	0.09
16	NO3-N (mgN/L)			0.96	0.06	0.16	0.34	0.44	0.40	0.46	0.44	0.37
17	o-PO4-P (mg P/L)	0.034	0.031		0.196	0.114	0.227	0.355	0.265	0.248	0.351	
18	P-Tot (mgP/L)			0.059	0.199	0.145						0.335
19	SiO2 (mg/L)	15.1	11.5	6.9	6.0	6.3						
20	SO4 (mg/L)	54.9	20.2	19.9	40.5	19.5	8.5	12.9	20.0	14.7	17.0	16.2
	BIOLOGICAL/BACTERIOLOGI											
1	BOD3-27 (mg/L)				1.0	0.8	0.9	0.8	1.0	1.3	1.0	2.3
2	COD (mg/L)					9.0	6.0	17.3	6.7	6.7	6.3	5.7
3	DO (mg/L)	7.0	7.1	7.3	7.6	7.4	7.2	7.4	6.5	7.0	7.0	4.2
4	DO_SAT% (%)	86	82	86	93	87	84	87	75	85	86	50
5	FCol-MPN (MPN/100mL)											1167
6	Tcol-MPN (MPN/100mL)											2033
	TRACE & TOXIC											
1	As (µg/L)										1.0	
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	11.0
4	Cu (µg/L)										1.0	8.0
5	Ni (µg/L)										1.0	20.0
6	Pb (µg/L)										1.0	1.0
7	Zn (µg/L)										1.0	14.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	90	113	81	79	72	83	83	91	89	89	83
2	HAR_Total (mgCaCO3/L)	152	173	141	171	144	201	170	181	173	172	177
3	Na% (%)	11	10	13	13	11	10	13	9	8	9	9
4	RSC (-)	0.0	0.9	1.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.3	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Flood										
		Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1073	874	1875								
2	pH_FLD (pH units)											
3	pH_GEN (pH units)	7.9	7.5	7.7								
4	TDS (mg/L)			500								
5	Temp (deg C)	28.9	30.6	27.8								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	6.4	17.4	66.7								
2	ALK-TOT (mgCaCO3/L)	434	598	1070								
3	B (mg/L)	0.15	0.08									
4	Ca (mg/L)	55	77	112								
5	Cl (mg/L)	77.7	149.4	280.1								
6	CO3 (mg/L)	7.7	20.9	80.4								
7	F (mg/L)	0.00	0.04	0.23								
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	257	344	571								
10	K (mg/L)	351.3	385.1	275.7								
11	Mg (mg/L)	34.3	26.9	43.3								
12	Na (mg/L)	295.4	326.4	239.4								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)											
15	NO2-N (mgN/L)	0.39	0.43	0.51								
16	NO3-N (mgN/L)											
17	o-PO4-P (mg P/L)	0.351	0.426	0.393								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	65.8	70.8	84.0								
20	SO4 (mg/L)	245.1	69.8	84.0								
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	138	193	280								
2	HAR_Total (mgCaCO3/L)	280	305	460								
3	Na% (%)	47	47	35								
4	RSC (-)	0.0	0.4	2.9								
5	SAR (-)	8.3	8.3	4.9								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Winter										
		Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	243	1818	1900	2000	1800	1590	1290	2200	2300	2400	1850
2	pH_FLD (pH units)											8.0
3	pH_GEN (pH units)	7.4	7.8	7.7	8.1	8.0	8.2	7.7	8.3	8.5	7.8	8.1
4	TDS (mg/L)			604	1230	1090	960	780	1430	1200	1500	1140
5	Temp (deg C)	20.0	23.5	27.5	25.5	27.0	27.5	26.5	26.0	26.0	28.5	27.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	8.0	26.5	15.9		0.0	31.9	27.9	0.0	31.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	400	897	208		295	248	328	352	480	500	352
3	B (mg/L)	0.04	0.16			0.18	0.17	0.25	0.27	0.35	0.35	0.30
4	Ca (mg/L)	56	94	47		79	46	112	57	71	101	103
5	Cl (mg/L)	55.5	225.1	123.9		495.9	344.0	208.0	252.1	290.0	286.1	178.0
6	CO3 (mg/L)	9.6	31.9	19.2		0.0	38.4	33.6	0.0	38.4	0.0	0.0
7	F (mg/L)			0.22		0.21	0.15	0.25	0.30	0.21	0.44	0.41
8	Fe (mg/L)	0.3	0.3									
9	HCO3 (mg/L)	234	515	107		360	224	332	429	508	610	429
10	K (mg/L)	377.9	388.7	56.3		136.9	109.1	91.0	138.8	132.5	153.7	92.5
11	Mg (mg/L)	23.5	39.0	24.1		67.1	51.6	65.0	96.0	53.7	45.4	56.8
12	Na (mg/L)	304.6	334.5	310.0		194.1	164.9	108.7	185.4	191.4	186.3	112.2
13	NH3-N (mg N/L)					0.31	0.66	1.00	0.95	1.18	1.46	1.25
14	NO2+NO3 (mg N/L)					0.15	0.49	0.66	2.72	3.73	2.92	2.25
15	NO2-N (mgN/L)	0.50	0.43	0.50		0.08	0.25	0.29	0.52	1.59	0.86	0.30
16	NO3-N (mgN/L)					0.07	0.24	0.37	2.20	2.14	2.06	1.95
17	o-PO4-P (mg P/L)	0.488	0.400	0.465		0.176	0.165	0.660	0.713	1.292	1.385	
18	P-Tot (mgP/L)											0.790
19	SiO2 (mg/L)	74.5	73.0	44.0		22.0						
20	SO4 (mg/L)	305.4	67.0	72.0		74.4	92.6	271.2	399.8	105.1	110.9	261.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	141	235	117		198	116	280	142	177	254	258
2	HAR_Total (mgCaCO3/L)	239	398	217		477	331	550	542	400	443	495
3	Na% (%)	48	45	70		39	43	26	36	42	39	29
4	RSC (-)	0.0	1.6	0.0		0.0	0.0	0.0	0.0	1.7	1.2	0.0
5	SAR (-)	8.6	7.3	9.2		3.9	4.0	2.0	3.5	4.2	3.9	2.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BALRAMPUR (GGU30U4) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : U Rapti SD, Gonda**

S.No	Parameters	Summer										
		Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	260	1857	1730	3100	2600	2400	3000	3200	2900	2400	1828
2	pH_FLD (pH units)						8.0					7.5
3	pH_GEN (pH units)	7.4	7.9	7.8	8.1	7.8	7.6	7.9	8.1	8.5	7.9	7.9
4	TDS (mg/L)			511	1900	1500	1460	1800	1770	1700	1530	1094
5	Temp (deg C)	25.7	22.7	25.5	27.5	27.5	26.0	27.5	25.5	26.0	26.0	28.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	14.6	32.2	0.0	0.0	0.0	15.9	0.0	0.0	8.0	0.0	
2	ALK-TOT (mgCaCO3/L)	406	997	208	564	120	464	380	536	448	340	
3	B (mg/L)	0.04	0.22	0.23	0.16	0.18	0.21	0.25	0.37	0.38	0.30	0.27
4	Ca (mg/L)	59	109	34	124	55	120	77	82	107	105	98
5	Cl (mg/L)	58.0	260.0	12.1	472.1	795.9	668.1	543.9	400.1	390.1	220.1	166.0
6	CO3 (mg/L)	17.6	38.8	0.0	0.0	0.0	19.2	0.0	0.0	9.6	0.0	
7	F (mg/L)	0.01		0.13	0.19	0.19	0.15	0.23	0.19	0.40	0.44	0.38
8	Fe (mg/L)	0.3	0.4									
9	HCO3 (mg/L)	229	568	254	688	146	527	464	654	527	415	415
10	K (mg/L)	386.6	403.8	80.5	159.9	152.5	223.3	146.2	330.8	156.0	94.2	88.1
11	Mg (mg/L)	25.1	42.4	25.8	62.0	27.8	65.0	78.5	70.2	64.0	71.2	53.7
12	Na (mg/L)	317.3	348.7	170.0	262.0	413.1	293.5	311.9	279.9	273.9	144.9	110.5
13	NH3-N (mg N/L)				0.20	0.29	0.97	1.04	1.14	1.18	1.31	1.18
14	NO2+NO3 (mg N/L)				0.20	0.76	4.46	3.81	22.33	2.43	2.75	2.14
15	NO2-N (mgN/L)	0.54	0.48		0.12	0.44	0.39	0.40	2.29	0.59	0.39	0.26
16	NO3-N (mgN/L)				0.08	0.32	4.08	3.40	20.04	1.84	2.37	1.88
17	o-PO4-P (mg P/L)	0.493	0.444		0.310		0.765	0.672	0.920	0.796	0.620	
18	P-Tot (mgP/L)				0.310	0.217						0.720
19	SiO2 (mg/L)	78.7	80.0	44.0	29.0	16.5						
20	SO4 (mg/L)	98.7	76.6	23.5	27.4	99.8	83.5	226.1	456.0	285.1	308.2	2.5
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)					0.5						
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	148	273	85	310	138	301	194	206	267	263	245
2	HAR_Total (mgCaCO3/L)	252	450	193	568	253	572	521	499	533	559	469
3	Na% (%)	48	44	56	43	67	43	49	40	45	32	29
4	RSC (-)	0.0	1.7	0.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	
5	SAR (-)	8.7	7.2	5.4	4.8	11.3	5.4	6.0	5.5	5.2	2.7	2.2
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**REGAULI**	**Code**	:	**GGU30H1**
State	:	Uttar Pradesh	District		Gorakhpur
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	Rapti
Sub-Sub Tributary	:	Burhi Rapti	Local River	:	Rapti
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	L Rapti Ghaghra SD, Turkmanpur
Drainage Area	:	16387 Sq. Km.	Bank	:	Left
Latitude	:	26°46'46"	Longitude	:	83°18'18"
		Opening Date	Closing Date		
Gauge	:	1/1/1976			
Discharge	:	1/1/1976			
Sediment	:	4/1/1978			
Water Quality	:	6/1/1996			

Water Quality Datasheet for the period : 2016-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Light Brown	Brown	Brown	Brown	Brown	Brown	Brown	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	260	192	193	270	270	300	330	240	330	280	365	314
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.5	8.0	8.0	8.5	8.0	8.0	8.0	8.0	8.0	8.5	8.0	8.0
6	pH_GEN (pH units)	8.4	8.0	8.2	8.6	7.9	8.2	8.2	8.3	8.5	8.4	8.1	8.1
7	TDS (mg/L)	160	120	120	172	168	183	198	148	200	176	220	193
8	Temp (deg C)	31.5	29.0	31.0	31.5	27.5	22.0	23.5	17.0	16.5	22.0	28.0	25.5
9	Turb (NTU)	1.8	2.6	4.8	5.0	4.9	3.3	2.7	1.5	1.0	0.9	0.7	0.7
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	8.0	8.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	168	144	104	132	156	180	176	116	156	168	176	164
3	B (mg/L)	0.19	0.18	0.17	0.18	0.19	0.19	0.19	0.18	0.21	0.18	0.20	0.20
4	Ca (mg/L)	41	34	29	36	41	46	41	28	36	38	43	40
5	Cl (mg/L)	13.8	9.9	8.2	10.0	10.0	12.0	12.0	10.0	10.0	12.0	16.0	14.0
6	CO3 (mg/L)	4.8	0.0	0.0	9.6	0.0	0.0	0.0	0.0	9.6	9.6	0.0	0.0
7	F (mg/L)	0.40	0.30	0.21	0.27	0.28	0.30	0.29	0.24	0.32	0.26	0.34	0.30
8	Fe (mg/L)			0.6				0.3				0.3	
9	HCO3 (mg/L)	195	176	127	142	190	220	215	142	171	185	215	200
10	K (mg/L)	5.1	4.3	4.7	4.2	4.6	4.3	5.0	4.4	5.0	6.1	7.0	6.2
11	Mg (mg/L)	20.7	17.5	13.4	15.5	17.5	21.7	22.7	17.5	18.6	19.6	22.0	19.6
12	Na (mg/L)	8.3	6.4	4.6	5.4	5.7	7.5	6.9	6.0	7.0	7.3	10.0	8.4
13	NH3-N (mg N/L)	0.37	0.31	0.28	0.30	0.33	0.30	0.31	0.28	0.33	0.30	0.34	0.30
14	NO2+NO3 (mg N/L)	0.48	0.57	0.49	0.50	0.59	0.36	0.35	0.36	0.48	0.44	0.57	0.46
15	NO2-N (mgN/L)	0.00	0.18	0.14	0.13	0.20	0.00	0.00	0.00	0.00	0.06	0.19	0.12
16	NO3-N (mgN/L)	0.48	0.39	0.35	0.37	0.39	0.36	0.35	0.36	0.48	0.39	0.38	0.34
17	P-Tot (mgP/L)	0.330	0.340	0.260	0.280	0.345	0.370	0.385	0.270	0.390	0.395	0.380	0.400
18	SO4 (mg/L)	17.8	15.4	13.9	15.3	15.8	16.1	15.7	13.5	16.1	15.8	20.0	16.2
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	1.8	1.6	2.0	2.0	2.2	1.4	1.4	1.4	2.7	1.6	3.9	2.3
2	COD (mg/L)	10.0	9.0	6.0	8.0	10.0	8.0	8.0	6.0	9.0	6.0	8.0	8.0
3	DO (mg/L)	7.1	6.3	6.3	6.7	6.7	7.1	7.1	7.5	7.1	6.9	4.1	5.5
4	DO_SAT% (%)	95	82	84	90	84	81	82	77	72	78	53	67
5	FCol-MPN (MPN/100mL)			600	5000	7000	8000	1000	1500	3000	1000	1400	2000
6	Tcol-MPN (MPN/100mL)			2700	5500	8000	9000	2500	2600	4500	1500	6000	6000
	TRACE & TOXIC												
1	As (µg/L)			0.5				0.9				3.0	
2	Cr (µg/L)			88.3				50.4				4.0	
3	Cu (µg/L)			4.9				4.4				10.0	
4	Ni (µg/L)			4.8				0.6				18.0	
5	Pb (µg/L)			0.5				4.6				0.0	
6	Zn (µg/L)			4.8				10.4				21.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	103	86	73	90	103	116	103	69	90	95	108	99
2	HAR_Total (mgCaCO3/L)	189	159	129	155	176	206	198	142	168	176	199	181
3	Na% (%)	8	8	7	7	6	7	7	8	8	8	10	9
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	PESTICIDES												

