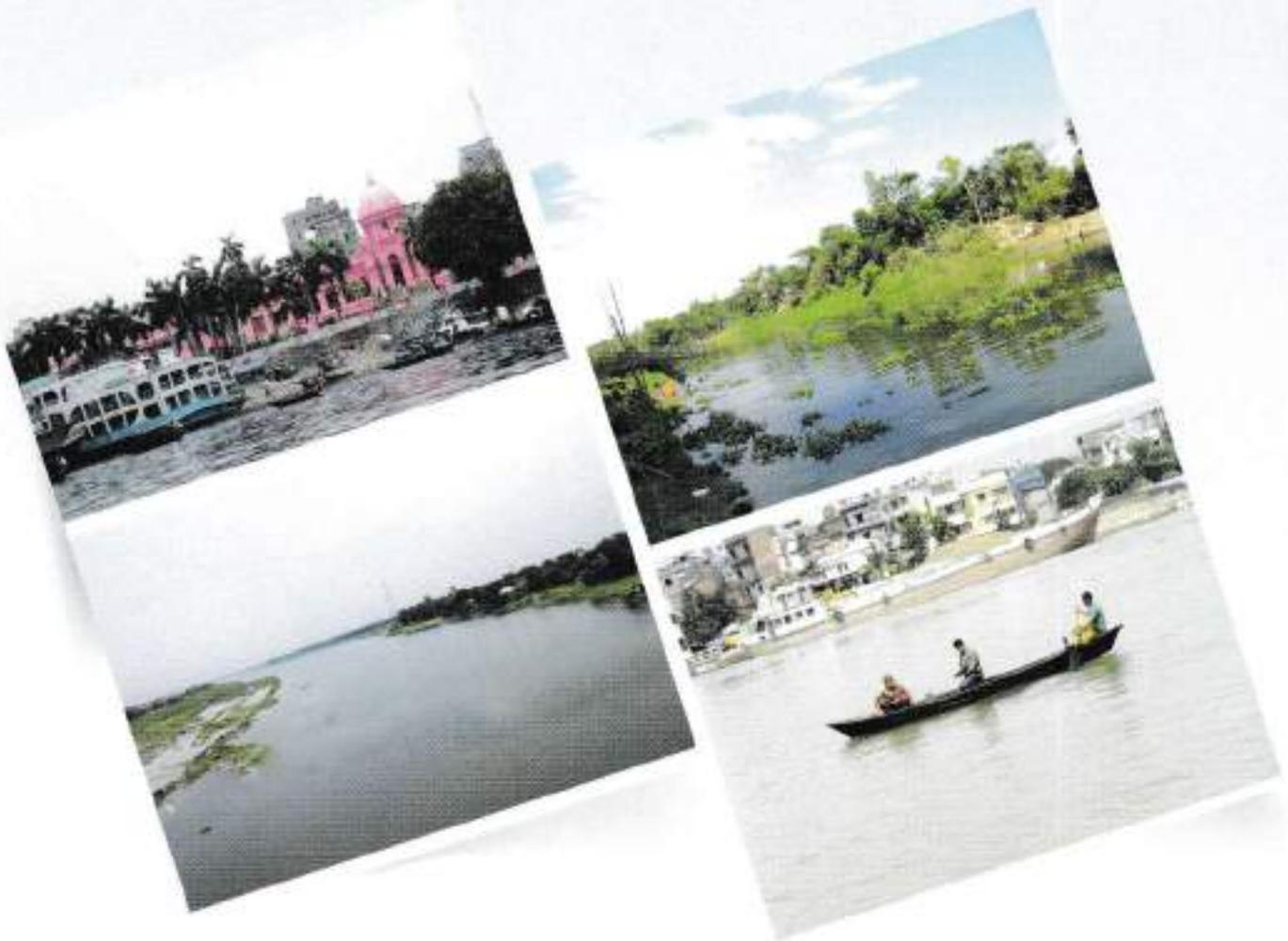




SURFACE AND GROUND WATER QUALITY REPORT 2017



Department of Environment

Ministry of Environment, Forests and Climate Change
Government of the People's Republic of Bangladesh
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MESSAGE

Rivers and wetlands are lifelines of Bangladesh. Three major river systems namely the Ganges, the Brahmaputra and the Meghna which drain through the country of the Bay of Bengal created huge floodplains, active and moribund and a good number of unique water ecosystems. Industrialisation, urbanisation and other development initiatives pose a continuous risk of pollution of surface and ground waters. Water is a major need for a growing economy with a continuous growth rate of more than 7 percent a year, water is also important for irrigation, health, domestic use and for fisheries and other biodiversity.

Department of Environment (DoE) has been monitoring surface water quality since its establishment in 1973. DoE's surface water quality monitoring network includes pollution hotspots of rivers, lakes and ground water.

Surface and Ground Water Quality Report 2017 is the sixth of its kind that gives overall status of surface and ground water quality in Bangladesh. Municipal and industrial solid waste, untreated sewage and effluents, are highly polluting rivers surrounding major cities and other urban growth centers. Water quality of rivers around the major cities and towns were not within the quality standards as set in the Environment Conservation Rules, 1997. The quality of water of large rivers such as the Padma, the Meghna, the Jamuna, the Brahmaputra was within the limit. Water quality of some rivers in southern region degraded due to high salinity and turbidity and thus, waters of those rivers are often unfit for domestic and agricultural use specially in the dry season. In addition, this report includes the water quality of three lakes (namely Dhanmondi, Gulshan and Hatir Jheel) and 65 ground water stations of five districts.

This report also highlighted the necessary steps to be taken for improvement in monitoring water quality and sustainable management of aquatic ecosystems. Hopefully this document will be useful in decision making for conservation of degraded riverine ecosystems of Bangladesh.

I sincerely thank Natural Resources Management and Research wing of the Department for preparing this report.

Dr Sultan Ahmed
(Additional Secretary)
Director General



FOREWORD

Water quality is crucial for a healthy ecosystem and livelihood. Bangladesh, as a downstream part of three major rivers is dominated by floodplain and deltaic ecosystem that are increasingly being threatened by surface water pollution and excessive ground water abstraction. Population increase, release of untreated industrial effluents and sewage, unplanned solid waste dumping along the river banks, encroachment and non-point source pollution from agricultural activities are major reasons for poor water quality and deterioration of river ecosystem. The dry season availability of both surface and ground water are already under pressure due to upstream uptake by the neighboring countries. Hence, monitoring of the quality and continuous improvement initiatives are vital for better ecosystem services.

The surface and ground water quality report 2017 contains data and some basic statistical analysis of a number of water quality parameters of 29 rivers, three lakes and 65 stations of five districts of the country for the period from January to December 2017. Physiochemical water quality parameters such as pH, EC, TDS, DO, BOD, COD, SS, Chloride, Turbidity, Total Alkalinity and Salinity were measured in laboratories. The mean value of such respective parameters in both seasons were compared with the water quality standards as set by the Environmental Quality Standard (EQS) guideline of Department of Environment (DoE). The report also gives an annual trend of quality and its seasonal variation of those parameters from 2010 to 2017. It does not include biological indicators for monitoring.

The quality of surface water in and around Dhaka city, near Chattagram city, Khulna city and near other major urban areas were below the Environmental Quality Standard (EQS) set in the Environmental Conservation Rules 1997 in dry season. The pollution level of different points along a single stretch of a river also varied. River erosion and dumping of solid waste increased the turbidity of river water in some sampling points. The water quality of three lakes in Dhaka was mostly below the EQS although Gulshan Lake's data showed some improvements.

The report suggests future programme of actions for conservation of water resources. Implementation of recommended activities in this report is vital to pave the way of conservation and sustainable use of water resources at various levels of our development agenda.

Dr Fahmida Khanom

Director (Deputy Secretary)

Natural Resource Management (NRM) and Research



EDITORIAL NOTES

Water is an essential element for industrial as well as agricultural development. Water quality refers to the chemical, physical, biological, and radiological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose. It is most frequently used by reference to a set of standards against which compliance can be assessed. The most common standards used to assess water quality relate to health of ecosystems, safety of human contact, and drinking water. Water quality and quantity greatly affects ecosystems productivity and services they provide. To provide with necessary information for sustainable services especially of aquatic ecosystem, continuous monitoring of water quality is essential.

Water quality parameters like pH, Dissolve Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Turbidity, Total Dissolve Solids (TDS), Suspended Solids (SS), Total Alkalinity, Electrical Conductivity (EC), Salinity and Chloride presented in this report were measured more or less round the year of 2017. Basic analysis was done on all rivers and lake included in this report. The report did not incorporate biological data and data which were not measured/received from the DoE Laboratories. Due to limited time and resource allocation it also did not cover all the analytical methods. A number of data are missing in various months due to unavailability. The yearly trend analysis of water quality of few rivers were averaged out and hence, the data variation were unexpectedly high in some cases.

As water pollution affects the entire biosphere of plants and organisms living in these water bodies, as well as organisms and plants that might be exposed to the water, this report can act as a guide for intervention measures.

A K M Rafiqul Islam
Deputy Director (Water and Bio)

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The Surface and Ground Water Quality Report 2017 is an effort of series of analytical results of water quality data that were collected by the Laboratories of Department of Environment (DoE). At the outset, We would like to express our gratitude to Mr. Dr Sultan Ahmed, Director General, Department of Environment, for the supervision and guidance during preparation of this report. Our sincere gratitude to all laboratories personnel (Directors, Deputy Directors, Senior Chemists, Junior Chemists, Assistant Biochemists and Sample Collectors) of all six laboratories of DoE for collecting water samples, conducting on-site and laboratory tests of water and provide us the analysis reports. Without their support it could not be done with the eventual outcome. We would like to extend our sincere thanks and appreciation to the editors Dr. Fahmida Khanom, Director (Natural Resources Management & Research) and A K M Rafiqul Islam, Deputy Director (Water and Bio) for their continuous efforts with excellent guidance to accomplish this report. Special thanks are also extended to Mr. Md. Abubakar Ahmed, Junior Consultant, for compiling data for this report.



Zawata Afnan
Assistant Director (Water & Bio.)



EXECUTIVE SUMMARY

Bangladesh is the downstream of three major river systems namely Ganges-Brahmaputra-Meghna system. It consists of numerous criss-crossed rivers and streams, lakes, floodplains and deltaic water bodies. Its surface water is the home to a wide variety of aquatic flora and fauna. The volume of water varies widely depending on the season, heavy summer rainstorms, upstream diversion of water flow and dry winter months. Its surface and ground water are mainly used for irrigation, fisheries, drinking water, navigation and industrial purposes.

Surface water quality-monitoring programme of DoE included 78 stations of 29 rivers, 16 stations of 3 Lakes (Gulshan, Dhanmondi and Hatir Jheel lakes) of Dhaka and 65 stations of 5 districts in Bangladesh. The monitoring involved field measurements and collecting water samples for laboratory analyses. Six divisional offices measured a total of 12 parameters (physical and chemical) of collected samples. Depending on continuity of measurements and spatio-temporal context, ten parameters viz. pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Suspended Solids (SS), Total Dissolved Solids (TDS), Electrical Conductivity (EC), Chloride, Turbidity, Salinity and Total Alkalinity were taken for analysis.

Based on the parameters mentioned above water quality of the major rivers viz. Padma, Meghna, Jamuna, Surma, Korotoa etc. was found within the limit of Environmental Quality Standards (EQS) in 2017 while rivers around greater Dhaka were highly polluted specially in the first five months of 2017 in terms of DO, BOD and COD values. High levels of Turbidity (184 mg/l), TDS (605 mg/l), BOD (32 mg/l) and COD (113 mg/l) were found in Buriganga river from January to December in 2017. In Meghna river DO and BOD level were found within the EQS which varied from 4.8 to 7.99 mg/l and 0.8 to 5.3 mg/l, respectively. In Jamuna river, DO and BOD levels varied from 4.4 to 7.5 mg/l and 2.0 to 5.8 mg/l, respectively.

High levels of Chloride, TDS and Turbidity were found in Moyuri, Rupsha, Pashur and Kakshiali River. Highest levels of Chloride (11208 mg/l) and TDS (13374 mg/l) were found in Pashur river. Highest value of Turbidity (96.8 NTU) was found in Kakshiali river. High COD (332 mg/l) was found in Kamapuli river.

Ground water has been the main source of water for drinking and irrigation. It is also the source of arsenic poisoning that affects millions of people in Bangladesh. Depending on continuity of measurements, six parameters viz. pH, Total Dissolved Solid, Electrical Conductivity, Chloride, Iron and Total Hardness were taken for analysis.

This report also includes a trend of quality of water of 10 rivers from 2010 to 2017. The trend showed that the water quality of Dhaleshwari and Korotoa river had decreased after 2011. The DO of Burigonga, Shitalakhya, Turag and Moyuri (near khulna city) river was below the EQS (≥ 5 mg/l) and did not improve in last eight years.

Impact of seasonality on water quality was evident in data analysis. During dry seasons water quality became worse. On the contrary, river water quality improved greatly during the wet seasons indicating clear relationship between increased flow and river water quality.

TABLE OF CONTENTS

Chapter 1: Introduction	1
1.1 Background	1
1.2 Major objectives	1
1.3 Limitations of the report	1
Chapter 2: An Overview Of Bangladesh's Surface And Ground Water	2
Surface water sources and Rivers of Bangladesh	2
Chapter 3: Methods For Measurement And Analysis Of Water Quality	4
3.1 Water Quality Parameters	4
3.2 Sampling Locations	4
3.3 Methods of Analysis	4
3.4 Surface Water Monitoring Stations	5
Chapter 4: River Water Quality In 2017	7
4.1 Buriganga River	7
4.2 Shitalakhya River	10
4.3 Turag River	12
4.4 Dhaleshwari River	14
4.5 Brahmaputra River	16
4.6 Kaliganga River	17
4.7 Jamuna River	18
4.8 Meghna River	19
4.9 Padma River	20
4.10 Korotoa River	21
4.11 Teesta River	22
4.12 Karnaphuli River	23
4.13 Halda River	25
4.14 Moyuri River	26
4.15 Bhairab River	27
4.16 Rupsha River	29
4.17 Mathavanga River	30
4.18 Pashur River	32
4.19 Khakshiali River	33
4.20 Gorai River	35
4.21 Modhumoti River	36
4.22 Beel Dakatia River	38
4.23 Kirtankhola River	39
4.24 Tatulia River	40
4.25 Sugandha River/Biskhali River	42
4.26 Lohalia River/Laukathi River	43
4.27 Surma River	44
4.28 Kushiara River	46
4.29 Balu River	47



Chapter 5: Water Quality Parameters Of Lake and Ground Water	49
5.1 Different water quality parameters of Gulshan lake water	49
5.2 Different water quality parameters of Dhanmondi lake water	51
5.3 Different water quality parameters of Hatir-Jheel lake water	53
5.4 Different water quality parameters of ground water in Chittagong district	55
5.5 Different water quality parameters of ground water in Khulna district	56
5.6 Different water quality parameters of ground water in Barisal district	58
5.7 Different water quality parameters of ground water in Bogura district	59
5.8 Different water quality parameters of ground water in Sylhet district	60
Chapter 6: Trend Analysis Of Water Quality Of Major Rivers	61
6.1 Buriganga River	61
6.2 Shitalakhya River	62
6.3 Turag River	63
6.4 Dhaleshwari River	64
6.5 Brahmaputra River	65
6.6 Halda River	66
6.7 Moyuri River	67
6.8 Surma River	68
6.9 Korotoa River	69
6.10 Mathavanga River	70
Chapter 7: Conclusion And Recommendations	71
7.1 Conclusion	71
7.2 Recommendations	71
Glossary	73
Literature Cited	79
Annex-1	80
Annex-2	122
Annex-3	130
Annex-4	142

**LIST OF TABLES**

Table- A:	Water Quality Monitoring Stations of DoE for Selected 29 Rivers	5
Table-1.	Level of pH of Buriganga River Water in 2017	81
Table-2.	Level of DO (mg/l) of Buriganga River Water in 2017	81
Table-3.	Level of BOD (mg/l) of Buriganga River Water in 2017	81
Table-4.	Level of COD (mg/l) of Buriganga River Water in 2017	81
Table-5.	Level of TDS (mg/l) of Buriganga River Water in 2017	82
Table-6.	Level of Turbidity (NTU) of Buriganga River Water in 2017	82
Table-7.	Level of Chloride (mg/l) of Buriganga River Water in 2017	82
Table-8.	Level of SS (mg/l) of Buriganga River Water in 2017	82
Table-9.	Level of Total Alkalinity (mg/l) of Buriganga River Water in 2017	83
Table-10.	Level of EC (1200 μ mohs/cm) of Buriganga River Water in 2017	83
Table-11.	Level of pH of Shitalakhya River Water in 2017	83
Table-12.	Level of DO (mg/l) of Shitalakhya River Water in 2017	83
Table-13.	Level of BOD (mg/l) of Shitalakhya River Water in 2017	84
Table-14.	Level of COD (mg/l) of Shitalakhya River Water in 2017	84
Table-15.	Level of TDS (mg/l) of Shitalakhya River Water in 2017	84
Table-16.	Level of Chloride (mg/l) of Shitalakhya River Water in 2017	84
Table-17.	Level of SS (mg/l) of Shitalakhya River Water in 2017	84
Table-18.	Level of EC (1200 μ mohs/cm) of Shitalakhya River Water in 2017	84
Table-19.	Level of Total Alkalinity (mg/l) of Shitalakhya River Water in 2017	85
Table-20.	Level of pH of Turagh River Water in 2017	85
Table-21.	Level of DO (mg/l) of Turagh River Water in 2017	85
Table-22.	Level of BOD (mg/l) of Turagh River Water in 2017	85
Table-23.	Level of COD (mg/l) of Turagh River Water in 2017	85
Table-24.	Level of TDS (mg/l) of Turagh River Water in 2017	86
Table-25.	Level of Chloride (mg/l) of Turagh River Water in 2017	86
Table-26.	Level of SS (mg/l) of Turagh River Water in 2017	86
Table-27.	Level of EC (1200 μ mohs/cm) of Turagh River Water in 2017	86
Table-28.	Level of Total Alkalinity (mg/l) of Turagh River Water in 2017	86
Table-29.	Level of pH of Dhaleshwari River Water in 2017	86
Table-30.	Level of DO (mg/l) of Dhaleshwari River Water in 2017	87
Table-31.	Level of BOD (mg/l) of Dhaleshwari River Water in 2017	87
Table-32.	Level of COD (mg/l) of Dhaleshwari River Water in 2017	87
Table-33.	Level of TDS (mg/l) of Dhaleshwari River Water in 2017	87
Table-34.	Level of Chloride (mg/l) of Dhaleshwari River Water in 2017	87
Table-35.	Level of SS (mg/l) of Dhaleshwari River Water in 2017	88
Table-36.	Level of EC (1200 μ mohs/cm) of Dhaleshwari River Water in 2017	88
Table-37.	Level of Total Alkalinity (mg/l) of Dhaleshwari River Water in 2017	88
Table-38.	Level of pH of Brahmaputra River Water in 2017	88
Table-39.	Level of DO (mg/l) of Brahmaputra River Water in 2017	88



Table-40.	Level of BOD (mg/l) of Brahmaputra River Water in 2017	88
Table-41.	Level of TDS (mg/l) of Brahmaputra River Water in 2017	89
Table-42.	Level of SS (mg/l) of Brahmaputra River Water in 2017	89
Table-43.	Level of Chloride (mg/l) of Brahmaputra River Water in 2017	89
Table-44.	Level of pH of Kaligonga River Water in 2017	89
Table-45.	Level of DO (mg/l) of Kaligonga River Water in 2017	89
Table-46.	Level of BOD (mg/l) of Kaligonga River Water in 2017	89
Table-47.	Level of TDS (mg/l) of Kaligonga River Water in 2017	89
Table-48.	Level of SS (mg/l) of Kaligonga River Water in 2017	89
Table-49.	Level of Chloride (mg/l) of Kaligonga River Water in 2017	90
Table-50.	Level of pH of Jamuna River Water in 2017	90
Table-51.	Level of DO (mg/l) of Jamuna River Water in 2017	90
Table-52.	Level of BOD (mg/l) of Jamuna River Water in 2017	90
Table-53.	Level of SS of Jamuna River Water in 2017	90
Table-54.	Level of TDS (mg/l) of Jamuna River Water in 2017	91
Table-55.	Level of Chloride (mg/l) of Jamuna River Water in 2017	91
Table-56.	Level of pH of Meghna River Water in 2017	91
Table-57.	Level of DO (mg/l) of Meghna River Water in 2017	91
Table-58.	Level of BOD (mg/l) of Meghna River Water in 2017	91
Table-59.	Level of TDS (mg/l) of Meghna River Water in 2017	91
Table-60.	Level of SS (mg/l) of Meghna River Water in 2017	92
Table-61.	Level of Chloride (mg/l) of Meghna River Water in 2017	92
Table-62.	Level of pH of Padma River Water in 2017	92
Table-63.	Level of DO (mg/l) of Padma River Water in 2017	92
Table-64.	Level of BOD (mg/l) of Padma River Water in 2017	93
Table-65.	Level of TDS (mg/l) of Padma River Water in 2017	93
Table-66.	Level of SS (mg/l) of Padma River Water in 2017	93
Table-67.	Level of EC (1200 μ mohs/cm) of Padma River Water in 2017	93
Table-68.	Level of pH of Korotoa River Water in 2017	94
Table-69.	Level of DO (mg/l) of Korotoa River Water in 2017	94
Table-70.	Level of DO (mg/l) of Korotoa River Water in 2017	94
Table-71.	Level of TDS (mg/l) of Korotoa River Water in 2017	95
Table-72.	Level of SS (mg/l) of Korotoa River Water in 2017	95
Table-73.	Level of EC (μ mohs/cm) of Korotoa River Water in 2017	95
Table-74.	Level of pH of Teesta River Water in 2017	96
Table-75.	Level of DO (mg/l) of Teesta River Water in 2017	96
Table-76.	Level of BOD (mg/l) of Teesta River Water in 2017	96
Table-77.	Level of TDS (mg/l) of Teesta River Water in 2017	96
Table-78.	Level of SS (mg/l) of Teesta River Water in 2017	96
Table-79.	Level of Turbidity (NTU) of Teesta River Water in 2017	96
Table-80.	Level of pH of Kamaphuli River Water in 2017	97
Table-81.	Level of DO (mg/l) of Kamaphuli River Water in 2017	97



Table-82.	Level of COD (mg/l) of Karnaphuli River Water in 2017	97
Table-83.	Level of TDS (mg/l) of Karnaphuli River Water in 2017	97
Table-84.	Level of SS (mg/l) of Karnaphuli River Water in 2017	97
Table-85.	Level of EC (mg/l) of Karnaphuli River Water in 2017	97
Table-86.	Level of pH of Halda River Water in 2017	97
Table-87.	Level of DO (mg/l) of Halda River Water in 2017	98
Table-88.	Level of COD (mg/l) of Halda River Water in 2017	98
Table-89.	Level of TDS (mg/l) of Halda River Water in 2017	98
Table-90.	Level of SS (mg/l) of Halda River Water in 2017	98
Table-91.	Level of EC (mg/l) of Halda River Water in 2017	98
Table-92.	Level of pH of Moyuri River Water in 2017	98
Table-93.	Level of DO (mg/l) of Moyuri River Water in 2017	98
Table-94.	Level of TDS (mg/l) of Moyuri River Water in 2017	99
Table-95.	Level of Chloride (mg/l) of Moyuri River Water in 2017	99
Table-96.	Level of Turbidity (NTU) of Moyuri River Water in 2017	99
Table-97.	Level of SS (mg/l) of Moyuri River Water in 2017	99
Table-98.	Level of EC (μ mhos/cm) of Moyuri River Water in 2017	99
Table-99.	Level of Total Alkalinity (mg/l) of Moyuri River Water in 2017	99
Table-100.	Level of pH of Bhairab River Water in 2017	100
Table-101.	Level of DO (mg/l) of Bhairab River Water in 2017	100
Table-102.	Level of BOD (mg/l) of Bhairab River Water in 2017	100
Table-103.	Level of TDS (mg/l) of Bhairab River Water in 2017	100
Table-104.	Level of Chloride (mg/l) of Bhairab River Water in 2017	101
Table-105.	Level of Turbidity (NTU) of Bhairab River Water in 2017	101
Table-106.	Level of EC (μ mhos/cm) of Bhairab River Water in 2017	101
Table-107.	Level of Total Alkalinity (mg/l) of Bhairab River Water in 2017	101
Table-108.	Level of pH of Rupsha River Water in 2017	101
Table-109.	Level of DO (mg/l) of Rupsha River Water in 2017	102
Table-110.	Level of BOD (mg/l) of Rupsha River Water in 2017	102
Table-111.	Level of Chloride (mg/l) of Rupsha River Water in 2017	102
Table-112.	Level of SS (mg/l) of Rupsha River Water in 2017	102
Table-113.	Level of Turbidity (NTU) of Rupsha River Water in 2017	102
Table-114.	Level of EC (μ mhos/cm) of Rupsha River Water in 2017	103
Table-115.	Level of Total Alkalinity (mg/l) of Rupsha River Water in 2017	103
Table-116.	Level of pH of Mathavanga River Water in 2017	103
Table-117.	Level of DO (mg/l) of Mathavanga River Water in 2017	103
Table-118.	Level of BOD (mg/l) of Mathavanga River Water in 2017	103
Table-119.	Level of TDS (mg/l) of Mathavanga River Water in 2017	104
Table-120.	Level of Chloride (mg/l) of Mathavanga River Water in 2017	104
Table-121.	Level of Turbidity (NTU) of Mathavanga River Water in 2017	104
Table-122.	Level of EC (μ mhos/cm) of Mathavanga River Water in 2017	104
Table-123.	Level of Total Alkalinity (mg/l) of Mathavanga River Water in 2017	104



Table-124.	Level of pH of Pashur River Water in 2017	104
Table-125.	Level of DO (mg/l) of Pashur River Water in 2017	105
Table-126.	Level of BOD (mg/l) of Pashur River Water in 2017	105
Table-127.	Level of TDS (mg/l) of Pashur River Water in 2017	105
Table-128.	Level of Chloride (mg/l) of Pashur River Water in 2017	105
Table-129.	Level of Turbidity (NTU) of Pashur River Water in 2017	105
Table-130.	Level of EC (μ mhos/cm) of Pashur River Water in 2017	105
Table-131.	Level of Total Alkalinity (mg/l) of Pashur River Water in 2017	105
Table-132.	Level of pH of Khakshiali River Water in 2017	106
Table-133.	Level of DO (mg/l) of Khakshiali River Water in 2017	106
Table-134.	Level of BOD (mg/l) of Khakshiali River Water in 2017	106
Table-135.	Level of TDS (mg/l) of Khakshiali River Water in 2017	106
Table-136.	Level of Chloride (mg/l) of Khakshiali River Water in 2017	106
Table-137.	Level of Turbidity (NTU) of Khakshiali River Water in 2017	106
Table-138.	Level of EC (μ mhos/cm) of Khakshiali River Water in 2017	107
Table-139.	Level of SS (mg/l) of Khakshiali River Water in 2017	107
Table-140.	Level of pH of Gorai River Water in 2017	107
Table-141.	Level of DO (mg/l) of Gorai River Water in 2017	107
Table-142.	Level of BOD (mg/l) of Gorai River Water in 2017	107
Table-143.	Level of TDS (mg/l) of Gorai River Water in 2017	108
Table-144.	Level of Chloride (mg/l) of Gorai River Water in 2017	108
Table-145.	Level of Turbidity (NTU) of Gorai River Water in 2017	108
Table-146.	Level of EC (μ mhos/cm) of Gorai River Water in 2017	108
Table-147.	Level of SS (mg/l) of Gorai River Water in 2017	109
Table-148.	Level of pH of Modhumoti River Water in 2017	109
Table-149.	Level of DO (mg/l) of Modhumoti River Water in 2017	109
Table-150.	Level of BOD (mg/l) of Modhumoti River Water in 2017	109
Table-151.	Level of TDS (mg/l) of Modhumoti River Water in 2017	109
Table-152.	Level of Chloride (mg/l) of Modhumoti River Water in 2017	110
Table-153.	Level of Turbidity (NTU) of Modhumoti River Water in 2017	110
Table-154.	Level of EC (μ mhos/cm) of Modhumoti River Water in 2017	110
Table-155.	Level of SS (mg/l) of Modhumoti River Water in 2017	110
Table-156.	Level of pH of Beel Dakatia River Water in 2017	110
Table-157.	Level of DO (mg/l) of Beel Dakatia River Water in 2017	110
Table-158.	Level of BOD (mg/l) of Beel Dakatia River Water in 2017	111
Table-159.	Level of TDS (mg/l) of Beel Dakatia River Water in 2017	111
Table-160.	Level of Chloride (mg/l) of Beel Dakatia River Water in 2017	111
Table-161.	Level of Turbidity (NTU) of Beel Dakatia River Water in 2017	111
Table-162.	Level of EC (μ mhos/cm) of Beel Dakatia River Water in 2017	111
Table-163.	Level of SS (mg/l) of Beel Dakatia River Water in 2017	111
Table-164.	Level of pH of Kirtankhola River Water in 2017	112
Table-165.	Level of DO (mg/l) of Kirtankhola River Water in 2017	112



Table-166.	Level of BOD (mg/l) of Kirtankhola River Water in 2017	112
Table-167.	Level of TDS (mg/l) of Kirtankhola River Water in 2017	112
Table-168.	Level of TS (mg/l) of Kirtankhola River Water in 2017	113
Table-169.	Level of EC (μ mohos/cm) of Kirtankhola River Water in 2017	113
Table-170.	Level of Total Alkalinity (mg/l) of Kirtankhola River Water in 2017	113
Table-171.	Level of TSS (mg/l) of Kirtankhola River Water in 2017	113
Table-172.	Level of pH of Tatulia River Water in 2017	114
Table-173.	Level of DO (mg/l) of Tatulia River Water in 2017	114
Table-174.	Level of BOD (mg/l) of Tatulia River Water in 2017	114
Table-175.	Level of TDS (mg/l) of Tatulia River Water in 2017	114
Table-176.	Level of Total Alkalinity (mg/l) of Tatulia River Water in 2017	114
Table-177.	Level of EC (μ mohos/cm) of Tatulia River Water in 2017	114
Table-178.	Level of TS (mg/l) of Tatulia River Water in 2017	114
Table-179.	Level of Salinity of Tatulia River Water in 2017	115
Table-180.	Level of pH of Sugandha River Water in 2017	115
Table-181.	Level of DO (mg/l) of Sugandha River Water in 2017	115
Table-182.	Level of BOD (mg/l) of Sugandha River Water in 2017	115
Table-183.	Level of TDS (mg/l) of Sugandha River River Water in 2017	115
Table-184.	Level of Total Alkalinity (mg/l) of Sugandha River Water in 2017	115
Table-185.	Level of EC (μ mohos/cm) of Sugandha River Water in 2017	115
Table-186.	Level of TS (mg/l) of Sugandha River Water in 2017	116
Table-187.	Level of Salinity of Sugandha River Water in 2017	116
Table-188.	Level of pH of Lohalia River Water in 2017	116
Table-189.	Level of DO (mg/l) of Lohalia River Water in 2017	116
Table-190.	Level of BOD (mg/l) of Lohalia River Water in 2017	116
Table-191.	Level of TDS (mg/l) of Lohalia River River Water in 2017	116
Table-192.	Level of Total Alkalinity (mg/l) of Lohalia River Water in 2017	116
Table-193.	Level of EC (μ mohos/cm) of Lohalia River Water in 2017	117
Table-194.	Level of pH of Surma River Water in 2017	117
Table-195.	Level of DO (mg/l) of Surma River Water in 2017	117
Table-196.	Level of BOD (mg/l) of Surma River Water in 2017	117
Table-197.	Level of COD (mg/l) of Surma River Water in 2017	117
Table-198.	Level of TDS (mg/l) of Surma River Water in 2017	117
Table-199.	Level of EC (μ mohos/cm) of Surma River Water in 2017	118
Table-200.	Level of pH of Kushiara River Water in 2017	118
Table-201.	Level of DO (mg/l) of Kushiara River Water in 2017	118
Table-202.	Level of BOD (mg/l) of Kushiara River Water in 2017	118
Table-203.	Level of COD (mg/l) of Kushiara River River Water in 2017	118
Table-204.	Level of TDS (mg/l) of Lohalia River Water in 2017	118
Table-205.	Level of EC (μ mohos/cm) of Kushiara River Water in 2017	118
Table-206.	Level of pH of Balu River Water in 2017	119
Table-207.	Level of DO (mg/l) of Balu River Water in 2017	119



Table-208.	Level of BOD (mg/l) of Balu River Water in 2017	119
Table-209.	Level of COD (mg/l) of Balu River Water in 2017	120
Table-210.	Level of TDS (mg/l) of Balu River Water in 2017	120
Table-211.	Level of Chloride (mg/l) of Balu River Water in 2017	120
Table-212.	Level of SS (mg/l) of Balu River Water in 2017	121
Table-213.	Level of EC (μ mhos/cm) of Balu River Water in 2017	121
Table-214.	Level of T.alkalinity (mg/l) of Balu River Water in 2017	121
Table-215.	Level of Turbidity (NTU) of Balu River Water in 2017	121
Table-216.	Level of pH of Gulshan Lake Water in 2017	123
Table-217.	Level of DO (mg/l) of Gulshan Lake Water in 2017	123
Table-218.	Level of BOD (mg/l) of Gulshan Lake Water in 2017	124
Table-219.	Level of COD (mg/l) of Gulshan Lake Water in 2017	124
Table-220.	Level of TDS (mg/l) of Gulshan Lake Water in 2017	125
Table-221.	Level of Turbidity (NTU) of Gulshan Lake Water in 2017	125
Table-222.	Level of Chloride (mg/l) of Gulshan Lake Water in 2017	126
Table-223.	Level of SS (mg/l) of Gulshan Lake Water in 2017	126
Table-224.	Level of Total Alkalinity (mg/l) of Gulshan Lake Water in 2017	127
Table-225.	Level of EC (μ mhos/cm) of Gulshan Lake Water in 2017	127
Table-226.	Level of Different Parameters of Dhanmondi Lake Water in 2017	128
Table-227.	Level of Different Parameter of of Hatir Jheel Lake Water in 2017	129
Table-228.	Level of pH of Ground Water at Chittagong District in 2017	131
Table-229.	Level of TDS (mg/l) of Ground Water at Chittagong District in 2017	131
Table-230.	Level of Chloride (mg/l) of Ground Water at Chittagong District in 2017	131
Table-231.	Level of EC (μ mhos/cm) of Ground Water at Chittagong District in 2017	132
Table-232.	Level of Iron (mg/l) of Ground Water at Chittagong District in 2017	132
Table-233.	Level of Hardness (mg/l) of Ground Water at Chittagong District in 2017	132
Table-234.	Level of pH of Ground Water at Khulna District in 2017	133
Table-235.	Level of EC (μ mhos/cm) of Ground Water at Khulna District in 2017	134
Table-236.	Level of Chloride (mg/l) of Ground Water at Khulna District in 2017	135
Table-237.	Level of Total Hardness (mg/l) of Ground Water at Khulna District in 2017	136
Table-238.	Level of Iron (mg/l) of Ground Water at Khulna District in 2017	137
Table-239.	Level of Salinity of Ground Water at Khulna District in 2017	138
Table-240.	Ground water quality (pH, EC) at Barisal district in 2017	139
Table - 241.	Ground water quality (TDS, T. Alkalinity, T. Hardness) at Barisal district in 2017	139
Table-242.	Ground water quality (pH, EC) at Bogura district in 2017	140
Table-243.	Ground water quality (Iron, Hardness) at Bogura district in 2017	140
Table-244.	Ground Water Quality (pH, EC, Iron, T. Hardness) at Sylhet in 2017	141
Table-245.	Trend of pH, DO and BOD of Buriganga river from 2010 to 2017.	143
Table-246.	Trend of pH, DO and BOD of Shitalakhya river from 2010 to 2017.	143
Table-247.	Trend of pH, DO and BOD of Turag river from 2010 to 2017.	144
Table-248.	Trend of pH, DO and BOD of Dhaleshwari river from 2010 to 2017.	144
Table-249.	Trend of pH, DO and BOD of Brahmaputra river from 2010 to 2017.	145



Table-250.	Trend of pH, DO and BOD of Halda River from 2010 to 2017.	145
Table-251.	Trend of pH, DO and BOD of Moyuri River from 2010 to 2017.	146
Table-252.	Trend of pH, DO and BOD of Surma River from 2010 to 2017.	146
Table-253.	Trend of pH, DO and BOD of Korotoa River from 2010 to 2017.	147
Table-254.	Trend of pH, DO and BOD of Mathavanga River Water from 2010 to 2017.	147



LIST OF FIGURES

Figure-A: Location of Surface water monitoring stations	6
Fig.1.1: Status of pH, DO, BOD, COD and TDS of Buriganga River in 2017	8
Fig.1.2: Status of Chloride, SS, T. Alkalinity, EC and Turbidity of Buriganga River in 2017	9
Fig.2: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Shitalakhya River in 2017	11
Fig.3: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Turag River in 2017	13
Fig.4: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Dhaleshwari River in 2017	15
Fig.5: Status of pH, DO, BOD, TDS, SS and Chloride of Brahmaputra River in 2017	16
Fig.6: Status of pH, DO, BOD, TDS, SS and Chloride of Kaliganga River in 2017	17
Fig.7: Status of pH, DO, BOD, SS, TDS and Chloride of Jamuna River in 2017	18
Fig.8: Status of pH, DO, BOD, TDS, SS and Chloride of Meghna River in 2017	19
Fig.9: Status of pH, DO, BOD, TDS, SS and EC of Padma River in 2017	20
Fig.10: Status of pH, DO, BOD, COD, TDS, SS and EC of Korotoa River in 2017	21
Fig.11: Status of pH, DO, BOD, TDS, SS and Turbidity of Teesta River in 2017	23
Fig.12: Status of pH, DO, COD, TDS, SS, EC, Salinity and Total Solids of Kamaphuli River in 2017	24
Fig.13: Status of pH, DO, COD, TDS, SS and EC of Halda River in 2017	25
Fig.14: Status of pH, DO, TDS, Chloride, Turbidity, SS, EC and T. Alkalinity of Moyuri River in 2017	26
Fig.15: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and T. Alkalinity of Bhairab River in 2017	28
Fig.16: Status of pH, DO, BOD, Chloride, SS, Turbidity, EC and T. Alkalinity of Rupsha River in 2017	29
Fig.17: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and T. Alkalinity of Mathavanga River in 2017	31
Fig.18: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Pashur River in 2017	32
Fig.19: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Kakshiali River in 2017	34
Fig.20: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Gorai River in 2017	35
Fig.21: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Modhumoti River in 2017	37
Fig.22: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Beel Dakatia River in 2017	38
Fig.23: Status of pH, DO, BOD, TDS, TS, EC, T. Alkalinity and TSS of Kirtankhola River in 2017	40
Fig.24: Status of pH, DO, BOD, TDS, TS and T. Alkalinity, TS and Salinity of Tatulia River in 2017	41
Fig.25: Status of pH, DO, BOD, TDS, T. Alkalinity, TS and Salinity of Sughanda River in 2017	42
Fig.26: Status of pH, DO, BOD, TDS, T. Alkalinity and EC of Lohalia River in 2017	44
Fig.27: Status of pH, DO, BOD, COD, TDS and EC of Surma River in 2017	45
Fig.28: Status of pH, DO, BOD, COD, TDS and EC of Kushiara River in 2017	46
Fig.29: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC, T. Alkalinity and Turbidity of Balu River in 2017	48
Fig.30: Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Gulshan Lake in 2017	50
Fig.31: Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Dhamnondi Lake in 2017	52
Fig.32: Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Hatir Jheel Lake in 2017	54



Fig 33. Status of pH, TDS, Chloride, EC, Iron and Hardness of Chittagong District area ground water in 2017	55
Fig 34. Status of pH, EC, Chloride, Total Hardness, Iron and Salinity of Khulna District area ground water in 2017	57
Fig 35. Status of pH, EC, TDS, T. alkalinity and Hardness of Barisal District area ground water in 2017	58
Fig 36. Status of pH, EC, TDS, T. alkalinity and T.Hardness of Bagura District area ground water in 2017	59
Fig 37. Status of pH, EC, Chloride, T. alkalinity, Iron and T.Hardness of Sylhet District area ground water in 2017	60
Fig 38. Trend of pH, DO and BOD of Buriganga river water from 2010 to 2017	61
Fig 39. Trend of pH, DO and BOD of Sitalakhya river water from 2010 to 2017	62
Fig 40. Trend of pH, DO and BOD of Turag river water from 2010 to 2017	63
Fig 41. Trend of pH, DO and BOD of Dhaleshwari river water from 2010 to 2017	64
Fig 42. Trend of pH, DO and BOD of Brahmaputra river water from 2010 to 2017	65
Fig 43. Trend of pH, DO and BOD of Halda river water from 2010 to 2017	66
Fig 44. Trend of pH, DO and BOD of Moyuri river water from 2010 to 2017	67
Fig 45. Trend of pH, DO and BOD of Surma river water from 2010 to 2017	68
Fig 46. Trend of pH, DO and BOD of Korotoa river water from 2010 to 2017	69
Fig 47. Trend of pH, DO and BOD of Mathavanga river water from 2010 to 2017	70



LIST OF FIGURES

Figure-A: Location of Surface water monitoring stations	6
Fig.1.1: Status of pH, DO, BOD, COD and TDS of Buriganga River in 2017	8
Fig.1.2: Status of Chloride, SS, T. Alkalinity, EC and Turbidity of Buriganga River in 2017	9
Fig.2: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Shitalakhya River in 2017	11
Fig.3: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Turag River in 2017	13
Fig.4: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Dhaleshwari River in 2017	15
Fig.5: Status of pH, DO, BOD, TDS, SS and Chloride of Brahmaputra River in 2017	16
Fig.6: Status of pH, DO, BOD, TDS, SS and Chloride of Kaliganga River in 2017	17
Fig.7: Status of pH, DO, BOD, SS, TDS and Chloride of Jamuna River in 2017	18
Fig.8: Status of pH, DO, BOD, TDS, SS and Chloride of Meghna River in 2017	19
Fig.9: Status of pH, DO, BOD, TDS, SS and EC of Padma River in 2017	20
Fig.10: Status of pH, DO, BOD, COD, TDS, SS and EC of Korotoa River in 2017	21
Fig.11: Status of pH, DO, BOD, TDS, SS and Turbidity of Teesta River in 2017	23
Fig.12: Status of pH, DO, COD, TDS, SS, EC, Salinity and Total Solids of Karnaphuli River in 2017	24
Fig.13: Status of pH, DO, COD, TDS, SS and EC of Halda River in 2017	25
Fig.14: Status of pH, DO, TDS, Chloride, Turbidity, SS, EC and T. Alkalinity of Moyuri River in 2017	26
Fig.15: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and T. Alkalinity of Bhairab River in 2017	28
Fig.16: Status of pH, DO, BOD, Chloride, SS, Turbidity, EC and T. Alkalinity of Rupsha River in 2017	29
Fig.17: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and T. Alkalinity of Mathavanga River in 2017	31
Fig.18: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Pashur River in 2017	32
Fig.19: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Kakshiali River in 2017	34
Fig.20: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Gorai River in 2017	35
Fig.21: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Modhumoti River in 2017	37
Fig.22: Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Beel Dakatia River in 2017	38
Fig.23: Status of pH, DO, BOD, TDS, TS, EC, T. Alkalinity and TSS of Kirtankhola River in 2017	40
Fig.24: Status of pH, DO, BOD, TDS, TS and T. Alkalinity, TS and Salinity of Tatulia River in 2017	41
Fig.25: Status of pH, DO, BOD, TDS, T. Alkalinity, TS and Salinity of Sughanda River in 2017	42
Fig.26: Status of pH, DO, BOD, TDS, T. Alkalinity and EC of Lohalia River in 2017	44
Fig.27: Status of pH, DO, BOD, COD, TDS and EC of Surma River in 2017	45
Fig.28: Status of pH, DO, BOD, COD, TDS and EC of Kushiara River in 2017	46
Fig.29: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC, T. Alkalinity and Turbidity of Bala River in 2017	48
Fig.30: Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Gulshan Lake in 2017	50
Fig.31: Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Dhamnondi Lake in 2017	52
Fig.32: Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Hatir Jheel Lake in 2017	54



ABBREVIATIONS

BOD	-	Biochemical Oxygen Demand
COD	-	Chemical Oxygen Demand
TDS	-	Total Dissolved Solids
EC	-	Electrical Conductivity
ECA	-	Ecologically Critical Area
ECR	-	Environmental Conservation Rules, 1997
DO	-	Dissolved Oxygen
SS	-	Suspended Solids
DoE	-	Department of Environment
EQS	-	Environmental Quality Standard
GEMS	-	Global Environment Monitoring System
GPS	-	Global Positioning System
IWM	-	Integrated Watershed Management
NTU	-	Nephelometric Turbidity Unit
SoE	-	State of the Environment
WQI	-	Water Quality Index
WCZ	-	Water Control Zone
ETP	-	Effluent Treatment Plant



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CHAPTER 1: INTRODUCTION

1.1 Background

Water is absolutely essential not only for survival of human-beings, but also for animals, plants and all other living beings. Monitoring surface water quality is one of the vital work of the Department of Environment (DoE). To evaluate water quality for human consumption and other uses the Government has set Environmental Quality Standard (EQS) for inland surface water in the Environmental Conservation Rules (ECR), 1997. The information obtained from monitoring would constitute part of diagnosis of functionality of aquatic ecosystem. Also it would help evaluating effectiveness of the pollution control measures.

There are about 405 rivers in Bangladesh including 57 transboundary rivers (BWDB, 2011). The flows in the rivers varies greatly depending on seasons, rainfall intensity and upstream diversion of transboundary rivers. Following fluctuation in flow river water quality varies significantly. Dumping of industrial untreated wastes, household and municipal wastes, medical wastes, naval waste etc. into water courses further degrade surface water quality. Because of severe pollution, Government has already declared four rivers (Buriganga, Shitalakhya, Turag and Balu) as Ecologically Critical Area (ECA) to protect from further pollution.

DoE has established a monitoring network. Following this network for surface water quality, DoE collect surface water samples for laboratory analyses. Samples are collected on monthly basis from selected sampling points of rivers under the monitoring network. In 2017, the monitoring program covered 78 sampling locations in 29 rivers, 16 sampling locations in 3 lakes, 65 sampling locations in 5 districts. Nearly 50% of these locations were monitored on monthly basis.

1.2 Major objectives

Major objectives of this report are to provide-

- information for research/study in the relevant field;
- updated information on the river's water quality to help information based decision-making process for sustainable development and management of water resources;
- water quality data to Global Environment Monitoring System (GEMS);
- sensitization and awareness building among the stakeholders and public in general;
- information sharing and preparation of State of the Environment (SoE) Report and
- guidance to make policy decisions.

1.3 Limitations of the report

This report has been prepared based on primary data and information collected by six divisional offices of DoE for the period of January to December 2017. The following are the limitations of the report:

- In some cases, data on all the parameters as per ECR 1997, for the entire period of the year could not be furnished with this report because of non-availability of data for certain parameters in some months of the year. to lack of irregular sampling and laboratory analyses.
- This report does not include information on microbiological parameters and biological indicators.

Data on weather conditions of the sampling locations at the time of sampling were unavailable.

CHAPTER 2: AN OVERVIEW OF BANGLADESH'S SURFACE AND GROUND WATER

Surface water sources and Rivers of Bangladesh

Rivers, canals, streams, lakes, Haors, Baors, Beels and ponds as surface water sources are the most important elements of physiographic features of Bangladesh and play a crucial role in the economy. The Padma, the Jamuna and the lower Meghna are the widest rivers, with the latter expanding to around eight kilometers across in the wet season, and even more during the floods. There are about 405 rivers in Bangladesh including 57 transboundary rivers. The watercourse of the country are unevenly distributed. They increase in number and size from the northwest to the southeastern region.

Surface water sources of Bangladesh greatly linked with the lives and livelihood of the people and their culture. The larger rivers serve as the main source of water for cultivation, domestic use and as the principal arteries of commercial transportation. Rivers and other surface water also provide fish, an important source of protein and habitat for other aquatic biodiversity. Perennial floods of the rivers delivers fresh deposits of rich silt replenishing the fertile but overexploiting soil. The rivers also drain excess monsoon rainfall into the Bay of Bengal. Hence, its quality is vital for the both human and other biodiversity of the country.

The river system of Bangladesh is extremely dynamic. The discharge carried by those rivers has a wide seasonal fluctuation peaking at the monsoon (July to September). Bangladesh has predominantly four major river systems. They are –

- The Brahmaputra-Jamuna,
- The Ganges-Padma,
- The Surma-Meghna, and
- The Chittagong Region river system.

The principal rivers of Bangladesh are the Padma, the Meghna, the Jamuna, the Brahmaputra, the Dhaleswari and the Karnaphuli. Besides those rivers, there are many small rivers like the Buriganga, the Sitalakhya, the Gomoti, the Tista, the Atrai, the Korotoa, the Mohananda, the Madhumoti and many others.

The rivers of Bangladesh greatly linked with the lives and livelihood of the people and their culture. They are part of our heritage. They generally flow from north to south. The large rivers serve as the main source of water for cultivation and as the principle arteries of commercial transportation. Rivers also provide fish, an important source of protein. Flooding of the rivers during the monsoon season causes enormous hardship and hinders development, but fresh deposits of rich silt replenish the fertile but overexploited soil. The rivers also drain excess monsoon rainfall in the Bay of Bengal. Thus, the great river system is at the same time the country's principal resource and cause hardship to the people.

The profusion of rivers can be divided into five major networks. The Jamuna-Brahmaputra system is 292 kilometres long and extends from northern Bangladesh to its confluence with the



Padma. Originating as the Yarlung Tsangpo River in China's Xizang Autonomous Region (Tibet) and flowing through India's state of Arunachal Pradesh, the Brahmaputra 740 kilometres in length, receives waters from five major tributaries. At the point where the Brahmaputra meets the Tista River in Bangladesh, its name becomes, the Jamuna. The Jamuna has shifting subchannels and forms fertile silt islands (chars). Erosion is very high along its banks.

The second system is the Padma-Ganges, which is divided into two sections: a 258 kilometres segment, the Ganges, which extends from the western border with India to its confluence with the Jamuna 72 kilometres west of Dhaka, and a 126 kilometres segment, the Padma, which runs from the Ganges-Jamuna confluence to the Meghna River at Chandpur. The Padma-Ganges is the central part of a deltaic river system with hundreds of rivers and streams-some 2,100 kilometres in length.

The third network is the Surma-Meghna River System, which courses from the northeastern border with India to Chandpur, where it joins with the Padma. The Surma-Meghna, 669 kilometres by itself and the longest river in Bangladesh, is formed by the union of six smaller rivers. When the Padma and Meghna join together, they form the fourth river system-the Padma-Meghna-which flows 145 kilometres to the Bay of Bengal.

This mighty network of four river systems flowing through the Bangladesh Plain drains an area of some 1.5 million square kilometres. The numerous channels of the Padma-Meghna, its distributaries, and smaller parallel rivers that flow into the Bay of Bengal are referred as the Mouths of the Ganges. Like the Jamuna, the Padma-Meghna and other estuaries on the Bay of Bengal are also known for their many chars.

A fifth river system, unconnected to the other four, is the Karnaphuli. Flowing through the region of Chattagram and the Chattagram Hills, it cuts across the hills and runs rapidly downhill to the west and southwest and then to the sea. The Feni, Karnaphuli, Sangu, and Matamuhari-an aggregate of some 420 kilometres- are the main rivers in the region. The port of Chattagram is situated on the banks of the Karnaphuli.

The country heavily depends on ground water for household supply and irrigation mostly during dry season. Ground water has been depleting because of over-exploitation in major urban areas. In addition, lichets from the soil pollution and dumping of industrial waste are becoming a threat to ground water pollution.

CHAPTER 3: METHODS FOR MEASUREMENT AND ANALYSIS OF WATER QUALITY

3.1 Water Quality Parameters

Water quality monitoring can help researchers predict and learn from natural processes in the environment and determine human impacts on an ecosystem. These measurement efforts can also assist in restoration projects or ensure environmental standards are being met.

Water has physical, chemical and biological properties. Physical properties of water quality include temperature and turbidity. Chemical characteristics involve parameters such as pH and dissolved oxygen. Biological indicators of water quality include algae and phytoplankton. These parameters are relevant not only to surface water studies of the ocean, lakes and rivers, but to groundwater and industrial processes as well.

A comprehensive range of physico-chemical parameters such as Temperature, Electrical Conductivity (EC), Dissolved Oxygen (DO), pH, Total Alkalinity, Turbidity, Total Dissolved Solids (TDS), Suspended Solids (SS), Biochemical Oxygen Demand (BOD₅), Salinity, Chloride and Chemical Oxygen Demand (COD) were measured to assess the inland surface water quality in Bangladesh.

3.2 Sampling Locations

In 2017, the monitoring program covered 78 sampling locations in 29 rivers, 16 sampling locations in 3 lakes, 65 sampling locations in 5 districts. Nearly 50% of these locations were monitored on monthly basis (Figure: A).

3.3 Methods of Analysis

Usually testing procedures and parameters grouped into physical, chemical, bacteriological and microscopic categories.

- Physical tests indicate properties detectable by the senses.
- Chemical tests determine the amounts of mineral and organic substances that affect water quality.
- Bacteriological tests show the presence of bacteria, characteristic of faecal pollution. This report only covered the physio-chemical analysis.

The methods taken by DoE are as follows:

SL. No.	Parameters	Methods
01	Dissolved Oxygen (DO)	Modified Winkler's Method/Titrimetric Method
02	Biochemical Oxygen Demand (BOD ₅)	Dilution Method
03	Chemical Oxygen Demand (COD)	Closed Reflux Colorimetric Method
04	Total Dissolved Solid (TDS)	Gravimetric Method
05	Suspended Solid (SS)	Gravimetric Method
06	Chloride	Argentometric Method
07	Temperature	Thermometer
08	Turbidity	Nephelometric Method
09	pH	Standard method/Using Electrode
10	EC	Standard method
11	Total Alkalinity	Standard method/ Titrimetric Method
12	Salinity	Using Electrode



3.4 Surface Water Monitoring Stations

Sample from 78 monitoring stations of both Rivers and inland waterbodies were collected. The following table list all monitoring stations in selected 29 rivers (Table A)

Table- A: Water Quality Monitoring Stations of DoE for Selected 29 Rivers

SI	River Name	Monitoring Stations	No. of Stations
1	Buriganga	Mirpur Bridge, Hazaribagh, Kamrangir Char, Chandni Ghat, Sadar Ghat, Dholaikhal, Pagla, Bangladesh China Friendship Bridge	08
2	Shitalakhya	Near ACI Factory Demra Ghat, Ghorashal Fertilizer Factory, Near Kanchpur Bridge	04
3	Turag	Gabtolli Bridge, Mirpur BIWTA Landing Station, Ashulia BIWTA Landing Station, Tongi Istima Mat and North Side of Tongi Bridge	05
4	Dhaleshwari	200m up of CETP, Dropping Point of CETP, 200m Down of CETP, Muktarpur Bridge, Munshiganj and Harindhara, Hemayetpur, Savar	05
5	Brahmaputra	Mymensingh	01
6	Kaliganga	Veuta Ghat, Manikgonj	01
7	Jamuna	Bahadurabad Ghat, Near Jamuna Fertilizer Factory, Fulchari Ghat, Gibanda, Shariakandi Groin Badth, Bogra, Near Banabandhu Bridge.	05
8	Meghna	Bhairab Bazar, Meghna Ghat and Shahajalal Paper Mills	03
9	Padma	Mawa Ghat, Pakshi Ghat (Up and Down Steam), Pabna and Baro Kuti Ghat (Up and Down Steam), Rajshahi.	03
10	Korotoa	Near Fateh Ali Bridge, Near Dutta Bari Bridge, Near Matidali Bridge, Near S.P Bridge and Shahjadpur	05
11	Teesta	Tista Bridge (Up Stream and Down stream)	01
12	Karnaphuli	TSP Side, Patenga and CUFL Side, Anowara	02
13	Halda	WASA Intake Mohara and Maduna Ghat	02
14	Moyuri	Gallamari Bridge (Bank and Middle)	01
15	Bhairab	Noapara Ghat (Bank and Middle), Fultala Ghat (Bank and Middle)	02
16	Rupsha	Rupsha Ghat (Bank and Middle), Labanchara Ghat (Bank, Middle)	02
17	Mathavanga	Pipeghat (200M Upstream); Pipeghat (200M Downstream), Darshana.	02
18	Pashur	Mongla Port (Bank and Middle)	01
19	Khakshiali	Kaliganj (Bank and Middle), Satkhira	01
20	Gorai	Kamarkhali Ghat (Bank and Middle), Kustia and Magura	02
21	Modhumoti	Mollarhat (Bank and Middle), Bagarhat.	01
22	Beel Dakatia	Khulna (Bank and Middle)	01
23	Kirtankhola	Launch ghat (Bank and Middle), Dopdopia Kheyaghat (Bank and Middle), Beltola Fery Gaht (Bank and Middle)	03
24	Tetulia	Vedhoria Feri Ghat (Bank and Middle), Bhola.	01
25	Sugandha	Jhalkathi Launch Ghat (Bank and Middle)	01
26	Lohalia	Patuakhali Launch Ghat, (Bank and Middle)	01
27	Surma	Mendibag Point, Kin Bridge, Shak Ghat, Chattak and Kazi Bazaar	05
28	Kushiara	Jokigonj (BSF Ghat, BDR Camp) and Fenchugonj Point	03
29	Balu	Near Jaber & Jubair Fabrics Ltd., Near Hossain Dyeing Ltd., Near Damra University College, Near Balu Bridge, 300 feet Road, Near Fulpukuria Dyeing Ltd., South Side of Tongi Rail Bridge, Pagar, Tongi.	06

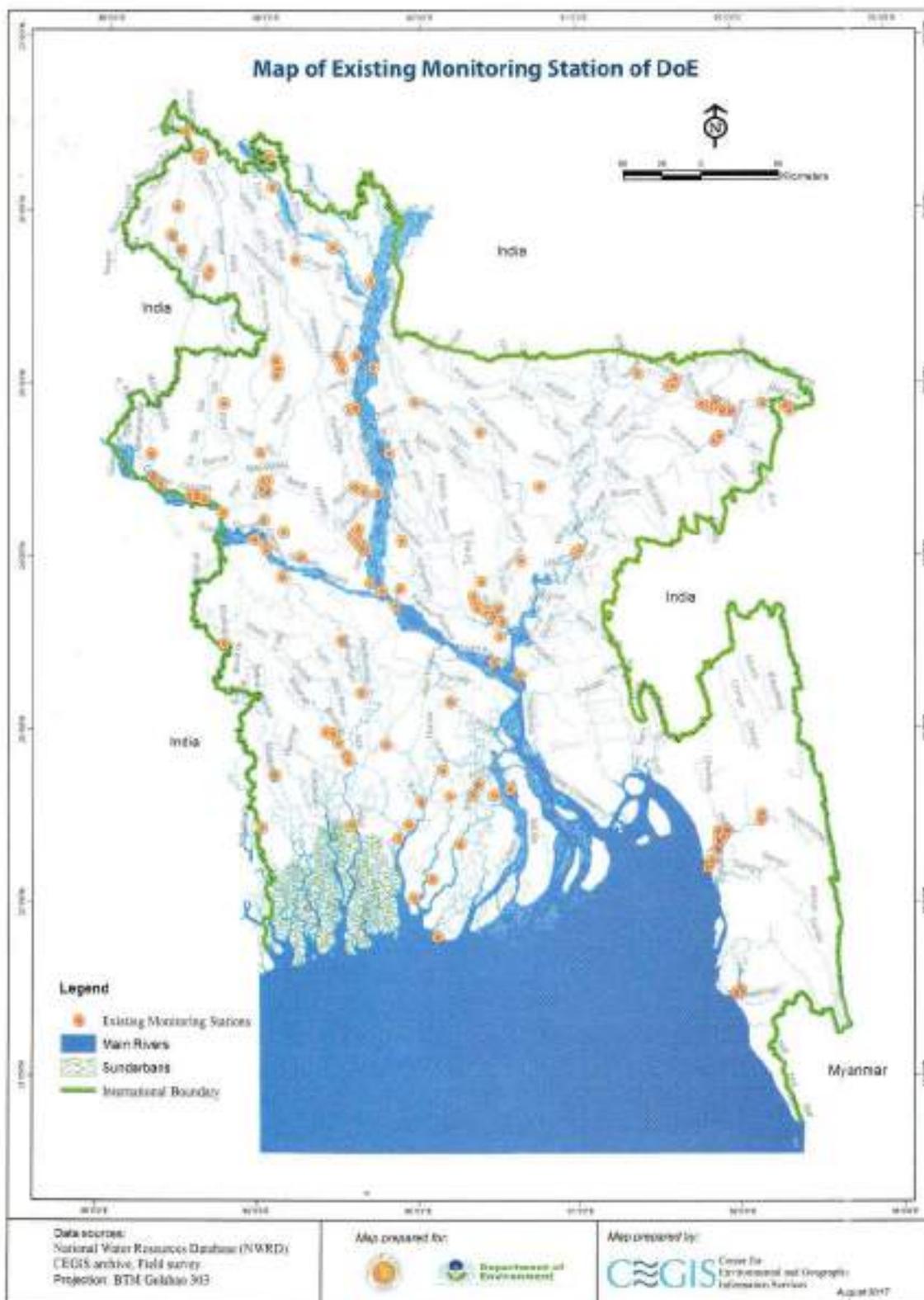


Figure-A: Location of Surface water monitoring stations

CHAPTER 4: RIVER WATER QUALITY IN 2017

4.1 Buriganga River

To monitor water quality of Buriganga river, samples were collected from eight different locations viz. Mirpur Bridge (M.B), Hazaribag (Hg), Kamrangir Char (K.C), Chandni Ghat (C.G), Sadar Ghat (S.G), Dholaikhal (DL), Bangladesh China Friendship Bridge (B.C.F.B) and Pagla (Pa) along the river. Detail data is attached Annex-1 (Table:1-10).

In 2017, pH among different locations varied from 7.05 to 7.93 (Fig.1.1 a) while standard pH range for inland surface water for fisheries is 6.5 to 8.5. In 2016, pH range varied from 6.78 to 7.89. In 2017, the maximum DO (5.58 mg/l) was found at Mirpur Bridge in October and the minimum (0.0 mg/l) was at all locations from January to March (Fig.1.1 b). Direct discharge of untreated effluent from industries, reduced flow of river water, municipal wastes and tannery wastes into the river are the proximate causes for depletion of DO in dry season. DO level was slightly increased in wet season (July to October) at all locations of the river. In 2016, DO level varied from 0.0 mg/l to 6.2 mg/l. In 2017, BOD of Buriganga river water was higher than EQS (≤ 6 mg/l). The maximum BOD (32 mg/l) was found at BCFB Point in March and the minimum (0.8 mg/l) was at Mirpur Bridge in September (Fig.1.1 c). In 2016, BOD range was 2.6 to 50.2 mg/l. In 2017, COD level was mostly below the EQS (200 mg/l) set for industrial waste water after treatment. The maximum and the minimum COD concentration of Buriganga river was 113 mg/l at BCFB Point in March and 10 mg/l at Sadar Ghat point in July (Fig.1d). In 2016, COD varied from 10 mg/l to 212.62 mg/l. In 2017, TDS of Buriganga river varied from 71.7 to 605 mg/l (Fig.1.1 e) against the EQS of 2100 mg/l for industrial wastewater after treatment. In 2016, TDS concentration varied from 56.2 to 586 mg/l.

In 2017, Chloride concentration of the Buriganga river was below the EQS for industrial wastewater after treatment. The maximum concentration was 89 mg/l at Sadar Ghat point in March and the minimum 4.0 mg/l at Sadar Ghat in August (Fig.1.2 f). In 2016, Chloride concentration varied from 5.98 mg/l to 56.98 mg/l. In 2017, SS of Buriganga river water at different locations was below the EQS (150 mg/l) for wastewater after treatment from industrial units. The maximum SS was 142 mg/l in April at Pagla and the minimum 11 mg/l in September at Dholaikhal (Fig.1.2 g). In 2016, SS varied from 04 mg/l to 80 mg/l. In 2017, the maximum and the minimum Total Alkalinity of Buriganga river water was 284.0 mg/l at Chadni Ghat in February and 40 mg/l at Mirpur Bridge in June (Fig.1.2 h). In 2016, T.Alkalinity varied from 40 mg/l to 212.62 mg/l. In 2017, the maximum EC of Buriganga river water was 1178 μ mhos/cm in March at Chandni Ghat and the minimum 151.2 μ mhos/cm in September at Chandni Ghat (Fig.1.2 i). In 2016, EC varied from 107.50 μ mhos/cm to 1182 μ mhos/cm. In 2017, the maximum and the minimum Turbidity of Buriganga river water was 184 NTU at Pagla in April and 9.66 NTU at Sadar Ghat point in December while EQS is 10 NTU (Fig.1.2 j). In 2016, Turbidity range varied from 3.6 to 120 NTU.

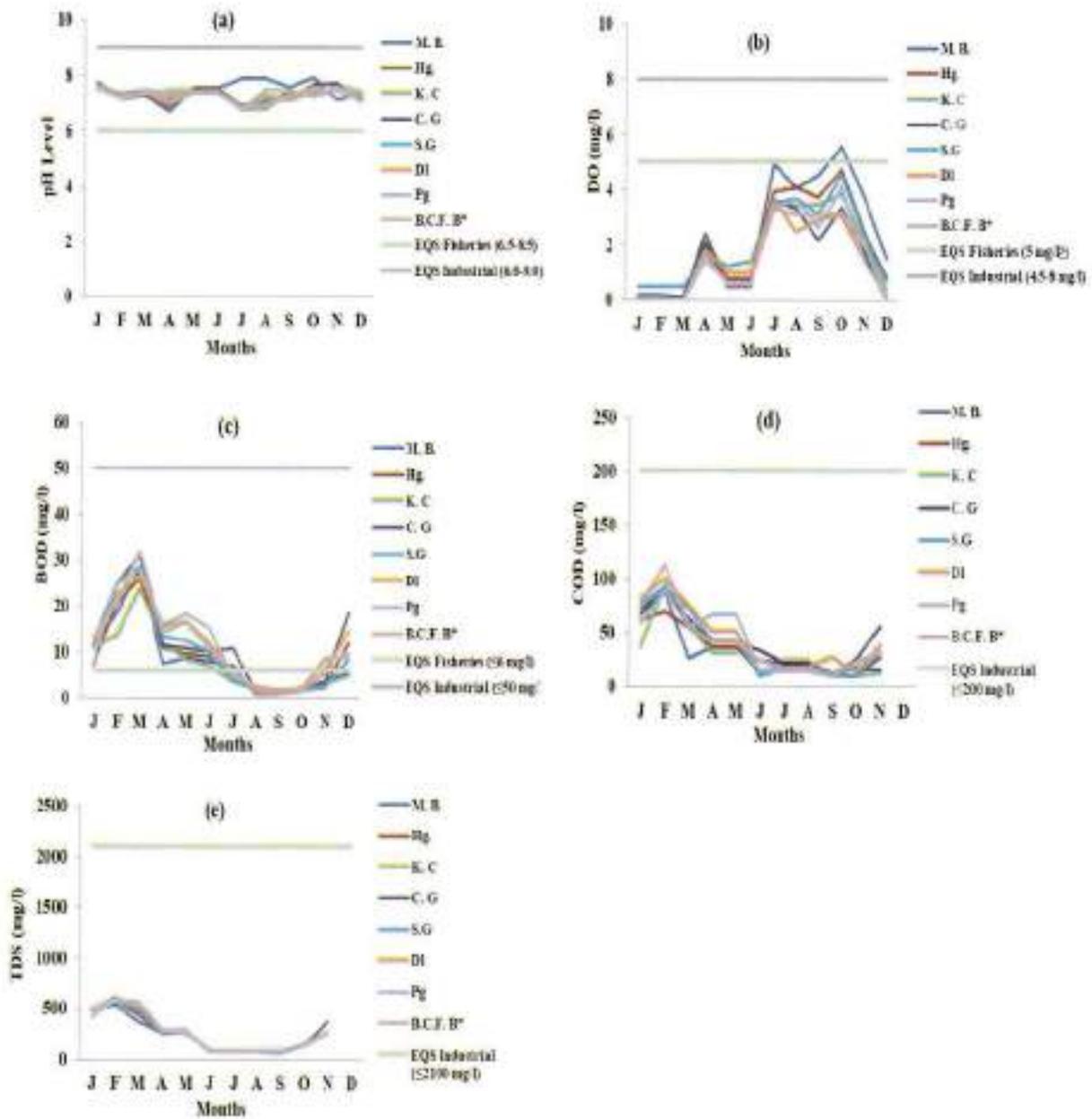


Fig.1.1: Status of pH, DO, BOD, COD and TDS of Buriganga River in 2017

[Abbreviations: M.B=Mirpur Bridge; Hg=Hazaribag; K.C=Kamrangir Char; C.G=Chandni Ghat; S.G=Sadar Ghat; DL=Dholaikhal; B.C.F.B=Bangladesh China Friendship Bridge and Pa=Pagla]

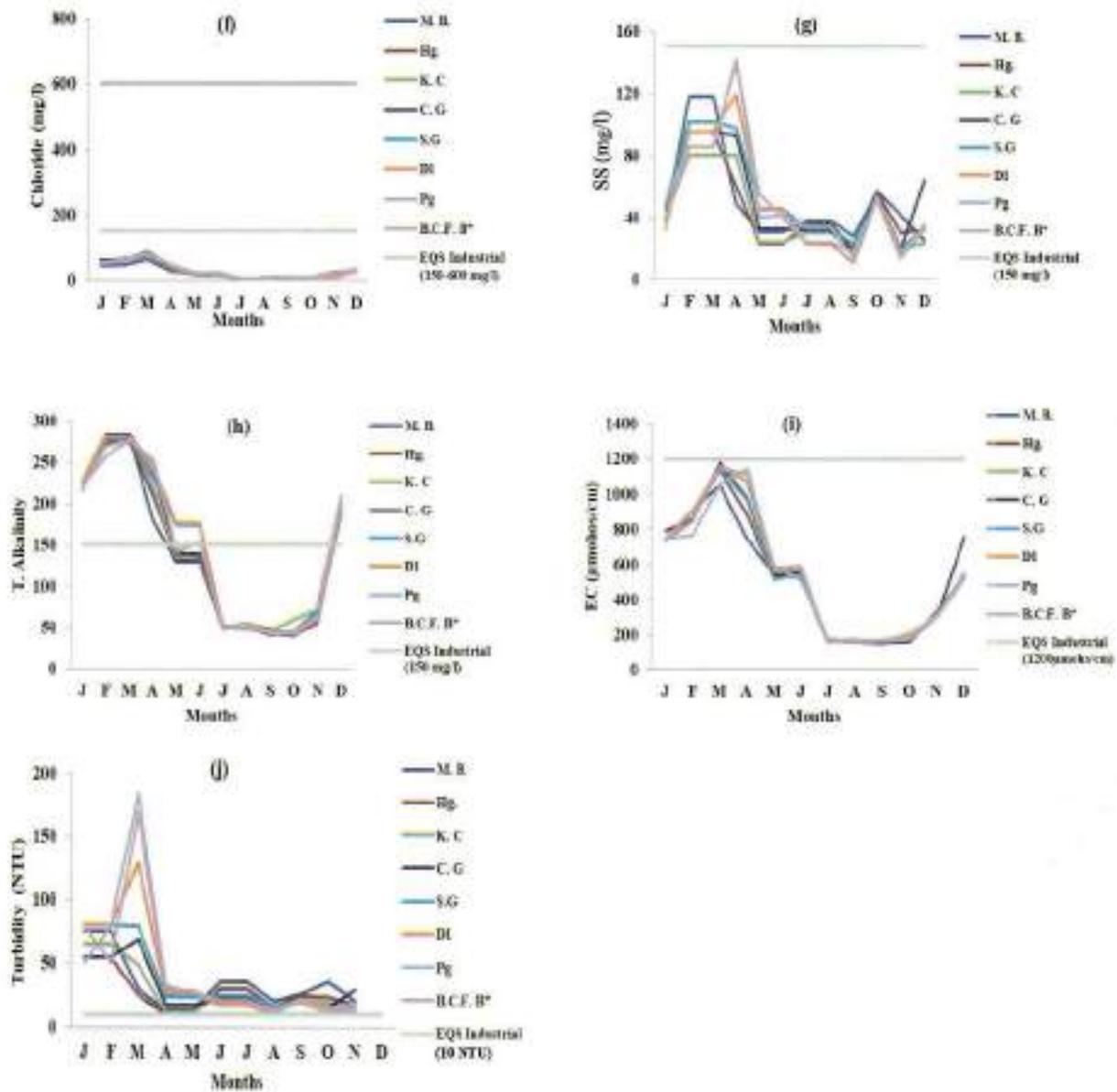


Fig.1.2: Status of Chloride, SS, T. Alkalinity, EC and Turbidity of Buriganga River in 2017

[Abbreviations: M.B=Mirpur Bridge; Hg=Hazaribag; K.C=Kamrangir Char; C.G=Chandni Ghat; S.G=Sadar Ghat; DL=Dbolaikhal; B.C.F.B=Bangladesh China Friendship Bridge and Pa=Pagla]

4.2 Shitalakhya River

The Shitalakhya river is a distributary of the Brahmaputra river. It remains navigable round the year. For monitoring water quality, samples were collected from four different locations viz. Demra Ghat (D.G), Ghorasal Fertilizer Factory (G.F.F), Near Kanchpur Bridge (N.K.B) and near ACI Factory at Narayanganj. Detail data is attached Annex-1 (Table:11-19).

In 2017, pH of Shitalakhya river water was within the EQS (6.5-8.5) range for inland surface water. The maximum pH was 8.18 in April at Ghorasal fertilizer Factory and the minimum PH was 7.68 in July at Derma Ghat (Fig.2a). In 2016, pH varied from 6.66 to 7.98. In 2017, the maximum DO (7.2 mg/l) was found at near Ghorasal Fertilizer Factory in April and the minimum (0.0 mg/l) was found at near ACI Factory in January and February (Fig.2b). In 2016, DO varied from 0.0 to 12 mg/l. In 2017, BOD at Demra Ghat was very high during dry period and was above the EQS (≤ 6 mg/l) for fisheries. Highest value of BOD (44.6 mg/l) was found near ACI Factory in February and lowest (1.0 mg/l) was in July at Ghorasal Fertilizer Factory (Fig.2c). In 2016, BOD concentration varied from 0.8 mg/l to 38 mg/l. In 2017, COD level was within the EQS (200 mg/l) for wastewater after treatment from industrial units at all locations of Shitalakhya river. The maximum COD (110 mg/l) was at near ACI Factory in February and the minimum COD (5 mg/l) was at Derma Ghat in August (Fig.2d). In 2016, COD level varied from 10 mg/l to 94 mg/l. In 2017, TDS of Shitalakhya river water varied from 58.2 to 556 mg/l against the EQS (2100 mg/l) for wastewater after treatment from industrial units. In dry season maximum TDS (556 mg/l) was at near ACI Factory in March and the minimum (58.2 mg/l) in July at Demra Ghat (Fig.2e). In 2016, TDS range was from 107.90 to 498 mg/l. In 2017, Chloride concentration of the Shitalakhya river water was below the EQS (600 mg/l) for wastewater after treatment from industrial units. The maximum Chloride (280 mg/l) was found at near ACI Factory in May and the minimum was 4.0 mg/l at near G.F.F in July (Fig.2f). In 2016, Chloride concentration varied from 4.0 mg/l to 48.9 mg/l. In 2017, SS of Shitalakhya river water at different sampling locations was within the EQS (150 mg/l) except the months of February and March. Maximum SS concentration of Shitalakhya river was 198 mg/l at near ACI Factory in February and the minimum was 10 mg/l in February at Ghorasal Fertilizer Factory (Fig.2g). In 2016, SS varied from 4 mg/l to 89 mg/l. In 2017, EC of Shitalakhya river at different locations was mostly within the EQS (1200 μ mhoms/cm) for treated wastewater from industrial units (Fig.2h). The maximum EC (1108 μ mhoms/cm) was at near ACI Factory in February and the minimum EC (114.1 μ mhoms/cm) was at Demra Ghat in August. In 2016, EC varied from 116.8 μ mhoms/cm to 6147 μ mhoms/cm. In 2017, Maximum Total Alkalinity (338 mg/l) was at near Kanchpur Factory in April and that of minimum was (36 mg/l) at Ghorasal Fertilizer Factory in October (Fig.2i). In 2016, Total Alkalinity varied from 22 mg/l to 164 mg/l.

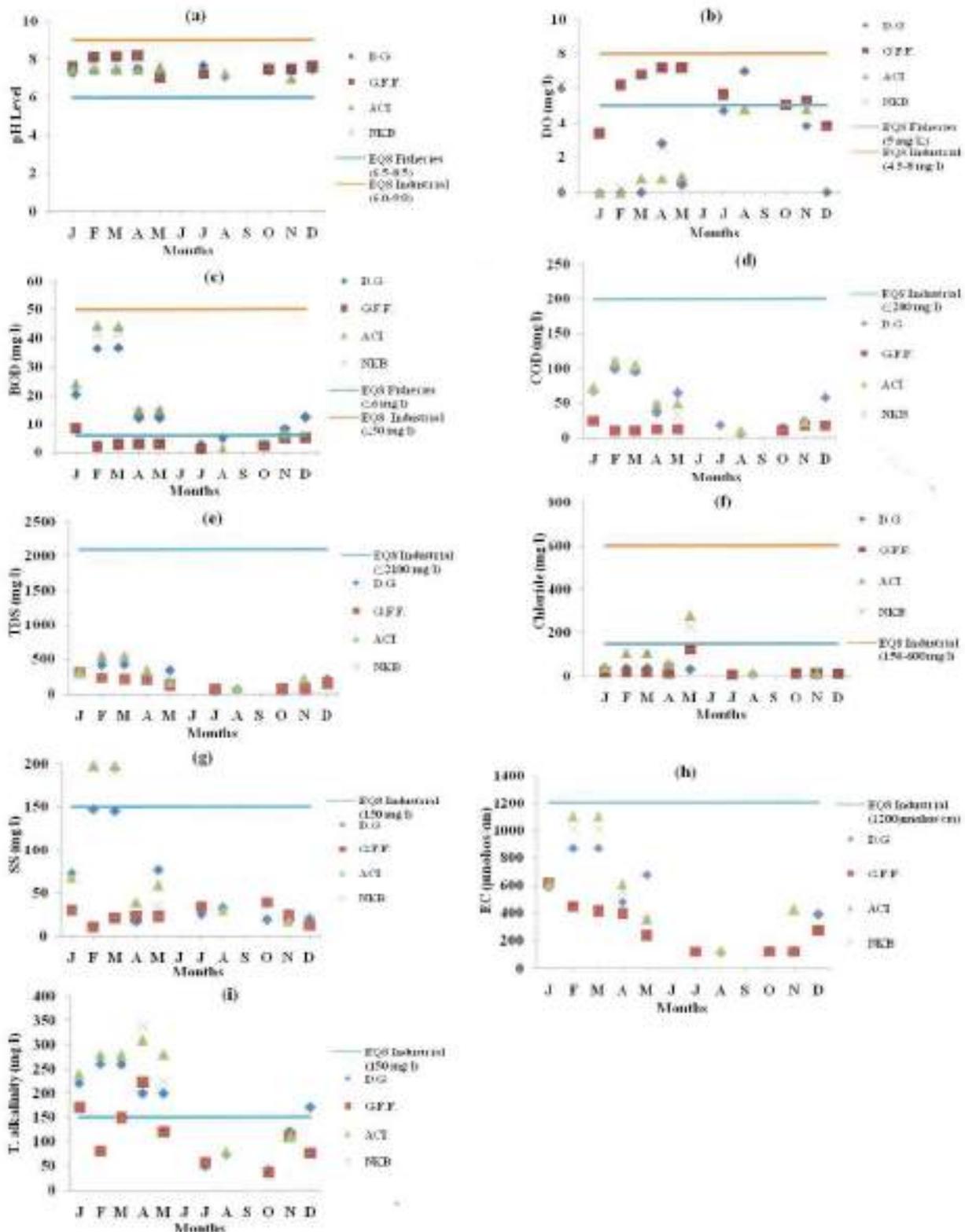


Fig.2: Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Shitalakhya River in 2017

[Abbreviations: DG=Demra Ghat; GFF=Ghorasal Fertilizer Factory; NKB=Near Kanchpur Bridge and near ACT Factory]

4.3 Turag River

Turag river is the upper tributary of the Buriganga. To monitor water quality in 2017, water samples were collected from five locations such as New Gabtoli Bridge (NGB), Mirpur Diabary BIWTA Landing Station (MDLS), Ashulia BIWTA Landing Station (ALS), Tongi Istima Mat and (TIM), North Side of Tongi Bridge (NSTB). Detail data is attached Annex-1 (Table:20-28).

In 2017, the pH range (6.68- 8.11) (Fig.3a) of Turag river was within EQS (6.5 -8.5). The maximum pH 8.13 was found in January at Tongi Istima Mat and the minimum pH 6.68 was found in June at New Gabtoli Bridge. In 2016, pH range was 6.68- 8.11. In 2017, DO concentration of Turag river water was very low during dry season. The maximum DO (5.87 mg/l) found at Ashulia BIWTA Landing Station in October and the minimum DO (0.0) mg/l was found in January and February at the all locations (Fig.3b). In 2016, DO was varied from 0.0 to 6.1. In 2017, BOD of Turag river water was beyond the EQS (≤ 6 mg/l) for all sampling locations. The maximum BOD was 54 mg/l in April at Mirpur Diabary BIWTA Landing Station and the minimum was 0.5 mg/l in July at Tongi Istima Mat (Fig.3c). In 2016, BOD varied from 1.8 mg/l to 70.3 mg/l. In 2017, COD at almost all locations of Turag river was below the EQS (200 mg/l) for waste water after treatment from industrial units. The maximum and the minimum COD content of Turag river water was 130 mg/l at Tongi Istima Mat in May and 5 mg/l at Ashulia BIWTA Landing Station in July (Fig.3d). In 2016, COD range was from 10 mg/l to 258.01 mg/l. In 2017, TDS was below the EQS (2100 mg/l) for wastewater after treatment from industrial units (Fig.3e) at all the sampling points. The maximum TDS was 789 mg/l in March at Ashulia BIWTA Landing Station while that of minimum was 60.1 in September at Tongi Istima Mat. In 2016, TDS varied from 56 mg/l to 930 mg/l. In 2017, Chloride content of Turag river water was below the EQS (600 mg/l). The maximum Chloride was (135 mg/l) found in April at Ashulia BIWTA Landing Station and the minimum Chloride was (3.0 mg/l) in July at the same locations (Fig.3f). In 2016, Chloride varied from 6.0 mg/l to 119.7 mg/l. In 2017, the maximum SS (297 mg/l) was at Ashulia BIWTA Landing Station in February and the minimum (9 mg/l) in July at Mirpur Diabary BIWTA Landing Station (Fig.3g). In 2016, SS varied from 18 mg/l to 200 mg/l. In 2017, the maximum EC (1679 μ mhos/cm) was in March at Ashulia BIWTA Landing Station and the minimum (116 μ mhos/cm) was in September (Fig.3h) at ACL. In 2016, EC varied from 118 μ mhos/cm to 1767 μ mhos/cm. In 2017, the maximum Total Alkalinity (320 mg/l) was at Ashulia BIWTA Landing Station in March and the minimum (38 mg/l) in October at New Gabtoli Bridge (Fig.3i). In 2016, Total Alkalinity varied from 38 mg/l to 450 mg/l.

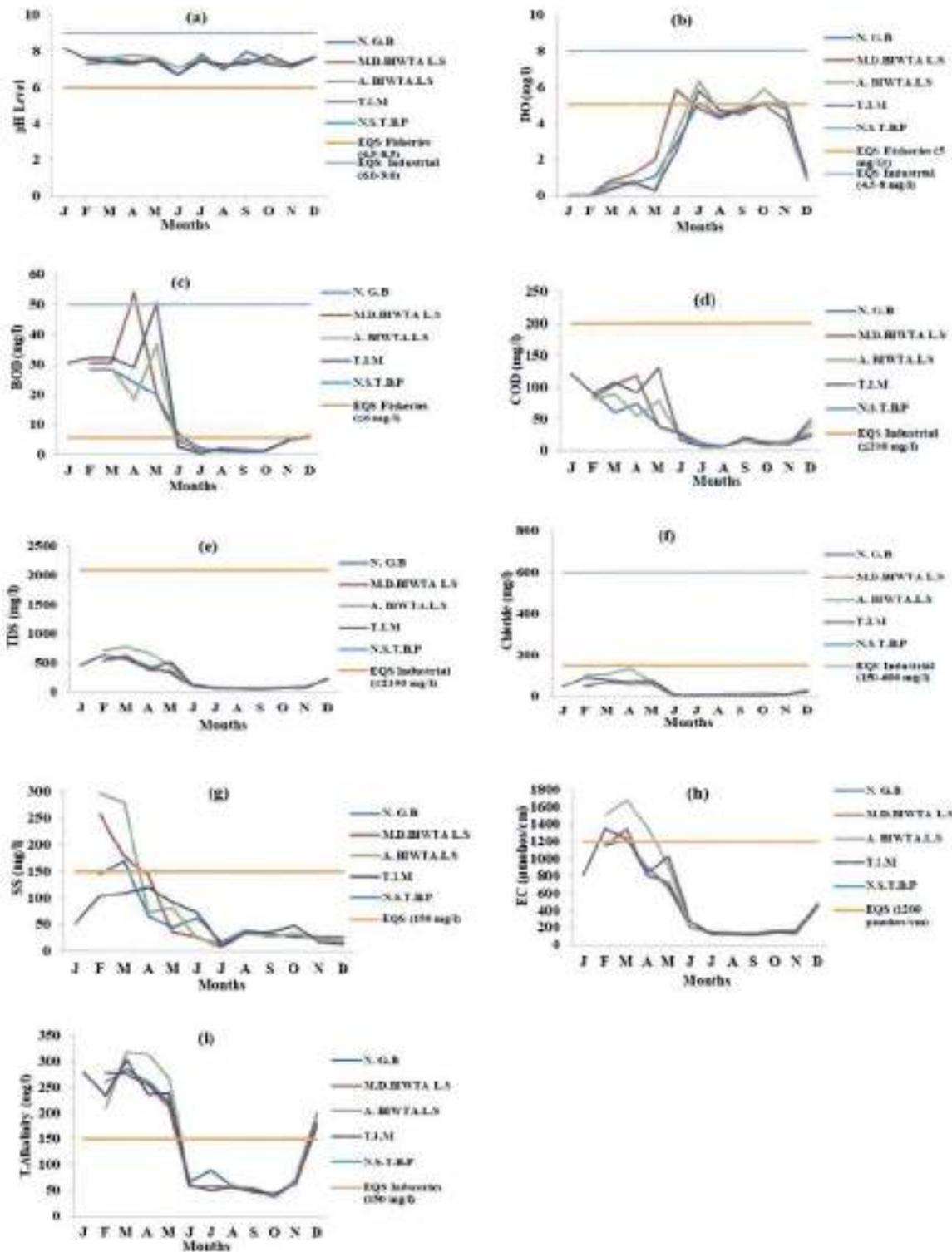


Fig.3. Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Turag River in 2017

[Abbreviations: NGB=New Gabtoli Bridge; MDLS=Mirpur Diabary BIWTA Landing Station; ALS=Ashulia BIWTA Landing Station; TIM=Tongi Istima Mat; NSTB=North Side of Tongi Bridge]



4.4 Dhaleshwari River

Dhaleshwari river is a 160 km long tributary of the Jamuna river flowing through central part of Bangladesh. In 2017, water samples were collected from five locations namely 200m up of CETP, Dropping Point of CETP, 200m Down of CETP, Muktarpur Bridge (M.B), Munshiganj and Harindhara, Hamayetpur, Savar, Dhaka for analyses. Data was not available in the months of January, February June and October at the CETP point. Data was available in the months of June, September and November at the Muktarpur Bridge point. Data was available in the months of January and February at the Hamayatpur point. Detail data is attached Annex-1 (Table: 29-37).