Water Quality Summary for the period : 2016-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	365	192	279
3	pH_FLD (pH units)	12	8.5	8.0	8.1
4	pH_GEN (pH units)	12	8.6	7.9	8.2
5	TDS (mg/L)	12	220	120	172
6	Temp (deg C)	12	31.5	16.5	25.4
7	Turb (NTU)	12	5.0	0.7	2.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	2.3
2	ALK-TOT (mgCaCO3/L)	12	180	104	153
3	B (mg/L)	12	0.21	0.17	0.19
4	Ca (mg/L)	12	46	28	38
5	Cl (mg/L)	12	16.0	8.2	11.5
6	CO3 (mg/L)	12	9.6	0.0	2.8
7	F (mg/L)	12	0.40	0.21	0.29
8	Fe (mg/L)	3	0.6	0.3	0.4
9	HCO3 (mg/L)	12	220	127	181
10	K (mg/L)	12	7.0	4.2	5.1
11	Mg (mg/L)	12	22.7	13.4	18.9
12	Na (mg/L)	12	10.0	4.6	7
13	NH3-N (mg N/L)	12	0.37	0.28	0.31
14	NO2+NO3 (mg N/L)	12	0.59	0.35	0.47
15	NO2-N (mgN/L)	12	0.20	0.00	0.08
16	NO3-N (mgN/L)	12	0.48	0.34	0.39
17	P-Tot (mgP/L)	12	0.400	0.260	0.345
18	SO4 (mg/L)	12	20.0	13.5	16
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	3.9	1.4	2
2	COD (mg/L)	12	10.0	6.0	8
3	DO (mg/L)	12	7.5	4.1	6.5
4	DO_SAT% (%)	12	95	53	79
5	FCol-MPN (MPN/100mL)	10	8000	600	3050
6	Tcol-MPN (MPN/100mL)	10	9000	1500	4830
	TRACE & TOXIC				
1	As (µg/L)	3	3.0	0.5	1.5
2	Cr (µg/L)	3	88.3	4.0	47.6
3	Cu (µg/L)	3	10.0	4.4	6.4
4	Ni (µg/L)	3	18.0	0.6	7.8
5	Pb (µg/L)	3	4.6	0.0	1.7
6	Zn (µg/L)	3	21.0	4.8	12.1
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	116	69	95
2	HAR_Total (mgCaCO3/L)	12	206	129	173
3	Na% (%)	12	10	6	8
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.3	0.2	0.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	604.3	1356	1278	918.4	1035	653.0	687.5	1273	504.4	402.7	
2	EC_FLD (µmho/cm)							250				
3	EC_GEN (µmho/cm)	311	256	291	290	278	220	245	308	306	304	237
4	pH_FLD (pH units)		7.0	7.0	8.0		7.0	7.6				8.2
5	pH_GEN (pH units)	8.0	7.9	8.0	8.0	8.0	7.8	8.0	8.3	8.4	8.4	8.2
6	TDS (mg/L)			198	194	167	127	147	199	190	180	148
7	Temp (deg C)	31.0	28.8	27.8	26.9	26.6	26.4	26.9	27.3	29.8	28.6	30.1
8	Turb (NTU)											3.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.4	5.8	5.7	2.0	4.0	3.2	2.4	5.6	6.4	6.4	2.4
2	ALK-TOT (mgCaCO3/L)	136	167	283	168	145	117	139	149	109	134	141
3	B (mg/L)	0.05	0.09	0.16	0.14	0.13	0.15	0.15	0.20	0.21	0.18	0.18
4	Ca (mg/L)	29	31	35	37	32	28	31	31	23	36	36
5	Cl (mg/L)	10.2	10.9	14.9	14.8	17.7	12.1	13.6	15.3	20.3	12.5	10.4
6	CO3 (mg/L)	2.9	7.0	6.9	2.4	4.8	3.8	2.9	6.7	7.7	7.7	2.9
7	F (mg/L)	0.15	0.14	0.13	0.15	0.14	0.13	0.14	0.17	0.19	0.27	0.29
8	Fe (mg/L)	74.5	0.2				0.1					0.6
9	HCO3 (mg/L)	160	130	182	200	167	135	164	168	117	148	166
10	K (mg/L)	8.1	3.6	4.1	4.8	4.5	4.6	5.6	4.8	4.4	4.1	4.6
11	Mg (mg/L)	11.9	10.6	8.7	18.5	17.5	13.8	19.8	18.2	17.3	16.5	16.9
12	Na (mg/L)	16.3	8.3	8.4	11.8	11.8	7.7	8.6	10.3	7.8	7.1	6.1
13	NH3-N (mg N/L)				0.07	0.15	0.52	0.54	0.29	0.39	0.31	0.32
14	NO2+NO3 (mg N/L)			0.11	0.10	0.09	0.98	1.18	0.60	0.39	0.49	0.53
15	NO2-N (mgN/L)	0.01	0.04	0.05	0.06	0.04	0.14	0.14	0.23	0.02	0.03	0.13
16	NO3-N (mgN/L)			0.06	0.04	0.05	0.84	1.04	0.37	0.38	0.46	0.40
17	o-PO4-P (mg P/L)	0.000	0.000	0.000	0.047	0.072	0.145	0.273	0.322	0.482	0.277	
18	P-Tot (mgP/L)				0.098							0.311
19	SiO2 (mg/L)	10.7	9.9	8.8	6.8	5.5						
20	SO4 (mg/L)	26.9	19.0	15.9	17.5	13.7	11.7	14.8	17.3	15.8	18.4	15.6
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.0	1.1	0.9	1.0	1.2	0.9	1.7	1.9
2	COD (mg/L)					6.0	6.0	6.8	7.6	5.2	7.2	8.6
3	DO (mg/L)				7.1	7.4	7.4	7.3	6.8	6.7	6.5	6.6
4	DO_SAT% (%)				88	92	92	91	86	88	84	87
5	FCol-MPN (MPN/100mL)											4200
6	Tcol-MPN (MPN/100mL)											5400
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											88.3
4	Cu (µg/L)											4.9
5	Ni (µg/L)											4.8
6	Pb (µg/L)											
7	Zn (µg/L)											4.8
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	72	79	88	92	80	71	77	78	59	90	91
2	HAR_Total (mgCaCO3/L)	122	123	124	169	153	128	159	154	131	159	162
3	Na% (%)	22	13	13	13	13	11	10	12	11	9	7
4	RSC (-)	0.3	0.1	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.7	0.3	0.3	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Winter										
		Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	94.09	281.3	122.6	122.4	159.4	168.0	140.4	195.1	277.4	113.3	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	329	811	340	355	343	320	368	420	415	320	300
4	pH_FLD (pH units)				7.0	7.0	7.7					8.0
5	pH_GEN (pH units)	7.9	7.8	7.9	8.3	7.9	7.9	8.0	8.3	8.5	8.3	8.3
6	TDS (mg/L)			204	223	210	182	221	273	226	199	182
7	Temp (deg C)	21.8	19.3	21.4	21.5	21.9	21.1	20.6	20.0	19.6	19.1	19.8
8	Turb (NTU)											2.1
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.0	13.7	8.7	3.7	0.0	2.0	0.0	8.0	14.9	4.0	2.0
2	ALK-TOT (mgCaCO3/L)	133	404	358	153	119	189	138	135	178	187	157
3	B (mg/L)	0.02	0.15	0.14	0.16	0.16	0.17	0.16	0.19	0.21	0.19	0.19
4	Ca (mg/L)	32	57	36	38	27	37	30	31	51	44	38
5	Cl (mg/L)	15.4	84.1	12.5	13.0	13.0	12.1	14.0	15.0	19.0	11.5	11.0
6	CO3 (mg/L)	2.4	16.5	10.5	4.5	0.0	2.4	0.0	7.2	18.0	4.8	2.4
7	F (mg/L)	0.17	0.18	0.14	0.17	0.16	0.12	0.16	0.18	0.26	0.31	0.29
8	Fe (mg/L)	0.1	0.2									0.3
9	HCO3 (mg/L)	157	288	238	177	145	226	168	148	181	218	187
10	K (mg/L)	5.1	21.6	3.6	3.5	4.6	4.6	5.7	3.8	3.0	5.5	4.7
11	Mg (mg/L)	12.1	17.6	16.8	16.8	17.0	25.0	19.1	19.9	19.6	23.2	20.1
12	Na (mg/L)	12.8	19.4	11.6	12.2	6.8	9.0	8.2	8.5	12.1	6.8	6.9
13	NH3-N (mg N/L)				0.11	0.15	0.64	0.48	0.34	0.33	0.33	0.30
14	NO2+NO3 (mg N/L)			0.10	0.08	0.09	0.48	0.47	0.58	0.48	0.51	0.39
15	NO2-N (mgN/L)	0.05	0.23	0.05	0.04	0.04	0.15	0.09	0.26	0.05	0.04	0.00
16	NO3-N (mgN/L)			0.05	0.04	0.04	0.33	0.38	0.32	0.42	0.47	0.39
17	o-PO4-P (mg P/L)	0.000	0.158	0.000	0.152	0.132	0.119	0.385	0.307	0.369	0.333	
18	P-Tot (mgP/L)			0.026	0.175							0.354
19	SiO2 (mg/L)	11.7	19.5	7.5	5.9	6.4						
20	SO4 (mg/L)	27.6	85.8	6.2	17.8	18.0	12.1	17.9	17.8	19.4	19.1	15.4
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.4	0.9	0.9	0.9	1.1	0.8	1.7	1.7
2	COD (mg/L)					4.8	8.3	5.5	5.0	4.0	9.0	7.8
3	DO (mg/L)			7.2	7.2	7.7	7.4	7.3	7.1	7.0	6.7	7.2
4	DO_SAT% (%)			78	80	88	83	81	77	76	72	78
5	FCol-MPN (MPN/100mL)											3375
6	Tcol-MPN (MPN/100mL)											4650
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											50.4
4	Cu (µg/L)											4.4
5	Ni (µg/L)											
6	Pb (µg/L)											4.6
7	Zn (µg/L)											10.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	80	143	90	96	68	93	74	77	128	110	95
2	HAR_Total (mgCaCO3/L)	130	217	160	165	139	197	154	160	210	206	178
3	Na% (%)	17	13	14	13	9	9	10	10	11	7	8
4	RSC (-)	0.1	1.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : REGAULI (GGU30H1) | **River Water** | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	48.59	54.52	38.42	41.33	64.25	83.32	65.21	114.4	140.4	33.67	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	354	219	354	390	350	380	383	450	350	343	320
4	pH_FLD (pH units)			7.0	7.0		8.0					8.2
5	pH_GEN (pH units)	8.1	8.0	8.0	8.3	8.1	8.1	8.0	8.3	8.8	8.2	8.2
6	TDS (mg/L)			255	238	210	222	247	280	195	207	196
7	Temp (deg C)	23.8	23.7	24.8	25.7	25.3	22.8	25.3	23.7	25.8	25.5	25.2
8	Turb (NTU)											0.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	8.1	10.0	4.0	0.0	5.3	0.0	2.7	15.9	1.3	2.7
2	ALK-TOT (mgCaCO3/L)	264	220	224	161	124	211	163	153	161	180	169
3	B (mg/L)	0.02	0.21	0.07	0.15	0.17	0.16	0.17	0.20	0.21	0.19	0.19
4	Ca (mg/L)	36	45	33	34	26	36	34	31	38	37	40
5	Cl (mg/L)	18.7	29.8	16.0	17.3	16.0	14.7	22.7	21.4	14.7	15.4	14.0
6	CO3 (mg/L)	4.8	9.7	12.0	4.8	0.0	6.4	0.0	3.2	19.2	1.6	3.2
7	F (mg/L)	0.07	0.18	0.14	0.16	0.14	0.16	0.16	0.18	0.16	0.34	0.30
8	Fe (mg/L)	0.2	0.3								1.0	0.3
9	HCO3 (mg/L)	156	248	249	187	151	244	198	181	158	216	200
10	K (mg/L)	3.8	5.0	5.0	4.8	6.0	6.9	6.4	4.7	4.0	5.7	6.4
11	Mg (mg/L)	14.4	14.4	15.1	20.4	18.2	27.2	21.3	21.3	20.0	26.2	20.4
12	Na (mg/L)	9.6	9.2	12.7	13.5	8.7	11.3	13.1	11.5	9.5	8.7	8.6
13	NH3-N (mg N/L)				0.14	0.16	0.62	0.40	0.37	0.34	0.34	0.31
14	NO2+NO3 (mg N/L)			0.11	0.09	0.29	0.65	0.59	0.48	0.48	0.54	0.49
15	NO2-N (mgN/L)	0.05	0.08	0.05	0.05	0.12	0.15	0.20	0.17	0.00	0.10	0.12
16	NO3-N (mgN/L)			0.06	0.04	0.17	0.50	0.40	0.32	0.47	0.44	0.37
17	o-PO4-P (mg P/L)	0.000	0.000		0.196	0.127	0.234	0.369	0.279	0.265	0.379	
18	P-Tot (mgP/L)			0.033	0.200							0.392
19	SiO2 (mg/L)	11.9	11.3	6.7	5.9	6.3						
20	SO4 (mg/L)	28.8	18.9	15.0	16.6	18.7	10.1	19.7	22.1	14.1	17.6	17.3
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)			0.6	1.1	0.7	1.1	0.9	1.2	1.2	1.6	2.6
2	COD (mg/L)					6.7	13.3	14.0	8.0	6.7	9.7	7.3
3	DO (mg/L)			7.2	7.3	7.3	7.2	6.9	6.5	6.9	6.7	5.5
4	DO_SAT% (%)			86	88	89	83	84	76	84	82	66
5	FCol-MPN (MPN/100mL)											1467
6	Tcol-MPN (MPN/100mL)											4500
	TRACE & TOXIC											
1	As (µg/L)										1.0	3.0
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	4.0
4	Cu (µg/L)										1.0	10.0
5	Ni (µg/L)										1.0	18.0
6	Pb (µg/L)										1.0	
7	Zn (µg/L)										1.0	21.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	89	113	83	85	66	90	86	79	96	93	100
2	HAR_Total (mgCaCO3/L)	149	173	146	169	142	203	175	167	179	202	185
3	Na% (%)	12	10	15	14	11	11	14	13	11	8	9
4	RSC (-)	0.0	0.9	1.6	0.1	0.0	0.3	0.0	0.1	0.0	0.0	0.0
5	SAR (-)	0.3	0.3	0.5	0.5	0.3	0.3	0.4	0.4	0.3	0.3	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood										
		Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1860	1757	1880								
2	pH_GEN (pH units)	8.1	7.7	7.7								
3	TDS (mg/L)			398								
4	Temp (deg C)	26.0	27.2	25.8								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	19.1	29.0	16.9								
2	ALK-TOT (mgCaCO3/L)	903	809	939								
3	B (mg/L)	0.21	0.14	0.24								
4	Ca (mg/L)	81	83	104								
5	Cl (mg/L)	194.0	201.5	270.2								
6	CO3 (mg/L)	23.0	34.9	20.4								
7	F (mg/L)			0.11								
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	527	458	552								
10	K (mg/L)	26.4	52.0	50.0								
11	Mg (mg/L)	36.3	26.4	28.8								
12	Na (mg/L)	13.8	35.7	32.7								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)											
15	NO2-N (mgN/L)	0.14	0.55	0.68								
16	NO3-N (mgN/L)											
17	o-PO4-P (mg P/L)	0.453	0.468	0.465								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	25.2	33.3	52.0								
20	SO4 (mg/L)	175.1	170.4	255.8								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	202	207	260								
2	HAR_Total (mgCaCO3/L)	353	317	380								
3	Na% (%)	7	17	13								
4	RSC (-)	2.4	2.4	2.2								
5	SAR (-)	0.3	0.9	0.7								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Winter										
		Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1336	2035	2130	940	1390	1460					
2	pH_GEN (pH units)	7.7	7.8	7.7	7.4	7.6	7.6					
3	TDS (mg/L)			392	560	850	880					
4	Temp (deg C)	20.3	18.0	24.0	27.0	25.0	26.0					
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	16.9	28.9	13.9	0.0	0.0	4.0					
2	ALK-TOT (mgCaCO3/L)	828	989	300	260	272	320					
3	B (mg/L)	0.20	0.17		0.19	0.16	0.12					
4	Ca (mg/L)	95	94	67	72	84	77					
5	Cl (mg/L)	214.5	225.1	280.1	120.0	263.8	284.0					
6	CO3 (mg/L)	20.4	34.8	16.8	0.0	0.0	4.8					
7	F (mg/L)			0.22	0.21	0.19	0.11					
8	Fe (mg/L)	0.3	0.3									
9	HCO3 (mg/L)	484	568	166	317	331	381					
10	K (mg/L)	38.6	62.2	105.2	14.1	129.4	141.5					
11	Mg (mg/L)	31.7	27.6	24.1	29.9	40.2	44.3					
12	Na (mg/L)	24.0	45.0	98.9	46.0	92.9	89.5					
13	NH3-N (mg N/L)				0.20	0.18	0.60					
14	NO2+NO3 (mg N/L)				0.14	0.17	0.53					
15	NO2-N (mgN/L)	0.23	0.59	0.66	0.04	0.11	0.33					
16	NO3-N (mgN/L)				0.10	0.06	0.20					
17	o-PO4-P (mg P/L)	0.576	0.481	0.393	0.289	0.248	0.176					
18	P-Tot (mgP/L)				0.290							
19	SiO2 (mg/L)	33.0	41.0	44.0	28.0	26.5						
20	SO4 (mg/L)	40.1	239.0	229.9	12.5	96.5	31.2					
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	237	235	168	181	211	194					
2	HAR_Total (mgCaCO3/L)	369	350	268	305	378	378					
3	Na% (%)	11	19	35	24	27	26					
4	RSC (-)	1.3	3.5	0.0	0.0	0.0	0.0					
5	SAR (-)	0.5	1.0	2.6	1.1	2.1	2.0					
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : REGAULI (GGU30H1) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Summer										
		Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1350	1993	1310								
2	pH_GEN (pH units)	7.7	7.8	7.9								
3	TDS (mg/L)			576								
4	Temp (deg C)	22.8	22.3	26.5								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	18.6	32.2	4.0								
2	ALK-TOT (mgCaCO3/L)	824	1022	389								
3	B (mg/L)	0.22	0.22	0.17								
4	Ca (mg/L)	95	101	52								
5	Cl (mg/L)	205.3	249.9	62.1								
6	CO3 (mg/L)	22.4	38.8	4.8								
7	F (mg/L)	0.02		0.15								
8	Fe (mg/L)	0.3	0.4									
9	HCO3 (mg/L)	480	584	465								
10	K (mg/L)	46.1	68.7	51.2								
11	Mg (mg/L)	33.0	31.2	32.9								
12	Na (mg/L)	30.0	48.7	71.3								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)			0.15								
15	NO2-N (mgN/L)	0.27	0.64	0.07								
16	NO3-N (mgN/L)			0.08								
17	o-PO4-P (mg P/L)	0.592	0.510									
18	P-Tot (mgP/L)			0.410								
19	SiO2 (mg/L)	38.7	48.0	33.0								
20	SO4 (mg/L)	44.8	247.4	39.8								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	237	253	129								
2	HAR_Total (mgCaCO3/L)	374	383	266								
3	Na% (%)	13	18	32								
4	RSC (-)	1.2	3.2	2.5								
5	SAR (-)	0.7	1.1	1.9								
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**BIRDGHAT**	**Code**	:	**GGU30F5**
State	:	Uttar Pradesh	District		Gorakhpur
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	Rapti
Sub-Sub Tributary	:		Local River	:	Rapti
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	L Rapti Ghaghra SD, Turkmanpur
Drainage Area	:	20093 Sq. Km.	Bank	:	Left
Latitude	:	26°46'46"	Longitude	:	83°21'21"
		Opening Date	Closing Date		
Gauge	:	4/26/1959			
Discharge	:	4/26/1959			
Sediment	:	1/1/1963			
Water Quality	:	4/1/1962			