In 2017, Dhaleshwari river water was almost neutral and pH varied from 6.55 to 8.27 (Fig.4a). In 2016, pH level varied from 7.0 to 7.86. In 2017, the maximum DO concentration (6.8 mg/l) was at Muktarpur Bridge in September and the minimum (0.5 mg/l) at Dropping Point of CETP in December (Fig.4b). In 2016, DO concentration varied from 0.8 to 7.5 mg/l. In 2017, BOD varied from 0.4 to 12.8 mg/l (Fig.4c) while EQS for fisheries is ≤ 6 mg/l. The maximum BOD Was 12.8 mg/l in January at Harindhara, Hemayetpur and the minimum BOD was 0.4 mg/l in September at Muktarpur Bridge In 2016, BOD varied from 1.2 to 8.4 mg/l. Level of COD of Dhaleshwari river water was within the EQS. The maximum COD of Dhaleshwari river water was 79 mg/l in May at 200m Down of CETP and the minimum was 10 mg/l in July at 200m up of CETP (Fig.4d) against the EQS (200 mg/l) for wastewater after treatment from industrial units. In 2016, COD varied from 14 to 30 mg/l. In 2017, TDS concentration varied from 57 to 580 mg/l (Fig.4e) while standard TDS level is 2100 mg/l for wastewater after treatment from industrial units. In 2016, TDS varied from 64.2 to 234 mg/l. In 2017, Chloride concentration ranged from 4 to 73 mg/l (Fig.4f), which is far below the EQS (600 mg/l) for wastewater after treatment from industrial units. In 2016, Chloride concentration range of Dhaleshwari river water was from 5 to 38 mg/l mg/l. In 2017, SS concentration ranged from 4 to 78 mg/l (Fig.4g), which is within the EQS (150 mg/l) for wastewater after treatment from industrial units. In 2016, SS concentration range of Dhaleshwari river water was from 12 to 42 mg/l mg/l. In 2017, Electrical Conductivity (EC) of Dhaleshwari river water at different locations was mostly within the EQS (1200 μ mhos/cm). The maximum and the minimum EC of Dhaleshwari river water was 1365 μ mhos/cm in April at Dropping Point of CETP and 116.4 μ mhos/cm in September at 200m Down of CETP (Fig.4h). In 2016, EC of Dhaleshwari river water was from 143.3 μ mhos/cm to 452 μ mhos/cm. In 2017, the maximum Total Alkalinity of Dhaleshwari river water was 236 mg/l in May at 200m Down of CETP and the minimum was 50 mg/l in September at Muktarpur Bridge (Fig.4i). In 2016, Total Alkalinity of Dhaleshwari river water was from 22 to 110 mg/l.

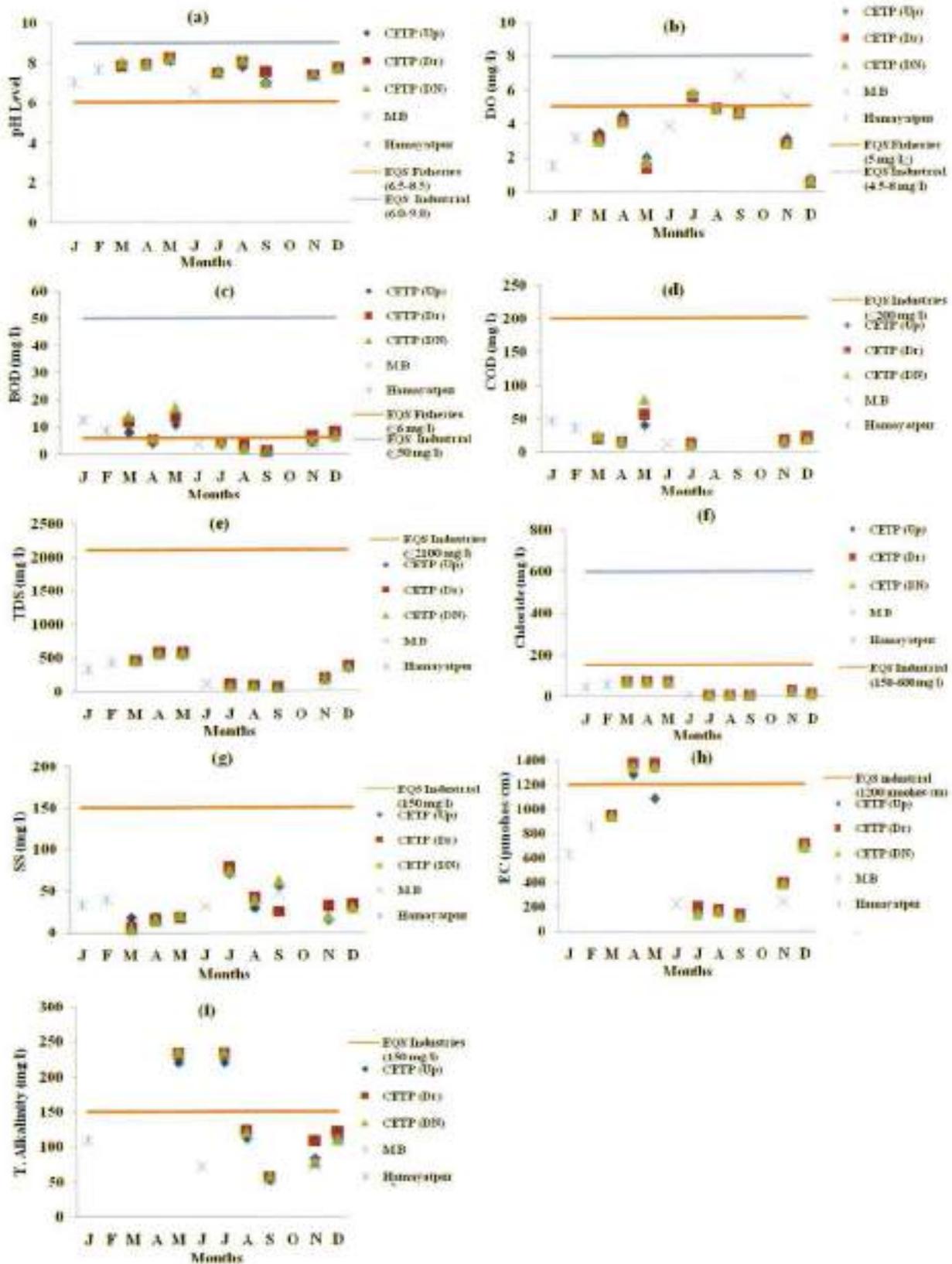


Fig.4. Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC and T. Alkalinity of Dhaleshwari River in 2017

4.5 Brahmaputra River

For monitoring of water quality, water samples were collected from one location (e.g. Mymensingh) of the river. Data was not available for the months of February, March, May, June, August, September and October of the river. Detail data is attached Annex-1 (Table: 38-43).

In 2017, pH level of Brahmaputra river water varied from 6.38 to 7.55 (Fig.5a), while standard range for fisheries is 6.5 to 8.5. In 2016, pH level varied from 7.18 to 7.78. In 2017, DO concentration varied from 6.4 to 8.5 mg/l (Fig.5b). The highest and the lowest DO was found in November and April respectively, while EQS for DO for fisheries is ≥ 5 mg/l. In 2016, DO varied from 5.8 to 7.6 mg/l. In 2017, BOD concentration varied from 1.2 to 2.8 mg/l (Fig.5c) while EQS for fisheries is ≤ 6 mg/l. In 2016, BOD varied from 1.0 to 2.2 mg/l. In 2017, TDS level ranged from 76.4 to 557 mg/l (Fig.5d) and was within the EQS (2100 mg/l). In 2016, TDS level varied from 52.2 to 168 mg/l. In 2017, SS was varied from 7 to 25 mg/l (Fig.5e). In 2016, SS was 10 to 45 mg/l. In 2017, Chloride level was from 6.0 to 10.0 mg/l (Fig.5f) and which is less than EQS (600 mg/l) for treated wastewater from industrial units. In 2016, Chloride concentration varied from 4.0 to 12.0 mg/l.

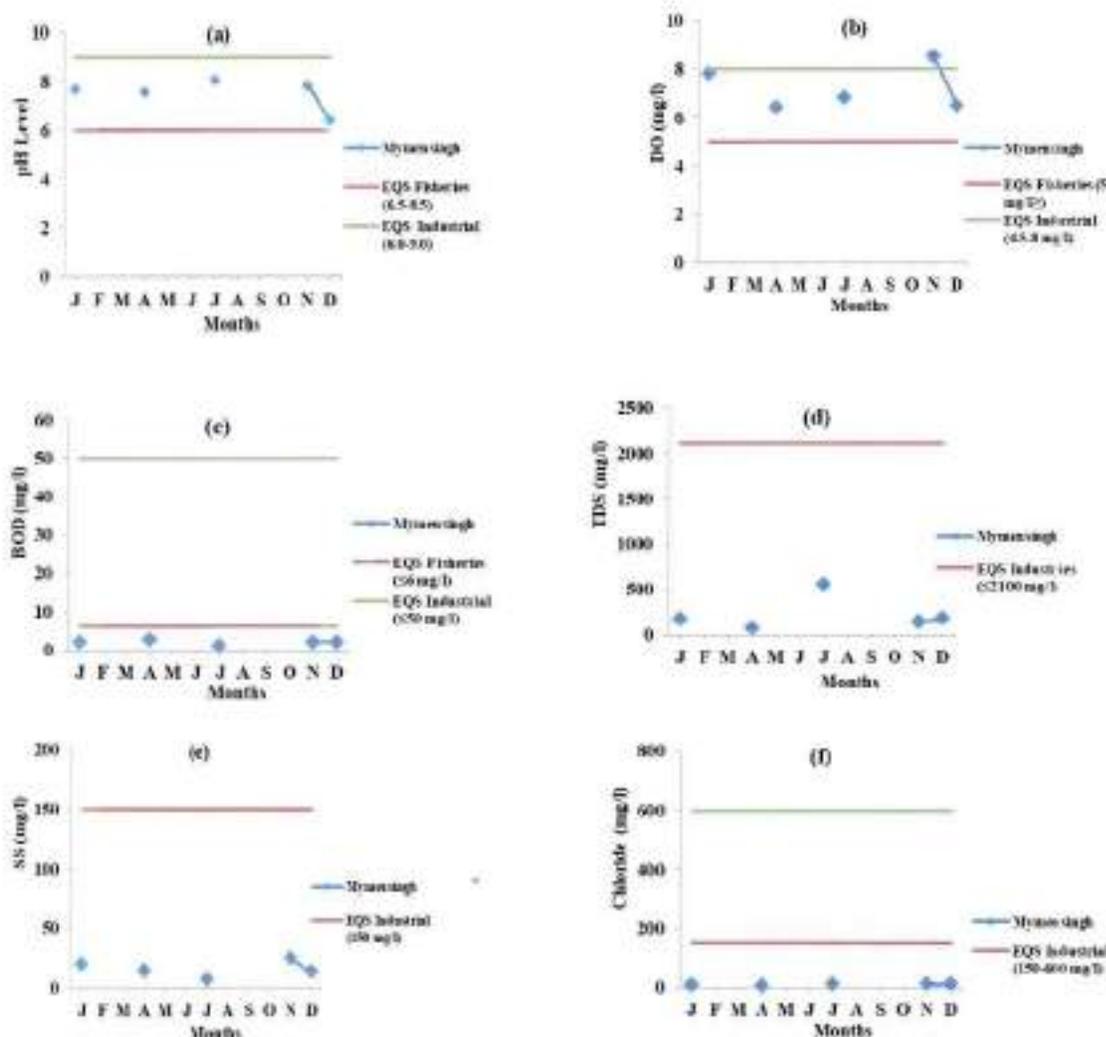


Fig.5. Status of pH, DO, BOD, TDS, SS and Chloride of Brahmaputra River in 2017

4.6 Kaliganga River

The Kaliganga river flows by Manikganj district. For monitoring of water quality, water samples were collected from one location (e.g. Bheutha Ghat, Manikganj) of the river. Data was not available for the months of February, March, June and August of the river. Detail data is attached Annex-1 (Table: 44-40).

In 2017, pH of Kaliganga river varied from 7.06 to 7.99 (Fig.6a). The maximum and the minimum pH was found in July and May, respectively. In 2016, pH level varied from 6.36 to 7.69. In 2017, DO range was from 5.8 to 8.8 mg/l (Fig.6b). In 2016, DO was from 6.2 to 7.7 mg/l. In 2017, BOD varied within a range of 0.8 to 4.2 mg/l (Fig.6c). In 2016, BOD varied from 1.2 to 3.2 mg/l. In 2017, TDS concentration was within the limit of EQS (2100 mg/l) for wastewater after treatment from industrial units. The maximum TDS was 226 mg/l in January and the minimum TDS was 57 mg/l in July (Fig.6d). In 2016, TDS concentration varied from 42 to 276 mg/l. In 2017, SS of Kaliganga river water was within the EQS (150 mg/l). The maximum and the minimum SS was 90.0 mg/l and 18.0 mg/l, respectively (Fig.6e). In 2016, SS varied from 8.0 to 38.0 mg/l. In 2017, Chloride level was lower than the EQS (600 mg/l). Highest Chloride was (13 mg/l) in October and the lowest was (3.0 mg/l) in July (Fig.6f). In 2016, Chloride varied from 4.0 to 12.7 mg/l.

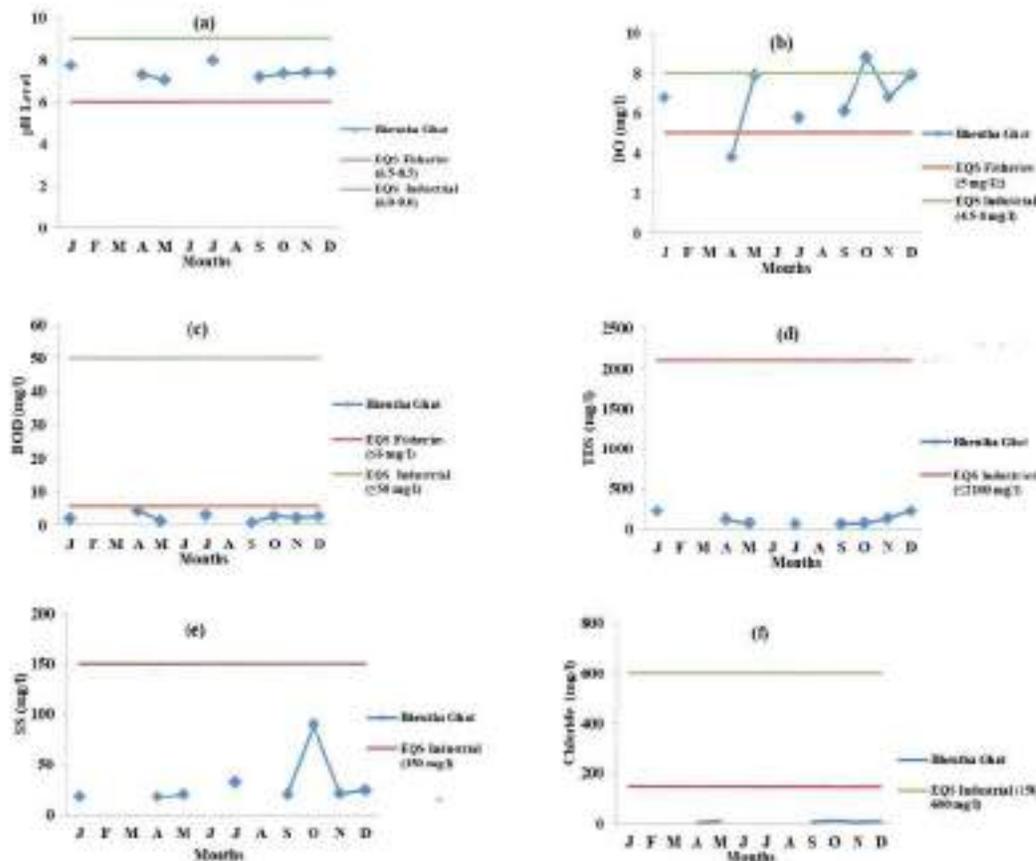


Fig.6. Status of pH, DO, BOD, TDS, SS and Chloride of Kaliganga River in 2017

4.7 Jamuna River

Samples were collected only from five locations e.g. Bahadurabad Ghat (B.G), Near Jamuna Fertilizer Factory (N.J.F.F), Fulchari Ghat, Gibanda (F.G.G), Shariakandi Groin Badth, Bogra (S.G.B.B), Near Banabandhu Bridge (N.B.B). Date was not available for the months of January, April to June and August to December at the Bhadurabad Ghat and Near Jamuna Fertilizer Factory of the river. Detail data is attached Annex-1 (Table: 50-55).

In 2017, pH varied from 6.95 to 8.48 and it was within the EQS limits (6.5 to 8.5) (Fig.7a). In 2016, pH was varied from 6.76 to 8.19. In 2017, DO concentrations ranged from 4.4 to 7.5 mg/l (Fig.7b) and it was within the EQS (≥ 5 mg/l) for fisheries. In 2016, DO concentration varied from 6.4 to 8.5 mg/l. In 2017, the maximum BOD level was 5.8 mg/l in July at Near Jamuna Fertilizer Factory and the minimum BOD level was 2.0 mg/l in January at Near Banabandhu Bridge (Fig.7c). BOD was below the EQS (≤ 6 mg/l) for fisheries (Fig.7c). In 2016, BOD concentration varied from 1.2 to 4.2 mg/l in December. In 2017, SS concentration varied 30 mg/l to 93 mg/l and was below the EQS (150 mg/l) ((Fig.7d). In 2016, SS was from 14mg/l to 108 mg/l. In 2017, level of TDS of Jamuna river water varied from 56.9 to 294 mg/l (Fig.7e), while EQS for TDS is 2100 mg/l. In 2016, TDS level varied from 62.2 to 125.3 mg/l. In 2017, Chloride content was varied from 3.0 mg/l to 50.0 mg/l (Fig.7f). In 2016, Chloride concentration varied from 4.0 mg/l to 10.0 mg/l.

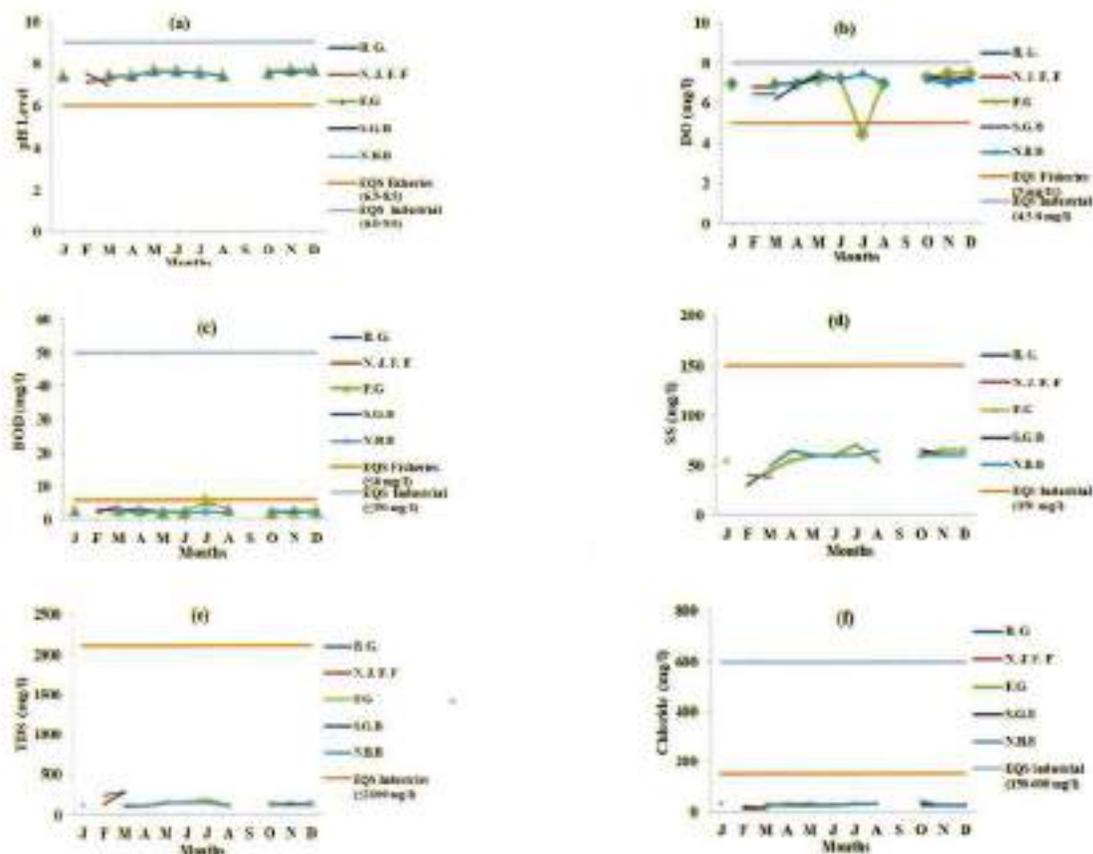


Fig.7. Status of pH, DO, BOD, SS, TDS and Chloride of Jamuna River in 2017

4.8 Meghna River

To monitor water quality, water samples were collected from three locations of Bhairab Bazar (B.B), Meghna Ghat (M.G), Near Shahjalal Paper Mills (N.S.P.M) of the Meghna river. Detail data is attached Annex-1 (Table: 56-61).

In 2017, the highest pH was 8.02 in November at Bhairab Bazar and the minimum pH was 6.12 at Near Shahjalal Paper Mills in November (Fig.8a). In 2016, pH level varied from 6.08 to 7.09. In 2017, DO level of Meghna river was varied 4.8 mg/l to 7.99 mg/l and was often higher than the EQS (≥ 5 mg/l) for fisheries (Fig.8b). In 2016, DO level varied from 0.8 mg/l to 7.1 mg/l. In 2017, at all the sampling locations of the river, BOD was below the EQS (≤ 6 mg/l) for fisheries round the year. The maximum and the minimum BOD load was 5.3 mg/l in December at Bhairab Bazar and 0.8 mg/l in September at Meghna Ghat (Fig.8c). In 2016, BOD concentration varied from 0.2 to 8.4 mg/l. In 2017, TDS of Meghna river water was very low and the range was from 31.5 to 111.5 mg/l (Fig.8d). In 2016, TDS concentration varied from 28.1 to 228 mg/l. In 2017, SS of Meghna river varied from 10.0 to 36.0 mg/l (Fig.7e). In 2016, SS was varied from 10.0 to 60.0 mg/l. In 2017, Chloride concentration at all the sampling locations was within the EQS (600 mg/l) for waste water after treatment from industrial units. The maximum Chloride (13.0 mg/l) was found in October at Near Shahjalal Paper Mills and the minimum (4.0 mg/l) was in January at Bhairab Bazar (Fig.8f). In 2016, Chloride concentration varied from 2.0 to 30.99 mg/l.

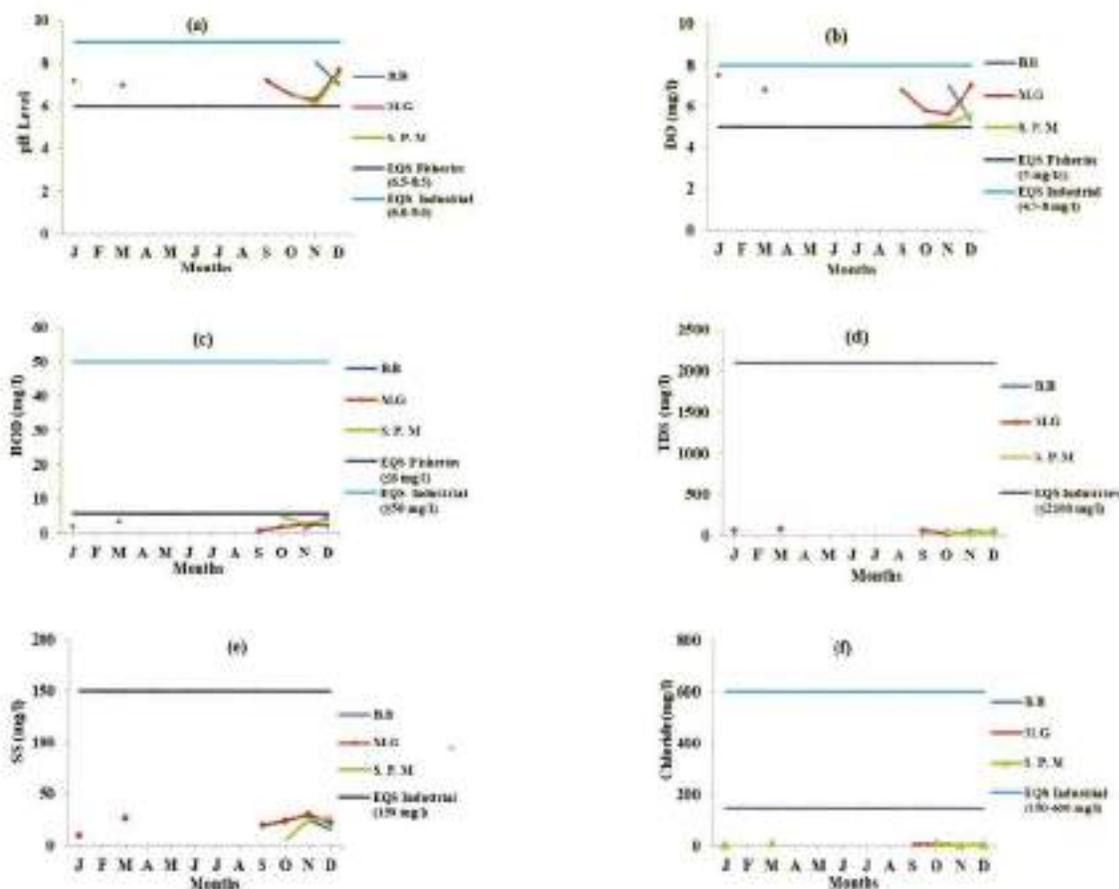


Fig.8. Status of pH, DO, BOD, TDS, SS and Chloride of Meghna River in 2017

4.9 Padma River

Water samples were collected from three locations of the river namely Mawa Ghat, Pakshi Ghat (Up and Down Stream) of Pabna and Baro Kuti Ghat (Up and Down Stream) of Rajshahi only middle points were used in the analysis. For analysis, average values of two points were considered. Date was not available for the months of February and September of the river. Detail data is attached Annex-1 (Table: 62-67).

In 2017, pH of Padma river water was mostly neutral and varied from 7.31 to 8.58 (Fig.9a) while standard pH for fisheries is 6.5 to 8.5. The maximum pH was found at Pakshi Ghat (Down) in July and the minimum pH level was at Mawa Ghat in March. In 2016, pH level varied from 7.08 to 8.32. In 2017, DO level of Padma river was above EQS (≥ 5 mg/l) for fisheries at almost all the locations and it varied from 6.8 to 7.8 mg/l (Fig.9b). In 2016, DO concentration ranged from 3.8 to 8.2 mg/l. In 2017, BOD load was within the EQS (≤ 6 mg/l) for fisheries at all locations. The maximum BOD was found 2.9 mg/l in January at Pakshi Ghat (Down) and the minimum was 1.6 mg/l in September at Mawa Ghat (Fig.9c). In 2016, BOD load varied from 1.0 to 30 mg/l. In 2017, TDS level of Padma river water was within EQS throughout the year and it varied from 63.5 to 170 mg/l (Fig.9d). In 2016, TDS concentration varied from 51 to 240 mg/l. In 2017, SS level of Padma river water was within EQS throughout the year and it varied from 18 to 205 mg/l (Fig.9e). In 2016, SS varied from 4.0 to 78 mg/l. In 2017, the maximum and the minimum EC of Padma river water was 334 μ mhos/cm in June at paskhi Ghat (Up Stream) and 19 μ mhos/cm in May at Mawa Ghat (Fig.9f), while EQS is 1200 μ mhos/cm wastewater after treatment from industrial units. In 2016, EC varied from 75 μ mhos/cm to 480 μ mhos/cm.

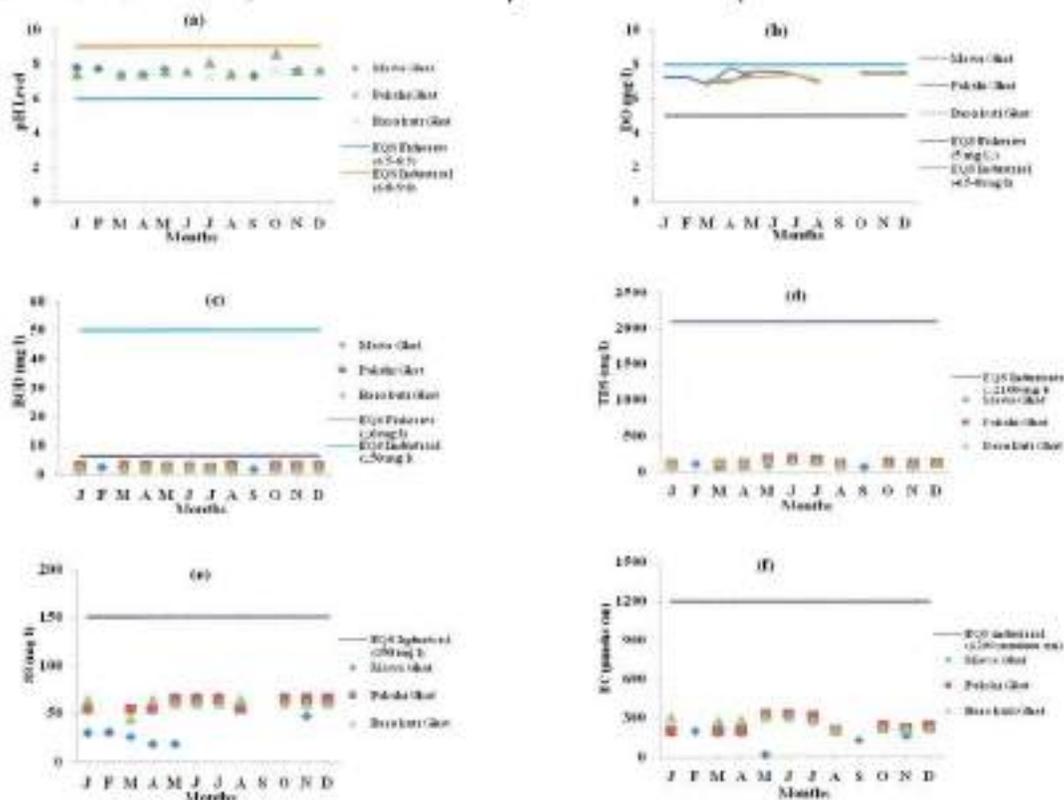


Fig.9. Status of pH, DO, BOD, TDS, SS and EC of Padma River in 2017



4.10 Korotoa River

To monitor water quality of Korotoa river in 2017, water samples were collected from five locations of the river e.g. Near Fateh Ali Bridge (F.A.B), Near Dutta Bari Bridge (D.B.B), Near Matidali Bridge (M.B), Near S.P Bridge (S.P.B) and Shahjadpur (Spr). Date was not available for the months of February and September at all the sampling points of the river. Detail data is attached Annex-1 (Table: 68-73).

In 2017, pH level of Korotoa river water varied from slightly acidic to slightly alkaline (6.86 to 7.63) (Fig.10a) and was within EQS limit. In 2016, pH level varied from 2.1 to 8.04. In 2017, DO level of Korotoa river water was lower than EQS (≥ 5 mg/l) for fisheries Shahjadpur Point. DO varied from 1.8 to 7.4 mg/l (Fig.10b). In 2016, DO concentration varied from 0.0 to 6.35 mg/l.

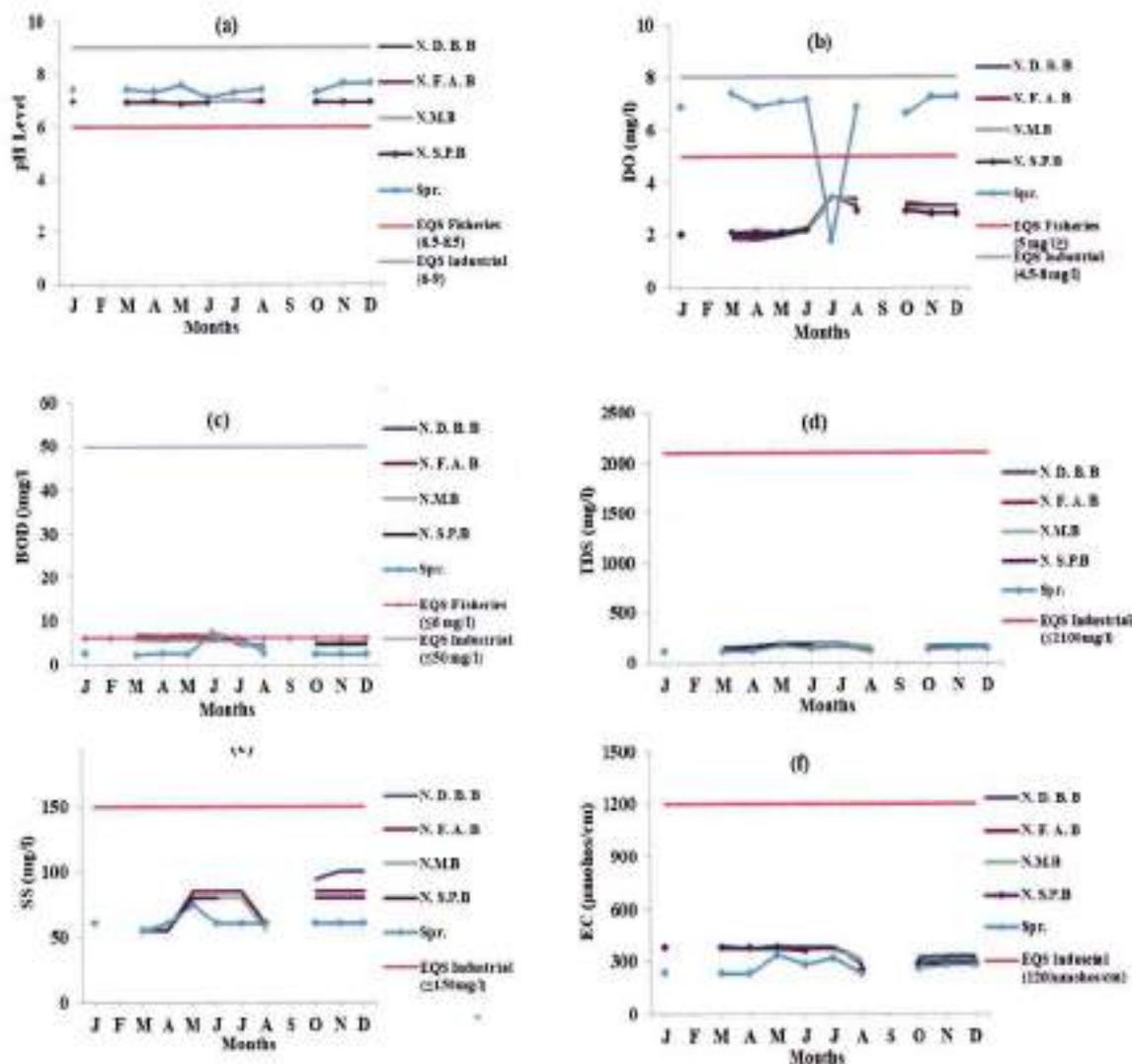


Fig.10. Status of pH, DO, BOD, COD, TDS, SS and EC of Korotoa River in 2017

Note:- Near Fateh Ali Bridge (F.A.B), Near Dutta Bari Bridge (D.B.B), Near Matidali Bridge (M.B), Near S.P Bridge (S.P.B) and Shahjadpur (Spr).



In 2017, the minimum BOD was 2.05 in March at Shahjadpur and the maximum BOD was 7.15 mg/l in June at the same location (Fig.10c). In 2016, BOD concentration varied from 2.16 to 11.1 mg/l. In 2017, TDS varied from 110 mg/l to 190 mg/l (Fig.10d). In 2016, TDS range was from 140 mg/l to 420 mg/l. In 2017, level of SS of Korotoa river water at different locations was within the EQS. The maximum and the minimum SS was 100 mg/l in November at Dutta Bari Bridge and 55 mg/l in January at the same location (Fig.10e). In 2016, SS concentration varied from 50 mg/l to 120 mg/l. In 2017, average EC varied from 230 μ mhos/cm to 390 μ mhos/cm (Fig.10f) and was within the EQS limit. In 2016, EC concentration varied from 279.50 μ mhos/cm to 809.5 μ mhos/cm.

4.11 Teesta River

The Teesta River is about 315 km long and it rises in the eastern Himalayas, flows through the Indian states of West Bengal and Sikkim through Bangladesh and enters the Bay of Bengal. It joins the Jamuna River at Fulchhari in Bangladesh. It drains an area of 12,540 km². It forms the border between Sikkim and West Bengal. Water samples were collected from near Tista Bridge (up Stream and down stream) of Teesta river for monitoring of water quality in 2017. Detail data is attached Annex-1 (Table: 74-79).

In 2017, pH level of Teesta river water varied from 7.41 to 7.61 (Fig.11a) and was within the EQS limit. In 2016, pH level varied from 7.24 to 7.54. In 2017, DO level of Teesta river water was above the EQS (≥ 5 mg/l) for fisheries. DO varied from 6.8 to 7.4 mg/l (Fig.11b). In 2016, DO level varied from 6.45 to 7.55 mg/l. In 2017, the maximum BOD was 2.4 mg/l in October and the minimum BOD was 2.05mg/l in July (Fig.11c). In 2016, BOD level varied from 1.9 to 3.2 mg/l. In 2017, TDS varied from 95 mg/l to 160 mg/l (Fig.10d). In 2016, TDS level varied from 95 mg/l to 170 mg/l. In 2016, Level of SS of Teesta river at different locations was within the EQS. The maximum and the minimum SS was 65 mg/l in May and 50 mg/l in January (Fig.11e). In 2016, SS level varied from 45 to 90 mg/l. In 2017, the maximum and the minimum Turbidity was 14.20 mg/l in March and 12 mg/l in November (Fig.11f). In 2016, Turbidity level varied from 10.5 to 18.75 mg/l.

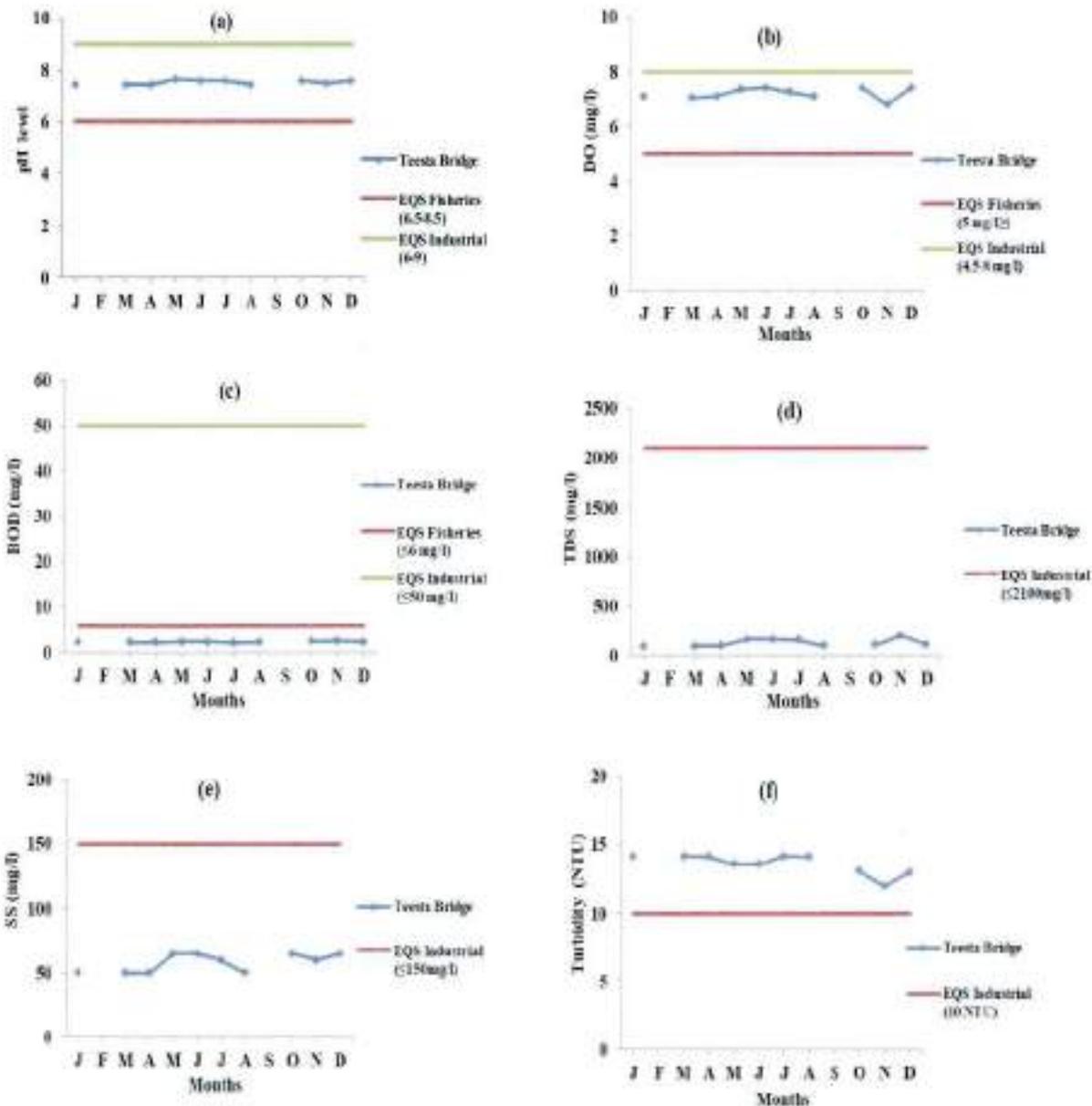


Fig.11. Status of pH, DO, BOD, TDS, SS and Turbidity of Teesta River in 2017

4.12 Karnaphuli River

The Karnaphuli river is in the south-eastern part of Bangladesh that flows through Chattagram Hill Tracts and Chattagram into the Bay of Bengal. Water samples were collected from two locations comprising four points (e.g. TSP Side, Patenga and CUFL Side, Anowara of Karnaphuli river for monitoring of water quality in 2017. Detail data is attached Annex-1 (Table: 80-55).

In 2017, pH level at the sampling points of the Karnaphuli river varied from 6.5 to 8.5 (Fig. 12a), while standard pH for inland surface water for fisheries is 6.5 to 8.5. In 2016, pH level varied from 6.8 to 8.5. DO level of Karnaphuli river was within the EQS although the year of 2017 and met the standard of DO for fisheries (≥ 5 mg/l). DO varied from 4.7 to 7.3 mg/l (Fig.12b). In 2016, DO concentration varied from 5.1 to 6.7 mg/l. In 2017, COD value varied from 80 to 332

mg/l (fig.11c), while EQS for wastewater after treatment from industrial units is 200 mg/l. COD value was high at CUFL points compare to TSP points. In 2016, COD value varied from 108 to 516 mg/l. In 2017, the maximum TDS was 13168 mg/l in March at CUFL and the minimum was 765 mg/l in July at TSP point (Fig.12d). In 2016, TDS concentration varied from 1175 to 20296 mg/l. In 2017, level of SS of Karnaphuli river water at different points was beyond the EQS (150 mg/l). The maximum and the minimum SS was 510 mg/l in October at CUFL and 132 mg/l in July at TSP location (Fig.12e). In 2016, SS value varied from 143 to 517 mg/l. In 2017, EC concentration was relatively higher during high tide at all locations of the river. The maximum EC concentration was 26330 $\mu\text{mhos/cm}$ in March at CUFL and the minimum EC concentration was 1523 $\mu\text{mhos/cm}$ in July at TSP point (Fig.12f). In 2016, EC concentration varied from 2300 to 40587 $\mu\text{mhos/cm}$. In 2017, Salinity concentration varied from 1.23 ppt to 17.4 ppt (Fig.12g). In 2017, Total Solids concentration varied from 8.97 mg/l to 13476 mg/l (Fig.12h).