Water Quality Datasheet for the period : 2016-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Brown	Brown	Brown	Brown	Light Brown	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	340	194	220	270	220	310	330	350	330	300	385	357
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	8.0	8.0	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
6	pH_GEN (pH units)	8.4	8.0	8.0	8.5	8.0	8.2	8.2	8.4	8.4	8.4	8.2	8.2
7	TDS (mg/L)	210	121	137	168	139	190	200	220	196	190	231	218
8	Temp (deg C)	28.5	28.5	26.0	25.0	27.0	25.0	23.0	19.5	20.0	21.0	22.5	25.0
9	Turb (NTU)	1.8	3.6	4.1	5.8	5.1	3.0	1.5	1.3	0.8	0.6	0.8	0.8
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	8.0	0.0	0.0	8.0	0.0	0.0	0.0	8.0	4.0	4.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	180	132	116	136	140	188	184	160	164	176	184	172
3	B (mg/L)	0.20	0.18	0.17	0.18	0.18	0.20	0.19	0.20	0.20	0.19	0.23	0.20
4	Ca (mg/L)	48	36	33	34	36	50	43	40	38	43	48	45
5	Cl (mg/L)	16.0	9.9	9.9	10.0	10.0	12.0	12.0	12.0	12.0	14.0	19.0	16.0
6	CO3 (mg/L)	9.6	0.0	0.0	9.6	0.0	0.0	0.0	9.6	4.8	4.8	0.0	0.0
7	F (mg/L)	0.44	0.30	0.21	0.26	0.23	0.28	0.31	0.30	0.33	0.33	0.40	0.36
8	Fe (mg/L)			0.2				0.3				0.3	
9	HCO3 (mg/L)	200	161	142	146	171	229	224	176	190	205	224	210
10	K (mg/L)	5.9	4.7	4.3	4.5	4.0	5.1	4.7	5.8	6.5	7.7	8.2	7.9
11	Mg (mg/L)	21.6	15.4	14.5	16.5	17.5	21.7	23.7	20.6	21.7	21.7	25.8	23.7
12	Na (mg/L)	10.6	6.2	5.3	5.7	5.2	7.8	7.3	7.2	8.5	9.1	12.0	10.2
13	NH3-N (mg N/L)	0.41	0.31	0.29	0.31	0.33	0.32	0.32	0.32	0.34	0.31	0.37	0.34
14	NO2+NO3 (mg N/L)	0.68	0.57	0.53	0.51	0.59	0.47	0.47	0.47	0.59	0.52	0.63	0.58
15	NO2-N (mgN/L)	0.19	0.17	0.15	0.14	0.21	0.13	0.13	0.09	0.11	0.10	0.17	0.14
16	NO3-N (mgN/L)	0.49	0.41	0.38	0.37	0.38	0.34	0.34	0.38	0.49	0.43	0.46	0.44
17	P-Tot (mgP/L)	0.320	0.350	0.280	0.290	0.345	0.325	0.380	0.390	0.410	0.430	0.455	0.440
18	SO4 (mg/L)	18.7	15.4	14.9	15.6	15.9	16.5	15.8	15.6	16.2	17.1	21.0	19.4
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	2.6	1.8	2.2	2.0	1.8	1.2	1.8	2.4	2.2	2.2	2.4	3.5
2	COD (mg/L)	13.0	9.0	8.0	7.0	9.0	7.0	9.0	10.0	8.0	7.0	5.0	5.0
3	DO (mg/L)	6.3	6.3	6.1	6.7	6.9	6.3	6.9	6.3	6.7	6.3	4.3	4.5
4	DO_SAT% (%)	80	80	75	81	86	76	80	68	73	70	49	55
5	FCol-MPN (MPN/100mL)			800	2500	3500	5000	1900	1600	11000	2500	1000	3000
6	Tcol-MPN (MPN/100mL)			8000	15000	5000	7000	5000	4700	16000	3000	2200	6000
	TRACE & TOXIC												
1	As (µg/L)			1.1				1.2				4.0	
2	Cr (µg/L)			109.2				68.6				16.0	
3	Cu (µg/L)			4.6				4.9				7.0	
4	Ni (µg/L)			5.4				0.1				13.0	
5	Pb (µg/L)			0.6				2.3				1.0	
6	Zn (µg/L)			5.4				11.1				26.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	121	91	82	86	90	125	108	99	95	108	120	112
2	HAR_Total (mgCaCO3/L)	211	155	142	155	163	215	206	185	185	198	228	211
3	Na% (%)	10	8	7	7	6	7	7	8	9	9	10	9
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
	PESTICIDES												

Water Quality Summary for the period : 2016-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	385	194	301
3	pH_FLD (pH units)	12	8.5	8.0	8
4	pH_GEN (pH units)	12	8.5	8.0	8.2
5	TDS (mg/L)	12	231	121	185
6	Temp (deg C)	12	28.5	19.5	24.3
7	Turb (NTU)	12	5.8	0.6	2.4
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	2.7
2	ALK-TOT (mgCaCO3/L)	12	188	116	161
3	B (mg/L)	12	0.23	0.17	0.19
4	Ca (mg/L)	12	50	33	41
5	Cl (mg/L)	12	19.0	9.9	12.7
6	CO3 (mg/L)	12	9.6	0.0	3.2
7	F (mg/L)	12	0.44	0.21	0.31
8	Fe (mg/L)	3	0.3	0.2	0.3
9	HCO3 (mg/L)	12	229	142	190
10	K (mg/L)	12	8.2	4.0	5.8
11	Mg (mg/L)	12	25.8	14.5	20.4
12	Na (mg/L)	12	12.0	5.2	7.9
13	NH3-N (mg N/L)	12	0.41	0.29	0.33
14	NO2+NO3 (mg N/L)	12	0.68	0.47	0.55
15	NO2-N (mgN/L)	12	0.21	0.09	0.14
16	NO3-N (mgN/L)	12	0.49	0.34	0.41
17	P-Tot (mgP/L)	12	0.455	0.280	0.368
18	SO4 (mg/L)	12	21.0	14.9	16.8
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	3.5	1.2	2.1
2	COD (mg/L)	12	13.0	5.0	8.1
3	DO (mg/L)	12	6.9	4.3	6.1
4	DO_SAT% (%)	12	86	49	73
5	FCol-MPN (MPN/100mL)	10	11000	800	3280
6	Tcol-MPN (MPN/100mL)	10	16000	2200	7190
	TRACE & TOXIC				
1	As (µg/L)	3	4.0	1.1	2.1
2	Cr (µg/L)	3	109.2	16.0	64.6
3	Cu (µg/L)	3	7.0	4.6	5.5
4	Ni (µg/L)	3	13.0	0.1	6.2
5	Pb (µg/L)	3	2.3	0.6	1.3
6	Zn (µg/L)	3	26.0	5.4	14.2
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	125	82	103
2	HAR_Total (mgCaCO3/L)	12	228	142	188
3	Na% (%)	12	10	6	8
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.3	0.2	0.3
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	546.9	1947	1361	957.9	782.1	351.8	394.6	1146	473.1	242.9	
2	EC_FLD (µmho/cm)	662	350					310				
3	EC_GEN (µmho/cm)	279	267	289	285	264	232	245	300	324	320	249
4	pH_FLD (pH units)	7.2	7.9					8.0				8.1
5	pH_GEN (pH units)	8.2	8.0	8.0	7.9	7.9	7.7	7.9	8.1	8.2	8.3	8.2
6	TDS (mg/L)			196	193	158	135	148	193	194	187	155
7	Temp (deg C)	30.3	26.1	25.7	25.3	24.2	19.8	20.5	20.6	29.0	24.8	27.0
8	Turb (NTU)											4.1
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.8	3.6	5.7	2.0	5.6	1.6	1.6	4.8	4.8	5.6	3.2
2	ALK-TOT (mgCaCO3/L)	128	242	258	174	136	128	138	143	106	130	141
3	B (mg/L)	0.03	0.08	0.16	0.15	0.14	0.17	0.15	0.19	0.21	0.18	0.18
4	Ca (mg/L)	13	34	37	36	31	28	30	32	24	36	38
5	Cl (mg/L)	11.0	14.9	16.0	14.3	14.4	12.9	13.6	14.5	19.2	15.1	11.2
6	CO3 (mg/L)	3.4	5.8	6.9	2.4	6.7	1.9	1.9	5.8	5.8	6.7	3.8
7	F (mg/L)	0.20	0.08	0.13	0.14	0.13	0.10	0.13	0.18	0.21	0.27	0.29
8	Fe (mg/L)	0.1	0.2				0.1					0.2
9	HCO3 (mg/L)	149	176	194	207	152	152	165	163	118	145	164
10	K (mg/L)	8.7	3.6	4.1	4.8	3.8	5.6	6.3	4.8	4.4	4.6	4.7
11	Mg (mg/L)	14.6	5.4	6.3	18.4	16.9	15.5	20.6	18.9	17.1	15.5	17.1
12	Na (mg/L)	16.8	8.1	8.6	11.9	8.3	9.0	9.4	10.3	7.0	9.2	6.6
13	NH3-N (mg N/L)				0.06	0.17	0.60	0.54	0.29	0.35	0.32	0.33
14	NO2+NO3 (mg N/L)			0.18	0.10	0.11	0.95	1.41	0.60	0.40	0.50	0.58
15	NO2-N (mgN/L)	0.01	0.04	0.05	0.06	0.05	0.15	0.39	0.24	0.02	0.04	0.17
16	NO3-N (mgN/L)			0.13	0.04	0.06	0.80	1.02	0.36	0.38	0.46	0.41
17	o-PO4-P (mg P/L)	0.072	0.031	0.027	0.036	0.089	0.163	0.316	0.324	0.436	0.289	
18	P-Tot (mgP/L)				0.082							0.317
19	SiO2 (mg/L)	8.0	9.7	8.8	7.2	5.8						
20	SO4 (mg/L)	37.1	17.5	15.6	15.7	13.4	10.8	16.0	18.8	15.6	19.0	16.1
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.0	1.1	0.9	1.2	1.2	1.0	2.2	2.0
2	COD (mg/L)						30.6	9.2	7.4	7.2	9.4	9.2
3	DO (mg/L)	6.9	6.6	6.3	7.1	8.4	8.1	7.9	7.0	6.7	6.3	6.4
4	DO_SAT% (%)	91	81	78	86	99	89	87	77	87	75	80
5	FCol-MPN (MPN/100mL)											2267
6	Tcol-MPN (MPN/100mL)											9333
	TRACE & TOXIC											
1	As (µg/L)											1.1
2	Cd (µg/L)											
3	Cr (µg/L)											109.2
4	Cu (µg/L)											4.6
5	Ni (µg/L)											5.4
6	Pb (µg/L)											
7	Zn (µg/L)											5.4
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	32	86	92	91	78	71	76	79	59	89	94
2	HAR_Total (mgCaCO3/L)	93	108	118	168	148	135	162	158	131	154	165
3	Na% (%)	28	14	14	13	11	12	11	12	10	11	8
4	RSC (-)	0.8	0.9	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.8	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	73.70	145.3	100.4	130.6	162.8	126.9	162.6	265.0	153.8	245.8	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	429	215	327	375	338	330	355	405	433	340	330
4	pH_FLD (pH units)						8.0					8.0
5	pH_GEN (pH units)	8.3	8.1	8.1	8.4	7.8	8.0	8.0	8.4	8.4	8.3	8.3
6	TDS (mg/L)			199	233	205	188	215	263	241	213	202
7	Temp (deg C)	20.0	16.8	17.0	15.0	20.5	13.4	13.1	17.1	19.3	24.3	21.9
8	Turb (NTU)											1.6
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	8.5	7.5	7.5	0.0	1.0	0.0	6.0	19.9	6.0	3.0
2	ALK-TOT (mgCaCO3/L)	138	218	273	160	117	180	137	134	174	201	174
3	B (mg/L)	0.02	0.14	0.13	0.15	0.16	0.15	0.18	0.18	0.21	0.19	0.19
4	Ca (mg/L)	21	42	36	43	28	39	30	32	49	49	43
5	Cl (mg/L)	21.0	27.5	12.5	15.0	14.0	15.0	16.0	15.0	20.9	12.1	12.0
6	CO3 (mg/L)	4.8	10.2	9.0	9.0	0.0	1.2	0.0	7.2	24.0	7.2	3.6
7	F (mg/L)	0.18	0.11	0.15	0.16	0.15	0.16	0.17	0.19	0.26	0.32	0.30
8	Fe (mg/L)	0.1	0.2									0.3
9	HCO3 (mg/L)	159	246	314	177	143	217	167	149	163	231	205
10	K (mg/L)	5.2	4.1	3.2	3.2	4.8	4.7	5.9	4.4	3.7	5.5	5.5
11	Mg (mg/L)	10.8	12.0	17.4	13.9	16.0	21.4	19.3	20.1	20.6	24.2	21.9
12	Na (mg/L)	11.2	8.3	11.6	29.6	7.0	9.5	8.7	8.7	12.8	7.1	7.7
13	NH3-N (mg N/L)				0.06	0.16	0.65	0.45	0.37	0.31	0.34	0.32
14	NO2+NO3 (mg N/L)			0.14	0.09	0.09	0.63	0.46	0.56	0.45	0.54	0.50
15	NO2-N (mgN/L)	0.05	0.06	0.05	0.04	0.05	0.17	0.10	0.27	0.02	0.06	0.11
16	NO3-N (mgN/L)			0.09	0.05	0.04	0.47	0.36	0.29	0.43	0.48	0.39
17	o-PO4-P (mg P/L)	0.031	0.031	0.007	0.129	0.134	0.124	0.403	0.333	0.357	0.338	
18	P-Tot (mgP/L)			0.011	0.150							0.376
19	SiO2 (mg/L)	9.8	10.5	6.1	6.4	5.9						
20	SO4 (mg/L)	26.0	11.8	9.2	14.6	18.4	12.1	14.1	18.6	21.2	19.4	16.0
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.5	0.9	1.0	1.1	1.2	1.5	1.7	1.9
2	COD (mg/L)					3.0	11.3	10.0	7.3	7.5	8.5	8.5
3	DO (mg/L)	6.8	6.8	7.0	7.0	8.6	8.7	7.5	6.9	6.2	6.8	6.5
4	DO_SAT% (%)	75	70	72	69	96	84	72	72	68	80	74
5	FCol-MPN (MPN/100mL)											4875
6	Tcol-MPN (MPN/100mL)											8175
	TRACE & TOXIC											
1	As (µg/L)											1.2
2	Cd (µg/L)											
3	Cr (µg/L)											68.6
4	Cu (µg/L)											4.9
5	Ni (µg/L)											
6	Pb (µg/L)											2.3
7	Zn (µg/L)											11.1
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	53	105	90	108	70	98	74	81	122	122	106
2	HAR_Total (mgCaCO3/L)	98	155	162	165	137	187	155	164	208	222	198
3	Na% (%)	19	10	14	22	10	10	10	10	11	6	8
4	RSC (-)	0.8	1.3	2.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.3	0.4	1.0	0.3	0.3	0.3	0.3	0.4	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	46.87	48.88	41.19	56.37	65.88	66.22	96.05	75.07	76.33	171.9	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	352	225	362	417	370	407	383	460	437	400	347
4	pH_FLD (pH units)						7.8	8.0				8.0
5	pH_GEN (pH units)	7.9	8.2	8.1	8.2	8.0	8.0	8.1	8.2	8.8	8.1	8.3
6	TDS (mg/L)			236	253	237	236	247	287	247	250	213
7	Temp (deg C)	22.7	20.3	19.2	20.2	19.7	20.5	18.3	17.7	23.5	24.5	22.8
8	Turb (NTU)											0.7
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	4.7	14.9	4.0	1.3	9.3	8.0	6.6	18.6	2.7	1.3
2	ALK-TOT (mgCaCO3/L)	136	252	246	160	131	216	171	164	180	205	177
3	B (mg/L)	0.02	0.19	0.07	0.17	0.18	0.16	0.18	0.24	0.21	0.20	0.21
4	Ca (mg/L)	25	45	36	34	28	33	33	37	41	49	45
5	Cl (mg/L)	20.0	36.8	15.3	18.6	16.0	17.3	21.3	24.0	28.6	21.4	16.3
6	CO3 (mg/L)	4.8	9.7	18.0	4.8	1.6	11.2	9.6	8.0	22.4	3.2	1.6
7	F (mg/L)	0.18	0.05	0.12	0.15	0.16	0.17	0.19	0.18	0.18	0.35	0.36
8	Fe (mg/L)	0.1	0.3								1.0	0.3
9	HCO3 (mg/L)	156	292	264	185	156	241	189	184	174	244	213
10	K (mg/L)	4.0	5.0	4.3	4.4	5.2	7.2	6.8	5.2	5.6	6.8	7.9
11	Mg (mg/L)	14.1	14.4	14.1	20.6	17.9	30.9	23.4	22.0	25.1	24.4	23.7
12	Na (mg/L)	8.8	43.1	14.6	14.6	9.8	11.8	13.7	12.9	17.9	13.6	10.4
13	NH3-N (mg N/L)				0.14	0.17	0.65	0.39	0.37	0.35	0.35	0.34
14	NO2+NO3 (mg N/L)			0.13	0.09	0.29	0.70	0.63	0.69	0.50	0.56	0.58
15	NO2-N (mgN/L)	0.05	0.09	0.05	0.04	0.12	0.15	0.23	0.38	0.02	0.11	0.14
16	NO3-N (mgN/L)			0.08	0.05	0.16	0.55	0.40	0.32	0.48	0.45	0.44
17	o-PO4-P (mg P/L)	0.034	0.031		0.992	0.162	0.224	0.382	0.276	0.296	0.400	
18	P-Tot (mgP/L)			0.018	0.217							0.442
19	SiO2 (mg/L)	10.3	10.7	2.3	6.1	5.9						
20	SO4 (mg/L)	27.4	17.4	14.1	17.3	18.9	9.9	20.5	21.0	19.7	18.2	19.2
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)			0.8	1.3	1.0	1.6	0.9	1.2	2.0	2.2	2.7
2	COD (mg/L)					13.0	17.3	13.0	8.7	9.3	11.3	5.7
3	DO (mg/L)	6.3	6.6	7.2	7.6	9.1	7.3	7.3	6.4	6.3	6.5	5.0
4	DO_SAT% (%)	73	73	77	84	99	80	77	67	73	78	58
5	FCol-MPN (MPN/100mL)											2167
6	Tcol-MPN (MPN/100mL)											3733
	TRACE & TOXIC											
1	As (µg/L)										1.0	4.0
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	16.0
4	Cu (µg/L)										1.0	7.0
5	Ni (µg/L)										1.0	13.0
6	Pb (µg/L)										1.0	1.0
7	Zn (µg/L)										1.0	26.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	62	113	89	86	70	83	83	93	102	122	113
2	HAR_Total (mgCaCO3/L)	120	173	148	172	145	212	181	185	206	224	212
3	Na% (%)	13	26	17	15	12	11	14	13	16	11	9
4	RSC (-)	0.3	1.7	2.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	1.4	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood										
		Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1950	1554	1890								
2	pH_GEN (pH units)	8.0	7.6	7.2								
3	TDS (mg/L)			410								
4	Temp (deg C)	27.0	24.5	23.0								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	1.0	26.5	6.0								
2	ALK-TOT (mgCaCO3/L)	1605	830	308								
3	B (mg/L)	0.12	0.12	0.22								
4	Ca (mg/L)	76	82	104								
5	Cl (mg/L)	150.5	37.6	139.9								
6	CO3 (mg/L)	1.2	31.9	7.2								
7	F (mg/L)											
8	Fe (mg/L)	0.1	0.2									
9	HCO3 (mg/L)	977	473	181								
10	K (mg/L)	3.4	11.1	4.3								
11	Mg (mg/L)	31.7	24.1	28.8								
12	Na (mg/L)	13.8	30.9	41.2								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)											
15	NO2-N (mgN/L)	0.48	0.54	0.61								
16	NO3-N (mgN/L)											
17	o-PO4-P (mg P/L)	0.380	0.450	0.506								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	17.2	32.0	44.0								
20	SO4 (mg/L)	35.0	36.0	58.1								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	190	205	260								
2	HAR_Total (mgCaCO3/L)	323	305	380								
3	Na% (%)	8	17	19								
4	RSC (-)	9.6	2.8	0.0								
5	SAR (-)	0.3	0.8	0.9								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Winter										
		Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1323	1803	1910	900	1110						
2	pH_GEN (pH units)	7.5	7.8	7.2	7.4	7.3						
3	TDS (mg/L)			404	550	680						
4	Temp (deg C)	20.1	18.9	22.5	18.5	22.0						
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	7.0	28.9	4.0	0.0	0.0						
2	ALK-TOT (mgCaCO3/L)	1675	927	304	200	197						
3	B (mg/L)	0.04	0.15		0.17	0.19						
4	Ca (mg/L)	86	93	61	67	40						
5	Cl (mg/L)	167.0	56.3	104.0	72.1	128.2						
6	CO3 (mg/L)	8.4	34.9	4.8	0.0	0.0						
7	F (mg/L)			0.22	0.27	0.23						
8	Fe (mg/L)	0.2	0.3									
9	HCO3 (mg/L)	1013	530	181	244	240						
10	K (mg/L)	6.7	16.7	5.1	15.6	52.0						
11	Mg (mg/L)	34.6	25.2	28.8	14.5	15.4						
12	Na (mg/L)	24.8	39.0	18.2	28.5	86.5						
13	NH3-N (mg N/L)				0.15	0.20						
14	NO2+NO3 (mg N/L)				0.18	0.18						
15	NO2-N (mgN/L)	0.58	0.59	0.61	0.11	0.11						
16	NO3-N (mgN/L)				0.07	0.07						
17	o-PO4-P (mg P/L)	0.501	0.460	0.455	0.207	0.300						
18	P-Tot (mgP/L)				0.210							
19	SiO2 (mg/L)	31.0	37.0	44.0	32.0	24.7						
20	SO4 (mg/L)	25.0	42.8	54.2	13.9	38.4						
	BIOLOGICAL/BACTERIOLOGIC											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	215	233	153	168	99						
2	HAR_Total (mgCaCO3/L)	359	338	273	228	163						
3	Na% (%)	13	19	12	20	45						
4	RSC (-)	9.7	3.1	0.0	0.0	0.7						
5	SAR (-)	0.6	0.9	0.5	0.8	3.0						
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : BIRDGHAT (GGU30F5) | **Division : M Ganga Div. I, Lucknow**

Local River : Rapti | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Summer										
		Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1340	1855									
2	pH_GEN (pH units)	7.5	7.9									
3	TDS (mg/L)											
4	Temp (deg C)	17.5	17.5									
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	12.0	33.9									
2	ALK-TOT (mgCaCO3/L)	1689	1000									
3	B (mg/L)	0.05	0.21									
4	Ca (mg/L)	83	104									
5	Cl (mg/L)	167.9	85.0									
6	CO3 (mg/L)	14.4	40.8									
7	F (mg/L)	0.00										
8	Fe (mg/L)	0.2	0.4									
9	HCO3 (mg/L)	1015	568									
10	K (mg/L)	8.2	25.2									
11	Mg (mg/L)	34.0	30.0									
12	Na (mg/L)	27.1	47.0									
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)											
15	NO2-N (mgN/L)	0.61	0.64									
16	NO3-N (mgN/L)											
17	o-PO4-P (mg P/L)	0.579	0.501									
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	36.0	43.0									
20	SO4 (mg/L)	27.8	50.9									
	BIOLOGICAL/BACTERIOLOGIC											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	207	260									
2	HAR_Total (mgCaCO3/L)	348	385									
3	Na% (%)	14	20									
4	RSC (-)	10.2	3.0									
5	SAR (-)	0.6	1.0									
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**TURTIPAR**	**Code**	:	**GGU00F1**
State	:	Uttar Pradesh	District		Ballia
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	
Sub-Sub Tributary	:		Local River	:	Ghaghra
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	L Rapti Ghaghra SD, Turkmanpur
Drainage Area	:	113088 Sq. Km.	Bank	:	Right
Latitude	:	26°10'10"	Longitude	:	83°53'53"
		Opening Date	Closing Date		
Gauge	:	11/12/1962			
Discharge	:	11/22/1962			
Sediment	:	2/14/1963			
Water Quality	:	10/3/1963			

Water Quality Datasheet for the period : 2016-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Brown	Brown	Brown	Brown	Brown	Light Brown	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	260	172	188	192	200	220	240	280	290	280	348	229
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.5	8.0	8.0	8.5	8.0	8.0	8.0	8.0	8.0	7.5	8.0	8.0
6	pH_GEN (pH units)	8.5	8.1	8.2	8.5	8.1	8.3	8.1	8.3	8.4	8.4	8.2	8.1
7	TDS (mg/L)	162	107	117	119	126	136	155	175	182	172	209	140
8	Temp (deg C)	28.0	29.5	30.0	30.0	29.5	28.0	23.0	18.5	17.5	24.0	23.5	25.0
9	Turb (NTU)	1.2	4.1	4.7	5.6	6.1	5.7	2.3	1.2	0.8	0.9	0.7	0.8
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	8.0	0.0	0.0	4.0	0.0	4.0	0.0	8.0	8.0	4.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	152	112	92	108	112	144	140	148	156	152	160	168
3	B (mg/L)	0.19	0.18	0.16	0.16	0.17	0.18	0.18	0.18	0.18	0.17	0.21	0.22
4	Ca (mg/L)	38	29	28	31	31	38	33	31	34	38	46	50
5	Cl (mg/L)	13.8	9.9	8.2	8.0	8.0	10.0	10.0	10.0	10.0	12.0	9.0	19.0
6	CO3 (mg/L)	9.6	0.0	0.0	4.8	0.0	4.8	0.0	9.6	9.6	4.8	0.0	0.0
7	F (mg/L)	0.40	0.27	0.21	0.24	0.23	0.22	0.27	0.27	0.25	0.25	0.31	0.34
8	Fe (mg/L)			0.5				0.5				0.3	
9	HCO3 (mg/L)	166	137	112	122	137	166	171	161	171	176	195	205
10	K (mg/L)	4.7	3.9	3.1	3.5	3.1	3.8	3.8	5.2	5.7	5.5	6.0	6.4
11	Mg (mg/L)	19.6	14.5	11.3	14.5	13.4	17.5	20.6	18.6	19.6	17.5	24.8	26.8
12	Na (mg/L)	8.1	6.0	3.9	4.2	4.8	6.0	6.1	6.4	6.9	7.5	10.0	12.1
13	NH3-N (mg N/L)	0.37	0.29	0.28	0.29	0.31	0.30	0.29	0.30	0.29	0.29	0.31	0.32
14	NO2+NO3 (mg N/L)	0.48	0.52	0.45	0.34	0.53	0.43	0.33	0.36	0.54	0.38	0.60	0.64
15	NO2-N (mgN/L)	0.00	0.15	0.12	0.00	0.18	0.13	0.00	0.00	0.13	0.00	0.18	0.20
16	NO3-N (mgN/L)	0.48	0.36	0.32	0.34	0.35	0.30	0.33	0.36	0.42	0.38	0.42	0.44
17	P-Tot (mgP/L)	0.290	0.350	0.250	0.260	0.260	0.280	0.325	0.290	0.345	0.335	0.360	0.380
18	SO4 (mg/L)	17.3	13.9	13.9	14.0	14.6	15.6	15.0	14.7	15.0	15.6	23.0	25.0
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	1.8	1.2	1.2	1.2	1.2	1.2	1.2	1.4	1.6	2.0	2.3	1.6
2	COD (mg/L)	10.0	7.0	4.0	5.0	7.0	6.0	7.0	7.0	7.0	6.0	5.0	7.0
3	DO (mg/L)	7.1	6.7	6.7	7.1	6.9	6.9	7.3	7.1	6.7	7.3	3.9	6.1
4	DO_SAT% (%)	90	87	88	93	89	88	85	75	69	86	46	74
5	FCol-MPN (MPN/100mL)			900	10000	5000	3000	3500	4000	4000	2000	1400	1500
6	Tcol-MPN (MPN/100mL)			2700	13000	8000	4000	5000	6000	6000	4000	3000	4500
	TRACE & TOXIC												
1	As (µg/L)			1.3				2.0				0.0	
2	Cr (µg/L)			316.8				44.7				10.0	
3	Cu (µg/L)			12.7				6.2				21.0	
4	Ni (µg/L)			5.7				0.2				7.0	
5	Pb (µg/L)			0.4				1.5				0.0	
6	Zn (µg/L)			5.7				16.5				24.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	95	73	69	77	77	95	82	77	86	95	115	125
2	HAR_Total (mgCaCO3/L)	176	133	116	138	133	168	168	155	168	168	218	236
3	Na% (%)	9	9	7	6	7	7	7	8	8	9	9	10
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
	PESTICIDES												