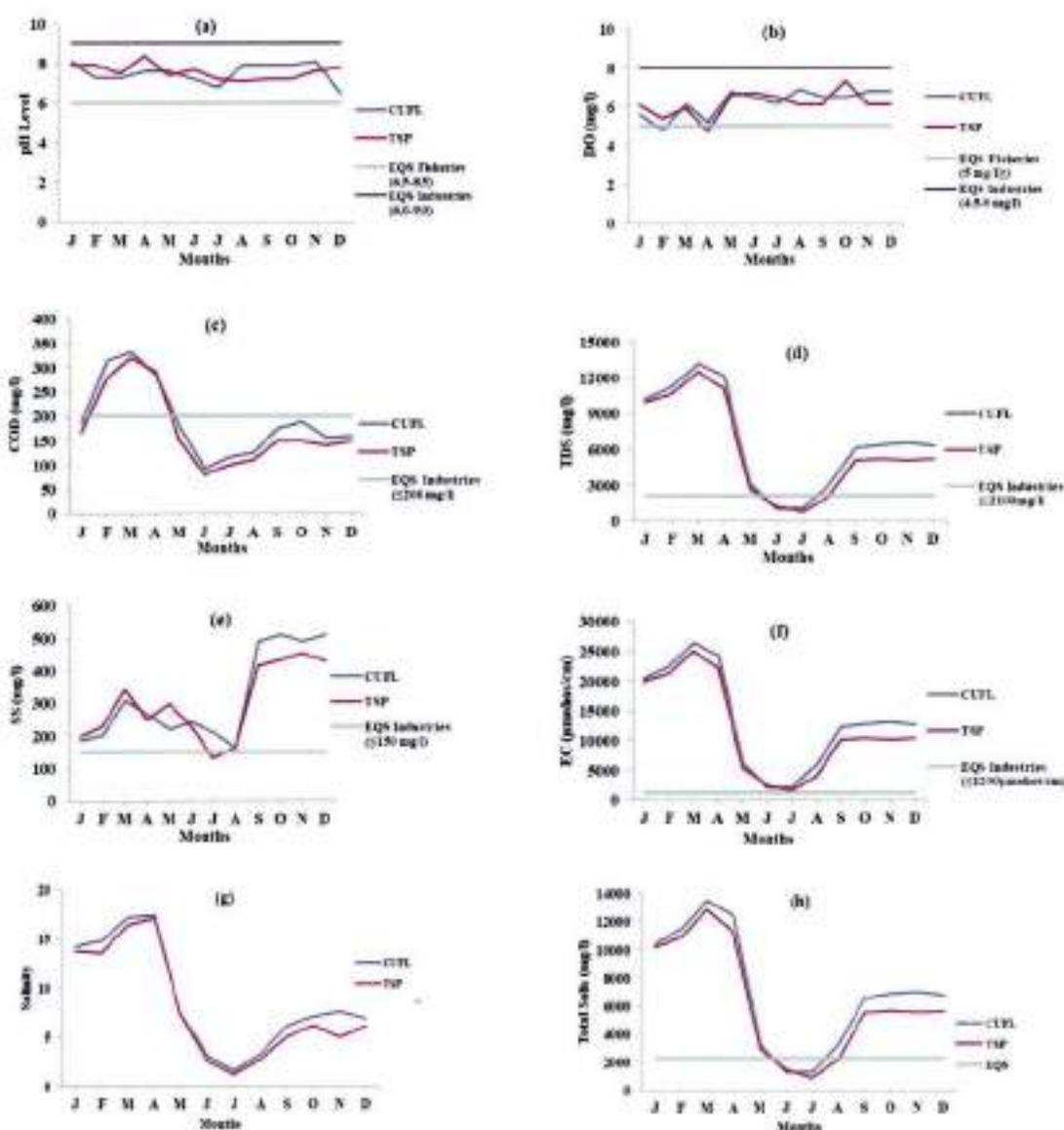


Fig.12. Status of pH, DO, COD, TDS, SS, EC, Salinity and Total Solids of Karnaphuli River in 2017



4.13 Halda River

The Halda river passes through the South-Eastern part of Bangladesh. Water sampling locations were WASA Intake Mohara, and Maduna Ghat of Halda River. Detail data is attached Annex-1 (Table: 86-91).

In 2017, pH of Halda river water was within EQS limit and varied from 6.6 to 7.9 (Fig.13a). In 2016, pH level varied from 6.8 to 7.8. DO level of Halda river was above the EQS limit throughout the monitoring period of 2017. DO varied from 5.5 to 7.5 mg/l (Fig.13b). In 2016, DO range was from 5.9 to 7.8 mg/l. In 2017, COD at the sampling locations of Halda river during high and low tide was varied 19.0 mg/l to 102 mg/l (Fig.13c). In 2016, COD range was from 13.0 mg/l to 115 mg/l. TDS level of Halda River in 2017 was within the EQS (2100 mg/l) for treated wastewater from industrial units. TDS varied from 59 to 246 mg/l (Fig.13d). In 2016, TDS concentration varied from 62 to 230 mg/l. In 2017, the maximum and the minimum SS content of Halda river water was 234 mg/l in June at Moduna Ghat point and 57 mg/l in January at the same location (Fig.13e). In 2016, SS value varied from 22.0 to 218 mg/l. In 2017, the maximum and the minimum EC was 490 μ mhos/cm in February at Moduna Ghat point and 125 μ mhos/cm in July at the same location (fig.13f). In 2016, EC concentration varied 132 and 398 μ mhos/cm.

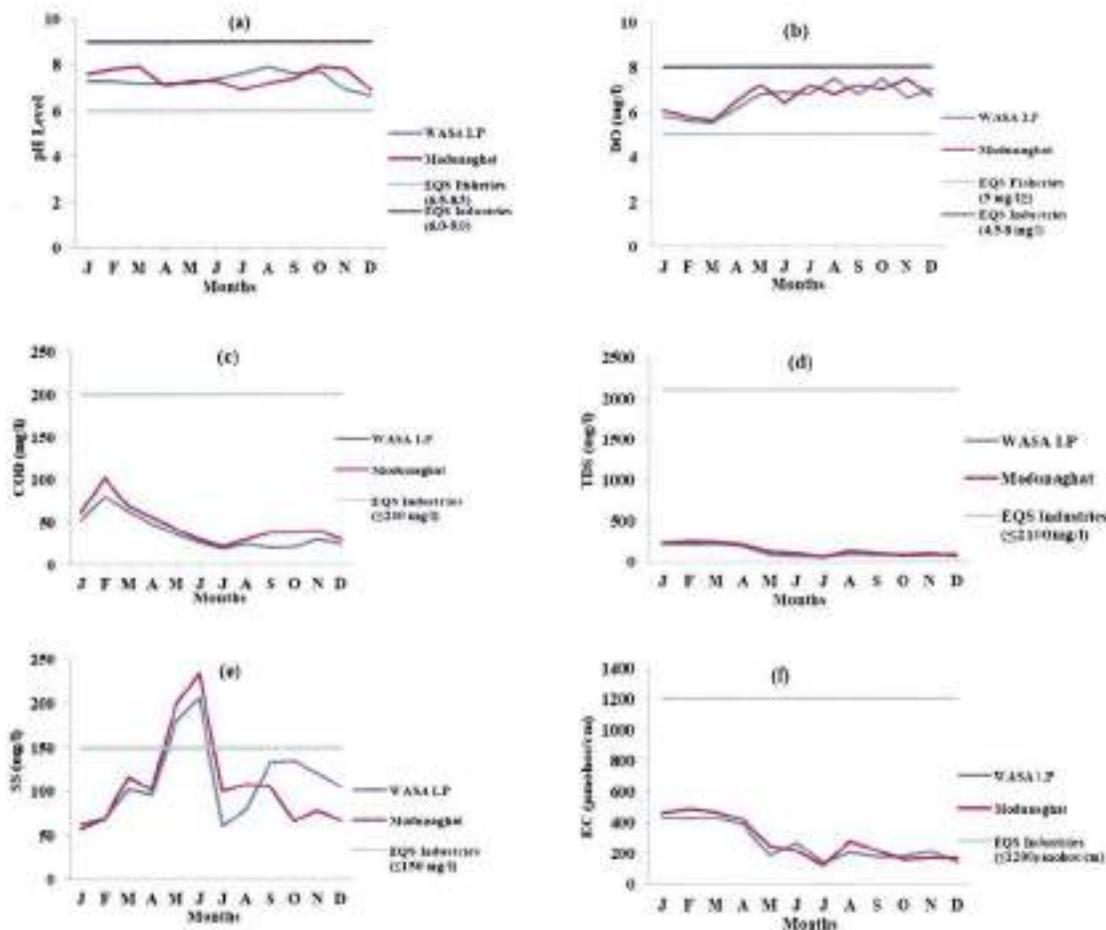


Fig.13. Status of pH, DO, COD, TDS, SS and EC of Halda River in 2017

4.14 Moyuri River

The Moyuri river is situated at the back swamp of the Bhairab-Rupsha river. For monitoring water samples were collected from one location named Gallamari Bridge (G.B) comprising both of the banks and middle point of the river. Average value of those three points was used in the analysis. Detail data is attached Annex-1 (Table: 92-99).

In 2017, pH level of Moyuri river water varied from 7.31 to 7.67 (Fig.14a) and was within the EQS limit. In 2016, pH level varied from 7.62 to 7.81.

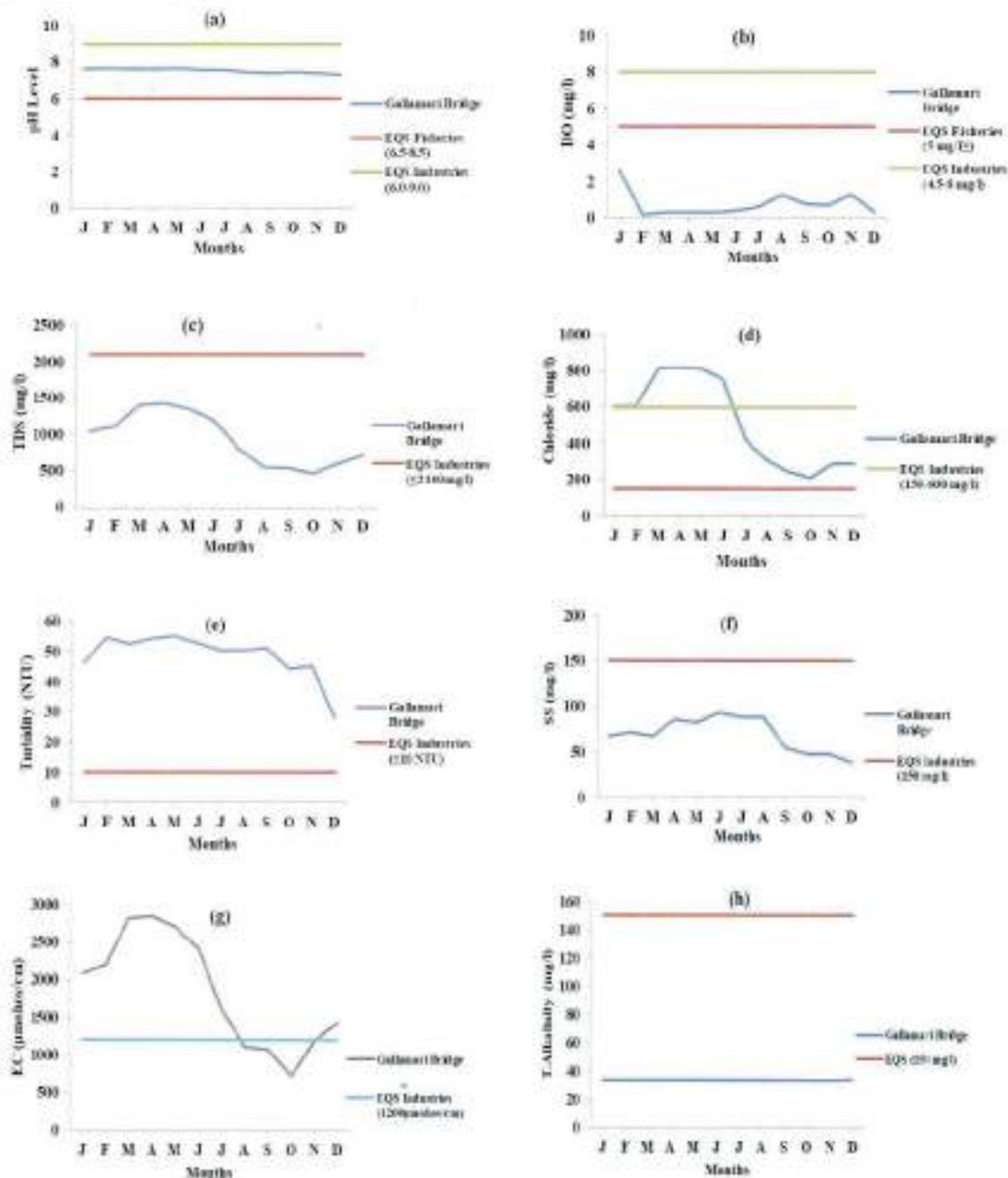


Fig.14. Status of pH, DO, TDS, Chloride, Turbidity, SS, EC and T.alkalinity of Moyuri River in 2017

In 2017, DO concentration of Moyuri river water varied from 0.2 to 2.6 (Fig.14b) and was lower than the EQS (≥ 5 mg/l) for fisheries. In 2016, DO varied from 0.5 to 2.9 mg/l. In 2017, TDS level of the Moyuri river water varied from 464 to 1424 mg/l (Fig.14c) while EQS is 2100 mg/l. In 2016, TDS range was from 348 to 1282 mg/l. In 2017, Chloride range was from 212 to 816 mg/l (Fig.14d) while EQS is 600 mg/l. Highest Chloride was found in April. In 2016, Chloride level varied from 122 to 602 mg/l. In 2017, the maximum Turbidity was 55.2 NTU in May and the minimum Turbidity was 28.3 NTU in December (Fig.14e) while EQS is 10 NTU. In 2016, Turbidity level varied from 45.30 to 68.57 NTU. In 2017, SS content of Moyuri river water was below the EQS (150 mg/l). SS varied from 34 to 94 mg/l (Fig.14f) and was within the EQS limit. In 2016, SS varied from 42 to 68 mg/l. In 2017, the maximum and the minimum EC was 2845 μ mhos/cm in April and 718 μ mhos/cm in October respectively (Fig.14g) while standard for treated wastewater from industrial unit EC is 1200 μ mhos/cm. In 2016, EC was from 724 μ mhos/cm to 2564 μ mhos/cm. In 2017, Total alkalinity varied from 34 to 34.66 mg/l (Fig.14h).

4.15 Bhairab River

The Bhairab river flows in the south of Bangladesh. Its water carries plenty of silt. Water samples were collected from three locations comprising six different points [e.g. Noapara Ghat Bank (NG), Middle and Opposite bank, Fultala Ghat (FG) Side, Middle and Opposite bank of Bhairab River for monitoring water quality in 2017. To simplify data analysis only middle point of all locations were considered. Because, no significant variation was found between side, middle and opposite bank point of a location of the river. Detail data is attached Annex-1 (Table: 100-107).

In 2017, pH at different locations of the Bhairab river varied from 7.6 to 7.88 (Fig.15a) while EQS for inland surface water is 6.5 to 8.5. In 2016, pH varied from 7.68 to 8.4. DO was around the EQS (≥ 5 mg/l) for fisheries. In 2017, DO was from 4.3 to 6.3 mg/l (Fig.15b). In 2016, DO varied from 3.8 to 6.5 mg/l. In 2017, BOD level of Bhairab river water was below the EQS (≤ 6 mg/l) for fisheries round the year. BOD varied from 0.5 to 0.9 mg/l (Fig.15c). In 2016, BOD level varied from 0.8 to 0.9 mg/l. In 2017, at all locations TDS level of Bhairab river water was very high during March to July. The maximum and the minimum TDS was 10894 mg/l in May and 118 mg/l in October at Fultala Ghat (Fig.15d) while EQS is 2100 mg/l. In 2016, TDS was from 132 to 5311 mg/l. In 2017, Chloride was varied from 62 to 8886 mg/l (Fig.15e) while EQS for Chloride is 600 mg/l. Highest Chloride (8886 mg/l) was found in May at Fultala Ghat and lowest was 62 mg/l in September at the same location. In 2016, Chloride level varied from 32 to 7884 mg/l. Turbidity of Bhairab river water at all locations was very high in 2017. It varied from 31 to 92.6 NTU while the EQS for drinking water is 10 NTU (Fig.15f). The prime reason may be of carrying huge silt by the river throughout the year. In 2016, Turbidity level varied from 34.26 to 96.67 NTU. In 2017, the maximum EC was 21788 μ mhos/cm in May at Fultala Ghat and the minimum Ec was 236 μ mhos/cm October at the same location (Fig.15g). In 2016, EC varied from 262 μ mhos/cm to 10622 μ mhos/cm (Fig.15h). In 2017, maximum T.alkalinity was 36 mg/l in April to June and minimum T.alkalinity 33 mg/l in December. In 2016, T.alkalinity was varied 34 mg/l to 36 mg/l.

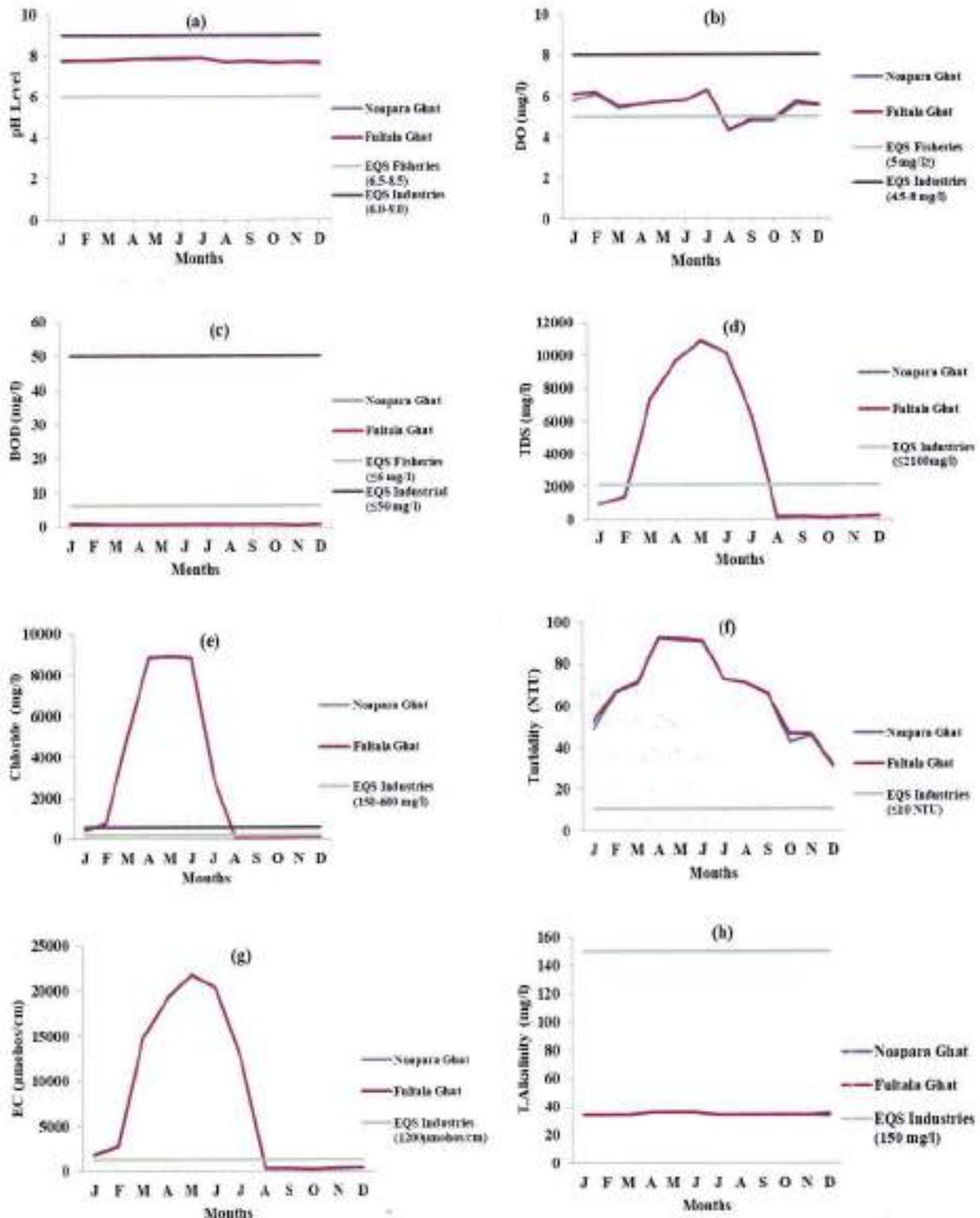


Fig.15. Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and T.alkalinity of Bhairab River in 2017

4.16 Rupsha River

The Rupsha river forms from the confluence of the Bhairab and Atrai rivers, and flows into the Pasur River. Its entire length is affected by tides. Water samples were collected from two different locations comprising six points [e.g. Rupsha Ghat Bank, Middle and Opposite and Labanchara Ghat Bank, Middle and Opposite] of Rupsha river for monitoring water quality in 2017. For analysis, average of three points of a location were considered. Detail data is attached Annex-1 (Table: 108-115).

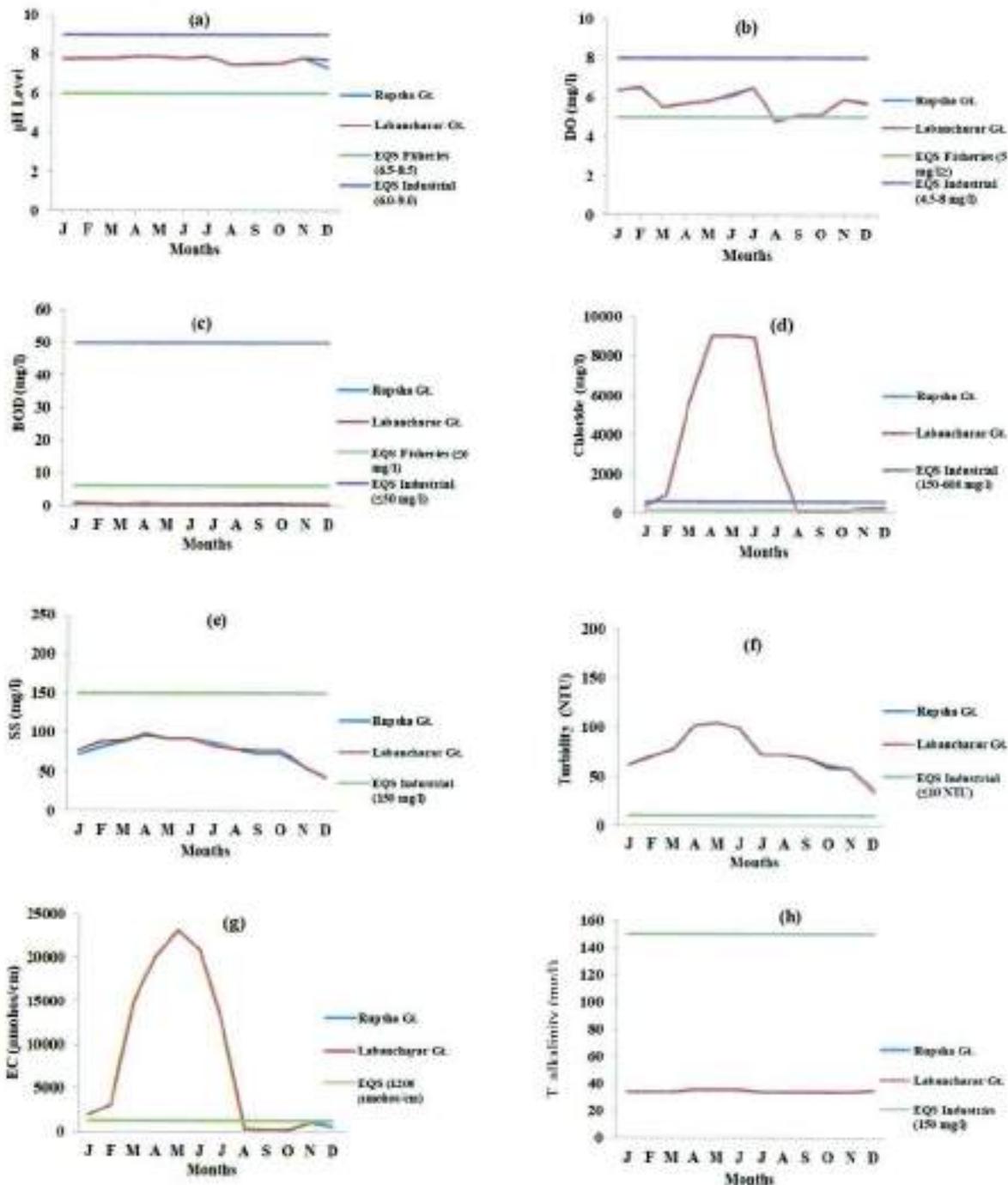


Fig.16. Status of pH, DO, BOD, Chloride, SS, Turbidity, EC and T.alkalinity of Rupsha River in 2017



In 2017, pH varied from 7.31 to 7.88 (Fig.16a) while standard pH for inland surface water is 6.5 to 8.5. In 2016, pH level varied from 7.66 to 7.92. In 2017, DO level was above the EQS (≥ 5 mg/l) for fisheries. The maximum and the minimum DO content was 6.6 in February and 5.3 mg/l in August at Labanchara Ghat respectively (Fig.16b). In 2016, DO level was varied from 5.3 to 6.8 mg/l. In 2017, the maximum and the minimum BOD was 1.0 mg/l in January and 0.6 mg/l in December (Fig.16c). In 2016, BOD level was from 0.7 to 0.9 mg/l. In 2017, Chloride level was much higher from February to July than the EQS (600 mg/l) for treated wastewater from industrial units. Chloride content varied from 68 to 9066 mg/l (Fig.16d). In 2016, Chloride varied from 58 to 3910 mg/l. In 2017, SS varied from 43 to 98 mg/l (Fig.16e) and was within the EQS limit. In 2016, SS varied from 44 to 96 mg/l. In 2017, Turbidity level of Rupsha river was very high all over the year. Turbidity varied from 34.66 to 105.36 NTU (Fig.15f) while EQS for drinking water is 10 NTU. In 2016, Turbidity range was from 41.40 to 88.60 NTU. In 2017, EC was high from January to July. EC level varied from 260 to 23223 $\mu\text{mhos/cm}$ (Fig.16g) while standard EC for treated wastewater from industrial units is 1200 $\mu\text{mhos/cm}$. In 2016, EC level varied from 268 to 12482 $\mu\text{mhos/cm}$. In 2017, T.alkalinity level varied from 34 mg/l to 36 mg/l (Fig.16h).

4.17 Mathavanga River

For monitoring water quality of Mathavanga river, water samples were collected from a single location comprising two different points, Pipeghat (upstream) and Pipeghat (downstream) and Darshana, Chuadanga. Average values of three points were taken while analysis carried out. Data was not available in the month of February. Details data is attached annexure-1 (Table: 116-123).

In 2017, pH varied from 7.46 to 7.78 (Fig.17a) while standard pH for inland surface water is 6.5 to 8.5. In 2016, pH range was from 6.62 to 7.79. In 2017, DO level varied from 5.1 to 7.83 mg/l (Fig.17b) while standard DO for fisheries is ≥ 5 mg/l. In 2016, DO level varied from 4.9 to 5.3 mg/l. In 2017, BOD was varied 0.8 to 1.86 mg/l (Fig.17c). In 2016, BOD range was 0.8 mg/l all over the year. In 2017, TDS varied from 144 to 3374 mg/l (Fig.17d). In 2016, TDS range was from 134 to 316 mg/l. In 2017, Chloride of Mathavanga river water varied from 28 to 704 mg/l (Fig.17e) while EQS for Chloride is 600 mg/l. In 2016, Chloride content varied from 32 to 36 mg/l. In 2017, Turbidity level was higher than EQS (10 NTU) for drinking water and varied from 20.2 to 36.2 NTU (Fig.17f). In 2016, Turbidity range was from 36.2 to 46.2 NTU. In 2017, the maximum EC was 6746 $\mu\text{mhos/cm}$ in May and the minimum EC was 288 $\mu\text{mhos/cm}$ October at pipe ghat point (Fig.17g). In 2016, EC varied from 262 $\mu\text{mhos/cm}$ to 10622 $\mu\text{mhos/cm}$ (Fig.17h). In 2017 T.alkalinity varied from 32 to 34 mg/l. In 2016, T. Alkalinity was varied 34 mg/l to 36 mg/l.

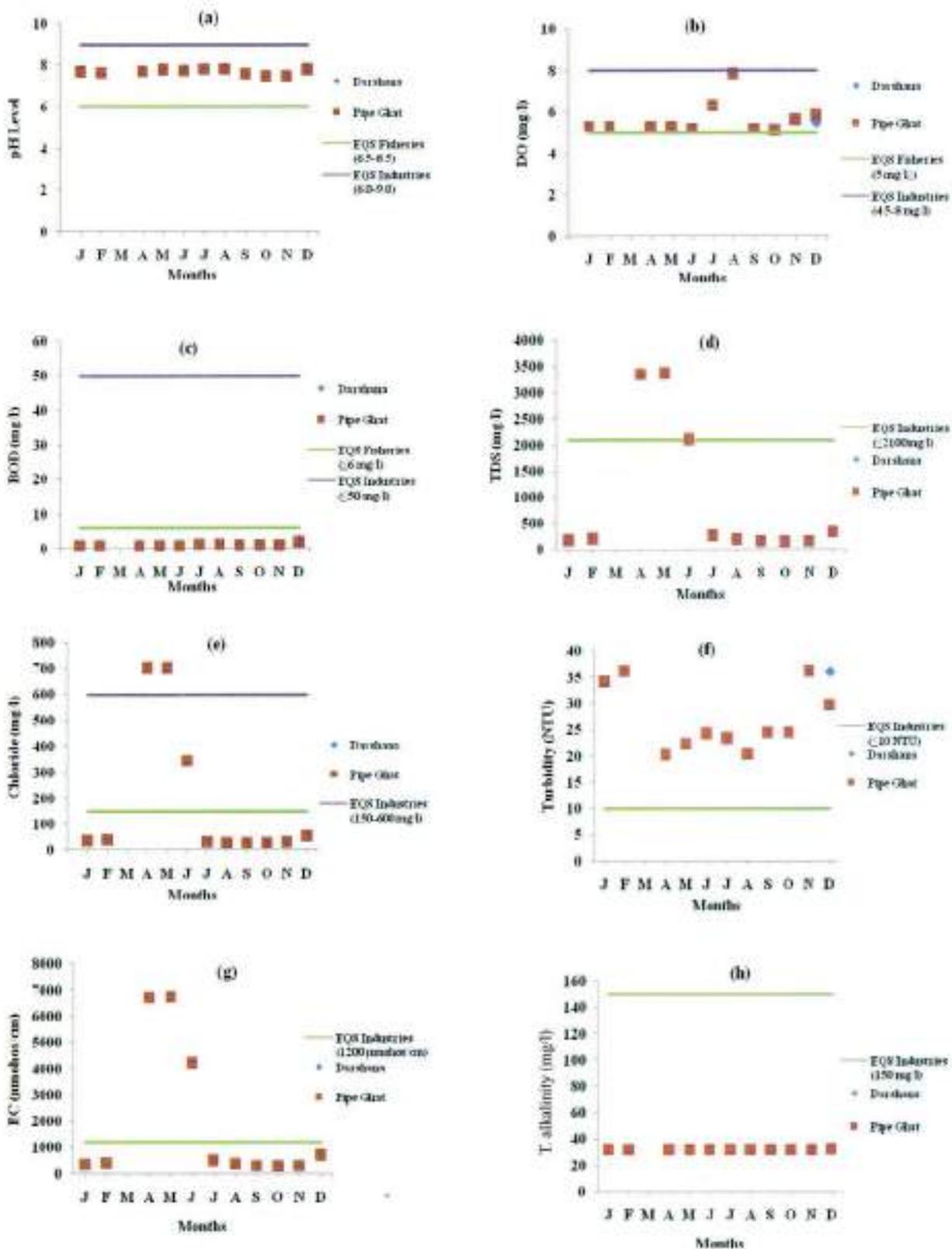


Fig.17. Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and T.alkalinity of Mathavanga River in 2017

4.18 Pashur River

The Pashur river located in south-western Bangladesh and a distributary of the Ganges, continues to the Rupsa river. All its distributaries are tidal. It meets the Shibsra River within the Sundarbans, and near to the sea the river becomes the Kunga River. For monitoring of water quality, water samples were collected from one location of Pashur river comprising three different points at Mongla Port (Bank, Middle and Opposite bank). For analysis, average values of three points were taken. Detail data is attached Annex-1 (Table: 124-131).

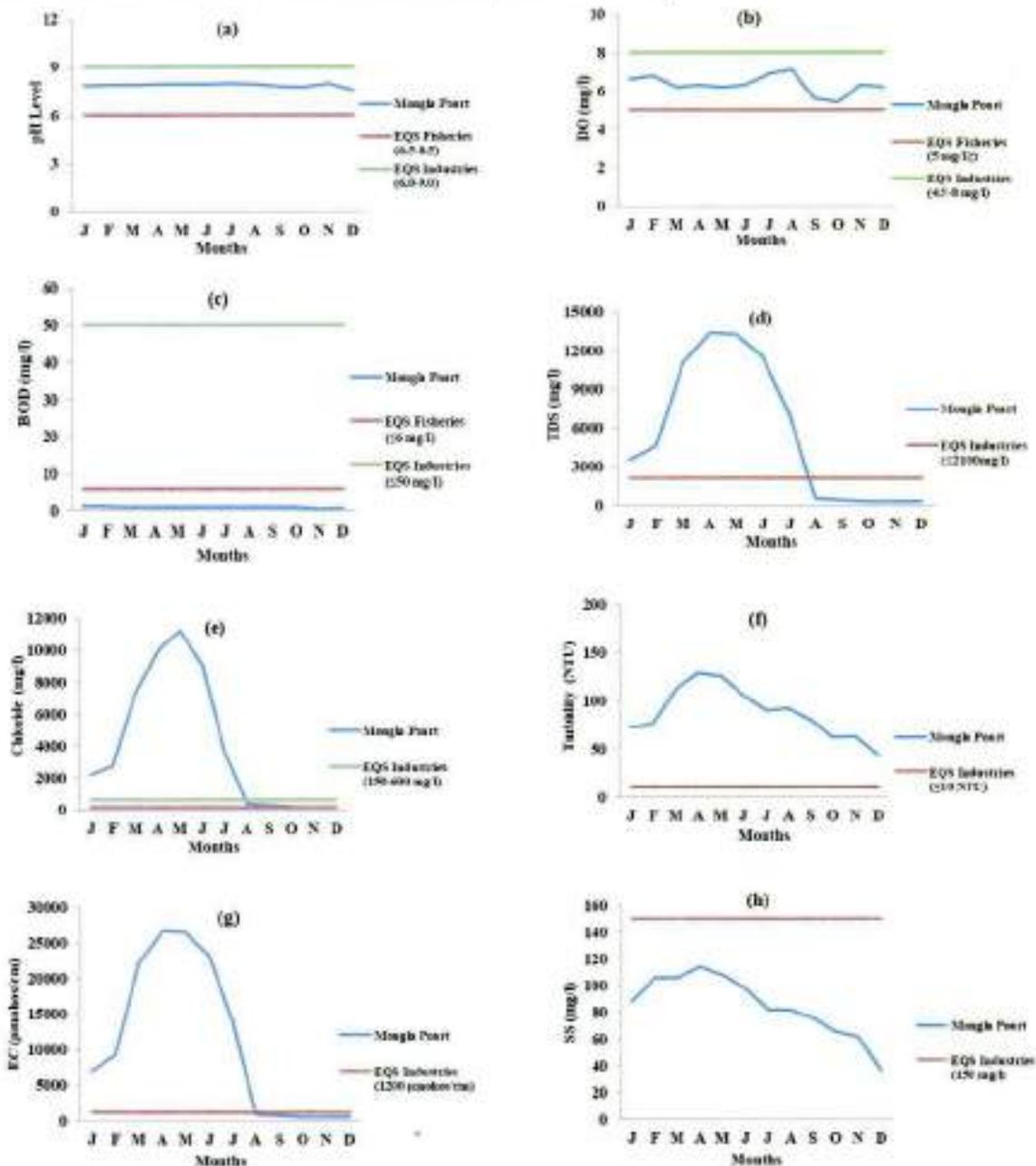


Fig.18. Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Pashur River in 2017

In 2017, pH level varied from 7.59 to 7.99 (Fig.18a) and was within the EQS (6.5 to 8.5) though slightly alkaline. In 2016, pH level varied from 7.54 to 8.2. In 2017, DO level was above the EQS (≥ 5 mg/l) for fisheries all over the year. The maximum and the minimum concentration of DO was 7.1 and 5.5 mg/l respectively (Fig/18b). In 2016, DO varied from 5.6 and 6.9 mg/l. In 2017, BOD level was within the EQS (≤ 6 mg/l) for fisheries. The maximum and the minimum value of BOD was 1.0 and 0.5 mg/l respectively (Fig.18c). In 2016, BOD level varied from 0.7 and 1.1 mg/l. In 2017, TDS varied from 262 to 13374 mg/l (Fig.17d). In 2016, TDS level varied from 254 to 11521 mg/l. In 2017, Chloride level of Pashur river water varied from 124 to 11208 mg/l. Chloride concentration was higher at all points during January to July compare to rest of the period (Fig.18e). In 2016, Chloride level varied from 124 to 7228 mg/l. In 2017, Turbidity level varied from 44 to 128.43 NTU (Fig.18f) against the EQS (10 NTU) for industrial discharge. Turbidity concentration was very high all over the year. In 2016, Turbidity level varied from 70.3 to 110 NTU. In 2017, the maximum EC was 26746 $\mu\text{mhos/cm}$ in April and the minimum EC was 523 $\mu\text{mhos/cm}$ November (Fig.18g). In 2016, EC varied from 508 $\mu\text{mhos/cm}$ to 23042 $\mu\text{mhos/cm}$ (Fig.18g). In 2017, the maximum SS was 114 mg/l in April and the minimum SS was 34 mg/l in December (Fig.18h). In 2016, SS was varied 72 mg/l to 98 mg/l.

4.19 Khakshiali River

The Khakshiali river is located in Satkhira district in Khulna division. To monitor water quality of Kakshiali river, water samples were collected from three different points of Kaligonj location e.g. Kaliganj Bank, Middle and Opposite bank at Shatkira in 2017. For analysis, average values of three points were considered. Detail data is attached Annex-1 (Table: 132-1139).

In 2017, pH level was within the EQS (6.5-8.5) for inland surface water and was varied from 7.46 to 7.77 (Fig.19a). In 2016, pH was from 7.58 to 7.79. In 2017, DO level varied from 5.1 to 6.3 mg/l (Fig.19b) throughout the year while EQS for fisheries is ≥ 5 mg/l. In 2016, DO level varied from 5.3 to 5.6 mg/l. In 2017, BOD was far below the EQS (≤ 6 mg/l). It varied from 0.8 to 1.0 mg/l (Fig.19c). In 2016, BOD level varied from 0.8 to 0.9 mg/l. In 2017, TDS level was very high from January to June. The minimum TDS was 314 mg/l in August and the maximum TDS was 13744 mg/l in May (Fig.19d). In 2016, TDS level varied from 742 to 11641 mg/l. In 2017, Chloride concentration was very high from January to August and varied from 272 to 11436 mg/l (Fig.19e) while standard for treated wastewater from industrial units is 150-600 mg/l. The highest Chloride was found in May and the lowest value was in November. In 2016, Chloride level varied from 376 to 7322 mg/l. In 2017, Turbidity level was above the EQS (10 NTU) limit for drinking water all the year that varied from 50 to 96.8 NTU (Fig.19f). In 2015, Turbidity level varied from 65.3 to 124.47 NTU. In 2017, the maximum EC was 27488 $\mu\text{mhos/cm}$ in May and the minimum 711 $\mu\text{mhos/cm}$ in December while EQS for EC is 1200 $\mu\text{mhos/cm}$ (Fig.19g). In 2016, EC varied from 1482 to 23038 $\mu\text{mhos/cm}$. In 2017, SS varied from 41 mg/l to 108 mg/l (Fig.19h).

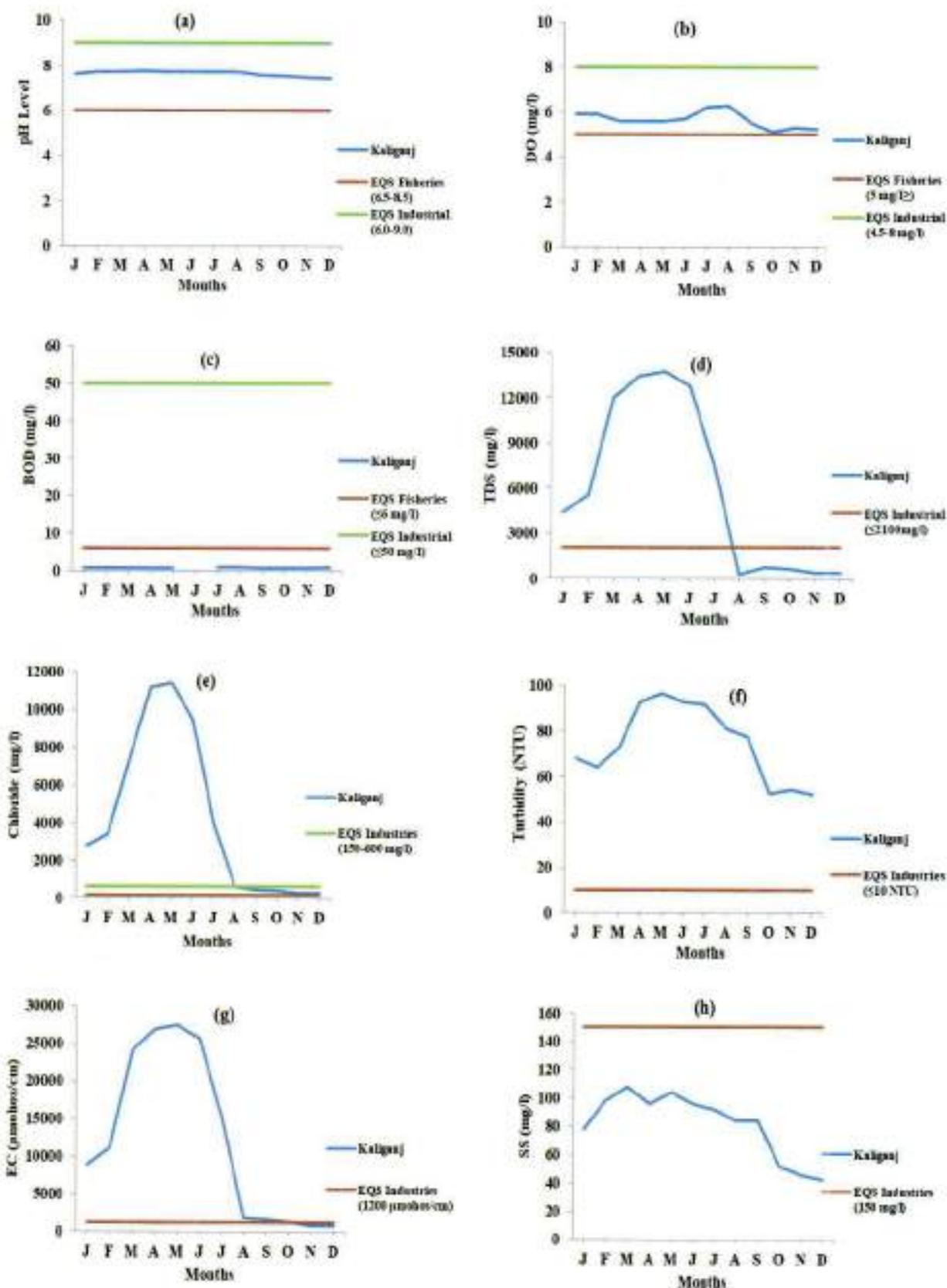


Fig.19. Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Kakshiali River in 2017

4.20 Gorai River

The Gorai river is located in Kushtia district in Khulna division. Water samples were collected from two locations viz. Magura and Kustia comprising three points each. Average values of three points of a location were used for graphical representation. Detail data is attached Annex-I (Table:140-1147).