Water Quality Datasheet for the period : 2016-2017

Station Name : TURTIPAR (GGU00F1)

Local River : Ghaghra **Well Water Analysis** **Division : M Ganga Div. I, Lucknow**

Sub-Division : L Rapti Ghaghra SD, Turkmanpur

S.No	Parameters	11/1/2016	5/1/2017
		B	B
	PHYSICAL		
1	Colour_Cod (-)	Brown	Clear
2	EC_GEN (µmho/cm)	2000	2097
3	Odour_Code (-)	odour free	odour free
4	pH_FLD (pH units)	8.5	8.0
5	pH_GEN (pH units)	7.7	7.9
6	TDS (mg/L)	1230	1248
7	Temp (deg C)	28.0	25.0
	CHEMICAL		
1	Alk-Phen (mgCaCO3/L)	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	216	244
3	B (mg/L)	0.28	0.32
4	Ca (mg/L)	100	108
5	Cl (mg/L)	154.0	162.8
6	CO3 (mg/L)	0.0	0.0
7	F (mg/L)	0.45	0.50
8	HCO3 (mg/L)	264	298
9	K (mg/L)	40.8	42.6
10	Mg (mg/L)	49.5	54.7
11	Na (mg/L)	102.6	107.2
12	NH3-N (mg N/L)	1.32	1.40
13	NO2+NO3 (mg N/L)	2.46	2.60
14	NO2-N (mgN/L)	0.36	0.40
15	NO3-N (mgN/L)	2.10	2.20
16	P-Tot (mgP/L)	0.670	0.720
17	SO4 (mg/L)	272.0	278.0
	BIOLOGICAL/BACTERIOLOGICAL		
	TRACE & TOXIC		
	CHEMICAL INDICES		
1	HAR_Ca (mgCaCO3/L)	249	271
2	HAR_Total (mgCaCO3/L)	456	499
3	Na% (%)	31	30
4	RSC (-)	0.0	0.0
5	SAR (-)	2.1	2.1
	PESTICIDES		

Water Quality Summary for the period : 2016-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	348	172	242
3	pH_FLD (pH units)	12	8.5	7.5	8
4	pH_GEN (pH units)	12	8.5	8.1	8.3
5	TDS (mg/L)	12	209	107	150
6	Temp (deg C)	12	30.0	17.5	25.5
7	Turb (NTU)	12	6.1	0.7	2.8
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	3
2	ALK-TOT (mgCaCO3/L)	12	168	92	137
3	B (mg/L)	12	0.22	0.16	0.18
4	Ca (mg/L)	12	50	28	36
5	Cl (mg/L)	12	19.0	8.0	10.7
6	CO3 (mg/L)	12	9.6	0.0	3.6
7	F (mg/L)	12	0.40	0.21	0.27
8	Fe (mg/L)	3	0.5	0.3	0.4
9	HCO3 (mg/L)	12	205	112	160
10	K (mg/L)	12	6.4	3.1	4.6
11	Mg (mg/L)	12	26.8	11.3	18.2
12	Na (mg/L)	12	12.1	3.9	6.8
13	NH3-N (mg N/L)	12	0.37	0.28	0.3
14	NO2+NO3 (mg N/L)	12	0.64	0.33	0.47
15	NO2-N (mgN/L)	12	0.20	0.00	0.09
16	NO3-N (mgN/L)	12	0.48	0.30	0.37
17	P-Tot (mgP/L)	12	0.380	0.250	0.31
18	SO4 (mg/L)	12	25.0	13.9	16.5
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	2.3	1.2	1.5
2	COD (mg/L)	12	10.0	4.0	6.5
3	DO (mg/L)	12	7.3	3.9	6.6
4	DO_SAT% (%)	12	93	46	81
5	FCol-MPN (MPN/100mL)	10	10000	900	3530
6	Tcol-MPN (MPN/100mL)	10	13000	2700	5620
	TRACE & TOXIC				
1	As (µg/L)	3	2.0	0.0	1.1
2	Cr (µg/L)	3	316.8	10.0	123.8
3	Cu (µg/L)	3	21.0	6.2	13.3
4	Ni (µg/L)	3	7.0	0.2	4.3
5	Pb (µg/L)	3	1.5	0.0	0.6
6	Zn (µg/L)	3	24.0	5.7	15.4
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	125	69	89
2	HAR_Total (mgCaCO3/L)	12	236	116	165
3	Na% (%)	12	10	6	8
4	RSC (-)	12	0.0	0.0	0
5	SAR (-)	12	0.3	0.2	0.2
	PESTICIDES				

Water Quality Summary for the period : 2016-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

Well Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	EC_GEN (µmho/cm)	2	2097	2000	2049
2	pH_FLD (pH units)	2	8.5	8.0	8.3
3	pH_GEN (pH units)	2	7.9	7.7	7.8
4	TDS (mg/L)	2	1248	1230	1239
5	Temp (deg C)	2	28.0	25.0	26.5
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	2	0.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	2	244	216	230
3	B (mg/L)	2	0.32	0.28	0.30
4	Ca (mg/L)	2	108	100	104
5	Cl (mg/L)	2	162.8	154.0	158.4
6	CO3 (mg/L)	2	0.0	0.0	0.0
7	F (mg/L)	2	0.50	0.45	0.47
8	HCO3 (mg/L)	2	298	264	281
9	K (mg/L)	2	42.6	40.8	41.7
10	Mg (mg/L)	2	54.7	49.5	52.1
11	Na (mg/L)	2	107.2	102.6	104.9
12	NH3-N (mg N/L)	2	1.40	1.32	1.36
13	NO2+NO3 (mg N/L)	2	2.60	2.46	2.53
14	NO2-N (mgN/L)	2	0.40	0.36	0.38
15	NO3-N (mgN/L)	2	2.20	2.10	2.15
16	P-Tot (mgP/L)	2	0.720	0.670	0.695
17	SO4 (mg/L)	2	278.0	272.0	275.0
	BIOLOGICAL/BACTERIOLOGICAL				
	TRACE & TOXIC				
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	2	271	249	260
2	HAR_Total (mgCaCO3/L)	2	499	456	477
3	Na% (%)	2	31	30	30
4	RSC (-)	2	0.0	0.0	0.0
5	SAR (-)	2	2.1	2.1	2.1
	PESTICIDES				

Water Quality Seasonal Average for the period: 2006-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	Q (cumec)	3829	5711	8398	4252	5378	3365	4387	7295	4660	4731	
2	EC_FLD (µmho/cm)							183				
3	EC_GEN (µmho/cm)	298	276	267	280	252	197	207	238	238	238	202
4	pH_FLD (pH units)	8.0	7.2	7.3	8.0	7.7	7.5	7.6	7.7			8.2
5	pH_GEN (pH units)	8.1	8.0	8.0	8.1	8.0	7.9	8.2	8.3	8.4	8.2	8.3
6	TDS (mg/L)			177	200	152	119	121	159	148	144	126
7	Temp (deg C)	31.1	30.2	29.1	30.4	29.3	30.4	30.2	23.9	29.2	30.9	29.4
8	Turb (NTU)											4.3
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	1.7	4.8	5.7	2.0	3.2	1.6	4.0	4.0	5.6	4.0	2.4
2	ALK-TOT (mgCaCO3/L)	100	154	200	137	129	112	121	134	107	109	115
3	B (mg/L)	0.03	0.07	0.15	0.13	0.13	0.32	0.15	0.17	0.22	0.17	0.17
4	Ca (mg/L)	27	33	34	38	30	28	30	29	25	30	31
5	Cl (mg/L)	10.8	9.4	10.9	14.7	13.6	9.7	12.9	13.6	14.4	8.8	9.6
6	CO3 (mg/L)	2.1	5.8	6.9	2.4	3.8	1.9	4.8	4.8	6.7	3.8	2.9
7	F (mg/L)	0.18	0.15	0.16	0.15	0.14	0.16	0.13	0.16	0.16	0.27	0.27
8	Fe (mg/L)	0.1	0.1				0.1					0.5
9	HCO3 (mg/L)	117	148	168	162	149	132	138	154	117	119	135
10	K (mg/L)	7.6	3.5	3.5	4.2	4.3	3.6	4.1	4.3	3.8	3.2	3.7
11	Mg (mg/L)	12.6	8.7	5.8	18.7	17.3	15.1	19.4	17.3	15.7	11.9	14.6
12	Na (mg/L)	14.8	8.1	8.5	10.3	8.3	4.6	5.6	9.2	5.8	5.0	5.4
13	NH3-N (mg N/L)				0.16	0.17	0.52	0.56	0.27	0.36	0.72	0.31
14	NO2+NO3 (mg N/L)			0.11	0.08	0.10	0.75	0.61	0.60	0.51	0.47	0.46
15	NO2-N (mgN/L)	0.04	0.05	0.05	0.03	0.04	0.14	0.15	0.23	0.16	0.03	0.09
16	NO3-N (mgN/L)			0.06	0.05	0.06	0.61	0.46	0.37	0.35	0.44	0.37
17	o-PO4-P (mg P/L)	0.004	0.029	0.025	0.036	0.087	0.101	0.324	0.293	0.502	0.269	
18	P-Tot (mgP/L)				0.126							0.282
19	SiO2 (mg/L)	2.3	6.3	8.0	6.6	5.1						
20	SO4 (mg/L)	46.9	38.1	21.2	20.1	20.4	14.6	17.8	15.6	16.3	18.0	14.7
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				0.9	0.9	0.7	0.9	1.0	1.0	1.2	1.3
2	COD (mg/L)					4.5	13.2	4.0	4.6	4.6	4.8	6.6
3	DO (mg/L)	7.0	7.1	7.2	7.4	7.7	7.5	7.5	7.3	7.2	6.8	6.9
4	DO_SAT% (%)	94	94	94	98	100	99	98	86	94	91	90
5	FCol-MPN (MPN/100mL)											5300
6	Tcol-MPN (MPN/100mL)											7900
	TRACE & TOXIC											
1	As (µg/L)											
2	Cd (µg/L)											
3	Cr (µg/L)											316.8
4	Cu (µg/L)											12.7
5	Ni (µg/L)											5.7
6	Pb (µg/L)											
7	Zn (µg/L)											5.7
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	69	83	84	95	76	70	75	71	62	76	78
2	HAR_Total (mgCaCO3/L)	121	119	108	173	148	132	155	143	127	126	139
3	Na% (%)	20	13	14	11	10	7	7	12	9	8	7
4	RSC (-)	0.2	0.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.6	0.3	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	Q (cumec)	704.6	1110	1198	2583	1203	563.4	903.7	1477	1485	648.1	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	273	254	302	313	308	273	290	340	330	290	258
4	pH_FLD (pH units)		8.0	8.0	8.0	7.6	7.6	7.5	7.5			8.0
5	pH_GEN (pH units)	8.3	8.1	8.0	8.4	8.1	8.0	7.9	8.4	8.4	8.4	8.3
6	TDS (mg/L)			180	193	185	163	192	220	182	178	162
7	Temp (deg C)	22.0	21.6	20.6	19.4	21.4	24.6	22.8	20.9	20.5	23.0	21.8
8	Turb (NTU)											2.5
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	4.0	9.7	1.7	5.0	0.0	0.0	0.0	6.0	12.0	8.0	5.0
2	ALK-TOT (mgCaCO3/L)	105	172	273	152	117	160	132	127	153	173	147
3	B (mg/L)	0.02	0.13	0.14	0.15	0.16	0.16	0.17	0.17	0.22	0.18	0.17
4	Ca (mg/L)	31	41	33	43	29	37	30	31	50	40	34
5	Cl (mg/L)	18.5	14.9	14.5	16.0	14.0	14.0	15.0	16.0	13.0	10.0	10.0
6	CO3 (mg/L)	4.8	11.7	4.5	6.0	0.0	0.0	0.0	7.2	14.4	9.6	6.0
7	F (mg/L)	0.18	0.19	0.14	0.18	0.15	0.16	0.16	0.19	0.29	0.30	0.25
8	Fe (mg/L)	0.1	0.2									0.5
9	HCO3 (mg/L)	118	186	195	173	143	195	161	140	157	192	167
10	K (mg/L)	5.5	3.9	3.3	5.6	4.8	4.0	4.6	3.8	2.9	4.9	4.6
11	Mg (mg/L)	14.2	7.8	11.9	18.1	16.5	20.6	18.8	19.8	15.7	20.7	19.1
12	Na (mg/L)	12.4	8.5	8.3	9.9	6.6	6.1	7.3	7.6	7.4	6.2	6.4
13	NH3-N (mg N/L)				0.20	0.16	0.63	0.46	0.34	0.32	0.32	0.29
14	NO2+NO3 (mg N/L)			0.11	0.76	0.08	0.59	0.44	0.56	0.51	0.45	0.41
15	NO2-N (mgN/L)	0.06	0.06	0.06	0.04	0.04	0.14	0.10	0.23	0.09	0.00	0.06
16	NO3-N (mgN/L)			0.06	0.72	0.04	0.46	0.34	0.33	0.42	0.45	0.35
17	o-PO4-P (mg P/L)	0.031	0.031	0.026	0.152	0.132	0.121	0.398	0.282	0.372	0.310	
18	P-Tot (mgP/L)				0.180							0.310
19	SiO2 (mg/L)	4.1	7.5	6.4	6.5	5.9						
20	SO4 (mg/L)	52.1	33.4	18.1	25.6	19.2	8.8	14.7	16.6	39.0	18.5	15.1
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)				1.1	0.5	0.7	0.9	1.0	1.0	1.3	1.3
2	COD (mg/L)					3.8	9.3	5.5	5.3	4.8	7.3	6.8
3	DO (mg/L)	7.3	7.3	7.1	7.5	7.5	7.5	7.9	7.3	7.3	7.2	7.0
4	DO_SAT% (%)	83	82	78	82	84	90	91	82	80	83	79
5	FCol-MPN (MPN/100mL)											3625
6	Tcol-MPN (MPN/100mL)											5250
	TRACE & TOXIC											
1	As (µg/L)											2.0
2	Cd (µg/L)											
3	Cr (µg/L)											44.7
4	Cu (µg/L)											6.2
5	Ni (µg/L)											
6	Pb (µg/L)											1.5
7	Zn (µg/L)											16.5
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	78	103	82	108	72	92	74	79	125	101	85
2	HAR_Total (mgCaCO3/L)	137	135	131	183	141	177	153	161	190	187	164
3	Na% (%)	16	12	12	10	9	7	9	9	8	7	8
4	RSC (-)	0.0	0.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **River Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	Q (cumec)	402.0	226.1	278.6	543.9	319.8	315.0	488.2	527.6	1053	231.9	
2	EC_FLD (µmho/cm)											
3	EC_GEN (µmho/cm)	323	264	327	317	333	327	297	373	300	320	286
4	pH_FLD (pH units)			8.0	8.0	7.5	7.8	7.5	7.5			7.8
5	pH_GEN (pH units)	8.0	8.2	8.1	8.3	8.2	8.1	8.2	8.4	8.7	8.3	8.2
6	TDS (mg/L)			227	189	191	187	195	230	168	197	174
7	Temp (deg C)	25.5	25.7	22.8	27.2	23.2	24.8	22.0	22.2	22.3	25.7	24.2
8	Turb (NTU)											0.8
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	2.7	8.1		8.0	3.3	2.7	10.6	12.0	9.3	2.7	1.3
2	ALK-TOT (mgCaCO3/L)	121	197		152	128	173	159	158	143	168	160
3	B (mg/L)	0.02	0.19	0.12	0.15	0.17	0.17	0.18	0.21	0.20	0.18	0.20
4	Ca (mg/L)	32	43	29	36	32	34	33	35	38	41	45
5	Cl (mg/L)	16.0	18.2	12.7	17.3	17.3	16.0	19.9	17.3	14.0	13.4	13.3
6	CO3 (mg/L)	3.2	9.7	12.0	9.6	4.0	3.2	12.8	9.6	11.2	3.2	1.6
7	F (mg/L)	0.19	0.20	0.14	0.20	0.14	0.16	0.19	0.20	0.29	0.34	0.30
8	Fe (mg/L)	0.1	0.3								1.0	0.3
9	HCO3 (mg/L)	142	221	207	166	148	205	168	176	151	198	192
10	K (mg/L)	4.3	4.4	3.8	5.1	6.1	5.6	5.7	4.7	4.0	5.2	6.0
11	Mg (mg/L)	14.1	11.2	13.7	19.6	16.8	24.4	20.6	22.0	17.9	20.7	23.1
12	Na (mg/L)	9.5	9.4	11.0	12.2	9.0	11.6	10.7	10.2	7.5	8.1	9.9
13	NH3-N (mg N/L)				0.22	0.16	0.68	0.41	0.37	0.35	0.33	0.30
14	NO2+NO3 (mg N/L)			0.10	0.08	0.30	0.57	0.62	0.57	0.54	0.54	0.54
15	NO2-N (mgN/L)	0.06	0.08	0.05	0.04	0.13	0.15	0.23	0.18	0.05	0.10	0.13
16	NO3-N (mgN/L)			0.05	0.05	0.16	0.42	0.39	0.39	0.49	0.43	0.41
17	o-PO4-P (mg P/L)	0.031	0.031	0.062	0.255	0.183	0.251	0.369	0.303	0.269	0.365	
18	P-Tot (mgP/L)				0.257							0.358
19	SiO2 (mg/L)	5.1	8.4	7.6	6.3	6.2						
20	SO4 (mg/L)	52.8	35.4	22.6	17.2	20.3	9.6	20.3	18.9	17.4	17.3	21.2
	BIOLOGICAL/BACTERIOLOGICAL											
1	BOD3-27 (mg/L)			0.4	1.0	0.8	0.8	1.1	1.1	1.3	1.4	1.9
2	COD (mg/L)					12.7	8.0	21.3	7.3	5.7	8.7	6.0
3	DO (mg/L)	7.2	7.1	7.3	7.4	7.5	7.4	8.0	7.3	7.1	6.8	5.8
4	DO_SAT% (%)	88	86	84	93	87	89	91	83	81	83	68
5	FCol-MPN (MPN/100mL)											1633
6	Tcol-MPN (MPN/100mL)											3833
	TRACE & TOXIC											
1	As (µg/L)										1.0	
2	Cd (µg/L)										1.0	
3	Cr (µg/L)										2.0	10.0
4	Cu (µg/L)										1.0	21.0
5	Ni (µg/L)										1.0	7.0
6	Pb (µg/L)										1.0	
7	Zn (µg/L)										1.0	24.0
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	79	107	73	91	80	86	83	87	96	103	111
2	HAR_Total (mgCaCO3/L)	138	153	130	172	151	188	169	179	171	189	208
3	Na% (%)	13	11	15	13	11	11	12	11	9	8	9
4	RSC (-)	0.0	0.9	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.2	0.3	0.3
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood Jun - Oct										
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	PHYSICAL											
1	EC_GEN (µmho/cm)	1813	1479	630								
2	pH_FLD (pH units)											
3	pH_GEN (pH units)	8.2	7.7	8.0								
4	TDS (mg/L)			584								
5	Temp (deg C)	29.1	27.8	29.0								
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	17.5	15.9	29.6								
2	ALK-TOT (mgCaCO3/L)	1039	889	804								
3	B (mg/L)	0.11	0.08	0.23								
4	Ca (mg/L)	62	90	108								
5	Cl (mg/L)	147.5	153.4	126.7								
6	CO3 (mg/L)	21.1	19.1	35.7								
7	F (mg/L)		0.04	0.22								
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	612	523	454								
10	K (mg/L)	16.0	30.3	53.2								
11	Mg (mg/L)	31.4	18.2	24.1								
12	Na (mg/L)	28.8	48.4	58.8								
13	NH3-N (mg N/L)											
14	NO2+NO3 (mg N/L)			0.23								
15	NO2-N (mgN/L)	0.14	0.16	0.23								
16	NO3-N (mgN/L)			0.00								
17	o-PO4-P (mg P/L)	0.147	0.196	0.217								
18	P-Tot (mgP/L)											
19	SiO2 (mg/L)	31.2	28.7	44.0								
20	SO4 (mg/L)	236.4	171.0	34.1								
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	155	225	270								
2	HAR_Total (mgCaCO3/L)	286	301	370								
3	Na% (%)	17	24	22								
4	RSC (-)	5.1	3.2	1.7								
5	SAR (-)	0.7	1.2	1.3								
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Winter Nov - Feb										
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1909	608	680	1650	1960	1970	1030	1150	1100	1860	2000
2	pH_FLD (pH units)						8.0	7.5				8.5
3	pH_GEN (pH units)	8.0	7.8	8.3	7.8	7.5	7.5	7.5	7.9	8.9	7.9	7.7
4	TDS (mg/L)			564	1010	1190	1190	620	710	600	1090	1230
5	Temp (deg C)	25.0	25.8		28.0	28.0	30.0	29.0	26.5	29.0	25.0	28.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	22.9	14.5	6.0	0.0	0.0	35.9	27.9	0.0	31.9	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1105	752	260	448	547	468	352	360	344	344	216
3	B (mg/L)	0.05	0.16	0.22	0.25	0.17	0.21	0.24	0.26	0.32	0.27	0.28
4	Ca (mg/L)	81	86	54	52	93	86	60	62	74	93	100
5	Cl (mg/L)	146.0	118.8	196.0	196.0	464.0	344.0	144.0	82.0	90.2	177.9	154.0
6	CO3 (mg/L)	27.6	17.5	7.2	0.0	0.0	43.2	33.6	0.0	38.4	0.0	0.0
7	F (mg/L)	0.00	0.06	0.00	0.19	0.28	0.15	0.18	0.32	0.34	0.51	0.45
8	Fe (mg/L)	0.2	0.2									
9	HCO3 (mg/L)	645	441	151	547	667	483	361	439	342	420	264
10	K (mg/L)	20.7	33.2	47.3	21.9	76.6	43.4	13.3	34.4	26.5	39.5	40.8
11	Mg (mg/L)	31.7	14.4	21.6	68.2	54.7	50.5	41.3	62.0	28.9	36.1	49.5
12	Na (mg/L)	36.1	46.8	41.4	170.9	370.3	261.0	145.3	60.0	98.9	114.1	102.6
13	NH3-N (mg N/L)				0.20	0.31	0.56	0.83	0.97	1.01	1.04	1.32
14	NO2+NO3 (mg N/L)			0.23	0.19	0.19	0.65	0.76	2.31	1.78	2.34	2.46
15	NO2-N (mgN/L)	0.17	0.14	0.23	0.08	0.11	0.32	0.33	0.39	0.19	0.76	0.36
16	NO3-N (mgN/L)			0.00	0.11	0.08	0.34	0.43	1.92	1.58	1.58	2.10
17	o-PO4-P (mg P/L)	0.202	0.163	0.403	0.465	0.475	0.165	0.600	0.610	1.219	1.323	
18	P-Tot (mgP/L)				0.250							0.670
19	SiO2 (mg/L)	39.0	35.5	42.0	32.0	26.0						
20	SO4 (mg/L)	390.1	24.4	30.2	22.6	157.0	68.6	67.5	105.1	63.8	67.2	272.0
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	203	215	135	129	232	215	151	155	185	232	249
2	HAR_Total (mgCaCO3/L)	336	275	225	413	460	426	323	413	305	382	456
3	Na% (%)	18	22	24	46	59	54	48	22	39	37	31
4	RSC (-)	4.8	2.3	0.0	0.8	1.8	0.9	0.6	0.0	0.8	0.0	0.0
5	SAR (-)	0.9	1.2	1.2	3.7	7.5	5.5	3.5	1.3	2.5	2.5	2.1
	PESTICIDES											

Water Quality Seasonal Average for the period: 2006-2017

Station Name : TURTIPAR (GGU00F1) | **Division : M Ganga Div. I, Lucknow**

Local River : Ghaghra | **Well Water** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Summer Mar - May										
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	PHYSICAL											
1	EC_GEN (µmho/cm)	1933	643	1120	1840	2100	2200	1610	1760	1520	990	2097
2	pH_FLD (pH units)						8.0					8.0
3	pH_GEN (pH units)	7.9	7.9	7.9	7.5	7.5	7.9	7.7	8.0	9.3	7.9	7.9
4	TDS (mg/L)			513	1120	1280	1340	1070	1090	900	570	1248
5	Temp (deg C)	24.8	26.2	26.0	29.0	25.5	25.0	25.0	25.0	24.0	26.0	25.0
	CHEMICAL											
1	Alk-Phen (mgCaCO3/L)	21.2	22.6		42.8	0.0	35.9	35.9	0.0	43.8	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	1118	1003		338	180	672	328	232	240	184	244
3	B (mg/L)	0.03	0.23	0.41	0.13	0.16	0.23	0.19	0.34	0.32	0.27	0.32
4	Ca (mg/L)	84	105	21	64	34	69	48	55	21	65	108
5	Cl (mg/L)	149.5	166.7	297.8	480.0	640.1	384.1	435.9	368.1	258.1	82.0	162.8
6	CO3 (mg/L)	25.6	27.2	7.2	51.6	0.0	43.2	43.2	0.0	52.8	0.0	0.0
7	F (mg/L)	0.03		0.19	0.19	0.28	0.13	0.27	0.17	0.28	0.38	0.50
8	Fe (mg/L)	0.2	0.3									
9	HCO3 (mg/L)	656	584	742	307	220	732	312	283	185	224	298
10	K (mg/L)	22.0	50.7	50.4	20.3	94.2	253.8	69.2	147.4	34.8	48.5	42.6
11	Mg (mg/L)	33.0	23.2	50.5	42.3	22.7	37.2	53.7	53.7	49.6	35.1	54.7
12	Na (mg/L)	40.4	66.7	70.2	368.7	402.0	287.0	268.4	242.0	205.2	55.2	107.2
13	NH3-N (mg N/L)					0.34	0.79	0.93	1.07	1.00	1.08	1.40
14	NO2+NO3 (mg N/L)			0.25	0.16	0.81	4.18	2.87	1.84	2.07	2.66	2.60
15	NO2-N (mgN/L)	0.19	0.21	0.15	0.12	0.39	0.41	0.36	0.00	0.54	0.43	0.40
16	NO3-N (mgN/L)			0.10	0.04	0.42	3.77	2.51	1.84	1.53	2.23	2.20
17	o-PO4-P (mg P/L)	0.234	0.234	0.537	0.134	0.506	0.723	0.692	0.847	0.641	0.579	
18	P-Tot (mgP/L)				0.520							0.720
19	SiO2 (mg/L)	42.0	42.7	40.0	6.8	23.2						
20	SO4 (mg/L)	384.0	30.1	87.4	120.0	87.8	59.0	69.1	311.0	159.8	194.9	278.0
	BIOLOGICAL/BACTERIOLOGICAL											
	TRACE & TOXIC											
	CHEMICAL INDICES											
1	HAR_Ca (mgCaCO3/L)	209	263	52	160	86	172	121	138	52	164	271
2	HAR_Total (mgCaCO3/L)	347	360	262	336	181	327	344	361	258	310	499
3	Na% (%)	19	26	32	69	74	49	58	49	60	25	30
4	RSC (-)	4.7	3.3	7.2	0.1	0.0	6.9	0.0	0.0	0.0	0.0	0.0
5	SAR (-)	0.9	1.5	1.9	8.8	13.1	6.9	6.3	5.6	5.6	1.4	2.1
	PESTICIDES											

HISTORY SHEET

			Water Year	:	**2016-2017**
Site	:	**BANSI**	**Code**	:	**GGU30N9**
State	:	Uttar Pradesh	District		Sidharthnagar
Basin	:	Ganga-Brahm-Meghna Basin	Independent River	:	Ganga
Tributary	:	Ghagra	Sub Tributary	:	Rapti
Sub-Sub Tributary	:		Local River	:	
Division	:	M Ganga Div. I, Lucknow	Sub-Division	:	L Rapti Ghaghra SD, Gorakhpur
Drainage Area	:	9575 Sq. Km.	Bank	:	
Latitude	:	27°11'11"	Longitude	:	82°18'18"
		Opening Date	Closing Date		
Gauge	:	6/16/1971			
Discharge	:	7/1/2014			
Sediment	:	--			
Water Quality	:	7/1/2014			