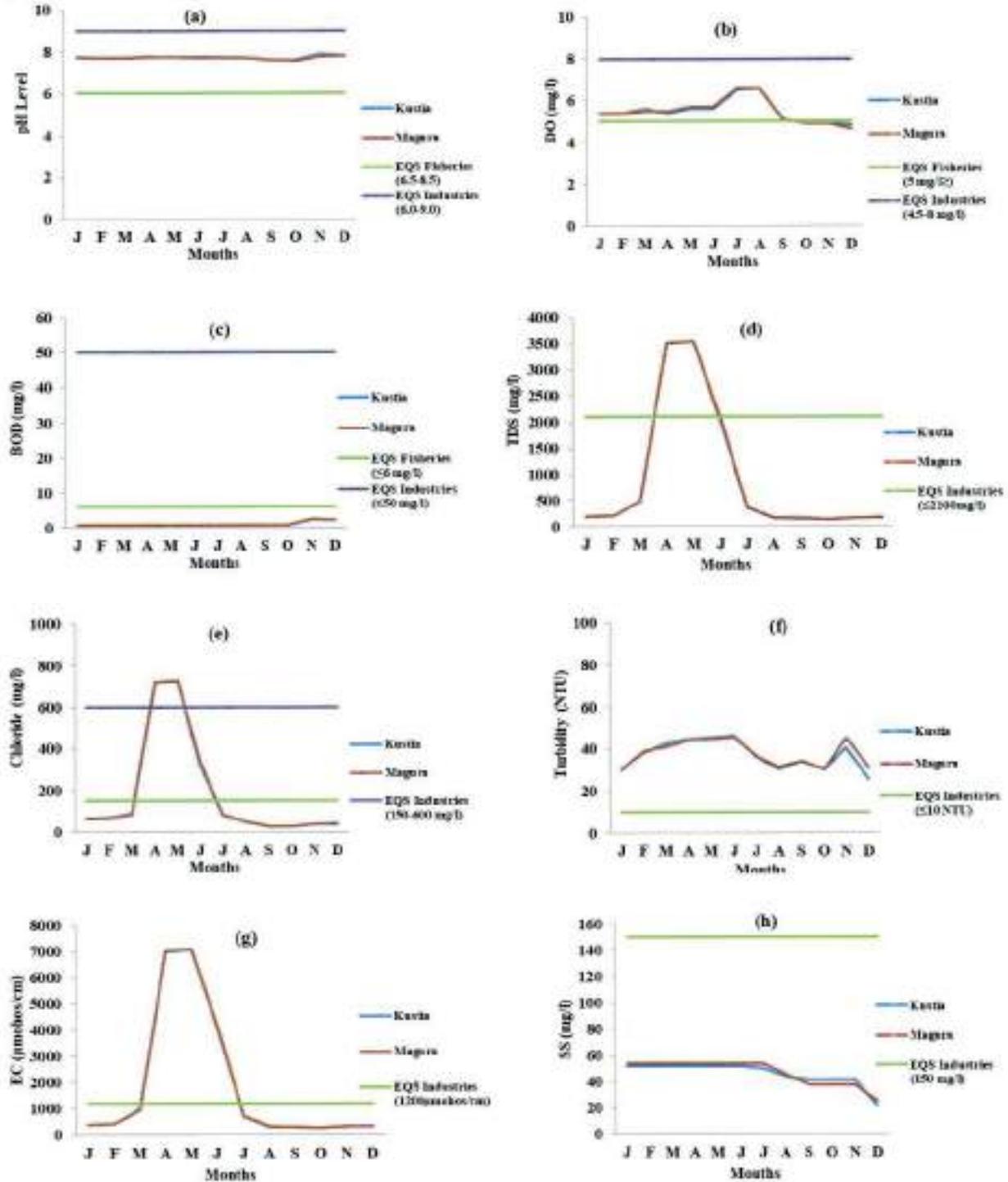


Fig.20. Status of pH, DO BOD, TDS, Chloride, Turbidity, EC and SS of Gorai River in 2017



In 2017, pH of Gorai river water was varied from 7.58 to 7.88 (Fig.20a) and was within the EQS (6.5-8.5) for inland surface water. In 2016, pH level varied from 7.65 to 7.79. In 2017, DO was above the EQS (≥ 5 mg/l) limit for fisheries at both locations. Level of DO varied from 4.6 to 6.6 mg/l (Fig.20b). In 2016, DO level varied from 5.1 to 6.8 mg/l. In 2017, BOD level was within the EQS (≤ 6 mg/l) and varied from 0.8 to 2.5 mg/l (Fig.20c). In 2016, BOD range was from 0.7 to 0.8 mg/l. In 2017, TDS level of Gorai river water was within the limit except the month of April to May while comparing to the EQS (2100 mg/l) for treated wastewater from industrial units. It varied from 144 to 3548 mg/l (Fig.20d). In 2016, TDS level varied from 134 to 184 mg/l. In 2017, the maximum and the minimum chloride values were 38 and 728 mg/l (Fig.20e). In 2016, Chloride level was from 28 and 38 mg/l. In 2017, Turbidity level was relatively higher throughout the year than the EQS (10 NTU) for drinking water. It varied from 25.66 to 46.43 NTU (Fig.20f). In 2015, Turbidity level varied from 24.33 to 36.26 NTU. In 2017, the maximum EC was 7094 $\mu\text{mhos/cm}$ in May and the minimum 284 $\mu\text{mhos/cm}$ in October while EQS for EC is 1200 $\mu\text{mhos/cm}$ (Fig.20g). In 2016, EC varied from 266 to 368 $\mu\text{mhos/cm}$. In 2017, SS varied from 22 mg/l to 54 mg/l (Fig.20 h).

4. 21 Modhumoti River

The Madhumati river, distributary of the upper Padma River, flowing through southwestern Bangladesh. It leaves the Padma just north of Kushtia and flows 306 km southeast before turning south across the swampy Sundarbans region to empty into the Bay of Bengal. In its upper course it is called the Garai; in its lower course it is known as the Baleswar; and its estuary mouth, which is some 14 km wide, is called the Haringhata. The Madhumati is one of the largest of the Padma distributaries in the southern part of the Gangetic Plain, and it offers the best navigation conditions of any river at the head of the Bay of Bengal. To monitor water quality of Modhumoti river in 2017, samples were collected from one location comprising three different points (Mollarhat side, middle and opposite) of Bagerhat. For analysis, average values of three points were considered. Detail data is attached Annex-1 (Table: 148-155).

In 2017, pH level of Modhumoti river was within the EQS and varied from 7.4 to 7.67 (Fig.21a). In 2016, pH level varied from 7.52 to 7.86. In 2017, DO was varied from 4.8 to 6.2 mg/l while EQS is ≥ 5 mg/l for fisheries (Fig.21b). In 2016, DO level was varied from 5.1 to 5.8 mg/l. In 2017, BOD varied from 0.8 mg/l to 8.0 mg/l (Fig.21c). In 2016, BOD was 0.8 mg/l all over the year. In 2017, TDS of Modhumoti river water was within EQS (2100 mg/l). The maximum and the minimum value was 418 mg/l in May and 144 mg/l in October (Fig.21d). In 2016, TDS level varied from 134 to 176 mg/l. In 2017, Chloride level varied from 34 to 76 mg/l while EQS for treated wastewater from industrial units is 600 mg/l (Fig.20e). In 2016, Chloride level varied from 52 to 72 mg/l. In 2017, Turbidity varied from 29 to 48.2 NTU (Fig.21f). In 2016, Turbidity varied from 42.2 to 79.06 NTU. In 2017, the maximum EC was 836 $\mu\text{mhos/cm}$ in May and the minimum 288 $\mu\text{mhos/cm}$ in October while EQS for EC is 1200 $\mu\text{mhos/cm}$ (Fig.21g). In 2016, EC varied from 268 to 352 $\mu\text{mhos/cm}$. In 2017, SS varied from 21 mg/l to 48 mg/l (Fig.21 h).

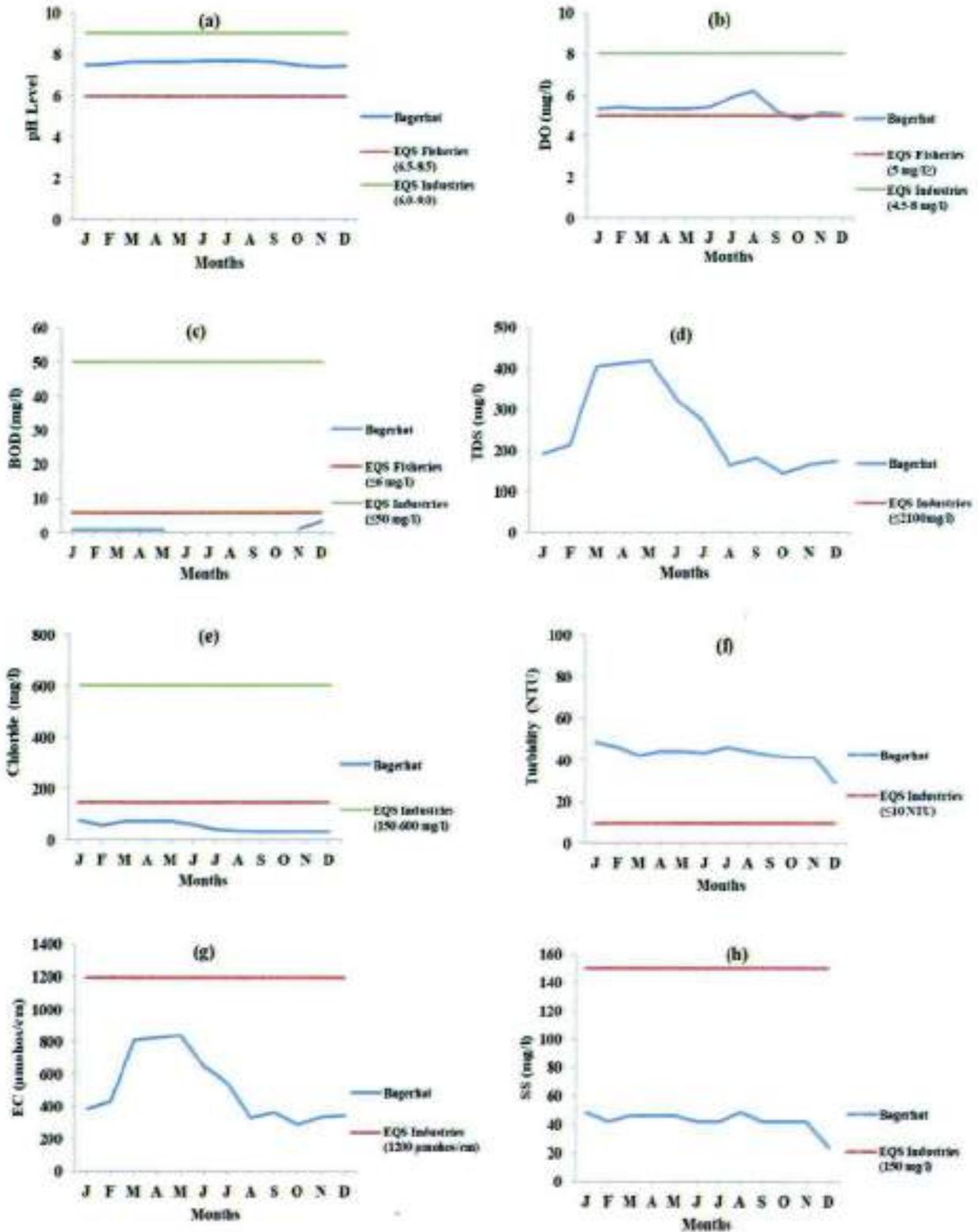


Fig.21. Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Modhumoti River in 2017



4.22 Beel Dakatia River

The Beel Dakatia river located in the north-eastern part of khulna district. To monitor water quality of Beel Dakatia river in 2017, samples were collected from one location at Khulna comprising two points (bank and middle). For analysis, average of two points were used. Detail data is attached Annex-1 (Table: 156-163).

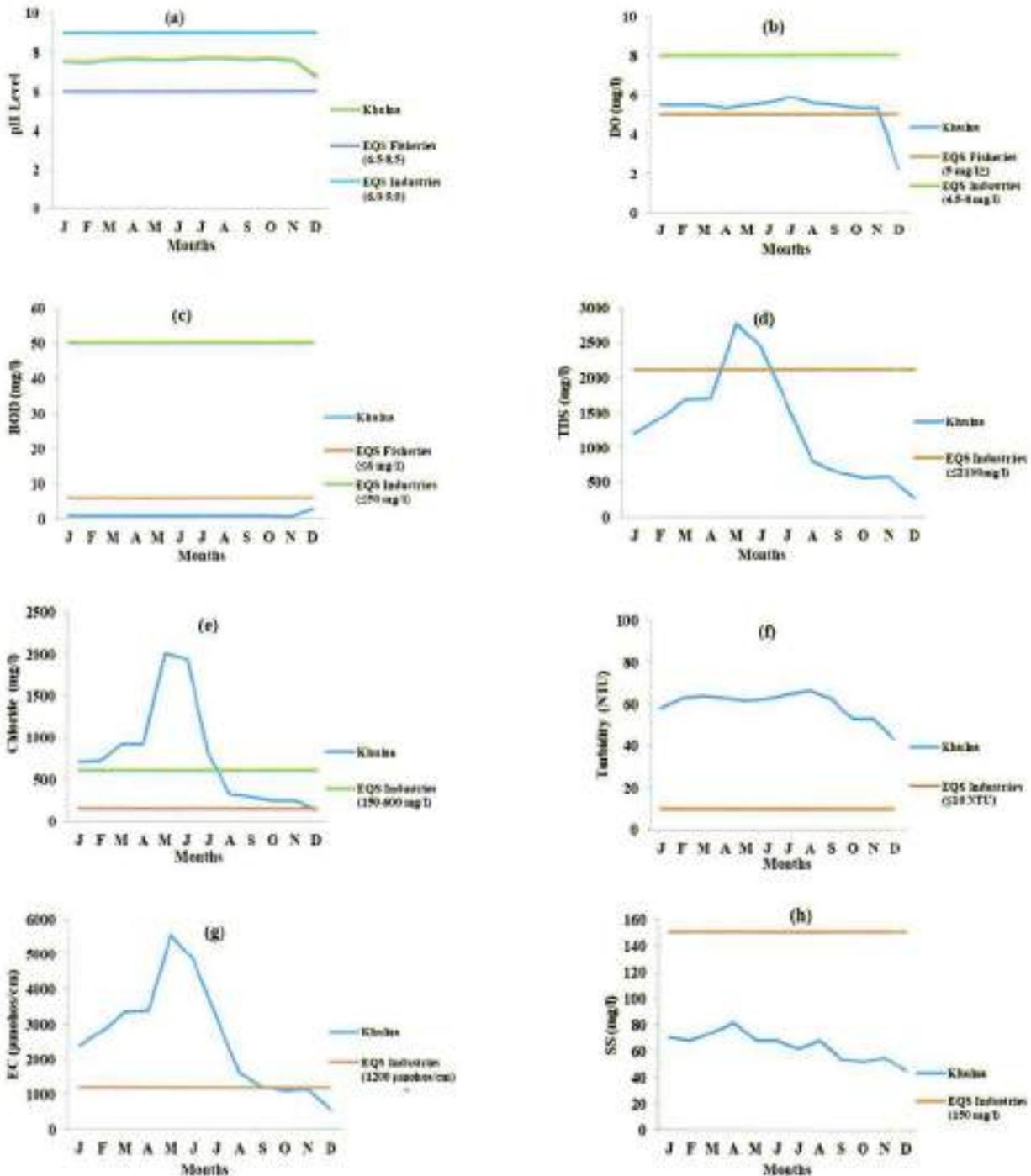


Fig.22. Status of pH, DO, BOD, TDS, Chloride, Turbidity, EC and SS of Beel Dakatia River in 2017

In 2017, pH level was within the EQS and varied from 7.48 to 7.68 (Fig.22a). In 2016, pH level varied from 7.22 to 7.64. In 2017, DO varied from 2.2 to 5.9 mg/l (Fig.22b) and was closer to the EQS for fisheries (≥ 5 mg/l). In 2016, DO level varied from 3.7 to 5.5 mg/l. In 2017, BOD Concentration varied from 0.6 to 2.7 mg/l (Fig.22c). In 2016, BOD Concentration varied from 0.6 to 0.8 mg/l. In 2017, the maximum and the minimum TDS was 2772 mg/l in May and 275 mg/l in December (Fig.22d). In 2016, TDS level varied from 562 to 1643 mg/l. In 2017, Chloride level varied from 144 mg/l to 2012 mg/l while EQS for treated wastewater from industrial units is 150-600 mg/l. The maximum value was found in May and the minimum was in December (Fig.22e). In 2016, Chloride level varied from 302 mg/l to 860 mg/l. In 2017, Turbidity varied from 43 to 66.3 NTU (Fig.22f) and was higher than EQS (10 NTU) for drinking water. In 2016, Turbidity range was from 40.8 to 66.85 NTU. In 2017, the maximum EC was 5542 $\mu\text{mhos/cm}$ in May and the minimum 585 $\mu\text{mhos/cm}$ in December while EQS for EC is 1200 $\mu\text{mhos/cm}$ (Fig.22g). In 2016, EC varied from 1122 to 3276 $\mu\text{mhos/cm}$. In 2017, SS varied from 46 mg/l to 82 mg/l (Fig.22 h). In 2016, SS varied from 46 mg/l to 88 mg/l.

4.23 Kirtankhola River

The Kirtankhola River starting from Sayeshtabad in barisal district, the river Kirtankhola ends into the Gajalia near Gabkhan khal. This old river is now known as the Barisal river. The total length of the river is about 160 km. For monitoring purpose water samples were collated from one location of the river at Launch ghat (bank and in the middle), Dopdopia Kheyaghat (bank and middle), Beltola Fery Gaht (bank and middle). For analysis, average of two points were used. Data was not available in the month of November. Detail data is attached Annex-1 (Table:164-171).

In 2017, pH level of Kirtankhola river water varied from 6.8 to 7.71 (Fig.23a) and was within the EQS. In 2016, pH range was from 7.1 to 7.3. In 2017, DO level of Kirtankhola rive was above the EQS (≥ 5 mg/l) for fisheries. DO varied from 5.16 mg/l to 7.3 mg/l (Fig.23b). In 2016, DO level varied from 7.1 mg/l to 6.9 mg/l. In 2017, BOD level varied from 2.18 mg/l and 2.6 mg/l. (Fig.23c). In 2016, BOD was 2.0 mg/l round the year. In 2017, TDS of Kirtankhola rive water was also within the EQS (2100 mg/l) throughout the year and the range was from 59 to 102 mg/l (Fig.23d). In 2016, TDS level varied from 63 to 114 mg/l. In 2017, TS content varied from 81 to 140 mg/l (Fig.23e) while EQS for treated wastewater from industrial units is 2250 mg/l. In 2017, EC level of the Kirtankhola river varied from 129 to 189 $\mu\text{mhos/cm}$ against the EQS for treated wastewater from industrial units is 1200 $\mu\text{mhos/cm}$ (Fig.23f). In 2016, EC varied from 167 to 173 $\mu\text{mhos/cm}$. In 2017, T.alkalinity of Kirtankhola river water was within EQS. The maximum and the minimum T. alkalinity was 148 mg/l in January and 132 mg/l in june (Fig.23g). In 2016, T. alkalinity was 131 mg/l to 147 mg/l. In 2017, TSS varied from 18 mg/l to 42 mg/l.

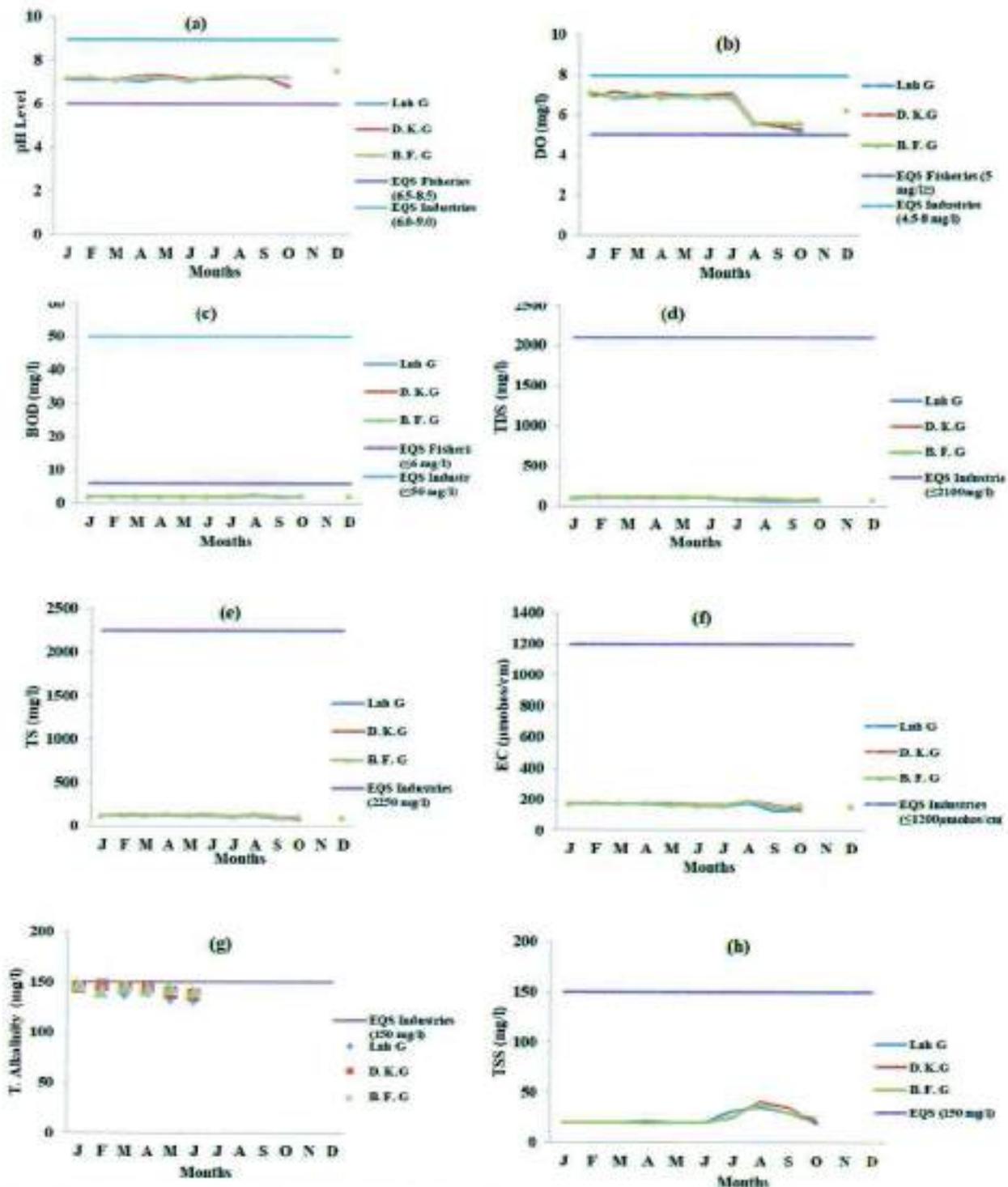


Fig.23. Status of pH, DO, BOD, TDS, TS, EC T. Alkalinity and TSS of Kirtankhola River in 2017

4.24 Tatulia River

For monitoring of water quality of Tetulia river water samples was collated from Vedhoria Feri Ghat (VFG) location (bank and middle point). For analysis, average of two points were used. Data was not available in the month of January, March, May, July, September and November. Detail data is attached Annex-1 (Table: 172-179).



In 2017, pH level of the Tetulia river water ranged from 7.05 to 7.3 mg/l (Fig.24a) while in 2016, the pH range was from 6.9 to 7.35. In 2017, DO varied from 5.65 to 7.0 mg/l (Fig.24b) while standard limit for fisheries is (≥ 5 mg/l). In 2016, DO level varied from 6.9 to 7.1 mg/l. In 2017, BOD level of the Tetulia river water was varied 2.0 to 2.55 mg/l (Fig.23c) against corresponding EQS (≤ 6 mg/l) for fisheries. In 2016, BOD level was 2.0 round the year. In 2017, TDS range varied from 83 to 140 mg/l (Fig.24d). In 2016, TDS range was 97 to 109 mg/l. In 2017, Total alkalinity level varied from 138 to 148 mg/l (Fig.24e) while EQS for treated wastewater from industrial units is 150 mg/l. In 2017, EC varied from 150-172 μ mohos/cm (Fig.24f) and was below the EQS (1200 μ mohos/cm). In 2017, TS varied from 74-156 mg/l (Fig.24g). In 2017, Salinity varied from 0.0-0.1 mg/l (Fig.24h).

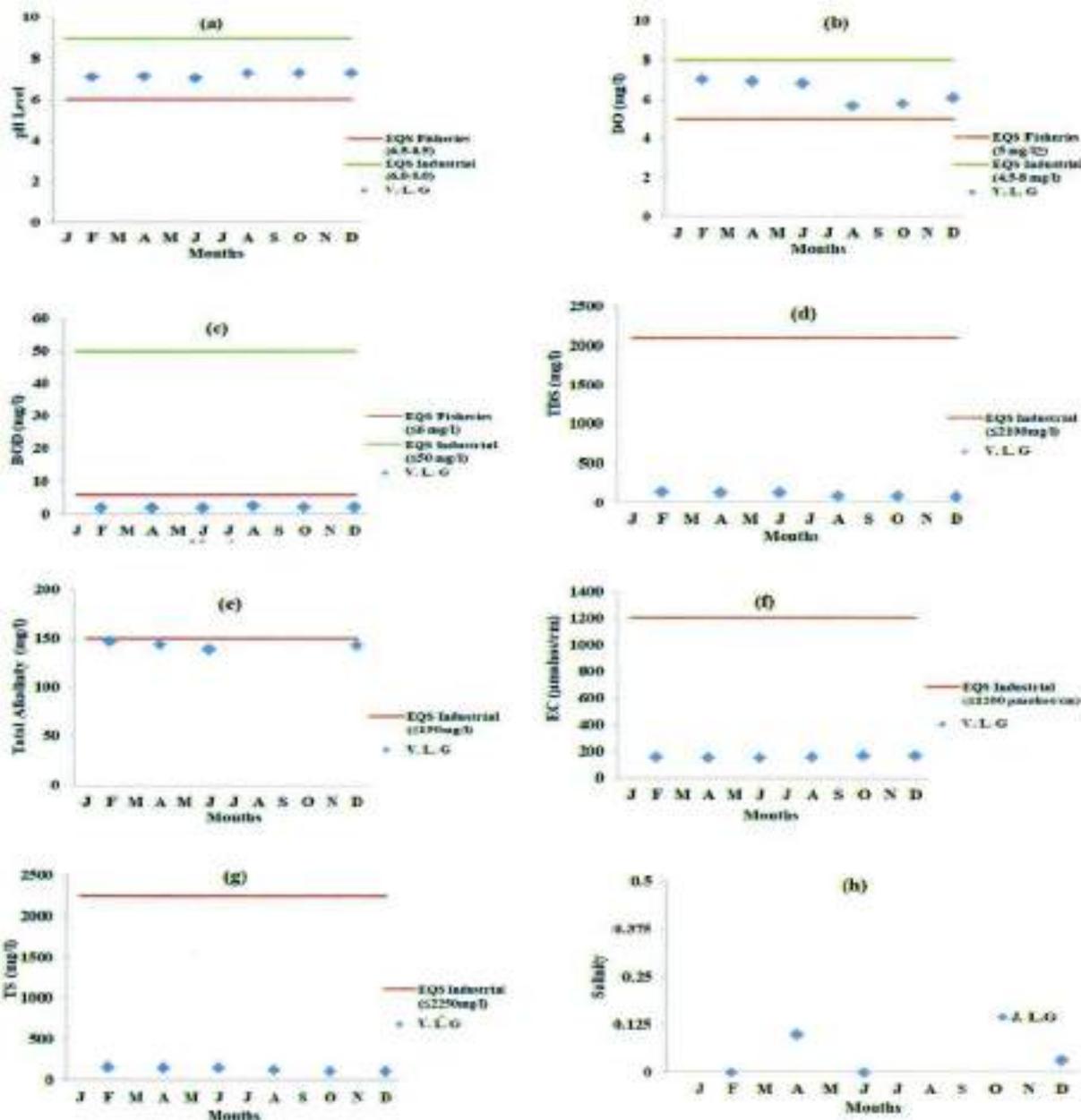


Fig.24. Status of pH, DO, BOD, TDS, TS and T. Alkalinity, TS and Salinity of Tatulia River in 2017



4.25 Sugandha River/Bishkhali River

The Bishkhali is a river of Bangladesh, a continuation of the Sugandha. Bishkhali river continuation of the kirtankhola and nalchity rivers. The total length of the river is 96 km. The average width of the river from its origin to first 30 km is about 1 km and the rest is about 2 km. The average depth is about 16m. The Sugandha turns into Bishkhali after entering Jhalokati town. To monitor water quality of Sugandha River water samples were collected for analysis from Jhalkathi Launch Ghat of the river. Data was not available in the month of January, March, May, July to November. Detail data is attached Annex-1 (Table: 180-187).

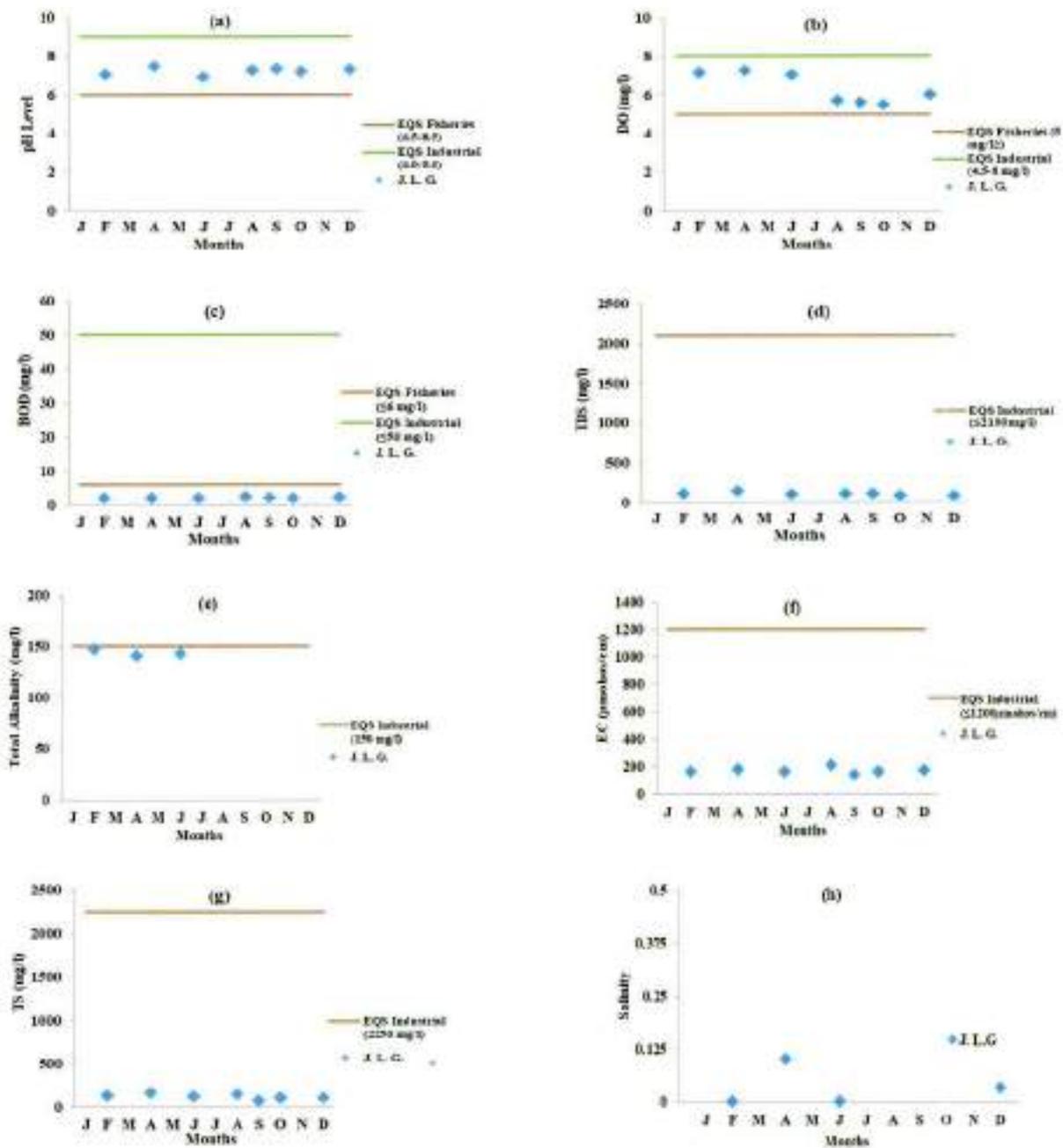


Fig.25. Status of pH, DO, BOD, TDS, T.Alkalinity, TS and Salinity of Sugandha River in 2017

In 2017, pH level of the Sughanda river water varied from 6.9 to 7.3. (Fig.25a) while EQS for fisheries is 6.5 to 8.5. In 2016, pH level varied from 7.1 to 7.3. In 2017, DO level varied from 5.5 to 7.25 mg/l (Fig.25b) and was above the EQS (≥ 5 mg/l) for fisheries. In 2016, DO level varied from 6.9 to 7.3 mg/l. In 2017, BOD level varied from 1.9 to 2.4 mg/l (Fig.25c) while EQS for fisheries is ≤ 6 mg/l. In 2016, BOD range was 2.0 mg/l round the year. In 2017, TDS level of the Sughanda river water was from 80 to 140 mg/l (Fig.25d) while corresponding EQS is 2100 mg/l for treated wastewater from industrial units. In 2016, TDS level varied from 97 to 107 mg/l. In 2017, Total alkalinity level of the Sughanda river water was 140 mg/l to 148 mg/l (Fig.25e) against EQS (150 mg/l) for treated wastewater from industrial units. In 2017, EC of the Sughanda river water was from 210 $\mu\text{mhos/cm}$ to 144 $\mu\text{mhos/cm}$ (Fig.25f) while corresponding EQS is 1200 $\mu\text{mhos/cm}$ for treated wastewater from industrial units. In 2017, TS level of the Sughanda river water was from 74 to 160 mg/l (Fig.25g) while corresponding EQS is 2250 mg/l for treated wastewater from industrial units. In 2017, Salinity varied from 0.0 to 0.1 mg/l.

4.26 Lohalia River/Laukathi River

Patuakhali city is surrounded on three sides by two rivers. The two major rivers are Laukathi and Lohalia, which are directly connected with the Bay of Bengal. For monitoring purpose water samples were collected from Patuakhali Launch Ghat (PLG) (side and middle). For analysis, average of two points were used. Data was not available in the month of February, April, June, August, October and November. Detail data is attached Annex-1 (Table: 188-193).

In 2017, pH level of the Lohalia river water varied from 7.15 to 7.3. (Fig.26a) while EQS for fisheries is 6.5 to 8.5. In 2016, pH was varied from 7.1 to 7.3. In 2017, DO level varied from 5.7 to 7.15 mg/l (Fig.25b) and was above the EQS (≥ 5 mg/l) for fisheries. In 2016, DO was varied from 6.9 to 7.1 mg/l. In 2017, BOD was varied from 2.0 to 2.3 mg/l (Fig.25c) while EQS for fisheries is ≤ 6 mg/l. In 2016, BOD range was 2.0 mg/l round the year. In 2017, TDS level of the Lohalia river water was from 68 to 106 mg/l (Fig.25d) EQS is 2100 mg/l. In 2016, TDS was varied from 99 to 107 mg/l. In 2017, Total Alkalinity level of the Lohalia river was varied from 140 to 146 mg/l (Fig.24e) against EQS (150 mg/l) for treated wastewater from industrial units. In 2017, EC level of the Lohalia river water was from 122 to 172 $\mu\text{mhos/cm}$ (Fig.25f) EQS is 1200 $\mu\text{mhos/cm}$.

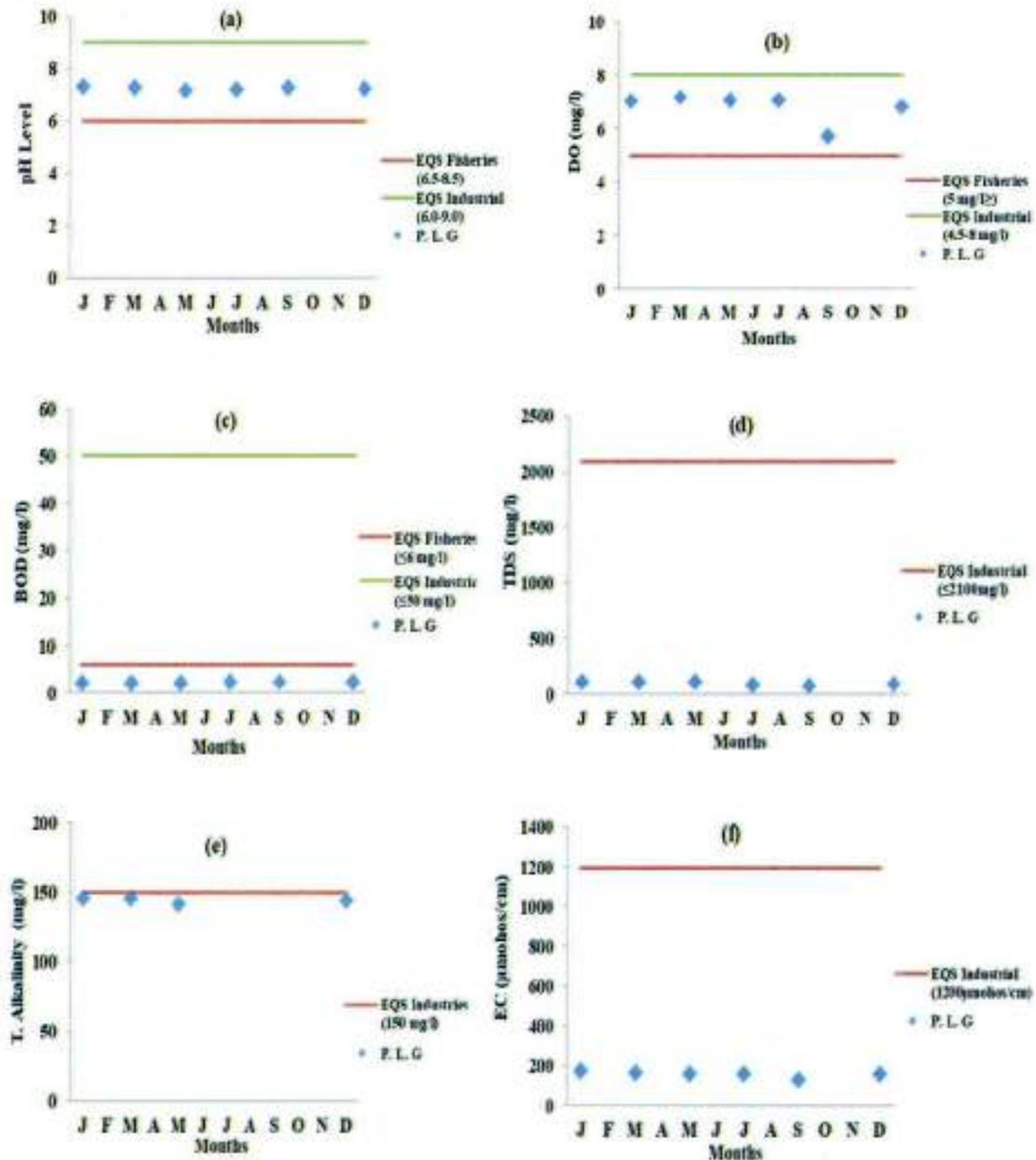


Fig.26. Status of pH, DO, BOD, TDS, T.alkalinity and EC of Lohalia River in 2017

4.27 Surma River

The Surma River is a major river in Bangladesh, part of the Surma-Meghna River System. It starts when the Barak River from northeast India divides at the Bangladesh border into the Surma and the Kushiya rivers. It ends in Kishoreganj District, above Bhairab Bazar, where the two rivers rejoin to form the Meghna River. The waters from the river ultimately flow into the

Bay of Bengal. The average depth of this river is 86m and maximum depth is 170m. For monitoring purpose water samples were collected from five different locations of the river namely Mendibag Point (MP), Kin Bridge (KB), Shak Ghat (SG), Chattak and Kazi Bazaar (KB). Detail data is attached Annex-1 (Table: 194-199).

In 2017, pH level of the Surma river water varied from 6.8 to 8.9 (Fig. 27a) while in 2016, pH was from 6.9 to 7.4. In 2017, DO content was mostly above the EQS (≥ 5 mg/l). It varied from 5.8 to 7.1 mg/l (Fig. 27b). In 2016, DO level varied from 5.03 to 7.2mg/l. In 2017, BOD value was also within the EQS at all locations. The maximum and the minimum BOD was 2.9 mg/l in January at Kazir Bazar and 1.7 mg/l in December at Shak Ghat location (Fig. 27c). In 2016, BOD level varied from 21 to 42 mg/l. In 2017, COD content was within the EQS (200 mg/l) and varied from 8 to 35 mg/l (Fig. 27d). In 2016, COD level varied from 62 to 118 mg/l. In 2017, TDS range was from 133 to 461 mg/l (Fig. 27e) where EQS for TDS is 2100 mg/l for treated wastewater from industrial units. In 2016, TDS level was varied from 41 to 209 mg/l. In 2017, EC level of Surma river water was within the EQS limit for treated wastewater from industrial unit. It varied from 266 to 881 $\mu\text{mhos/cm}$ (Fig. 27f). In 2016, EC was varied from 82 to 418 $\mu\text{mhos/cm}$.