Water Quality Datasheet for the period : 2016-2017

Station Name : BANSI (GGU30N9) | **Division : M Ganga Div. I, Lucknow**

Local River : | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
	PHYSICAL												
1	Q (cumec)												
2	Colour_Cod (-)	Clear	Brown	Brown	Brown	Brown	Clear	Clear	Clear	Clear	Clear	Clear	Clear
3	EC_GEN (µmho/cm)	230	188	200	230	230	250	290	310	260	270	289	289
4	Odour_Code (-)	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free	odour free
5	pH_FLD (pH units)	8.0	8.0	8.5	8.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
6	pH_GEN (pH units)	8.4	8.1	8.3	8.6	8.1	8.3	8.1	8.4	8.3	8.4	8.1	8.1
7	TDS (mg/L)	148	117	126	146	142	154	178	190	162	168	177	177
8	Temp (deg C)	31.0	32.0	29.0	31.0	30.0	29.0	23.0	17.0	18.0	23.0	29.0	29.0
9	Turb (NTU)	1.2	3.6	4.8	5.7	5.2	1.4	1.3	1.2	0.9	0.8	0.8	0.8
	CHEMICAL												
1	Alk-Phen (mgCaCO3/L)	4.0	0.0	4.0	8.0	0.0	4.0	0.0	8.0	4.0	8.0	0.0	0.0
2	ALK-TOT (mgCaCO3/L)	148	128	104	124	132	164	148	136	152	168	164	164
3	B (mg/L)	0.19	0.18	0.16	0.17	0.18	0.19	0.18	0.18	0.17	0.18	0.18	0.18
4	Ca (mg/L)	33	31	26	33	33	38	29	31	34	33	33	33
5	Cl (mg/L)	12.1	9.9	6.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	12.0	12.0
6	CO3 (mg/L)	4.8	0.0	4.8	9.6	0.0	4.8	0.0	9.6	4.8	9.6	0.0	0.0
7	F (mg/L)	0.36	0.30	0.21	0.24	0.22	0.22	0.21	0.29	0.30	0.24	0.26	0.26
8	Fe (mg/L)			1.3				0.5				0.7	
9	HCO3 (mg/L)	171	156	117	132	161	190	181	146	176	185	200	200
10	K (mg/L)	5.1	3.9	3.1	4.1	4.2	3.9	4.3	5.1	5.2	5.5	6.1	6.1
11	Mg (mg/L)	18.6	16.5	11.3	14.5	16.5	18.6	18.6	20.6	18.6	21.7	18.6	18.6
12	Na (mg/L)	7.8	6.4	4.4	5.2	5.5	6.4	6.5	6.0	6.6	6.6	8.0	8.0
13	NH3-N (mg N/L)	0.37	0.29	0.28	0.30	0.32	0.30	0.29	0.31	0.30	0.28	0.24	0.24
14	NO2+NO3 (mg N/L)	0.48	0.54	0.46	0.49	0.37	0.32	0.34	0.37	0.46	0.47	0.47	0.47
15	NO2-N (mgN/L)	0.00	0.15	0.12	0.13	0.00	0.00	0.00	0.00	0.10	0.11	0.15	0.15
16	NO3-N (mgN/L)	0.48	0.39	0.34	0.36	0.37	0.32	0.34	0.37	0.36	0.36	0.32	0.32
17	P-Tot (mgP/L)	0.320	0.330	0.240	0.280	0.310	0.305	0.345	0.320	0.340	0.300	0.350	0.350
18	SO4 (mg/L)	1.7	15.4	14.4	14.9	15.4	15.2	15.2	15.1	15.4	15.8	16.4	16.4
	BIOLOGICAL/BACTERIOLOGICAL												

Water Quality Datasheet for the period : 2016-2017

Station Name : BANSI (GGU30N9) | **Division : M Ganga Div. I, Lucknow**

Local River : | **River Water Analysis** | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016	12/1/2016	1/2/2017	2/1/2017	3/1/2017	4/5/2017	5/1/2017
		A	A	A	A	A	A	A	A	A	A	A	A
1	BOD3-27 (mg/L)	2.2	1.4	1.0	1.8	1.6	1.0	1.4	1.8	1.0	1.4	2.4	2.4
2	COD (mg/L)	10.0	8.0	4.0	6.0	6.0	7.0	8.0	8.0	5.0	5.0	18.0	18.0
3	DO (mg/L)	7.1	6.3	6.9	6.9	7.1	7.3	7.1	7.5	6.3	6.7	4.7	5.1
4	DO_SAT% (%)	95	86	89	92	93	94	82	77	66	78	61	66
5	FCol-MPN (MPN/100mL)			300	1500	2000	3000	4000	5000	3000	1500	1600	1400
6	Tcol-MPN (MPN/100mL)			900	11000	5000	7000	10000	8000	3500	2000	2200	2500
	TRACE & TOXIC												
1	As (µg/L)			0.4				1.9				4.0	
2	Cd (µg/L)			0.1				1.2				3.0	
3	Cr (µg/L)			21.0				1.5				203.0	
4	Cu (µg/L)			8.3				3.8				9.0	
5	Ni (µg/L)			0.0				0.8				318.0	
6	Pb (µg/L)			0.6				2.6				1.0	
7	Zn (µg/L)			0.0				7.0				3.0	
	CHEMICAL INDICES												
1	HAR_Ca (mgCaCO3/L)	82	78	65	82	82	95	73	77	85	82	83	82
2	HAR_Total (mgCaCO3/L)	159	146	112	142	150	172	151	163	163	172	160	159
3	Na% (%)	9	9	8	7	7	7	8	7	8	7	9	9
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
	PESTICIDES												

Water Quality Summary for the period : 2016-2017

Station Name : BANSI (GGU30N9) | **Division : M Ganga Div. I, Lucknow**

Local River : | **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

River Water Summary

S.No	Parameters	Number of Observations	Maximum	Minimum	Mean
	PHYSICAL				
1	Q (cumec)				
2	EC_GEN (µmho/cm)	12	310	188	253
3	pH_FLD (pH units)	12	8.5	8.0	8.1
4	pH_GEN (pH units)	12	8.6	8.1	8.3
5	TDS (mg/L)	12	190	117	157
6	Temp (deg C)	12	32.0	17.0	26.8
7	Turb (NTU)	12	5.7	0.8	2.3
	CHEMICAL				
1	Alk-Phen (mgCaCO3/L)	12	8.0	0.0	3.3
2	ALK-TOT (mgCaCO3/L)	12	168	104	144
3	B (mg/L)	12	0.19	0.16	0.18
4	Ca (mg/L)	12	38	26	32
5	Cl (mg/L)	12	12.1	6.0	10.2
6	CO3 (mg/L)	12	9.6	0.0	4
7	F (mg/L)	12	0.36	0.21	0.26
8	Fe (mg/L)	3	1.3	0.5	0.8
9	HCO3 (mg/L)	12	200	117	168
10	K (mg/L)	12	6.1	3.1	4.7
11	Mg (mg/L)	12	21.7	11.3	17.7
12	Na (mg/L)	12	8.0	4.4	6.5
13	NH3-N (mg N/L)	12	0.37	0.24	0.29
14	NO2+NO3 (mg N/L)	12	0.54	0.32	0.44
15	NO2-N (mgN/L)	12	0.15	0.00	0.08
16	NO3-N (mgN/L)	12	0.48	0.32	0.36
17	P-Tot (mgP/L)	12	0.350	0.240	0.316
18	SO4 (mg/L)	12	16.4	1.7	14.3
	BIOLOGICAL/BACTERIOLOGICAL				
1	BOD3-27 (mg/L)	12	2.4	1.0	1.6
2	COD (mg/L)	12	18.0	4.0	8.6
3	DO (mg/L)	12	7.5	4.7	6.5
4	DO_SAT% (%)	12	95	61	82
5	FCol-MPN (MPN/100mL)	10	5000	300	2330
6	Tcol-MPN (MPN/100mL)	10	11000	900	5210
	TRACE & TOXIC				
1	As (µg/L)	3	4.0	0.4	2.1
2	Cd (µg/L)	3	3.0	0.1	1.4
3	Cr (µg/L)	3	203.0	1.5	75.2
4	Cu (µg/L)	3	9.0	3.8	7
5	Ni (µg/L)	3	318.0	0.0	106.3
6	Pb (µg/L)	3	2.6	1.0	1.4
7	Zn (µg/L)	3	7.0	0.0	3.3
	CHEMICAL INDICES				
1	HAR_Ca (mgCaCO3/L)	12	95	65	80
2	HAR_Total (mgCaCO3/L)	12	172	112	154
3	Na% (%)	12	9	7	8
4	RSC (-)	12	0.1	0.0	0
5	SAR (-)	12	0.3	0.2	0.2
	PESTICIDES				

Water Quality Seasonal Average for the period: 2014-2017

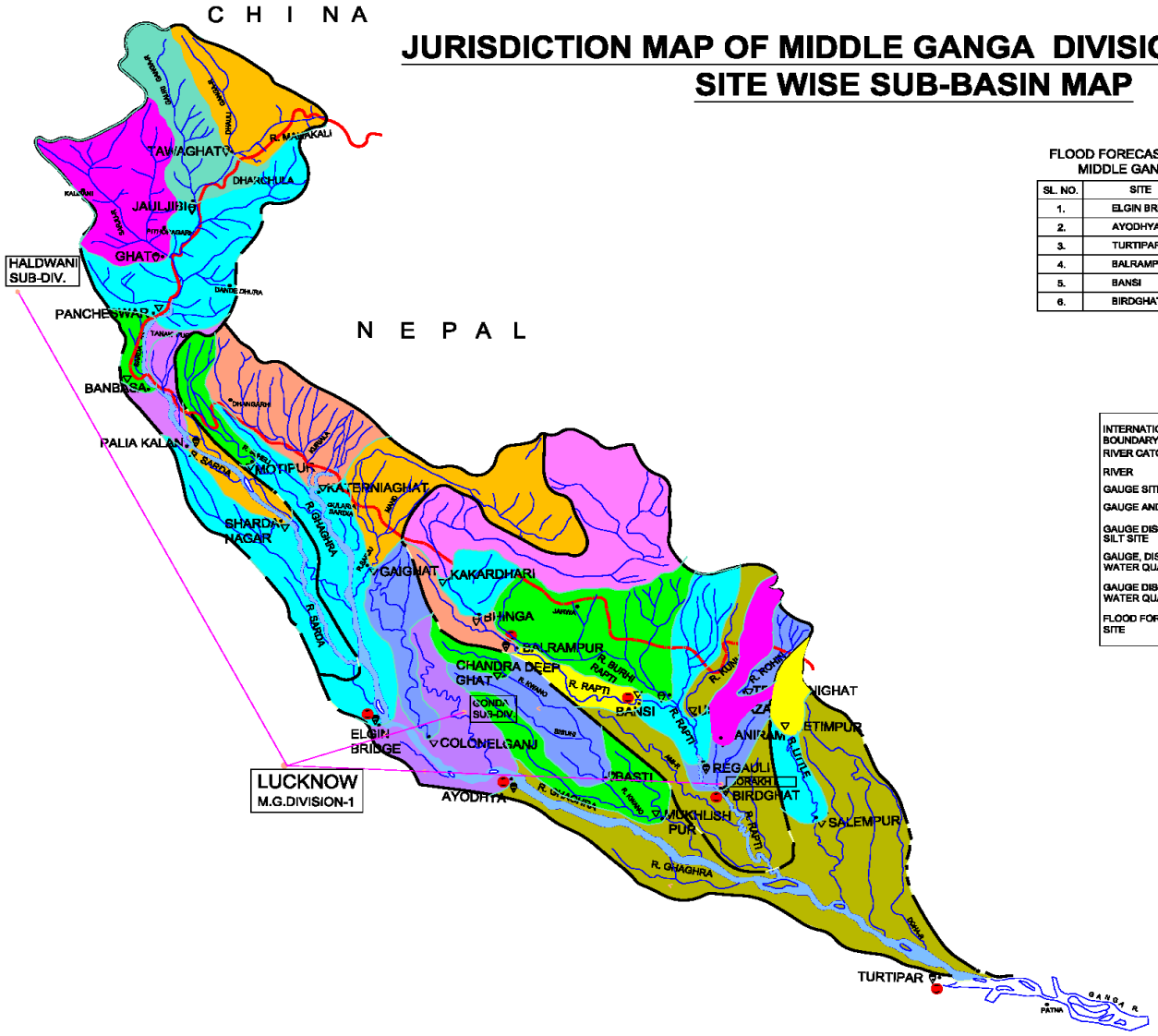
Station Name : BANSI (GGU30N9) **Division : M Ganga Div. I, Lucknow**

Local River : **River Water** **Sub-Division : L Rapti Ghaghra SD, Turkmanpur**

S.No	Parameters	Flood			Winter			Summer		
		Jun - Oct			Nov - Feb			Mar - May		
		2014	2015	2016	2014-2015	2015-2016	2016-2017	2015	2016	2017
	PHYSICAL									
1	Q (cumec)		153.8			115.6			19.26	
2	EC_GEN (µmho/cm)	280	262	216	355	298	278	360	307	283
3	pH_FLD (pH units)			8.2			8.0			8.0
4	pH_GEN (pH units)	8.4	8.4	8.3	8.6	8.4	8.3	8.8	8.3	8.2
5	TDS (mg/L)	169	155	136	198	183	171	200	191	174
6	Temp (deg C)	29.0	30.4	30.6	19.3	20.5	21.8	26.0	25.7	27.0
7	Turb (NTU)			4.1			1.2			0.8
	CHEMICAL									
1	Alk-Phen (mgCaCO3/L)	5.0	5.6	3.2	10.0	10.0	4.0	9.3	5.3	2.7
2	ALK-TOT (mgCaCO3/L)	100	130	127	171	183	150	156	173	165
3	B (mg/L)	0.21	0.18	0.18	0.21	0.18	0.18	0.20	0.18	0.18
4	Ca (mg/L)	19	34	31	49	43	33	38	38	33
5	Cl (mg/L)	15.0	10.8	9.6	12.5	10.5	10.0	15.4	12.7	11.3
6	CO3 (mg/L)	6.0	6.7	3.8	12.0	12.0	4.8	11.2	6.4	3.2
7	F (mg/L)	0.17	0.28	0.27	0.23	0.30	0.25	0.24	0.32	0.25
8	Fe (mg/L)			1.3	0.0		0.5		1.0	0.7
9	HCO3 (mg/L)	110	144	147	184	199	173	168	198	195
10	K (mg/L)	4.3	3.9	4.1	3.5	5.1	4.6	4.7	5.7	5.9
11	Mg (mg/L)	16.5	15.7	15.5	20.1	21.9	19.1	18.9	23.7	19.6
12	Na (mg/L)	6.5	6.3	5.9	7.3	6.5	6.4	8.4	7.7	7.5
13	NH3-N (mg N/L)	0.33	0.31	0.31	0.31	0.33	0.30	0.34	0.32	0.25
14	NO2+NO3 (mg N/L)	0.37	0.50	0.47	0.44	0.47	0.37	0.49	0.54	0.47
15	NO2-N (mgN/L)	0.02	0.04	0.08	0.04	0.00	0.03	0.02	0.10	0.14
16	NO3-N (mgN/L)	0.35	0.46	0.39	0.39	0.47	0.35	0.46	0.43	0.33
17	o-PO4-P (mg P/L)	0.406	0.273		0.320	0.326		0.255	0.372	
18	P-Tot (mgP/L)			0.296			0.328			0.333
19	SiO2 (mg/L)									
20	SO4 (mg/L)	14.3	18.3	12.4	24.7	18.8	15.2	15.2	17.3	16.2
	BIOLOGICAL/BACTERIOLOGICAL									
1	BOD3-27 (mg/L)	0.8	1.6	1.6	0.9	1.3	1.3	1.2	1.4	2.0
2	COD (mg/L)	4.5	7.6	6.8	5.8	7.5	7.0	6.3	8.3	13.7
3	DO (mg/L)	6.7	6.6	6.8	7.1	7.1	7.0	7.1	6.9	5.5
4	DO_SAT% (%)	87	88	91	77	79	80	87	84	68
5	FCol-MPN (MPN/100mL)			1267			3750			1500
6	Tcol-MPN (MPN/100mL)			5633			7125			2233
	TRACE & TOXIC									
1	As (µg/L)						1.9		1.0	4.0
2	Cd (µg/L)						1.2		1.0	3.0
3	Cr (µg/L)			21.0					2.0	203.0
4	Cu (µg/L)			8.3			3.8		1.0	9.0
5	Ni (µg/L)								1.0	318.0
6	Pb (µg/L)						2.6		1.0	1.0
7	Zn (µg/L)						7.0		1.0	3.0
	CHEMICAL INDICES									
1	HAR_Ca (mgCaCO3/L)	49	86	77	124	107	83	96	95	82
2	HAR_Total (mgCaCO3/L)	117	151	142	208	198	162	175	194	164
3	Na% (%)	10	8	8	7	7	8	9	8	9
4	RSC (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5	SAR (-)	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3
	PESTICIDES									