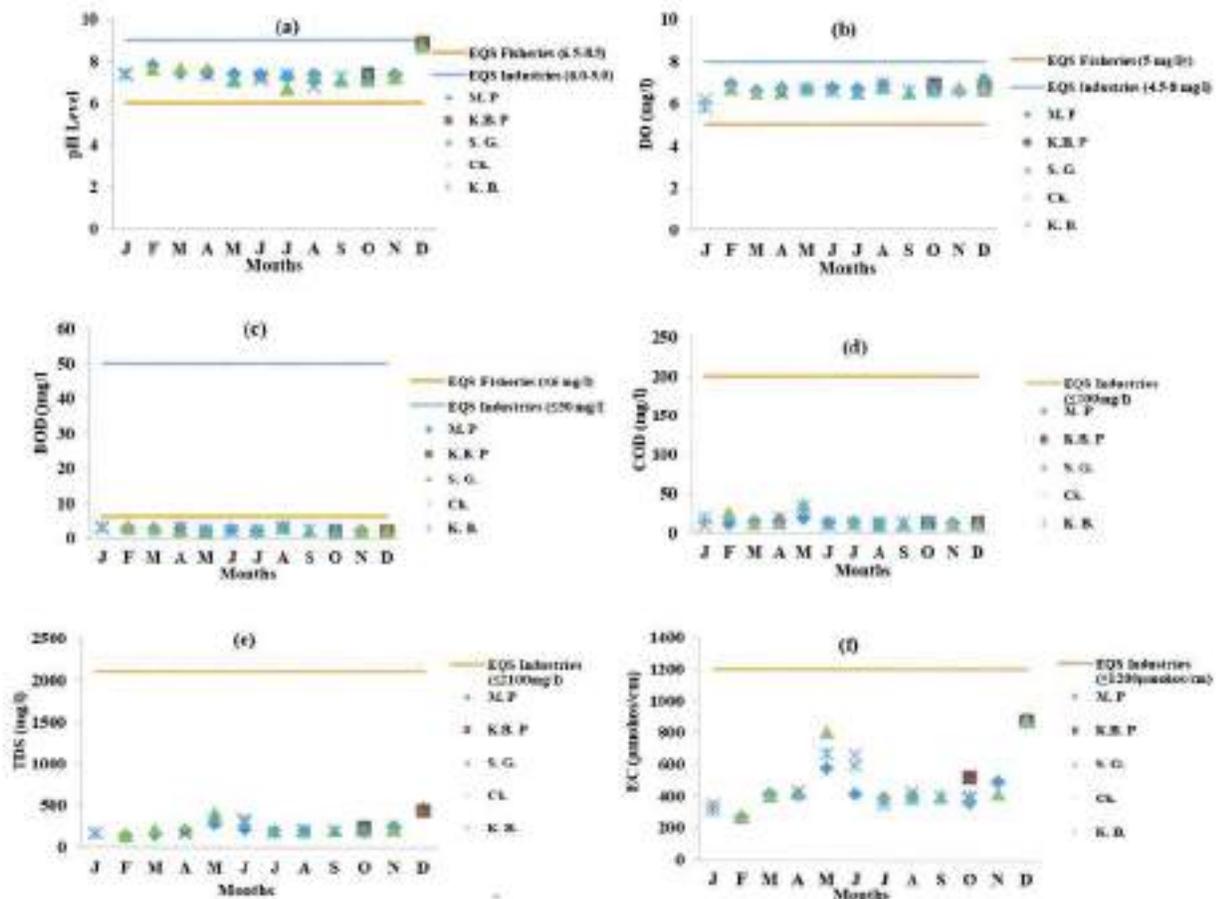


Fig.27. Status of pH, DO, BOD, COD, TDS and EC of Surma River in 2017

[Abbreviations: MP=Mendibag Point; KB=Kin Bridge; SG=Shak Ghat; CK=Chattak and KB=Kazi Bazaar]



4.28 Kushiara River

The Kushiara river is one of the Trans-boundary rivers of Bangladesh. The total length of the Kushiara is about 161 km and width of the river is 250m. During rainy season the mean depth of the Kushiara reaches upto 10m. Water samples were collected from three locations (e.g. Jokigonj (BSF Ghat, BDR Camp) and Fenchugonj point of the river in 2017 for analysis of water quality. Detail data is attached Annex-1 (Table: 200-205).

In 2017, pH level of Kushiara river water was within EQS (6.5-8.5) for inland surface water. It varied from 7.3 to 7.6 (Fig. 28a). In 2016, pH level varied from 6.9 to 7.8. In 2017, DO was above the EQS (≥ 5 mg/l) for fisheries and varied from 6.56 to 6.9 mg/l (Fig. 28b). In 2016, DO level varied from 6.2 to 6.7 mg/l. In 2017, BOD level was from 2 to 3 mg/l while EQS for fisheries is ≤ 6 mg/l (Fig. 28c). In 2016, BOD level varied from 23 to 42 mg/l. In 2017, COD content was within the EQS (200 mg/l) and varied from 11 to 16 mg/l (Fig. 28d). In 2016, COD level varied from 59 to 156 mg/l. In 2017, TDS level of Kushiara river water was below the EQS for treated wastewater from industrial unit and varied from 156 to 201 mg/l (Fig. 28e). In 2016, TDS level varied from 72 to 206 mg/l. In 2017, EC was within the EQS limit and it varied from 312 to 402 $\mu\text{mhos/cm}$ (Fig. 28f). In 2016, EC was from 140 to 412 $\mu\text{mhos/cm}$.

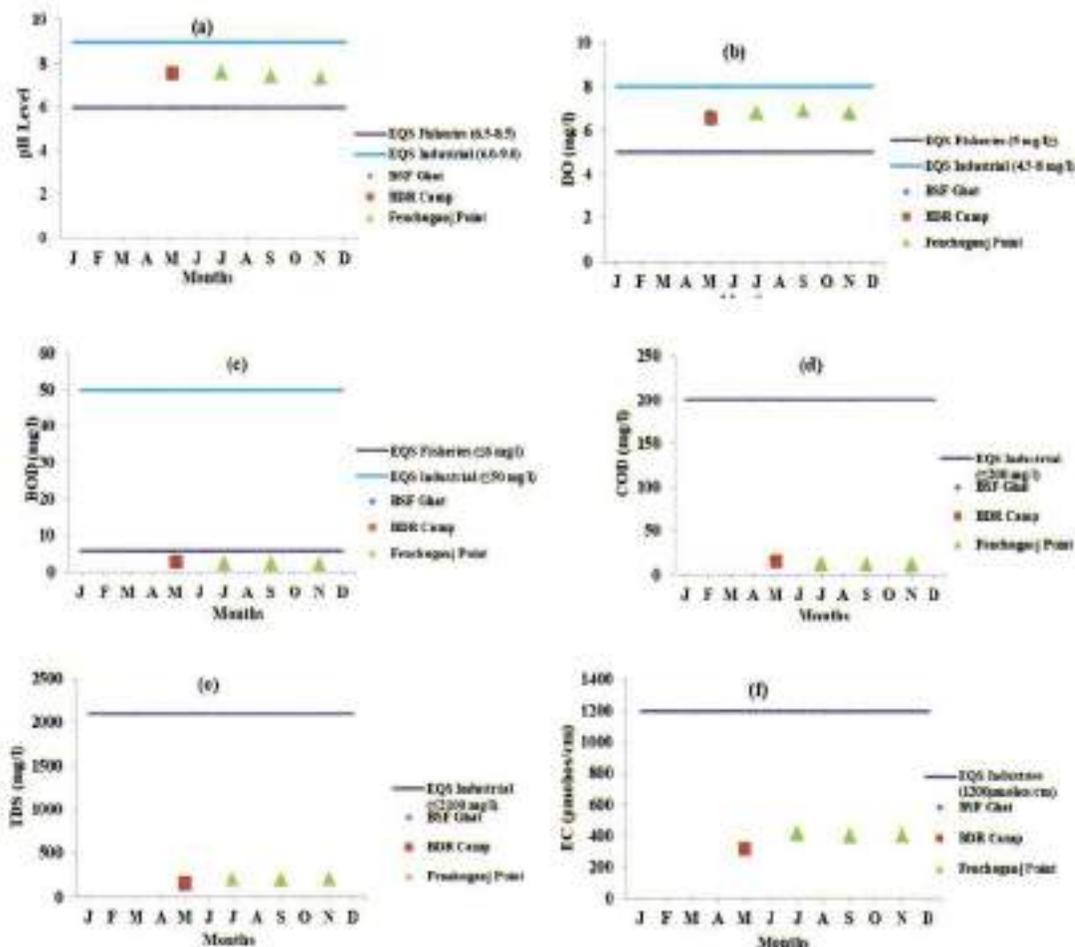


Fig 28. Status of pH, DO, BOD, COD, TDS and EC of Kushiara River in 2017

4.29 Balu River

Balu River runs mainly through the extensive swamps of Beel Belai and those east of Dhaka, joining the Shitalakshya near demra. It has a narrow connection through the Suti Nadi near kapasia with the Shitalakshya, and also by way of the Tongi Khal with the turag; there is also a link with the Shitalakshya near kaliganj. Although it carries floodwater from the Shitalakshya and the Turag during the flood season, the Balu is of importance mainly for local drainage and access by small boats. [Sifatul Quader Chowdhury]. To monitor water quality in 2017, water samples were collected from six locations such as Near Jaber & Jubair Fabrics Ltd. Tongi (N.J&J F.L.T), Near Hossain Dyeing Ltd. Pagar, Tongi (N.H.D.L.T), Near Damra University College, Demra, Dhaka (N.D.U.C.D), Near Balu Bridge, 300 feet Road, Dhaka (N.B.B.D), Near Fulpukuria Dyeing Ltd. Pagar, Tongi (N.F.D.L.T), South Side of Tongi Rail Bridge, Pagar, Tongi (S.S.T.R.B.T). Data was not available in the months of February to December at the Near Fulpukuria Dyeing Ltd. Pagar, Tongi and South Side of Tongi Rail Bridge, Pagar, Tongi. Details data is attached annexure -1 (Table:206-2115).

In 2017, the pH range (6.94- 8.81) (Fig.29a) of Balu river was within EQS (6.5 -8.5). The maximum pH 8.81 was found in April at Near Jaber & Jubair Fabrics Ltd. Tongi and the minimum pH 6.94 was found in August at Near Damra University College, Demra, Dhaka. In 2017, DO concentration of Balu river water was very low during dry season. The maximum DO (5.2 mg/l) found at Near Damra University College, Demra, Dhaka in October and the minimum DO (0.0) mg/l was found in January at the all locations (Fig.29b). In 2017, the maximum BOD was 84 mg/l in April at Near Hossain Dyeing Ltd. Pagar, Tongi and the minimum was 1.1 mg/l in July at Near Jaber & Jubair Fabrics Ltd. Tongi (Fig.29c). In 2017, COD of Balu river was over the EQS (200 mg/l) in dry season for waste water after treatment from industrial units. The maximum and the minimum COD content of Balu river water was 282 mg/l at Near Hossain Dyeing Ltd. Pagar, Tongi in March and 7 mg/l at the same location in July (Fig.29d). In 2017, TDS was below the EQS (2100 mg/l) for wastewater after treatment from industrial units (Fig.29e) at all the sampling points. The maximum TDS was 1110 mg/l in March at Near Hossain Dyeing Ltd. Pagar, Tongi while that of minimum was 83.7 in October at Near Damra University College, Demra, Dhaka. In 2017, the maximum Chloride was (176 mg/l) found in March at Near Hossain Dyeing Ltd. Pagar, Tongi and the minimum Chloride was (7.0 mg/l) in July at the same locations (Fig.29f). In 2017, the maximum SS (234 mg/l) was at Near Hossain Dyeing Ltd. Pagar, Tongi in March and the minimum (9 mg/l) in July at the same location (Fig.29g). In 2017, the maximum EC (2433 μ mhos/cm) was in March at Near Hossain Dyeing Ltd. Pagar, Tongi and the minimum (166 μ mhos/cm) was in October at Near Damra University College, Demra, Dhaka (Fig.29h). In 2017, the maximum Total Alkalinity (430 mg/l) was at Near Jaber & Jubair Fabrics Ltd. Tongi in April and the minimum (42 mg/l) in October at Near Hossain Dyeing Ltd. Pagar, Tongi (Fig.29i). In 2017, the maximum Turbidity of Balu river was (250 mg/l) at 300 feet Road, Dhaka in February and the minimum (9.36 mg/l) in April at Near Damra University College, Demra, Dhaka (Fig.29j).

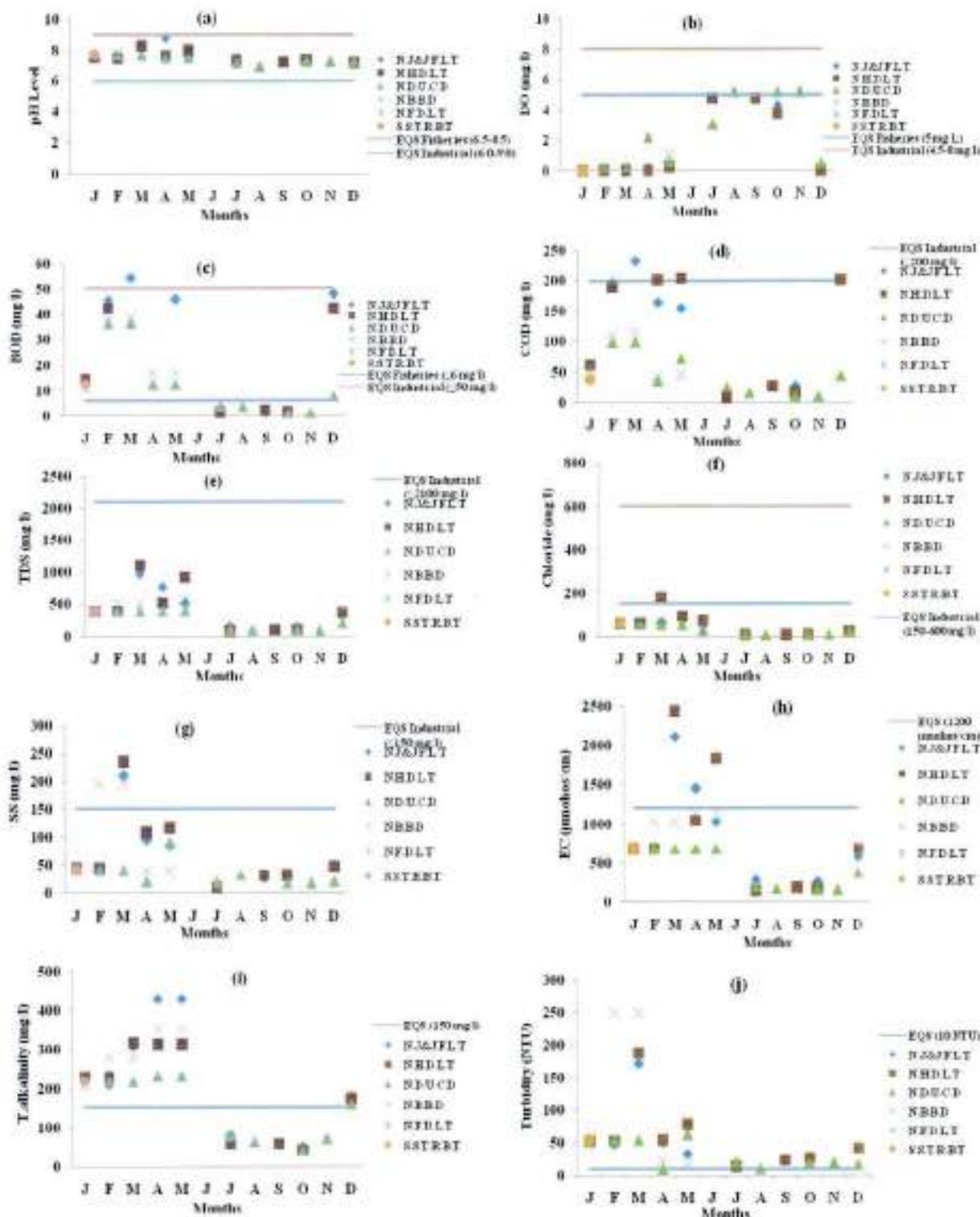


Fig 29. Status of pH, DO, BOD, COD, TDS, Chloride, SS, EC, T.alkalinity and Turbidity of Balu River in 2017

Note: Near Jaber & Jubair Fabrics Ltd. Tongi (N.J&J.F.L.T), Near Hossain Dyeing Ltd. Pagar, Tongi (N.H.D.L.T), Near Damra University College, Demra, Dhaka (N.D.U.C.D), Near Balu Bridge, 300 feet Road, Dhaka (N.B.B.D), Near Fulpukuria Dyeing Ltd. Pagar, Tongi (N.F.D.L.T), South Side of Tongi Rail Bridge, Pagar, Tongi (S.S.T.R.B.T).

CHAPTER 5: WATER QUALITY PARAMETERS OF LAKE AND GROUND WATER

5.1 Different water quality parameters of Gulshan lake water

It is an important urban water body in Dhaka city providing environmental services. However, the lake itself is a victim of environmental pollution. Direct discharge of sewage and dumping of municipal waste into the lake turned it highly polluted. The lake has been declared by the government as "Ecologically Critical Area" in 2001. Water samples were collected from nine locations e.g. Near United Hospital, Kalachadpur (N.U.H.K), Near Housing, South Bridge (N.H.S.B), Near Lake View Clinic (N.L.V.C), North Side Gulshan Baridhara Lake (N.S.G.B.L), Taltola Shooting Complex, South Side (T.S.C.S.S), North Side of Gulshan-1, Gudara Ghat (N.S.G.G.G), South Side of Gulshan-1, Gudara Ghat (S.S.G.G.G), Gulshan-Bonani Connection Bridge (G.B.C.B), Bonani Bridge (B.B) of the lake in 2017 for analysis of water quality. For analysis, average of nine points were used. Data was not available in the month of May and September. Detail data is attached Annex-2 (Table:216-225).

In 2017, pH of Gulshan Lake water varied from 6.79 to 8.05. The maximum pH was in December at North Side Gulshan Baridhara Lake and the minimum pH was in June at Near United Hospital, Kalachadpur (Fig. 30a). In 2016, pH of Gulshan Lake water varied from 6.85 to 8.27. In 2017, DO content of Gulshan lake widely varied among the sampling locations as well as among sampling months. DO of Gulshan Lake water varied from 0 to 11.41 mg/l. The maximum DO was in August at Near United Hospital, Kalachadpur and the minimum DO (0.0) mg/l was in December at North Side of Gulshan-1, Gudara Ghat (Fig. 30b). In 2016, DO concentration of Gulshan Lake water varied from 0 to 15.3 mg/l. In 2017, BOD of Gulshan Lake water varied from 6.0 to 80 mg/l. The maximum BOD (80 mg/l) was in February at Near Lake View Clinic and the minimum BOD (6.0) was in July at Gulshan-Bonani Connection Bridge (Fig. 30c). BOD was higher than EQS throughout the year of 2017. In 2016, BOD of Gulshan Lake water varied from 8.1 to 51.7 mg/l. In 2017, COD of Gulshan Lake water varied from 19.7 to 186 mg/l. The maximum COD (186 mg/l) was in June at Near Housing, South Bridge and the minimum COD (19.7) mg/l was in July at Gulshan-Bonani Connection Bridge (Fig. 30d). COD was mostly below the EQS. In 2016, COD of Gulshan Lake water varied from 28 to 303 mg/l. In 2017, TDS of Gulshan Lake water varied from 31 to 440 mg/l. The maximum TDS (440 mg/l) was in December at Taltola Shooting Complex, South Side and the minimum TDS (31mg/l) was in November at Gulshan-Bonani Connection Bridge (Fig. 30e). In 2016, TDS of Gulshan Lake water varied from 122.5 to 432 mg/l. In 2017, Turbidity of Gulshan Lake water varied from 16.3 to 96.7 NTU. The maximum Turbidity (96.7 NTU) was in June at Near Housing, South Bridge and the minimum Turbidity (16.3 NTU) was in November at North Side Gulshan Baridhara Lake (Fig. 30f). In 2016, Turbidity of Gulshan Lake water varied from 16 to 82 NTU and it was higher than EQS throughout the year. In 2017, Chloride of Gulshan Lake water varied from 11 to 55 mg/l. The maximum Chloride (55 mg/l) was in January at North Side Gulshan Baridhara Lake and the minimum Chloride (11 mg/l) was in July at Gulshan-Bonani Connection Bridge (Fig. 30g). In 2016, Chloride of Gulshan Lake water varied from 15.82 to 76.97 mg/l. In 2017, SS of Gulshan Lake water varied from 25 to 156 mg/l. The maximum SS (156 mg/l) was in December at Near United Hospital, Kalachadpur and the minimum SS (25 mg/l) was in July at Gulshan-Bonani Connection Bridge (Fig. 30h). In 2016, SS of Gulshan



Lake water varied from 24 mg/l to 142 mg/l. In 2017, Total Alkalinity of Gulshan Lake water varied from 104 mg/l to 210 mg/l. The maximum Total Alkalinity (294 mg/l) was in February at Taltola Shooting Complex, South Side and the minimum Total Alkalinity (72 mg/l) was in August at Near United Hospital, Kalachadpur (Fig. 30i). In 2016, Total Alkalinity of Gulshan Lake water varied from 104 mg/l to 210 mg/l. In 2017, EC of Gulshan Lake water varied from 280 μ mhos/cm to 812 μ mhos/cm. The maximum EC (812 μ mhos/cm) was in March at Near Housing, South Bridge and the minimum EC (280 μ mhos/cm) was in August at North Side Gulshan Baridhara Lake (Fig. 30j). In 2016, EC of Gulshan Lake water varied from 250 μ mhos/cm to 869 μ mhos/cm.

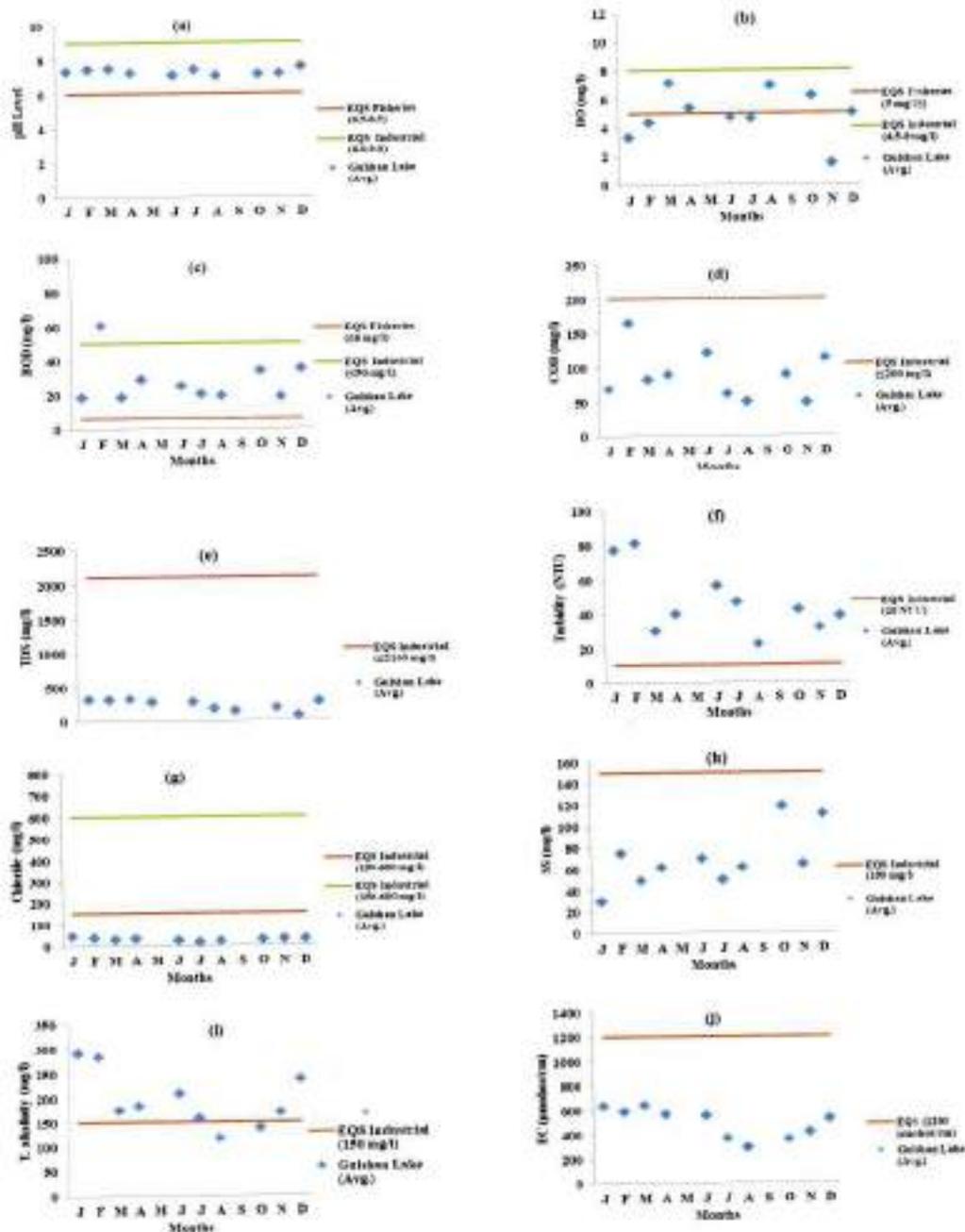


Fig 30. Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Gulshan Lake in 2017

5.2 Different water quality parameters of Dhanmondi lake water

Dhanmondi Lake is in the Dhanmondi residential area in Dhaka, Bangladesh. The lake was originally a dead channel and was connected to the Turag River. The lake is partially connected with the Begunbari Canal. In 1956, Dhanmondi was developed as a residential area. In the development plan, about 16% of the total area of Dhanmondi was designated for the lake. The lake has become a well visited tourist spot, with cultural hubs such as the Rabindra-Sarobar located along its side. Data was available in the months of January, February and September. Detail data is attached Annex-2 (Table: 226).

Water samples were collected from four locations e.g. 8 No. Road Bridge (8 N.R.B), Near Gigatola Pilkhana More (N.G.P.M), Near Dhanmondi-32 Bangabandhu Jadughor (N.D.B.J), Near Dhanmondi-32 Bridge (N.D.B) of the lake in 2017 for analysis of water quality.

In 2017, pH level of Dhanmondi Lake water was within the EQS (6.5-8.5) for fisheries. It varied from 7.1 to 8.54 (Fig. 31a). In 2016, pH level varied from 7.44 to 7.66. In 2017, DO was varied from 4.4 to 6.9 mg/l (Fig. 31b). In 2016, DO was varied from 5.2 to 6.6 mg/l. In 2017, BOD was varied from 1.5 to 4.6 mg/l (Fig. 31c). In 2016, BOD was varied from 5.8 to 20 mg/l. In 2017, COD was varied from 8 to 12 mg/l COD was within the EQS (Fig. 31d). In 2016, COD was varied from 18 to 58 mg/l. In 2017, TDS was varied from 92.3 to 184.2 mg/l and was within the EQS (Fig. 31e). In 2016, TDS was varied from 139.7 to 140.10 mg/. In 2017, Turbidity was varied from 2.3 to 12.8 NTU and the month of September Turbidity concentration was out the EQS (Fig. 31f). In 2016, Turbidity was varied from 2.3 to 6.4 NTU. In 2017, Chloride was varied from 18 to 40 mg/l and was within the EQS (Fig. 31g). In 2016, Chloride was varied from 8.0 to 39.9 mg/l. In 2017, SS was varied from 12 to 32 mg/l and was within the EQS (Fig. 31h). In 2016, SS was varied from 13 to 16 mg/l. In 2017, Total Alkalinity was within the EQS (150 mg/l) and varied from 51 to 90 mg/l (Fig. 31i). In 2016, Total Alkalinity varied from 70 to 120 mg/l. In 2017, EC was within the EQS (1200 μ mhos/cm) limit and it was varied 189.7 to 335 μ mhos/cm (Fig. 31j). Overall condition of the lake is good.

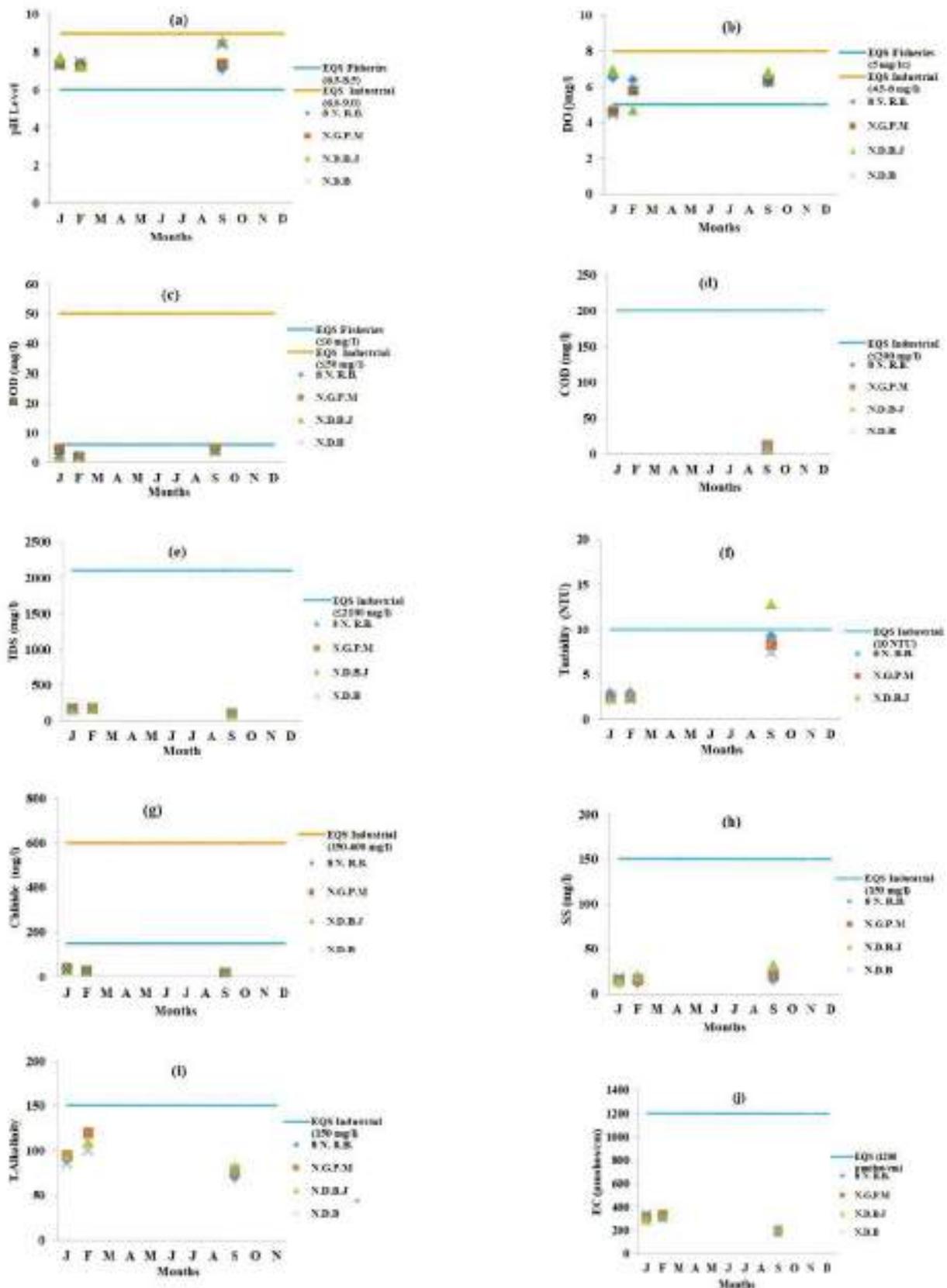


Fig 31. Status of pH, DO, BOD, COD, TDS, Turbidity , Chloride, SS, T. Alkalinity and EC of Dhamnondi Lake in 2017

5.3 Different water quality parameters of Hatir-Jheel lake water

Hatir-Jheel is a lakefront in Dhaka, Bangladesh that has been transformed into a transportation medium for minimizing traffic congestion. It is now a popular recreational spot for residents of Dhaka and is currently undergoing renovation. Hatir-Jheel, the new projects of beautification Dhaka city. It has already become an attractive location to visit in Dhaka City.

Hatirjheel is located at the centre of the capital city, dhaka. It has a latitude of 23.7495747 and a longitude of 90.3967635. In other words, the Hatirjheel has a coordinate of 23°44'58.47"N 90°23'48.35"E. The area stretches from Sonargaon Hotel in the south to all the way to Banasree in the north. The place is surrounded by Tejgaon, Gulshan, Badda, Rampura, Banasree, Niketon, and Maghbazar, and it made the transportation of the people living near these areas much easier.

Direct discharge of sewage, municipal waste and industrial effluent cause water pollution in the lake. Water samples were collected from three locations e.g. Badda-Gulshan Link Road Bridge (B.G.L.R), Rampura Bridge (R.B), FDC More Bridge (FDC M.B), of the lake in 2017 for analysis of water quality. Data was available in the months of January, February and September. Detail data is attached Annex-2 (Table: 227).

In 2017, pH level of Hatir Jheel Lake water was within the EQS (6.5-8.5) for fisheries. It varied from 6.93 to 8.0 (Fig.32a). In 2016, pH level varied from 7.3 to 7.49. In 2017, DO was varied from 0 to 9.76 mg/l (Fig.32b). In 2016, DO was varied from 5.8 to 6.5 mg/l. In 2017, BOD was varied from 3.0 to 29.1 mg/l and was above the EQS for the months of January, February and September (Fig.32c). In 2017, COD of Hatir Jheel water varied from 12 to 75 mg/l (Fig.32d). In 2016, COD of Hatir Jheel water varied from 41 to 58 mg/l. In 2017, TDS was varied from 173.2 to 352 mg/l (Fig.32e). In 2016, TDS was varied from 235 to 241 mg/l. In 2017, SS was varied from 18 to 64 mg/l and was below the EQS. In 2017, Turbidity was varied from 12.2 to 37 NTU and was above the EQS (Fig.32f). In 2016, Turbidity was varied from 24 to 60 NTU. In 2017, Chloride of Hatir Jheel Lake water varied from 24 to 52 mg/l (Fig.32g). In 2016, Chloride of Hatir Jheel Lake water varied from 19.0 to 40.9 mg/l. In 2017, SS was varied from 18 to 64 mg/l (Fig.32h). In 2016, SS was varied from 22 to 55 mg/l. In 2017, Total Alkalinity was above the EQS (150 mg/l) and varied from 158 to 246 mg/l (Fig. 32i). In 2016, Total Alkalinity varied from 120 to 160 mg/l. In 2017, EC was within the EQS (1200 μ mhos/cm) limit and it varied from 326 to 646 μ mhos/cm (Fig. 32j). In 2016, EC varied from 513 to 529 μ mhos/cm.

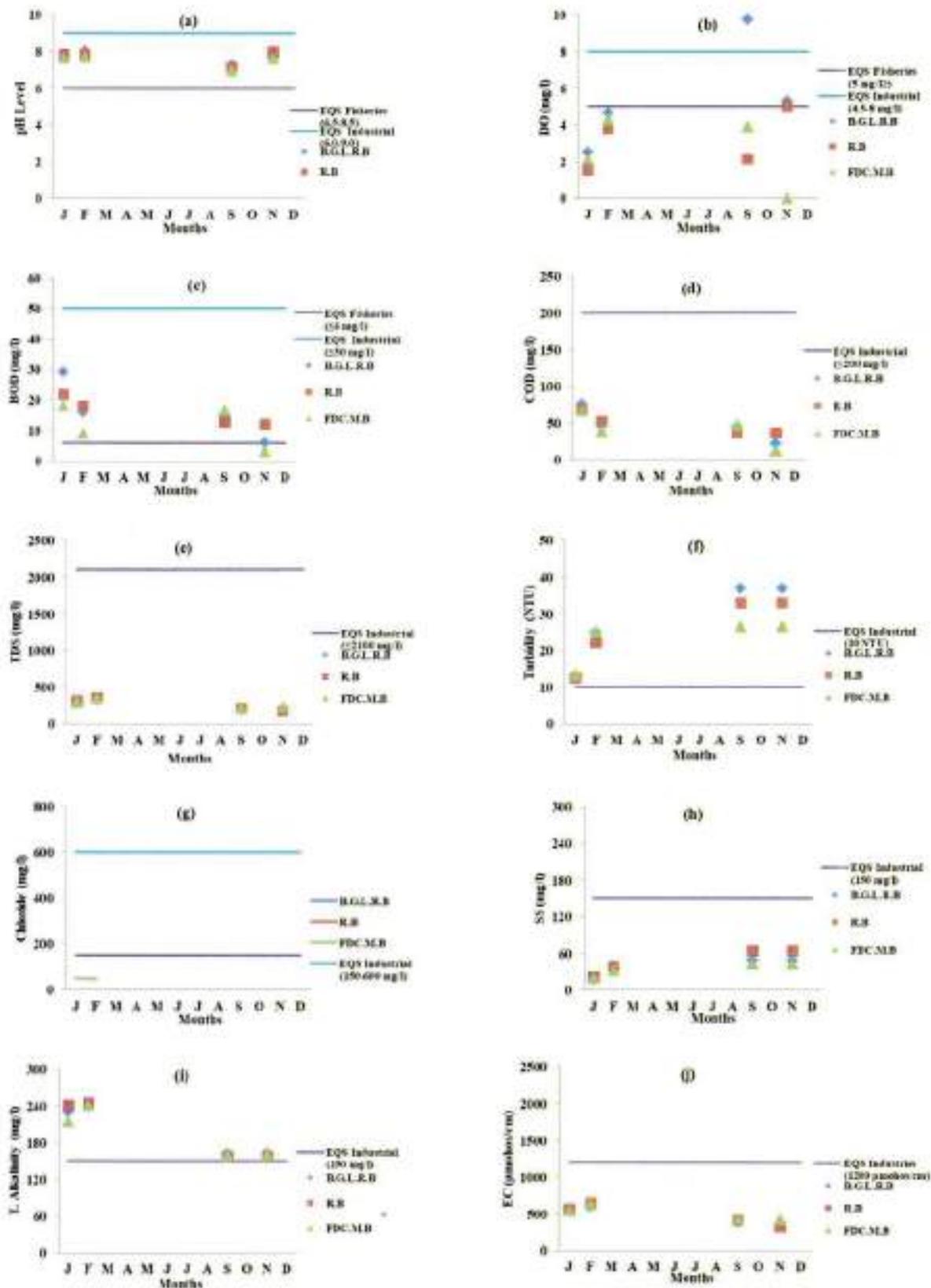


Fig 32. Status of pH, DO, BOD, COD, TDS, Turbidity, Chloride, SS, T. Alkalinity and EC of Hatir Jheel Lake in 2017

5.4 Different water quality parameters of ground water in Chittagong district

Chittagong is the second largest city of Bangladesh. It is a sea port city and faces various environmental challenges like industrial pollution, land slide, municipal wastes dumping, etc. There is possibility of increasing ground water salinity as the city is on the sea coast. For monitoring ground water quality, samples were collected from eight different locations viz. MES College Area (MES C.A), USTC Area (USTC A), Nsirabad 2 No. Gate Area (N.2No.G.A), and Chittagong Politechnic Institute Area (C.P.I.A), City College Area (C.C.A), Agrabad Women College Area (A.W.C.A), CEPZ Area (CEPZ A). For analysis, average points were used. Details data is attached annexure -3 (Table: 228-233).

In 2017, pH level of ground water of Chittagong District area was within EQS (6.5-8.5) for drinking water. It varied from 6.6 to 8.2 (Fig. 33a). In 2016, pH level varied from 6.4 to 7.84. In 2017, TDS level of Chittagong District area ground water was below the EQS for treated wastewater from drinking unit and varied from 54 to 175 mg/l (Fig. 33b). In 2016, TDS varied from 68.8 to 188 mg/l. In 2017, Chloride was within the EQS limit and it varied from 22 to 150 mg/l (Fig. 33c). In 2016, Chloride was within the EQS limit and it varied from 38 to 212 mg/l. In 2017, EC was within the EQS limit and it varied from 115 to 348 $\mu\text{mhos/cm}$ (Fig.33d). In 2016, EC concentration varied from 150 to 385 $\mu\text{mhos/cm}$. In 2017, Iron was within the EQS (0.3-1 mg/l) limit and it varied from 0.06 to 0.4 mg/l (Fig. 33e). In 2016, Iron level from 0.09 to 08 mg/l. In 2017, Hardness was within the EQS (200 mg/l) limit and it varied from 115 to 180 mg/l (Fig. 33f). In 2016, Hardness level varied from 134 to 176 mg/l.

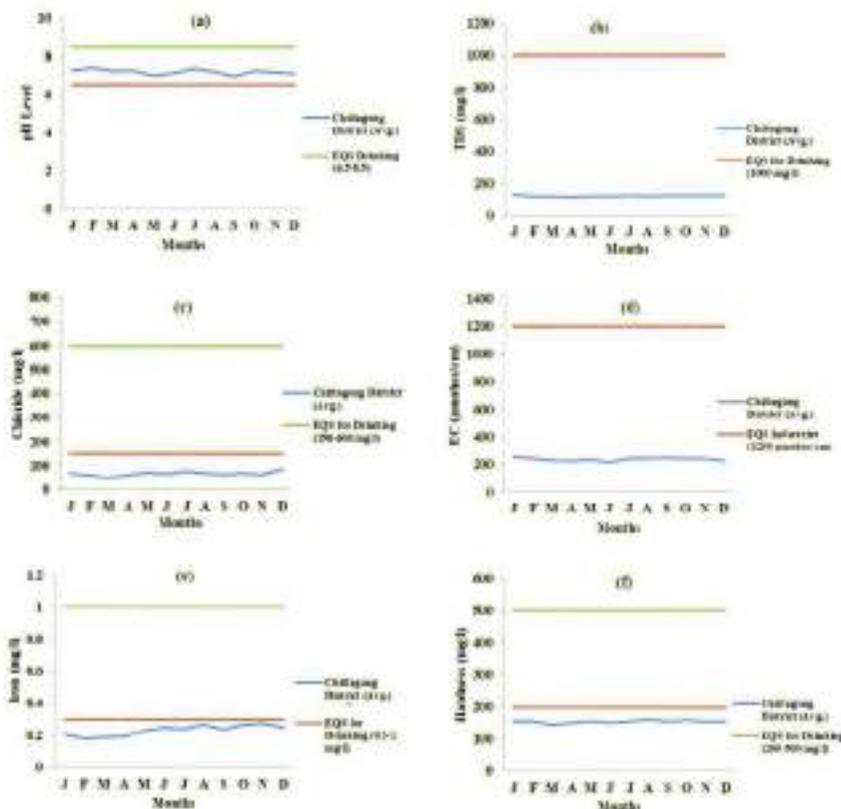


Fig 33. Graphical presentation of pH, TDS, Chloride, EC, Iron and Hardness of Chittagong District area ground water in 2017

5.5 Different water quality parameters of ground water in Khulna district

Khulna is the third-largest city of Bangladesh. It is situated north of the port of Mongla and has various heavy and light industries. For monitoring ground water quality, samples were collected from twenty six different locations viz. Divisional Commissioner Office, Boyra (D.C.O.B), Govt. Girls College, Boyra (G.G.C.B), Khulna Public College, Boyra (K.P.C.B), Boyra Bazar More, Boyra (B.B.M.B), Aizer More, Boyra (A.M.B), Rupsha Bus Stand, Rupsha (R.B.S.R), Natun Bazar, Rupsha (N.B.R), Govt. Comercial College, Sonadanga (G.C.C.S), Sonadanga Bus Stand, Sonadanga (S.B.S.S), Sarjical Clinic, Sonadanga (S.C.S), Govt. B.L College, Daulatpur (G.B.L.C.D), KUET University Main Gate, Fulbari Gate (KUET U.M.G.F.G), Gollamari Bus Stand, Gollamari (G.B.F.G), Govt. Mohasin College, Khalishpur (G.M.C.K), Moylapota More (M.M), Nirala More (N.M), Islami Bank Hospital, Santidham More (I.B.H.S.M), Seba Clinic, Sher-E-Bangal Road (S.C.S-E-B.R), Jia Hall, Sib Bary (J.H.S.B), Khulna University, Vaskarja Chattar (K.U.V.C), Sarkit House (S.H), Govt. Khulna Gila School (G.K.G.S), D.C Office (D.C O), Dak Banglo More (D.B.M), Govt. Azom Khan Commerce College (G.A.K.C.C), Govt. Majid Memorial City College (G.M.M.C.C). For analysis, average points were used. Detail data is attached Annex-3 (Table: 234-239).

In 2017, pH of Khulna district ground water was within the EQS (6.5-8.5). It varied from 7.26 to 7.58 (Fig. 34a). In 2016, pH varied from 7.18 to 7.84. In 2017, EC of Khulna district ground water mostly was above the EQS (1200 $\mu\text{mhos/cm}$). It varied from 1676 to 2552 $\mu\text{mhos/cm}$. The maximum EC (2552 $\mu\text{mhos/cm}$) was in August at Govt. Girls College, Boyra and the minimum Total Alkalinity (1676 $\mu\text{mhos/cm}$) was in January at Jia Hall, Sib Bary (Fig. 34b). In 2016, EC level varied from 735 to 2444 $\mu\text{mhos/cm}$. In 2017, the maximum Chloride concentration of Khulna district ground water was 412 mg/l at Govt. B.L College, Daulatpur in June and the minimum Chloride concentration was 212 mg/l at Aizer More, Boyra in December (Fig. 34c) where the EQS is (150-600 mg/l). In 2016, Chloride level varied from 312 to 1674 mg/l. In 2017, Total Hardness of Khulna district ground water within the EQS (200-500 mg/l). It varied from 180 to 364 mg/l (Fig. 34d). In 2016, Total Hardness varied from 224 to 390 mg/l. In 2017, Iron of Khulna district ground water was within EQS (0.3-1.0 mg/l). It varied from 0.22 to 0.56 mg/l (Fig. 34e). Ground water quality is good throughout the year of 2017. In 2016, Iron level varied from 0.22 to 0.58 mg/l. In 2017, Salinity of Khulna district ground water was within EQS (400 ppt). It varied from 0.0 to 0.3 ppt (Fig. 34f). In 2016, Salinity varied from 0.0 to 0.4 ppt.

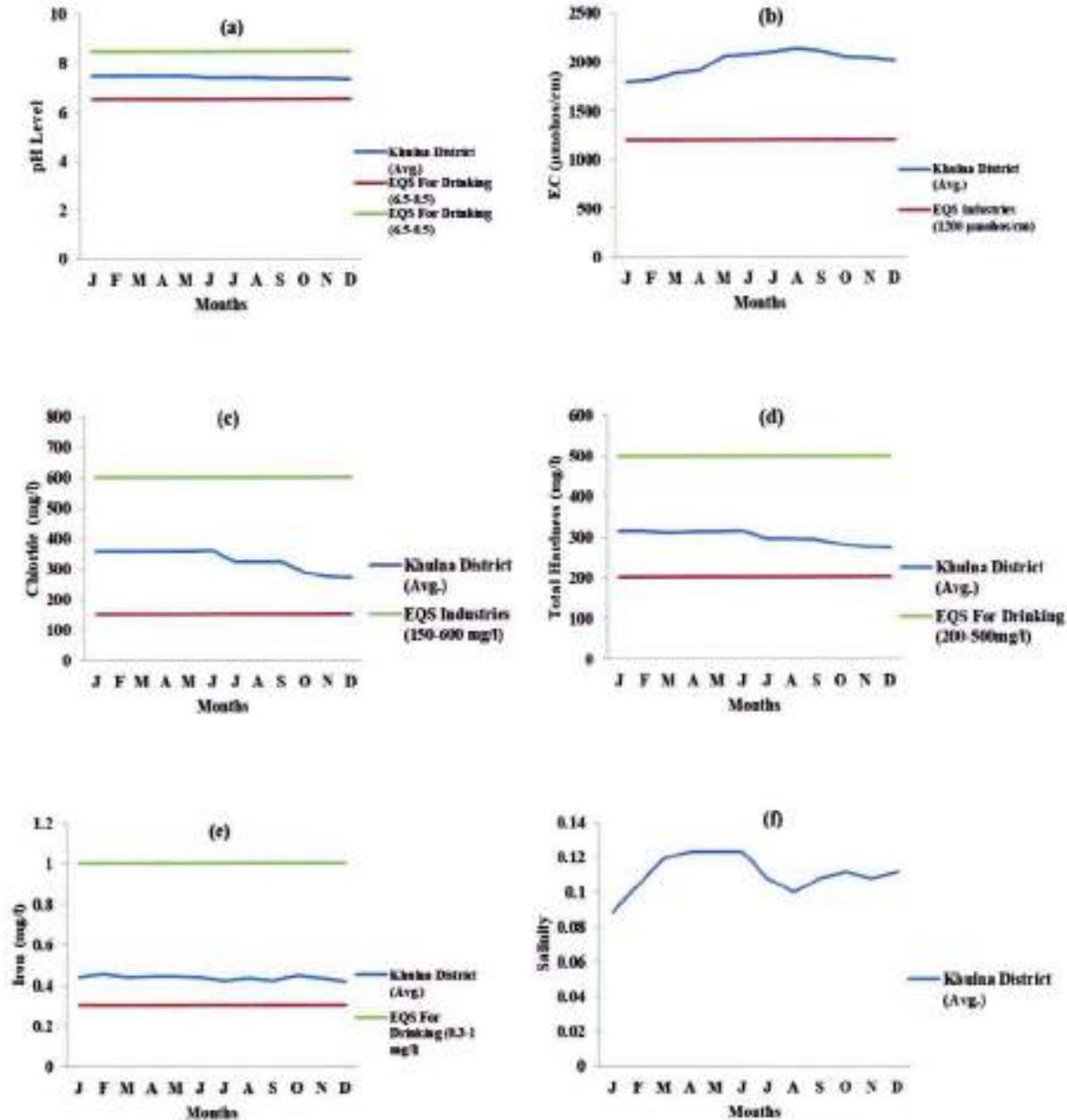


Fig 34. Status of pH, EC, Chloride, Total Hardness, Iron and Salinity of Khulna District area ground water in 2017

5.6 Different water quality parameters of ground water in Barisal district

Barisal is a major city that lies on the bank of kirtankhola river in south-central Bangladesh. It is one of the oldest municipalities and river ports of the country. For monitoring ground water quality, samples were collected from ten different locations viz. DC Office (DC.O), Upozila Office (U.O), Sadar Hospital (S.H), Sher-E-Bangla Medical College Hospital (S-E-B.M.C.H), BM College, Sadar (B.M.C.S), Syed Hatim Ali Govt. College (S.H.A.G.C), Barisal Zila School (B.Z.S), Natullabad Bus Stand (N.B.S), Chowmatha Bazar, Sadar (C.B.S), Battala Bazar, Sadar (B.B.S). For analysis, average points were used. Detail data is attached Annex-3 (Table: 240-241).

In 2017, pH level of Barisal district ground water was within EQS (6.5-8.5) for drinking water. It varied from 7.0 to 7.48 (Fig. 35a). In 2016, pH level varied from 7.0 to 7.4. In 2017, EC was within the EQS (1200 μ mohos/cm) limit and it varied from 216 to 220 μ mohos/cm (Fig. 35b). In 2016, EC varied from 210 to 641 μ mohos/cm. In 2017, TDS was within the EQS (1000 mg/l) and it varied from 110 to 321 mg/l (Fig. 35c). Total Alkalinity was also within the EQS (150 mg/l) and varied from 18 to 30 mg/l (Fig. 35d). Total Hardness varied from 110 to 150 mg/l while EQS for Total Hardness (200-500 mg/l) ((Fig. 35e)).

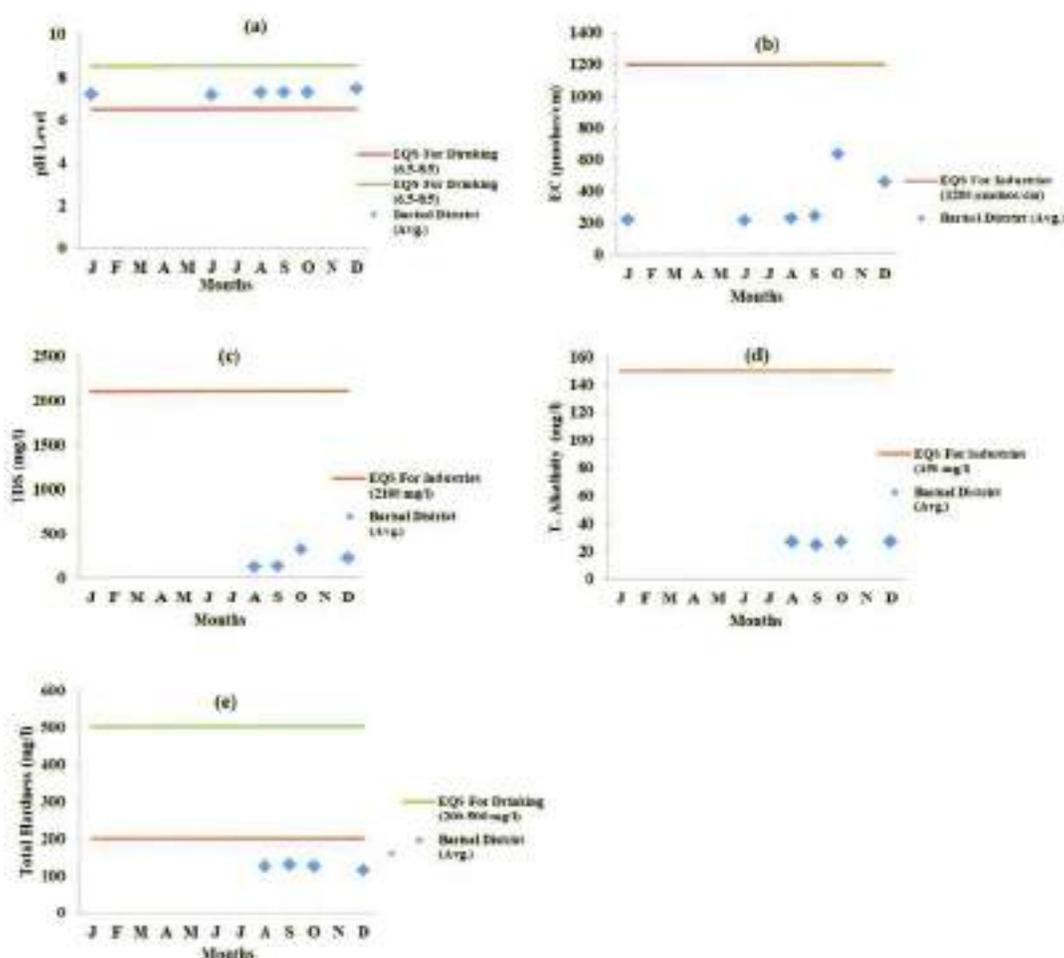


Fig 35. Status of pH, EC, TDS, T. alkalinity and Hardness of Barisal District area ground water in 2017

5.7 Different water quality parameters of ground water in Bogura district

Bogura district is a northern district of Bangladesh in the Rajshahi division. It is called the gateway to north bangal. Bogura is an industrial city where many small and mid-sized industries are sited. For monitoring ground water quality, samples were collected from eleven different locations viz. Bogra Zilla School (B.Z.S), VM School Sadar, (VM.S.S), Zilla Parishad (Z.P), Office of the Duputy Commissioner (O.D.C), Office of the Bogra Municipality (O.B.M), Yakubiya Girls High School (Y.G.H.S), Head Post Office (H.P.O), Biddut Office (B.O), T & T Office (T & T. O), Commercial College (C.C), Office of the Police Super (O.P.S). For analysis, average points were used. Detail data is attached Annex-3 (Table: 242-243).

In 2017, pH level of Bogra district ground water was within EQS (6.5-8.5). It varied from 6.96 to 7.41 (Fig.36a). EC was within the EQS (1200 μ mohos/cm) limit and it varied from 325 to 416 μ mohos/cm (Fig.36b). Iron level of Bogra district ground water was within EQS (0.3-1.0 mg/l). It varied from 0.30 mg/l to 4.0 mg/l (Fig.36c). T.alkalinity was within the EQS (150 mg/l) limit and it varied from 28 to 36mg/l ((Fig.36d).Hardness was within the EQS (200-500 mg/l) limit and it varied from 200 to 220 mg/l (Fig.36e).

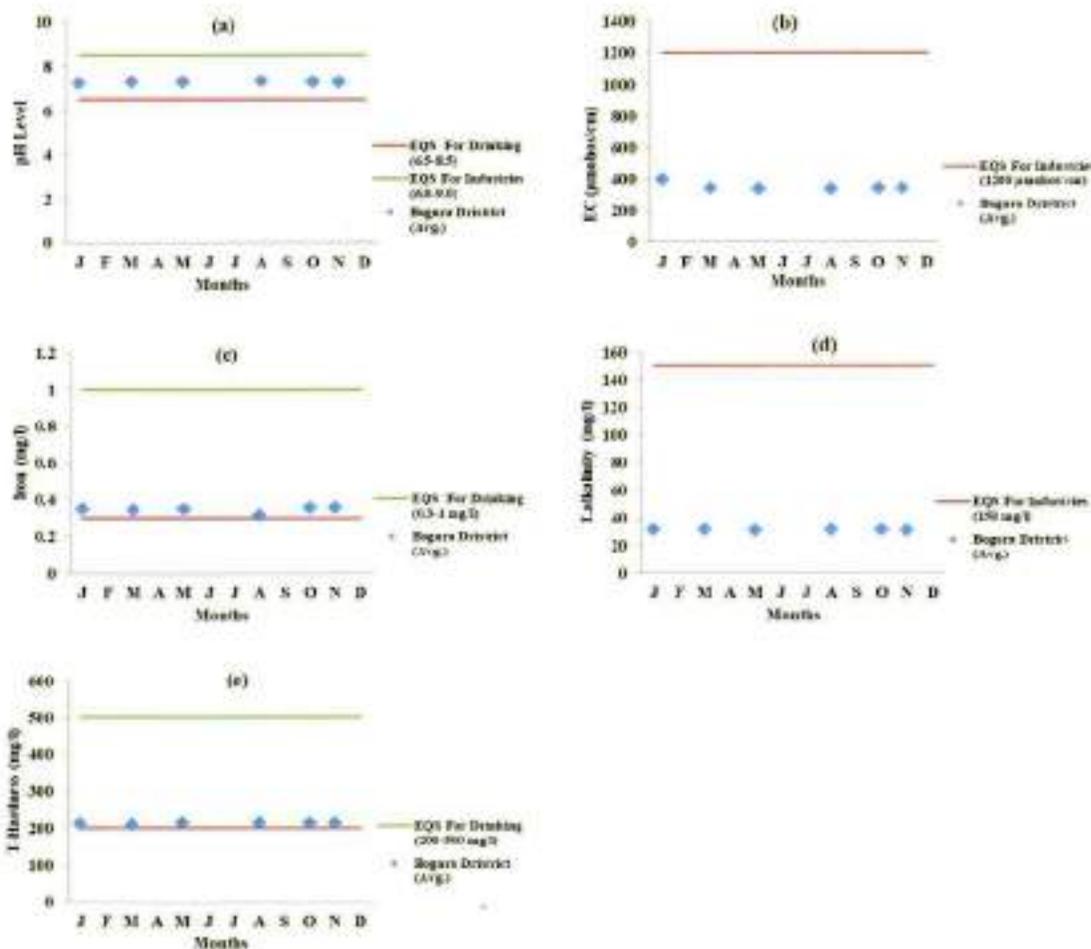


Fig 36. Status of pH, EC, TDS, T. alkalinity and T.Hardness of Bagura district area ground water in 2017



5.8 Different water quality parameters of ground water in Sylhet district

Sylhet is the northeastern division of Bangladesh. The area around Sylhet is a traditional tea growing area. For monitoring ground water quality, samples were collected from ten different locations viz. MC College, Tilagor (MC. C.T), Kadamtoli Bus Terminal (K.B.T), Sylhet Railway Station (S.R.S), Durgakumar Govt. Primary School (D.G.P.S), Agrogami Girls High School (A.G.H.S), Sylhet Govt. Girls High School (S.G.H.S), Osmani Medical College (O.M.C), Kadamtoli Primary School (K.P.S), Shahjalal Darga, Sadar (S.D.S), Shahporan Darga, Khadinnagar (S.D.K). Detail data is attached Annex-3 (Table: 244).

In 2017, pH level of Sylhet district ground water was within EQS (6.5-8.5). It varied from 6.8 to 7.8 (Fig.37a). In 2016, pH level varied from 6.8 to 7.6. In 2017, EC was within the EQS (1200 μ mhos/cm) limit and it varied from 312 to 388 μ mhos/cm (Fig.37b). In 2016, EC varied from 33 to 348 μ mhos/cm. In 2017, Chloride was within the EQS (150-600 mg/l) and it varied from 9.0 to 18 mg/l (Fig.37c). In 2017, Alkalinity was within the EQS (0.3-1.0 mg/l) and it varied from 9.0 to 28 mg/l (Fig.37d). In 2017, Iron was within the EQS (150 mg/l) and it varied from 0.58 to 0.85 mg/l (Fig.37e). In 2016, Iron varied from 0.3 to 0.85 mg/l. In 2017, Total Hardness was also within the EQS (200-500 mg/l) and varied from 8.0 to 24 mg/l (Fig.37f). In 2016, Total Hardness varied from 8.0 to 18 mg/l.

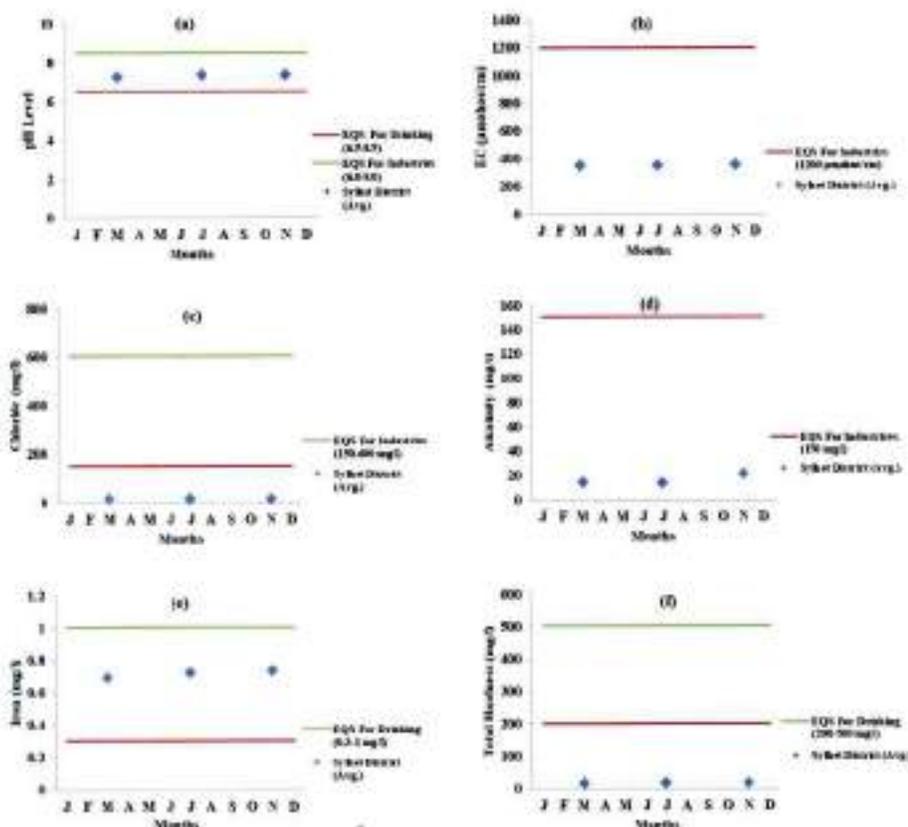


Fig 37. Status of pH, EC, Chloride, T. alkalinity, Iron and T.Hardness of Sylhet district area ground water in 2017

CHAPTER 6: TREND ANALYSIS OF WATER QUALITY OF MAJOR RIVERS

6.1 Buriganga River

The Buriganga River flows pass the south-west outskirts of Dhaka City. The Buriganga receives high amount of food waste including rotten fruits, vegetables, and fish. Value in each cell is seasonal (Dry: November – April, Wet: May-October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 245).

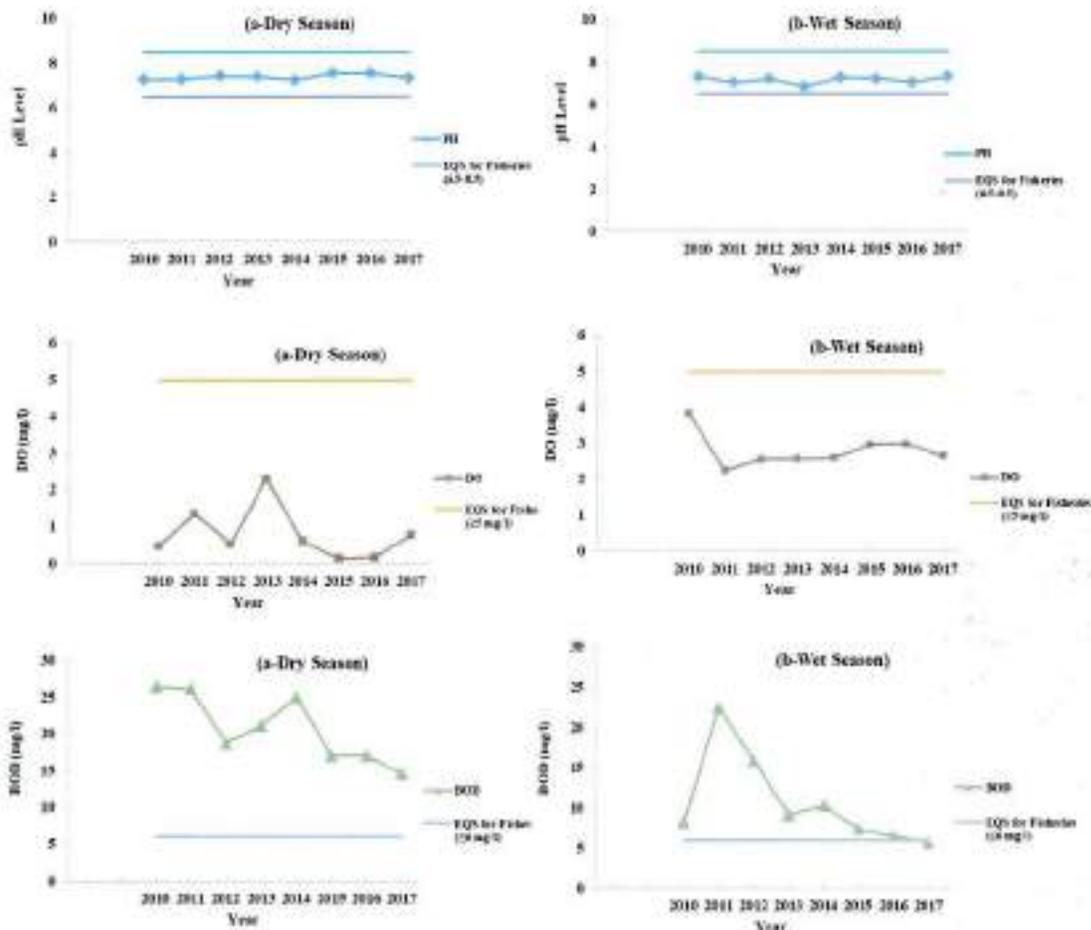


Fig 38. Trend of pH, DO and BOD of Buriganga river water from 2010 to 2017

From 2010 to 2017, pH of Buriganga river water was within the EQS (6.5-8.5) for inland surface water for fisheries. DO of Buriganga river was below the EQS. Direct discharge of untreated effluent from industries, domestic wastes, tannery wastes into the river and reduced flow of water are the proximate causes for depletion of DO in dry season of recent years. BOD content was higher than EQS (≤ 6 mg/l) irrespective of dry season (Fig.38).

With the passage of time tremendous human pressure on Buriganga river (interms of plying motorized vessels, infrastructural development, encroachment, industrial and sewage waste dumping etc.) and dumping of ever increasing all sorts of wastes turned Buriganga a worst polluted and ecologically dysfunctional river.

6.2 Shitalakhya River

The Shitalakhya river is a distributary of the Brahmaputra. In its initial stages it flows in a southwest direction and then east of the city of Narayanganj in central Bangladesh until it merges with the Dhaleswari near Kalagachhiya. A portion of its upper course is known as Banar River. The river is about 110 kilometres long and at its widest, near Narayanganj, it is 300 metres across. Its flow, measured at Demra, has reached 74 cubic metres per second (2,600 cu ft/s). It remains navigable year round. The river flows through Gazipur district forming its border with Narsingdi for some distance and then through Narayanganj District. The river's maximum depth is 21 metres and average depth is 10 metres. Different parameters of Shitalakhya River water are given in the following graph. Value in each cell is seasonal (Dry: November–April, Wet: May–October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 246).

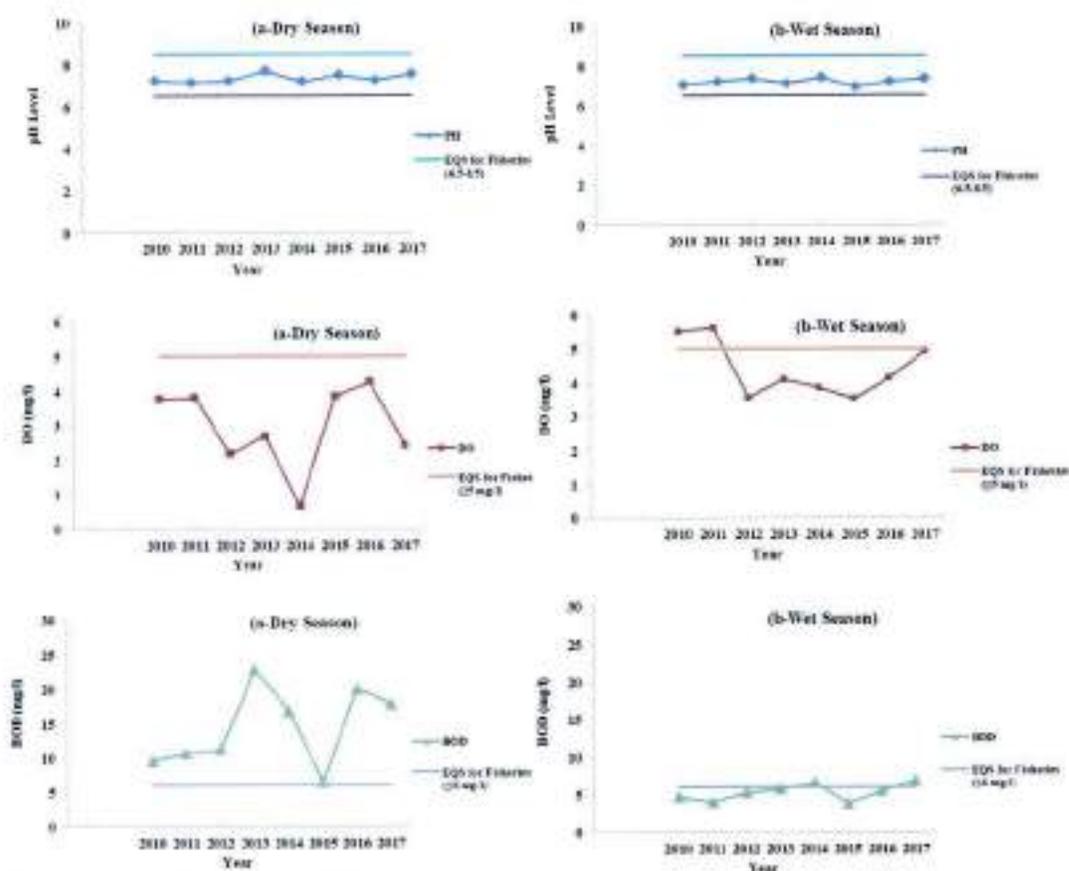


Fig 39. Trend of pH, DO and BOD of Sitalakhya river water from 2010 to 2017

From 2010 to 2017, pH of Shitalakhya river water was within the EQS (6.5-8.5) for inland surface water for fisheries. DO content was below the EQS (≤ 5 mg/l). BOD was exceeded EQS during 2010-2017 though water quality. This may be due to increase of flow in the river. Direct discharge of untreated effluent from industries, loading/unloading construction materials, municipal and human wastes pollute river water. Some textile dyeing industries, consumer item producing industries and jute mills are located around the sampling location and all of those industries discharge wastes into river water (Fig.39).

6.3 Turag River

The Turag river is the upper tributary of the Buriganga, a major river in Bangladesh. The Turag originates from the Bangshi river, the latter an important tributary of the Dhaleshwari river, flows through Gazipur and joins the Buriganga at Mirpur in Dhaka district. Different parameters of Turag river water are shown below. Value in each cell is seasonal (Dry: November–April, Wet: May–October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 247).

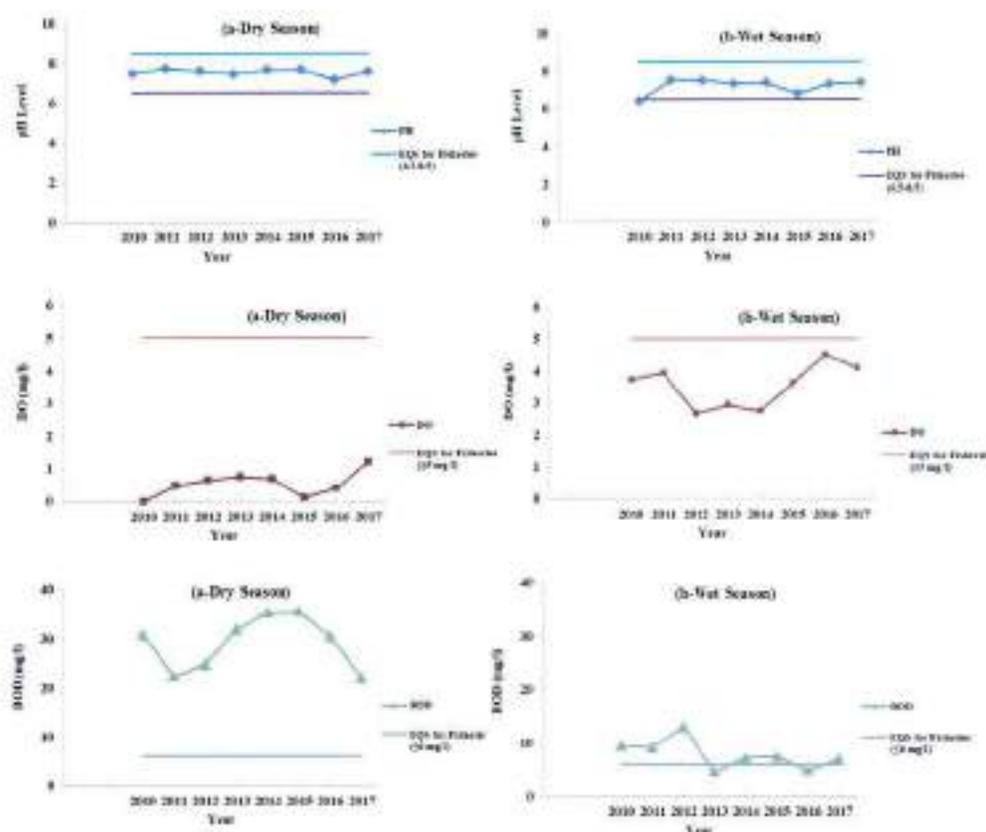


Fig 40. Trend of pH, DO and BOD of Turag river water from 2010 to 2017

From 2010 to 2017, pH of Turag river water was within the EQS (6.5-8.5) for inland surface water for fisheries. DO content was below the EQS irrespective of seasons. Sometimes, DO reached to zero especially in dry season. In wet seasons BOD was higher than the EQS in the recent past. Seasons or flow of the river is clearly a factor affecting water quality along with dumping of wastes (Fig.40).

There are many industries dotting the banks of this river those dispose their wastes into the river. During the Bishwa Ijtema, Muslims pilgrims coming from all over the world and stay on the river bank for few days. Unfortunately the site lack of proper accommodation and an adequate sanitation system. As a result, human waste and garbage generated are disposed into the river and pollutes the river heavily. Encroachment, sand/earth filling, dumping of industrial, municipal and medical waste, etc. turned its water pitch black and unfit for any use.



6.4 Dhaleshwari River

The Dhaleshwari river is a 160 km long distributary of the Jamuna river flowing through central part of Bangladesh. It starts off the Jamuna near the north-western tip of Tangail. Then it divided into two: the north branch retains the name Dhaleshwari and the other branch flows as Kaliganga. The both branches merged at the southern part of Manikganj district. Finally the merged flow meets the Shitalakhya River near Narayanganj district. Value in each cell is seasonal (Dry: November – April, Wet: May–October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 248).

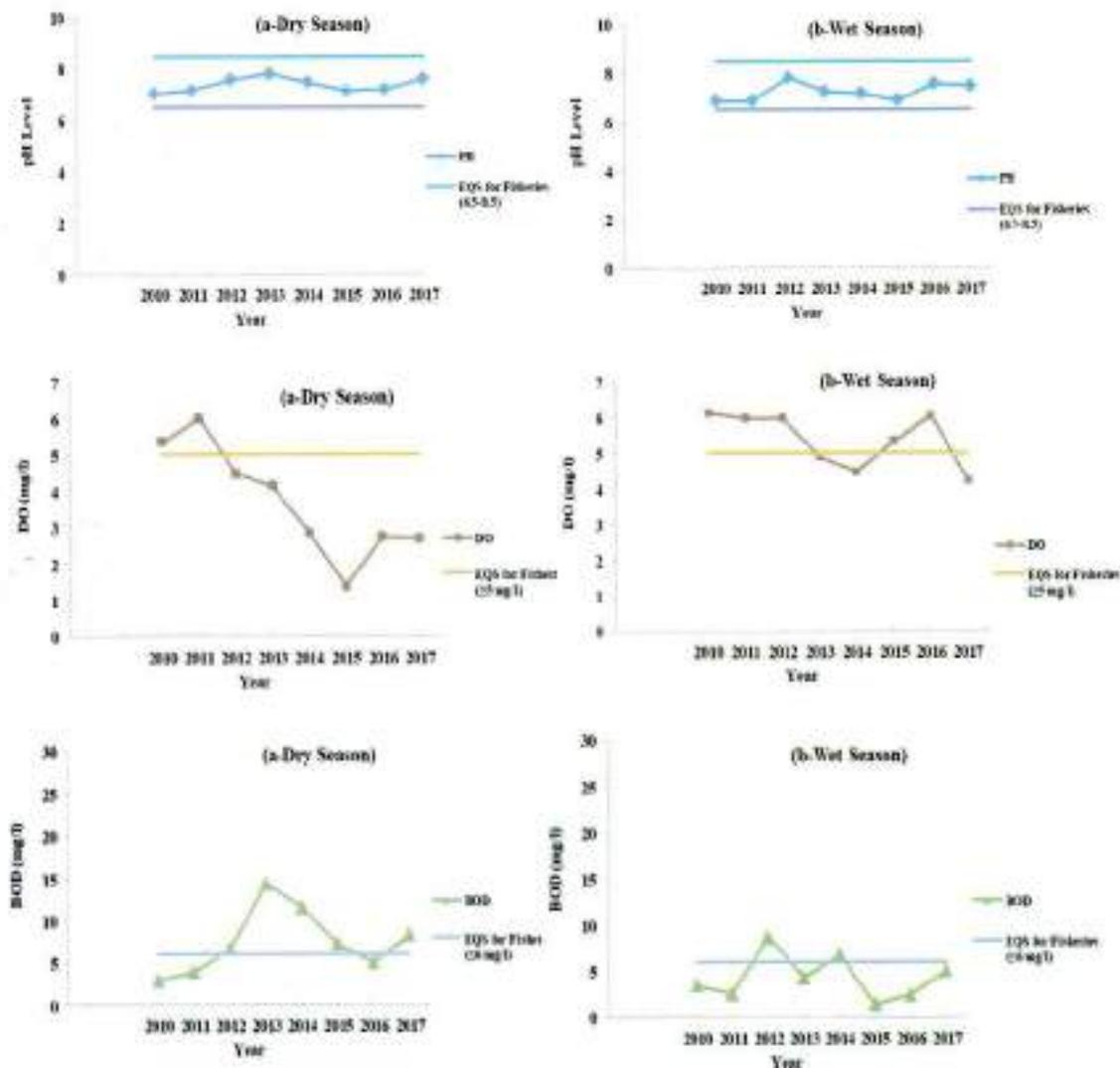


Fig 41. Trend of pH, DO and BOD of Dhaleshwari river water from 2010 to 2017

From 2010 to 2017, pH of Padma river water was within the EQS for inland surface water for fisheries. DO content was within the EQS in the wet season. And BOD content of Dhaleshwari river water was within the EQS in wet season. (Fig.41).

6.5 Brahmaputra River

The Brahmaputra, a trans-boundary river that originates from Manossarobar near Mount Kailash in the Himalayas and flows via Tibet, China, India and Bangladesh to Bay of Bengal. The total length it travels from Himalayans to the Bay of Bengal is 2900 km (Chowdhury, 2006). Value in each cell is seasonal (Dry: November–April, Wet: May–October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 249).

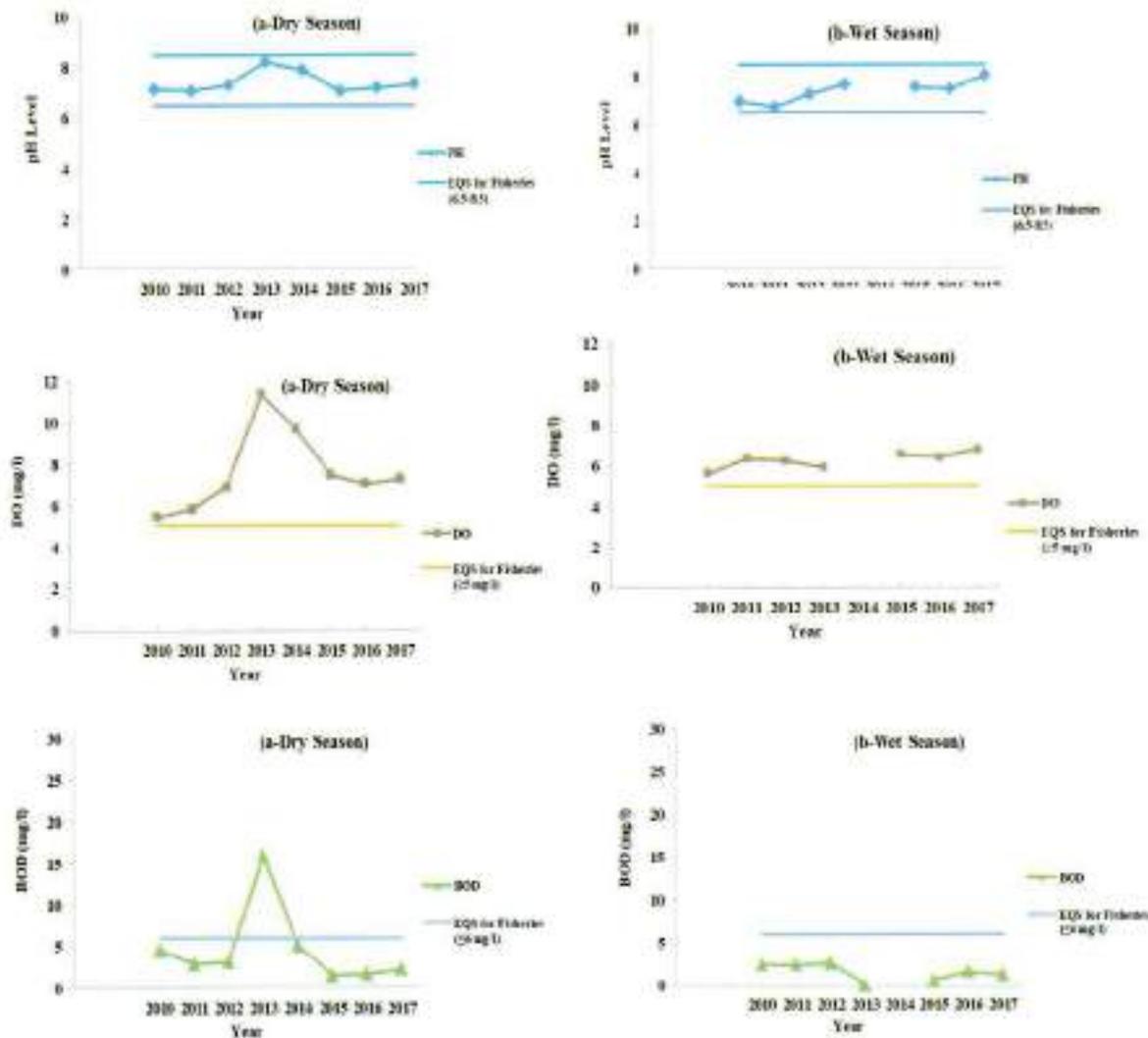


Fig 42. Trend of pH, DO and BOD of Brahmaputra river water from 2010 to 2017

From 2010 to 2017, pH of Brahmaputra river water was within the EQS for inland surface water for fisheries. DO content was within the EQS in the wet season. BOD content of Brahmaputra river water was higher than the EQS in the year 2013 in Dry Season (Fig.42).

6.6 Halda River

The Halda river is a river in south-eastern Bangladesh. It originates at the Badnatali Hill Ranges in Ramgarh Upazila in the Chittagong Hill Tracts, flows through Fatikchhari Upazila, Bhujpur Thana, Hathazari Upazila, Raozan Upazila and Chandgaon Thana of the Chattagram Metropolitan City, and falls into the Karnaphuli river. The 81-kilometre long river has a very turbulent tributary, the Dhurung River, which joins Purba Dhalai about 48 kilometres downstream. The river is navigable by big boats 29 km into it (up to Nazir Hat) and by small boats 16–24 km further (up to Narayanhat). The Halda reaches up 6.4 m in depth and 9.1 m in deepest point. Value in each cell is seasonal (Dry: November–April, Wet: May–October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Details data is attached annexure-4 (Table: 250).

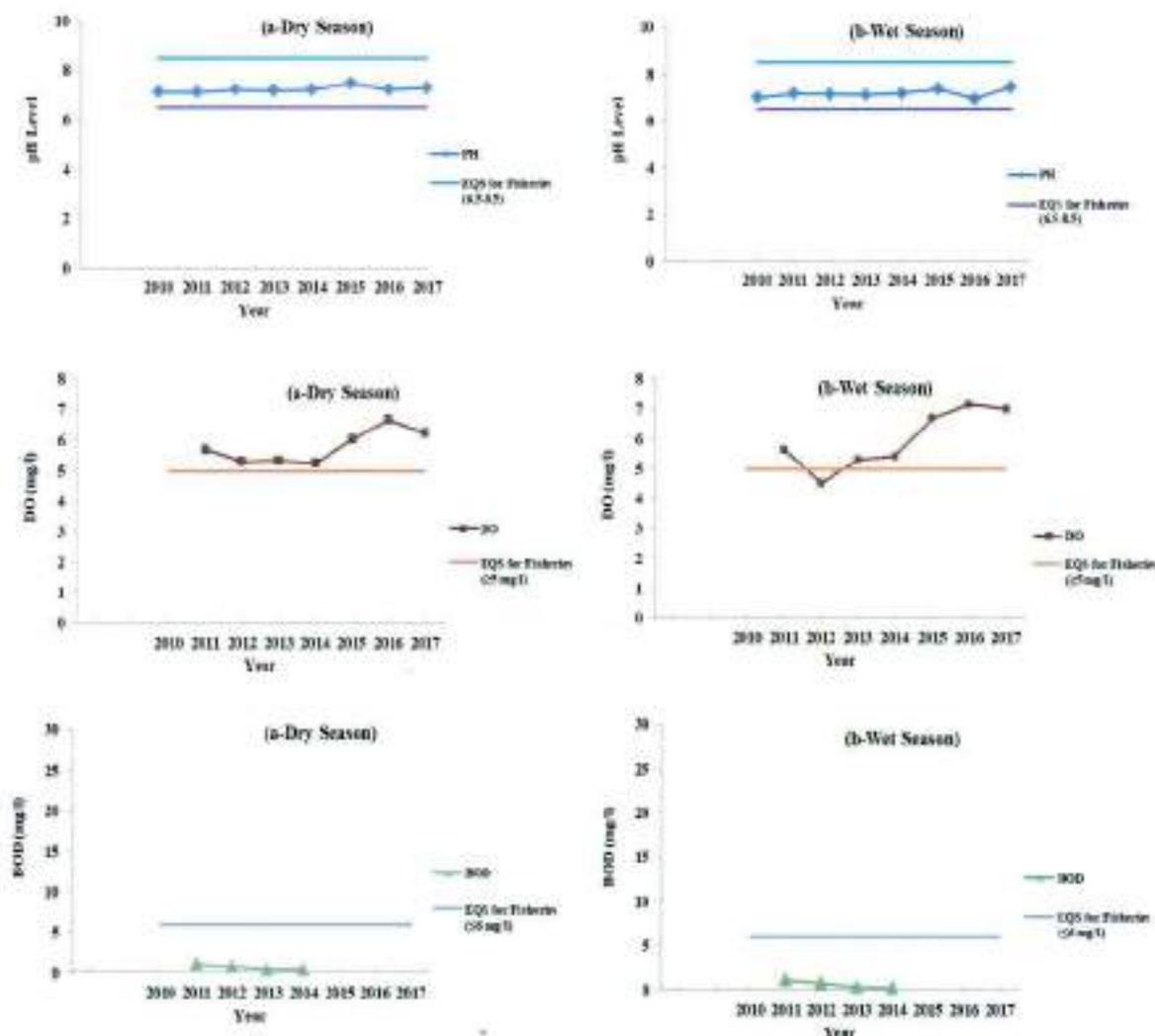


Fig 43. Trend of pH, DO and BOD of Halda river water from 2010 to 2017

From 2010 to 2017, pH of Halda river water was within the EQS for inland surface water for fisheries. DO and BOD content was within the EQS. In 2015-2017, BOD data was not available. Considering pH, DO and BOD, water quality of Halda is good (Fig.43).