Index Map

JURISDICTION MAP OF MIDDLE GANGA DIVISION- I, LUCKNOW
SITE WISE SUB-BASIN MAP



FLOOD FORECASTING SITES UNDER MIDDLE GANGA DIVISION - 1

SL. NO.	SITE	RIVER
1.	ELGIN BRIDGE	GHAGHRA
2.	AYODHYA	GHAGHRA
3.	TURTIPAR	GHAGHRA
4.	BALRAMPUR	RAPTI
5.	BANSI	RAPTI
6.	BIRDGHAT	RAPTI

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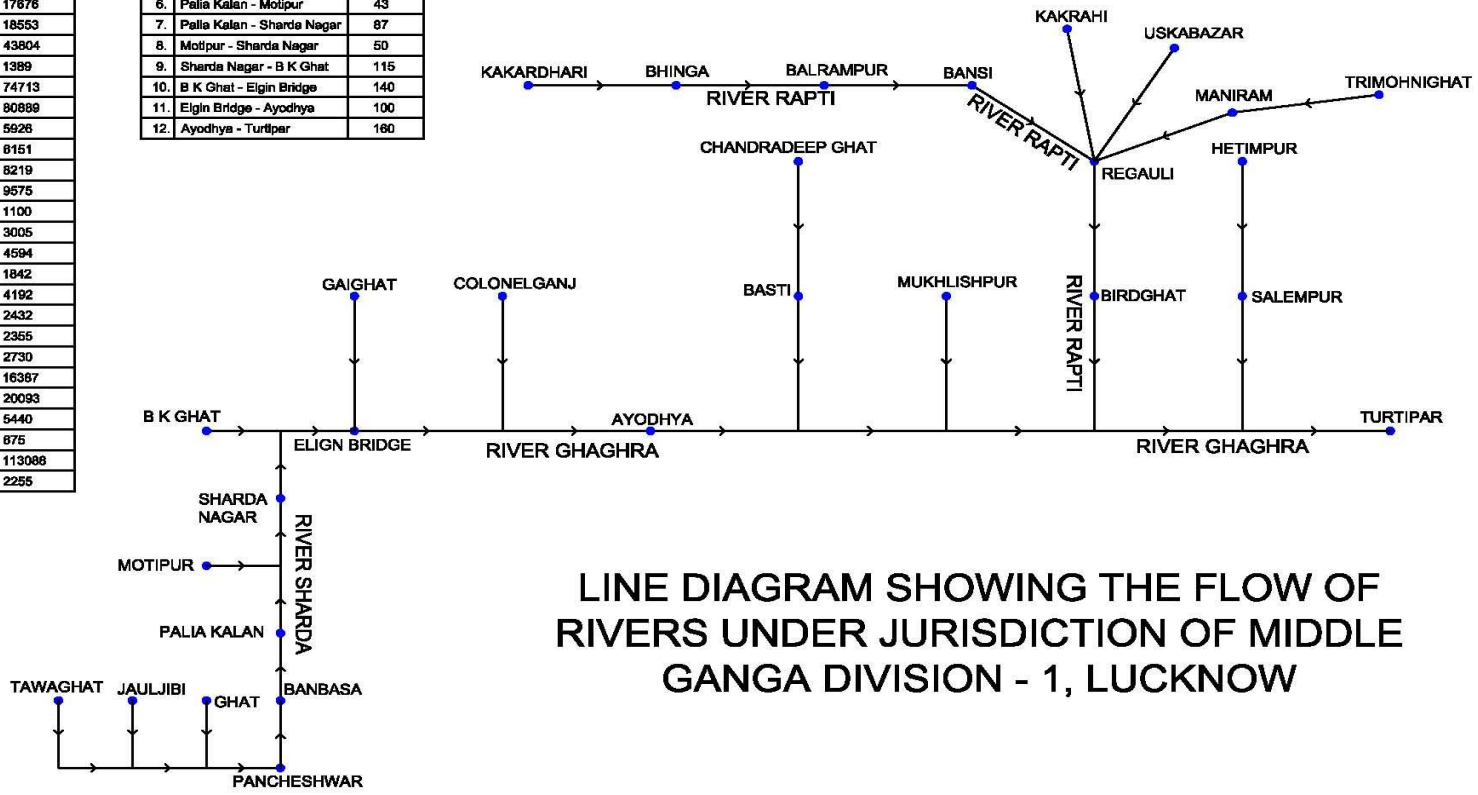
- INTERNATIONAL BOUNDARY
- RIVER CATCHMENT
- RIVER
- GAUGE SITE
- GAUGE AND DISCHARGE SITE
- GAUGE DISCHARGE AND SILT SITE
- GAUGE, DISCHARGE, SILT AND WATER QUALITY SITE
- GAUGE DISCHARGE AND WATER QUALITY SITE
- FLOOD FORECASTING SITE

SL. NO.	SITE	CATCHMENT AREA (Sq Km)
1.	Tawaghat	1225
2.	Jauljibi	2150
3.	Ghat	3900
4.	Pancheswar	12293
5.	Banbasa	15820
6.	Palia Kalan	17676
7.	Sharda Nagar	18553
8.	B K Ghat	43804
9.	Motipur	1389
10.	Elgin Bridge	74713
11.	Ayodhya	80889
12.	Kakardhari	5926
13.	Bhinga	6151
14.	Balrampur	8219
15.	Bansi	9575
16.	Chandradeepghat	1100
17.	Basti	3005
18.	Gaighat	4594
19.	Colonelganj	1842
20.	Kakrahi	4192
21.	Uskabazar	2432
22.	Trimohinighat	2355
23.	Maniram	2730
24.	Regauli	16367
25.	Birdghat	20093
26.	Mukhlishpur	5440
27.	Hetimpur	875
28.	Turtipar	113088
29.	Salempur	2255

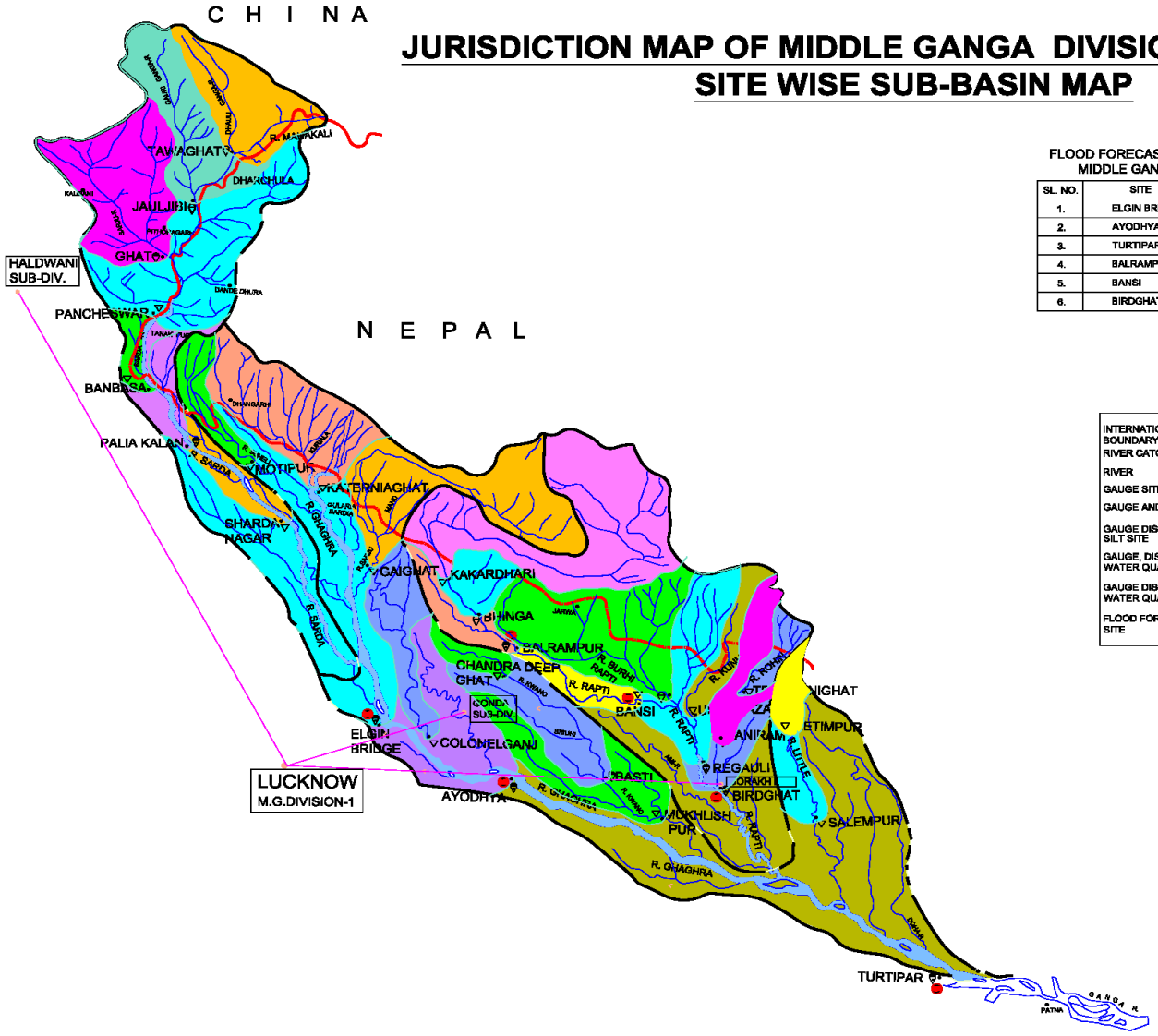
SL. NO.	SITE DESCRIPTION (From - To)	DISTANCE (Km)
1.	Tawaghat - Jauljibi	50
2.	Jauljibi - Ghat	217
3.	Ghat - Pancheswar	85
4.	Pancheswar - Banbasa	155
5.	Banbasa - Palia Kalan	155
6.	Palia Kalan - Motipur	43
7.	Palia Kalan - Sharda Nagar	87
8.	Motipur - Sharda Nagar	50
9.	Sharda Nagar - B K Ghat	115
10.	B K Ghat - Elgin Bridge	140
11.	Elgin Bridge - Ayodhya	100
12.	Ayodhya - Turtipar	160



LINE DIAGRAM SHOWING THE FLOW OF RIVERS UNDER JURISDICTION OF MIDDLE GANGA DIVISION - 1, LUCKNOW

Index Map

JURISDICTION MAP OF MIDDLE GANGA DIVISION- I, LUCKNOW
SITE WISE SUB-BASIN MAP



FLOOD FORECASTING SITES UNDER MIDDLE GANGA DIVISION - 1

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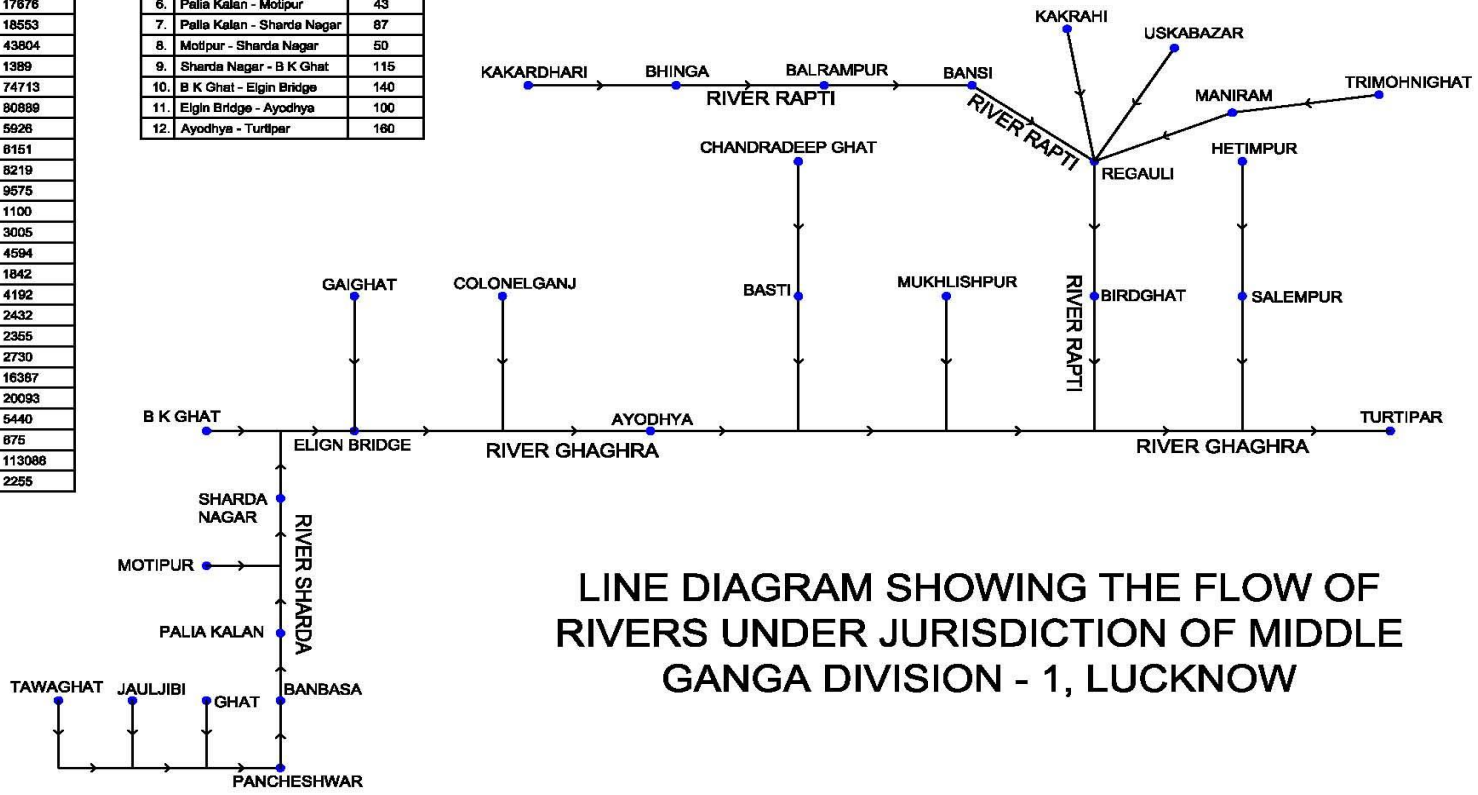

LINE DIAGRAM SHOWING THE FLOW OF RIVERS UNDER JURISDICTION OF MIDDLE GANGA DIVISION - 1, LUCKNOW

ABBREVIATIONS AND SYMBOLS

N	: North
E	: East
sq. km.	: Square Kilometre
m	: Metre
o	: Degree
’	: Minute
”	: Second
SP	:Sodium Percentage
RSC	: Residual Sodium Carbonate
SAR	: Sodium Adsorption Ratio
HAR	: Hardness
mg/l	: Milligram per Litre
ml.	: Millilitre
pH	: Negative Logarithm of Hydrogen Ion Concentration