6.7 Moyuri River

The Moyuri river is situated at the back swamp of the Bhairab-Rupsha river. Khulna City Corporation (KCC) is situated on the bank of this river basin and the Moyuri river borders the westbound of the city. Value in each cell is seasonal (Dry: November–April, Wet: May–October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 251).

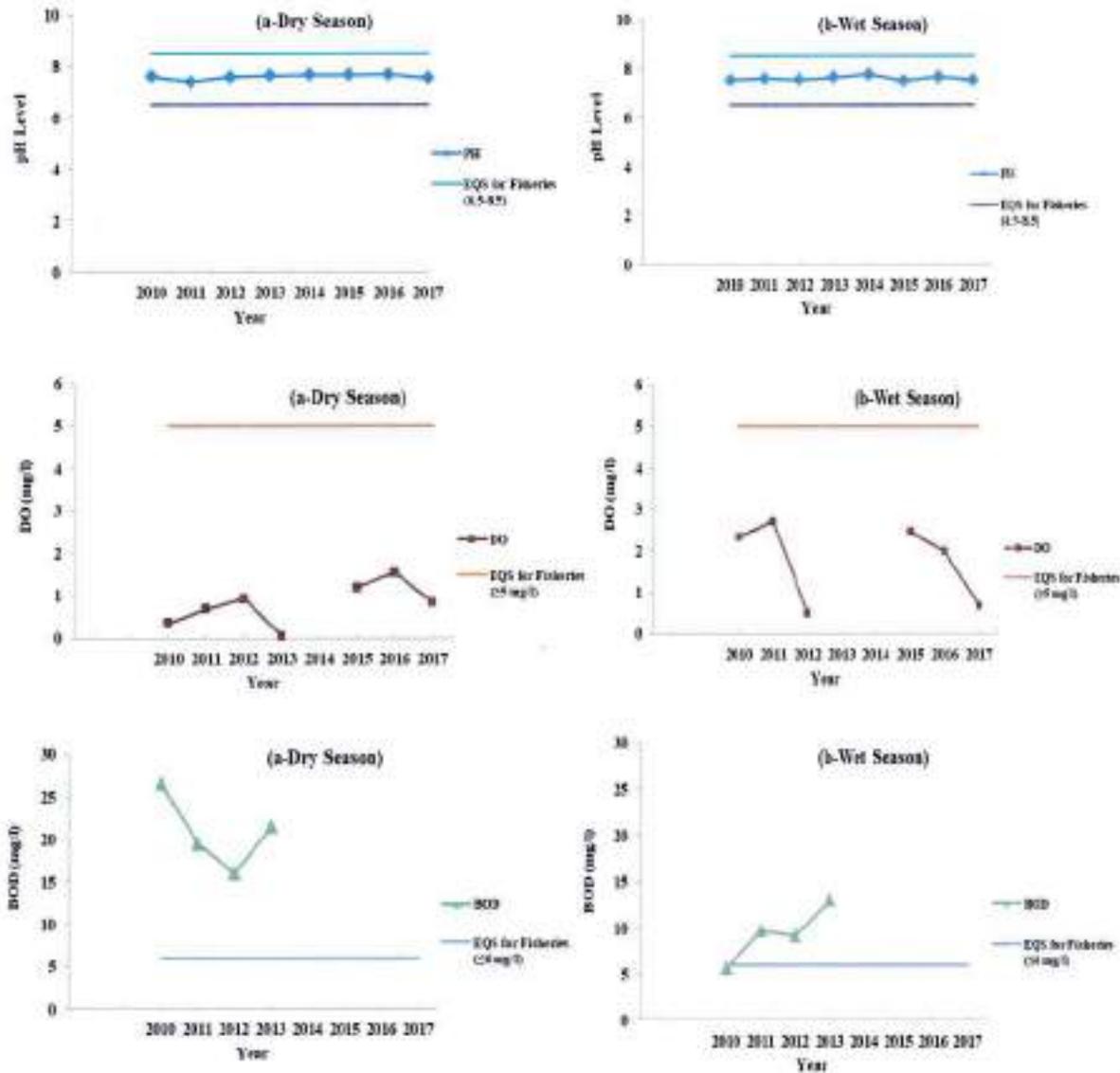


Fig 44. Trend of pH, DO and BOD of Moyuri river water from 2010 to 2017

From 2010 to 2017, pH of Moyuri river water was within the EQS for inland surface water for fisheries. In 2014-2017, BOD data was not available. DO content was not within the EQS. And BOD content of Moyuri river water was over the EQS (Fig.44).

6.8 Surma River

The Surma river is a major river in Bangladesh, part of the Surma-Meghna river system. It starts when the Barak river from northeast India divides at the Bangladesh border into the Surma and the Kushiya rivers. It ends in Kishoreganj district, above Bhairab Bazar, where the two rivers rejoin to form the Meghna river. The waters from the river ultimately flow into the Bay of Bengal. The average depth of this river is 86m and maximum depth is 170m. Value in each cell is seasonal (Dry: November – April, Wet: May-October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 252).

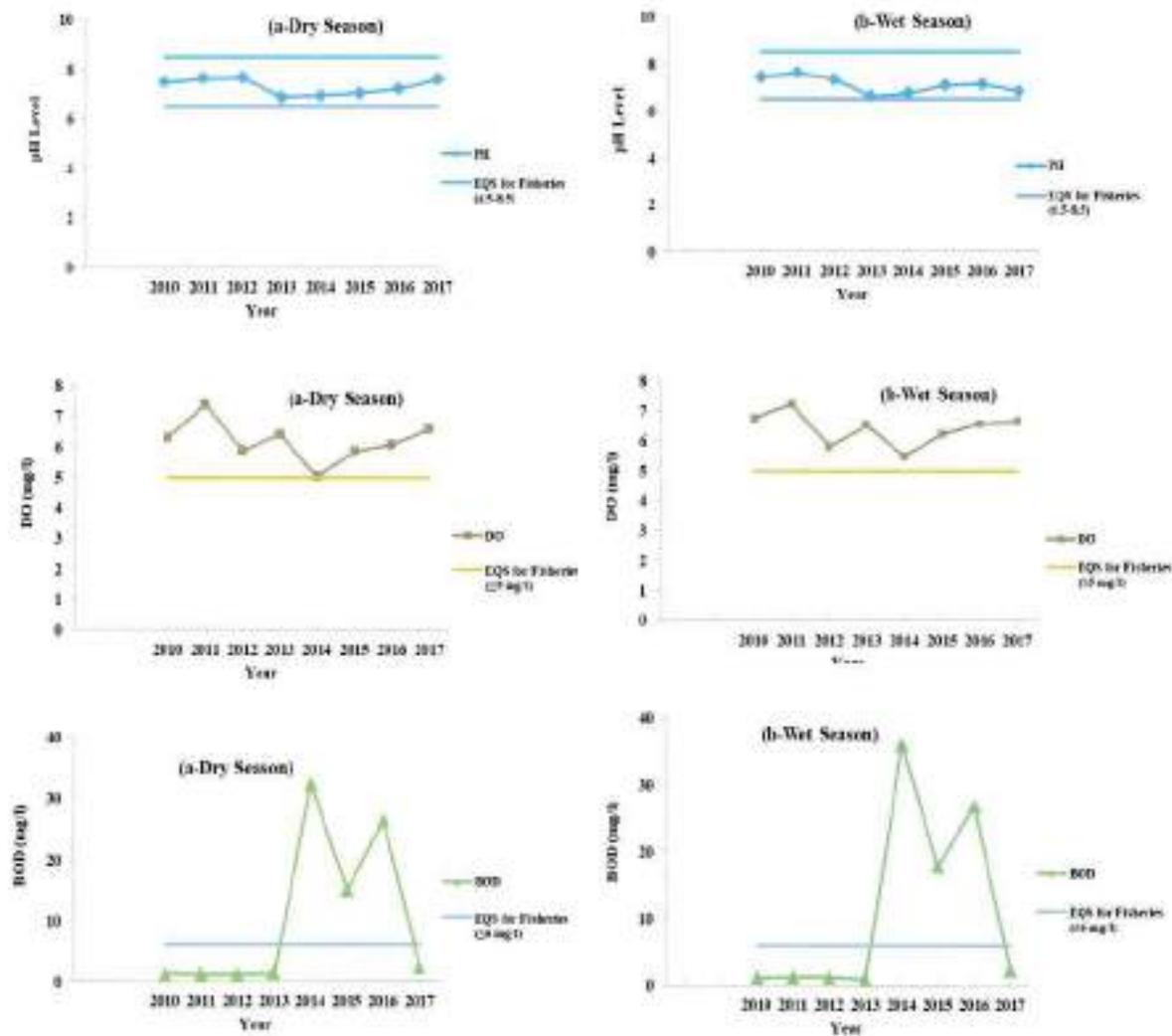


Fig 45. Trend analysis of pH, DO and BOD of Surma river water from 2010 to 2017

From 2010 to 2017, pH of Surma river water was within the EQS (6.5-8.5) for inland surface water for fisheries. DO content was around the EQS. And BOD content of Surma river water was much over the EQS in the year of 2013 to 2016. BOD content of Surma river water was the EQS in the year of 2017 (Fig.45).

6.9 Korotoa River

The Korotoa river is a small stream in Rajshahi division of Bangladesh, was once a large and sacred river. A channel of it presently flows by the ancient ruins of Mahasthangarh (or Pundranagara, ancient capital of Pundravardhana) in Bogra District. Value in each cell is seasonal (Dry: November-April, Wet: May-October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 253).

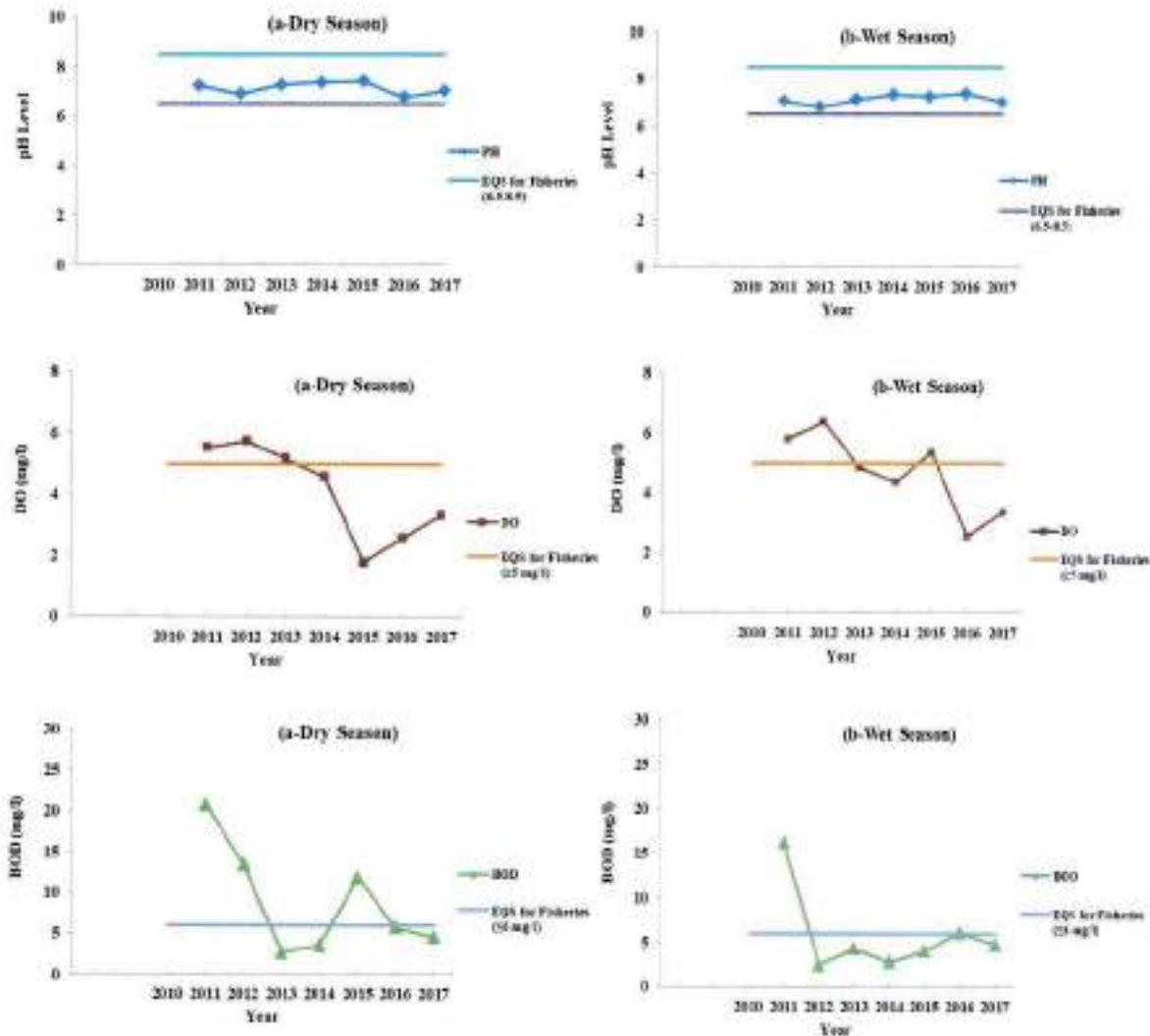


Fig 46. Trend of pH, DO and BOD of Korotoa river water from 2010 to 2017

From 2010 to 2017, pH of Korotoa river water was within the EQS (6.5-8.5) for inland surface water for fisheries. DO level was below EQS after 2013 till 2017. However, BOD content of Korotoa river water did not match with DO and was over the EQS in the year of 2011, 2012 (Dry season) and 2015 (Dry Season). BOD content of Korotoa river water was the EQS in the year of 2017. It is assumed that the high level of BoD at certain points influenced the average results (Fig.46).



6.10 Mathavanga River

The Mathabhanga or Hauli, whose lower reach is called the Haulia, leaves the Padma about ten miles below the point where the Jalangi leaves from it. It flows first in a south-easterly direction as far as Hatboalia, where it bifurcates one branch, which is there after known as the Kumar or Pangasi, it then proceeds in the same direction, past Alamdanga, up to the boundary of the district which it forms for a few miles until it passes into Jessore, whilst the other branch pursues a very tortuous course. The general trend of which is to the south, until, after passing Chuadanga it reaches Krishnaganj (in India). There a second bifurcation takes place, the two resulting streams being as the Churni and the Ichamati, and the name of the parent river being lost. It borderline's between India and Bangladesh. Value in each cell is seasonal (Dry: November-April, Wet: May-October) as well as average of sampling locations. EQS of pH, DO, BOD are for fisheries, as per ECR, 1997. Detail data is attached Annex-4 (Table: 254).

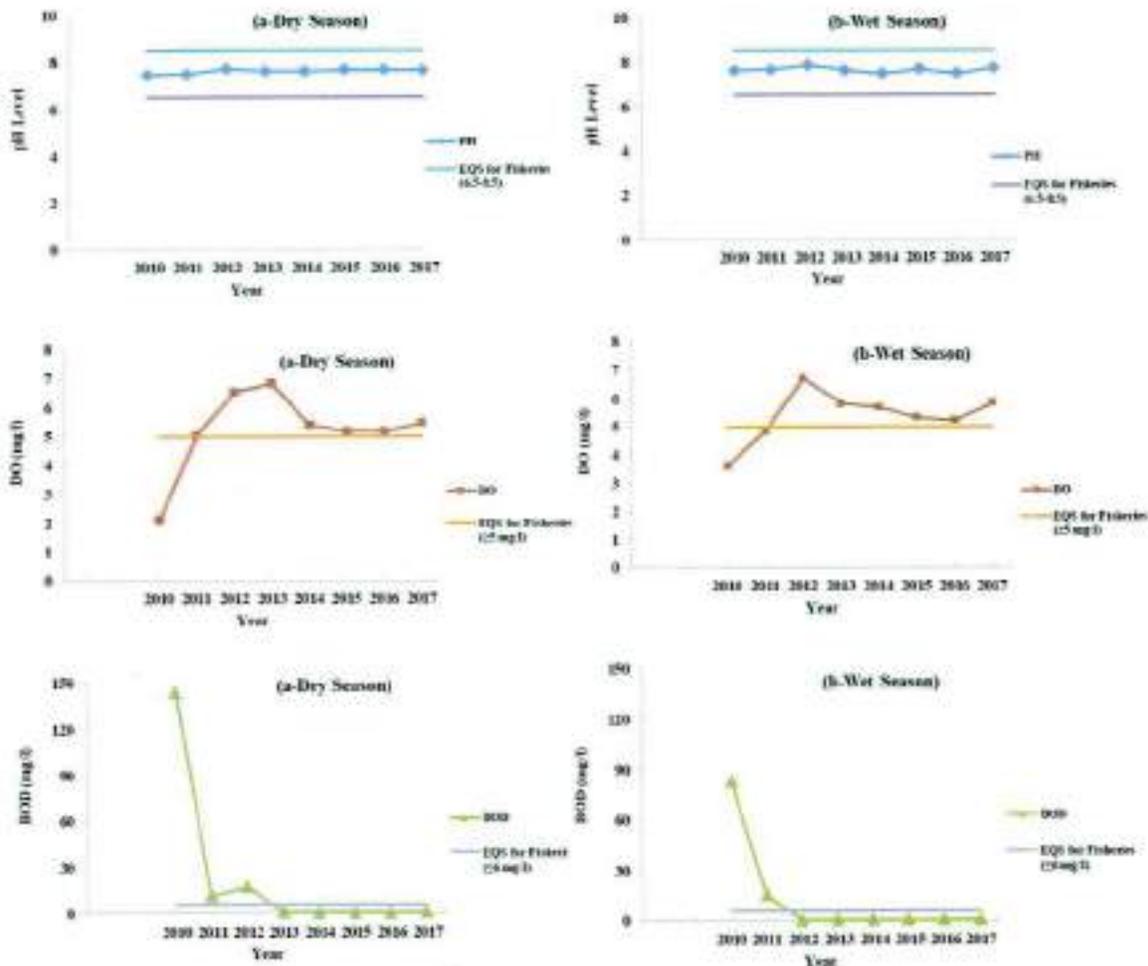


Fig 47. Trend of pH, DO and BOD of Mathavanga river water from 2010 to 2017

From 2010 to 2017, pH of Mathavanga river water was within the EQS (6.5-8.5) for inland surface water for fisheries. DO level was within the EQS after 2011. And BOD content of Mathavanga river water was over the EQS in the year of 2010, 2011 and 2012 (Dry Season). BOD content of Mathavanga river water was the EQS in the year of 2017 (Fig.47).

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

Impacts of seasonal variation of flow, industrialization and urbanization has been assumed to be responsible for poor water quality for the rivers around Dhaka city, Chattagram and Khulna city. Spatial and temporal variation in water quality has been evident from the data analysis. Ninety percent of surface water flows through the 57 transboundary rivers. Low rainfall and upstream intake of water by the neighboring countries reduces the flow of water in dry season. During monsoon, water quality of most monitoring stations was improved, when compared to the Environmental Quality Standard (EQS) set in the ECR, 1997. High density of industries, poor solid waste management by the City Corporations and untreated and other liquied waste sewage are assumed to be responsible for poor water, water quality of rivers around Dhaka city, Chattagram and Khulna city. The difference in pollution level among the sampling points along a single river was also evident because of urbanization.

High salinity together with high turbidity are making river ecosystem in the southern region fragile. Salinity level of rivers in southern Bangladesh greatly increases during dry season. Long dry period and reduced upstream flow are the proximate causes of high salinity of surface water in southern region. Soil erosion from catchment area, dumping of solid waste into rivers are the main causes of high turbidity. Salinity level reduces near to EQS during wet season. Summer rainfall and increased flow from upstream are proximate causes of salinity decrease.

Despite discontinuous sampling and measurement of a few parameters, this report provides important indication of pollution level of surface and ground water of the country. Due to limited time and restricted budget the trend analysis has been limited to certain parameters and a few rivers. Still, the report can be used as a basis for identifying the reasons of pollution and developing sustainable water resource management plans.

7.2 Recommendations

To provide with useful information for policy feedback, a continuous monitoring of a comprehensive set of parameters is essential. The following actions are recommended to avail comprehensive data sets :

- a. Introduction of online water quality monitoring system is essential could be introduced to avoid the discontinuity of data.
- b. Review and updating of surface water monitoring network is essential. Pollution hot-spots could be identified and monitoring stations should include those hotspots.
- c. For each river, sampling must be done from more than one location. Collection of water samples and analyses must be in a consistent way and on regular basis for assessment of water quality.
- d. More rivers can be included in the monitoring programme;



- e. More parameters such as biological indicators should be included in the monitoring programme. A comprehensive set of parameters including microbial test (Fecal Coli form, E-Coli etc) of river water is essential to evaluate water quality of rivers.
- f. Weather information could be collected while sampling.
- g. Use of Global Positioning System (GPS) to represent monitoring results in global context is essential.
- h. Monitoring of ETP outlets of major industrial zones should be intensified and data should be collected more frequently.

In addition, to improve the quality of water the following steps are recommended:

- a. Enforcement programme should be increased to stop all illegal discharges to surface water.
- b. For the sustainable management of trans-boundary rivers and to increase river flow during dry season strengthening regional cooperation is essential and Integrated Watershed Management (IWM) approach can be implemented in this regard.
- c. Programmes could be initiated to develop River Health Card and establish Water Quality Index (WQI) for each river to guide the policy makers.
- d. Awareness raising and Coordination among all stakeholders to stop polluting surface and ground water
- i. Existing parameters should be revisited and new parameters should be included for a comprehensive groundwater monitoring.
- j. Increase skilled manpower at all level of water quality monitoring including sample collection.

GLOSSARY

pH

In chemistry, pH is a logarithmic scale used to specify the acidity or basicity of an aqueous solution. It is approximately the negative of the base 10 logarithm of the molar concentration, measured in units of moles per liter, of hydrogen ions. More precisely it is the negative of the base 10 logarithm of the activity of the hydrogen ion. At 25 °C, solutions with a pH less than 7 are acidic and solutions with a pH greater than 7 are basic. The neutral value of the pH depends on the temperature, being lower than 7 if the temperature increases. Pure water is neutral, pH 7 at (25 °C), being neither an acid nor a base. Contrary to popular belief, the pH value can be less than zero or greater than 14 for very strong acids and bases respectively. Measurements of pH are important in agronomy, medicine, chemistry, water treatment, and many other applications. The pH scale is traceable to a set of standard solutions whose pH is established by international agreement. Primary pH standard values are determined using a concentration cell with transference, by measuring the potential difference between a hydrogen electrode and a standard electrode such as the silver chloride electrode. The pH of aqueous solutions can be measured with a glass electrode and a pH meter, or an indicator.

Dissolved Oxygen (DO)

Dissolved Oxygen is the amount of gaseous oxygen (O_2) dissolved in the water. Oxygen enters the water by direct absorption from the atmosphere, by rapid movement, or as a waste product of plant photosynthesis. Water temperature and the volume of moving water can affect dissolved oxygen levels. Oxygen dissolves easier in cooler water than warmer water. Adequate dissolved oxygen is important for good water quality and necessary to all forms of life. Dissolved oxygen levels that drop below 5.0 mg/L cause stress to aquatic life. Lower concentrations cause greater stress. Oxygen levels that go below 1-2 mg/L for a few hours may result in large fish kills.

Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand (BOD) also called Biological Oxygen Demand is the amount of dissolved oxygen needed (i.e. demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period. The BOD value is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C and is often used as a surrogate of the degree of organic pollution of water. BOD can be used as a gauge of the effectiveness of wastewater treatment plants. BOD is similar in function to chemical oxygen demand (COD), in that both measure the amount of organic compounds in water. However, COD is less specific, since it measures everything that can be chemically oxidized, rather than just levels of biodegradable organic matter.

Methods: There are two commonly recognized methods for the measurement of BOD.

Dilution method

This standard method is recognized by U.S. EPA, which is labeled Method 5210B in the Standard Methods for the Examination of Water and Wastewater. In order to obtain BOD₅, dissolved oxygen (DO) concentrations in a sample must be measured before and after the incubation period, and appropriately adjusted by the sample corresponding dilution factor. This analysis is performed using 300 ml incubation bottles in which buffered dilution water is dosed with seed microorganisms and stored for 5 days in the dark room at 20 °C to prevent DO production via photosynthesis. In addition to the various dilutions of BOD samples, this procedure requires dilution water blanks, glucose glutamic acid (GGA) controls, and seed controls. The dilution water blank is used to confirm the quality of the dilution water that is used to dilute the other samples. This is necessary because impurities in the dilution water may cause significant alterations in the results. The GGA control is a standardized solution to determine the quality of the seed, where its recommended BOD₅ concentration is 198 mg/l ± 30.5 mg/l. For measurement of carbonaceous BOD (cBOD), a nitrification inhibitor is added after the dilution water has been added to the sample. The inhibitor hinders the oxidation of ammonia nitrogen, which supplies the nitrogenous BOD (nBOD). When performing the BOD₅ test, it is conventional practice to measure only cBOD because nitrogenous demand does not reflect the oxygen demand from organic matter. This is because nBOD is generated by the breakdown of proteins, whereas cBOD is produced by the breakdown of organic molecules.

BOD₅ is calculated by:

$$\text{where: } \textit{Seeded} : BOD_5 = \frac{(D_0 - D_5) - (B_0 - B_5)f}{P} \quad \textit{Unseeded} : BOD_5 = \frac{(D_0 - D_5)}{P}$$

D_0 is the dissolved oxygen (DO) of the diluted solution after preparation (mg/l)

D_5 is the DO of the diluted solution after 5 day incubation (mg/l)

P is the decimal dilution factor

B_0 is the DO of diluted seed sample after preparation (mg/l)

B_5 is the DO of diluted seed sample after 5 day incubation (mg/l)

f is the ratio of seed volume in dilution solution to seed volume in BOD test on seed

Manometric method

This method is limited to the measurement of the oxygen consumption due only to carbonaceous oxidation. Ammonia oxidation is inhibited. The sample is kept in a sealed container fitted with a pressure sensor. A substance that absorbs carbon dioxide (typically lithium hydroxide) is added in the container above the sample level. The sample is stored in conditions identical to the dilution method. Oxygen is consumed and, as ammonia oxidation is inhibited, carbon dioxide is released. The total amount of gas, and thus the pressure, decreases because carbon dioxide is absorbed. From the drop of pressure, the sensor electronics computes and displays the consumed quantity of oxygen.

The main advantages of this method compared to the dilution method are:

simplicity: no dilution of sample required, no seeding, no blank sample.

direct reading of BOD value.

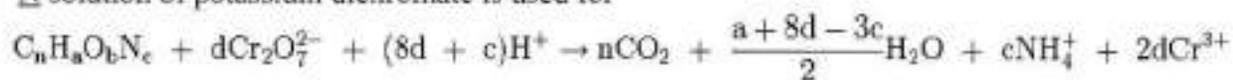
continuous display of BOD value at the current incubation time.



Chemical Oxygen Demand (COD)

In environmental chemistry, the chemical oxygen demand (COD) is an indicative measure of the amount of oxygen that can be consumed by reactions in a measured solution. It is commonly expressed in mass of oxygen consumed over volume of solution which in SI units is milligrams per litre (mg/L). A COD test can be used to easily quantify the amount of organics in water. The most common application of COD is in quantifying the amount of oxidizable pollutants found in surface water (e.g. lakes and rivers) or wastewater. COD is useful in terms of water quality by providing a metric to determine the effect an effluent will have on the receiving body, much like biochemical oxygen demand (BOD).

Using potassium dichromate: Potassium dichromate is a strong oxidizing agent under acidic conditions. (Acidity is usually achieved by the addition of sulfuric acid.) Most commonly, a 0.25 N solution of potassium dichromate is used for



COD determination, although for samples with COD below 50 mg/L, a lower concentration of potassium dichromate is preferred. In the process of oxidizing the organic substances found in the water sample, potassium dichromate is reduced (since in all redox reactions, one reagent is oxidized and the other is reduced), forming Cr^{3+} . The amount of Cr^{3+} is determined after oxidation is complete, and is used as an indirect measure of the organic contents of the water sample.

Total Dissolved Solid (TDS)

Total dissolved solids (TDS) is a measure of the dissolved combined content of all inorganic and organic substances present in a liquid in molecular, ionized or micro-granular (colloidal sol) suspended form. Generally the operational definition is that the solids must be small enough to survive filtration through a filter with two-micrometer (nominal size, or smaller) pores. Total dissolved solids are normally discussed only for freshwater systems, as salinity includes some of the ions constituting the definition of TDS. The principal application of TDS is in the study of water quality for streams, rivers and lakes, although TDS is not generally considered a primary pollutant (e.g. it is not deemed to be associated with health effects) it is used as an indication of aesthetic characteristics of drinking water and as an aggregate indicator of the presence of a broad array of chemical contaminants.

Measurement

The two principal methods of measuring total dissolved solids are gravimetry and conductivity. Gravimetric methods are the most accurate and involve evaporating the liquid solvent and measuring the mass of residues left. This method is generally the best, although it is time-consuming. If inorganic salts comprise the great majority of TDS, gravimetric methods are appropriate. Electrical conductivity of water is directly related to the concentration of dissolved ionized solids in the water. Ions from the dissolved solids in water create the ability for that water to conduct an electrical current, which can be measured using a conventional conductivity meter or TDS meter. When correlated with laboratory TDS measurements, conductivity provides an

approximate value for the TDS concentration, usually to within ten-percent accuracy. The relationship of TDS and specific conductance of groundwater can be approximated by the following equation:

$TDS = k_c EC$, where TDS is expressed in mg/L and EC is the electrical conductivity in microsiemens per centimeter at 25 °C. The correlation factor k_c varies between 0.55 and 0.8.

Electrical Conductivity (EC)

Electrical conductivity is the measure of the amount of electrical current a material can carry or its ability to carry a current. Electrical conductivity is also known as specific conductance. Conductivity is an intrinsic property of a material.

Units of Electrical Conductivity

Electrical conductivity is denoted by the symbol σ and has SI units of siemens per meter (S/m). In electrical engineering, the Greek letter κ is used. Sometimes the Greek letter γ represents conductivity. In water, conductivity is often reported as specific conductance, which is a measure compared to that of pure water at 25°C. The electrical conductivity of the water depends on the water temperature: the higher the temperature, the higher the electrical conductivity would be. The electrical conductivity of water increases by 2-3% for an increase of 1 degree Celsius of water temperature. Many EC meters nowadays automatically standardize the readings to 25°C. While the electrical conductivity is a good indicator of the total salinity, it still does not provide any information about the ion composition in the water. The same electrical conductivity values can be measured in low quality water (e.g. water rich with Sodium, Boron and Fluorides) as well as in high quality irrigation water (e.g. adequately fertilized water with appropriate nutrient concentrations and ratios). The commonly used units for measuring EC of water are: $\mu S/cm$ (microSiemens/cm) or dS/m (deciSiemens/m), Where: $1000 \mu S/cm = 1 dS/m$

Relationship between TDS and EC

Since the electrical conductivity is a measure to the capacity of water to conduct electrical current, it is directly related to the concentration of salts dissolved in water, and therefore to the Total Dissolved Solids (TDS). Salts dissolve into positively charged ions and negatively charged ions, which conduct electricity. Since it is difficult to measure TDS in the field, the electrical conductivity of the water is used as a measure. The electrical conductivity of the water can be determined in a quick and inexpensive way, using portable meters. Distilled water does not contain dissolved salts and, as a result, it does not conduct electricity and has an electrical conductivity of zero. Nevertheless, when the salt concentration reaches a certain level, electrical conductivity is no longer directly related to salts concentration. This is because ion pairs are formed. Ion pairs weaken each other's charge, so that above this level, higher TDS will not result in equally higher electrical conductivity.

EC can be converted to TDS using the following calculation:

$$TDS \text{ (ppm)} = 0.64 \times EC \text{ (}\mu S/cm\text{)} = 640 \times EC \text{ (dS/m)}$$

This relation provides an estimate only.



Suspended Solids (SS)

Suspended solids refers to small solid particles which remain in suspension in water as a colloid or due to the motion of the water. It is used as one indicator of water quality. It is sometimes abbreviated SS, but is not to be confused with settleable solids, also abbreviated SS, which contribute to the blocking of sewer pipes.

Total Suspended Solids (TSS)

Total suspended solids (TSS) is the dry-weight of suspended particles, that are not dissolved, in a sample of water that can be trapped by a filter that is analyzed using a filtration apparatus. It is a water quality parameter used to assess the quality of a specimen of any type of water or water body, ocean water for example, or wastewater after treatment in a wastewater treatment plant. It is listed as a conventional pollutant in the U.S. Clean Water Act. Total dissolved solids is another parameter acquired through a separate analysis which is also used to determine water quality based on the total substances that are fully dissolved within the water, rather than undissolved suspended particles. TSS was previously called non-filterable residue (NFR), but was changed to TSS because of ambiguity in other scientific disciplines.

TSS in mg/L can be calculated as:

$(\text{dry weight of residue and filter-dry weight of filter alone, in grams}) / \text{mL of sample} * 1,000,000$

TSS of a water or wastewater sample is determined by pouring a carefully measured volume of water (typically one litre; but less if the particulate density is high, or as much as two or three litres for very clean water) through a pre-weighed filter of a specified pore size, then weighing the filter again after drying to remove all water. Filters for TSS measurements are typically composed of glass fibres. The gain in weight is a dry weight measure of the particulates present in the water sample expressed in units derived or calculated from the volume of water filtered (typically milligrams per litre or mg/L).

Chloride

The chloride ion is the anion (negatively charged ion) Cl^- . It is formed when the element chlorine (a halogen) gains an electron or when a compound such as hydrogen chloride is dissolved in water or other polar solvents. Chloride salts such as sodium chloride are often very soluble in water. It is an essential electrolyte located in all body fluids responsible for maintaining acid/base balance, transmitting nerve impulses and regulating fluid in and out of cells.

Alkalinity

Alkalinity is the capacity of water to resist changes in pH that would make the water more acidic. (It should not be confused with basicity which is an absolute measurement on the pH scale.) Alkalinity is the strength of a buffer solution composed of weak acids and their conjugate bases. It is measured by titrating the solution with a monoprotic acid such as HCl until its pH changes abruptly, or it reaches a known endpoint where that happens. Alkalinity is expressed in units of meq/L (milliequivalents per liter), which corresponds to the amount of monoprotic acid added as a titrant in millimoles per liter.



Turbidity:

Turbidity is the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye, similar to smoke in air. The measurement of turbidity is a key test of water quality. Fluids can contain suspended solid matter consisting of particles of many different sizes. While some suspended material will be large enough and heavy enough to settle rapidly to the bottom of the container if a liquid sample is left to stand (the settleable solids), very small particles will settle only very slowly or not at all if the sample is regularly agitated or the particles are colloidal. These small solid particles cause the liquid to appear turbid. Turbidity (or haze) is also applied to transparent solids such as glass or plastic. In plastic production, haze is defined as the percentage of light that is deflected more than 2.5° from the incoming light direction.

Salinity:

Salinity is the saltiness or amount of salt dissolved in a body of water, called saline water (see also soil salinity). Salinity is an important factor in determining many aspects of the chemistry of natural waters and of biological processes within it, and is a thermodynamic state variable that, along with temperature and pressure, governs physical characteristics like the density and heat capacity of the water.

Salinity is the saltiness or dissolved salt content of a water body. Salinity is an important factor in determining many aspects of the chemistry of natural waters and of biological processes within it, and is a thermodynamic state variable that, along with temperature and pressure, governs physical characteristics like the density and heat capacity of the water. Seawater typically has a salinity of around 35 g/kg, although lower values are typical near coasts where rivers enter the ocean. Rivers and lakes can have a wide range of salinities, from less than 0.01 g/kg to a few g/kg, although there are many places where higher salinities are found. The Dead Sea has a salinity of more than 200 g/kg.

Hardness:

Hardness is a measure of the resistance to localized plastic deformation induced by either mechanical indentation or abrasion. Some materials (e.g. metals) are harder than others (e.g. plastics, wood). Macroscopic hardness is generally characterized by strong intermolecular bonds, but the behavior of solid materials under force is complex; therefore, there are different measurements of hardness: scratch hardness, indentation hardness, and rebound hardness. Hardness is dependent on ductility, elastic stiffness, plasticity, strain, strength, toughness, viscoelasticity, and viscosity.



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Annex-1

List of Tables for Different Parameters of River Water

1.0 Buriganga River (Table: 1-10)

Table-1. Level of pH of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	7.74	7.14	7.31	6.72	7.55	7.55	7.89	7.89	7.58	7.93	7.13	7.4
Hajaribag	7.55	7.25	7.27	6.78	7.53	7.53	6.88	6.88	7.43	7.23	7.64	7.2
Kamrangir Char	7.62	7.31	7.45	7.43	7.46	7.46	6.8	6.8	7.36	7.28	7.62	7.4
Chadnighat	7.51	7.35	7.37	7.18	7.37	7.37	6.94	7.1	7.13	7.67	7.71	7.05
Sadar Ghat	7.57	7.35	7.47	6.94	7.4	7.4	6.85	7.15	7.13	7.42	7.5	7.28
Dlolaikhal	7.58	7.26	7.4	7.07	7.39	7.39	6.83	7.29	7.09	7.42	7.6	7.26
Pagla	7.61	7.13	7.48	7.36	7.38	7.38	6.76	7.5	7.46	7.22	7.51	7.35
Bangladesh China Frp. Brg.	7.55	7.18	7.36	7.24	7.37	7.37	6.82	6.97	7.25	7.6	7.47	7.06
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-2. Level of DO (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	0.2	0.2	0.1	2.4	0.5	0.5	4.93	4.08	4.54	5.58	3.73	1.5
Hajaribag	0	0	0	2.1	0.77	0.77	3.94	4.06	3.71	4.73	2.45	0.8
Kamrangir Char	0	0	0	1.8	0.59	0.59	3.47	3.43	3.46	3.82	2.08	0.4
Chadnighat	0	0	0.1	2	0.48	0.48	3.63	3.32	2.18	3.33	1.75	0
Sadar Ghat	0.5	0.5	0.5	1.6	1.21	1.4	3.49	3.68	3.09	4.57	2.3	0.7
Dlolaikhal	0	0	0	1.8	0.99	0.99	3.66	2.46	2.88	3.07	1.43	0.2
Pagla	0	0	0	1.4	0.62	0.62	3.29	3.65	2.6	4.1	1.4	0.2
Bangladesh China Frp. Brg.	0	0	0	1.6	0.58	0.58	3.27	3.1	3.05	3.13	2.13	0
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-3. Level of BOD (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	11.2	18.6	28.2	7.5	8.8	8	7.2	1	0.8	1.8	3.6	5.4
Hajaribag	7.2	20.6	26.2	10.8	9.6	9	4.8	1.5	1.4	2.1	2.4	12
Kamrangir Char	10.8	13.7	23.9	11.8	8.4	7	3.6	2.1	2	1.8	3.2	4.8
Chadnighat	11.8	25	31	11.5	10.8	10	10.8	1.8	1.2	2.4	3.6	18.6
Sadar Ghat	10.7	25	28.6	13.4	12.6	10	3.8	2.4	1.2	1.8	2.6	8.4
Dlolaikhal	10.8	22.6	26.7	15.4	16.8	12	6.2	1.5	1.2	1.6	5.6	14.4
Pagla	7.8	24.8	28.2	16.2	18.4	15.2	4.8	2.7	1.8	1.8	8.2	9.6
Bangladesh China Frp. Brg.	13.2	20.9	32	14.2	16.6	10.8	5.6	2.4	2	2.2	8.8	8.6
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												

Table-4. Level of COD (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	46	72	88	26	36	36	24	22	22	12	17	14.7
Hajaribag	38	61	70	55	36	36	12.4	18	18	12	10	27
Kamrangir Char	48	36	95	58	31	31	-	24	24	10	10	12
Chadnighat	56	67	88	63	41	41	34	22	22	10	25	56
Sadar Ghat	38	77	93	72	43	43	10	17	17	12	10	32
Dlolaikhal	43	82	100	75	51	51	14.3	18	18	27	13	38
Pagla	28	59	90	55	67	67	14.4	14	14	10	23	32
Bangladesh China Frp. Brg.	41	77	113	58	41	41	24	16	16	10	22	34
EQS Industrial (≤ 200 mg/l)												



Table-5. Level of TDS (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	360	484	538	372	272	273	86.5	82	77.5	71.7	148.2	261
Hajaribag	359	497	589	440	264	265	82.1	86	81	84.4	143.4	269
Kamrangir Char	356	473	594	483	256	272	82.4	81	81.4	81.1	136.8	266
Chadnighat	391	477	605	492	271	278	82.2	78	76.1	80.78	143.4	375
Sadar Ghat	355	472	593	488	278	284	85	80	82.1	91.2	140.1	269
Dlolaikhal	357	472	599	537	283	291	83.1	80	83.8	87.2	140.1	256
Pagla	359	423	592	571	295	255	82.9	80	82.1	82.8	152	272
Bangladesh China Frp. Brg.	359	498	593	555	291	295	82.5	84	82.6	-	138.2	267
EQS Industrial (≤ 2100 mg/l)												

Table-6. Level of Turbidity (NTU) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	38	75	75	29.7	13.9	13.9	35.6	35.6	20.3	25.8	33.6	20.7
Hajaribag	42	55	55	25.2	10.5	10.5	30.2	30.2	16	24.6	23.7	17.5
Kamrangir Char	41	65	65	49.1	11.6	11.6	24.2	24.2	15.9	21.6	19.9	14.5
Chadnighat	39	55	55	69.4	17.2	17.2	23.2	23.2	16.7	20	16.1	28.9
Sadar Ghat	44	80	80	79.6	23.5	23.5	25.6	25.6	16.8	19.8	16.7	9.65
Dlolaikhal	42	80	80	129	27.2	27.2	17.4	17.4	10.6	21.9	16.2	12.1
Pagla	42	50	80	184	32.6	27	20.4	20.4	12.2	21	12.2	18.5
Bangladesh China Frp. Brg.	42	80	50	169	28.1	28.2	20.7	20.7	13.2	19.9	11.3	12.5
EQS Industrial (10 NTU)												

Table-7. Level of Chloride (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	45	49	65	30	23	23	6.6	10	8	8	17	34
Hajaribag	47	67	70	34	17	17	7	7	8	9	10	34
Kamrangir Char	50	63	73	40	16	16	6	5	7	8	10	33
Chadnighat	62	65	76	42	20	20	6	5	6	9	25	32
Sadar Ghat	52	61	89	43	19	19	7	4	7	9	10	30
Dlolaikhal	53	66	78	44	22	22	7	6	7	10	13	31
Pagla	55	63	78	47	27	20	6	6	6	9	23	31
Bangladesh China Frp. Brg.	54	65	82	47	20	27	7	5	8	10	22	32
EQS Industrial (150-600 mg/l)												

Table-8. Level of SS (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	38	118	118	49	31	31	38	38	28	57	42	25
Hajaribag	40	95	95	61	23	23	36	36	19	56	30	32
Kamrangir Char	38	80	80	80	24	24	30	30	18	54	21	23
Chadnighat	45	95	95	93	33	33	32	32	19	52	18	64
Sadar Ghat	48	102	102	98	46	46	33	33	23	53	19	34
Dlolaikhal	32	95	95	119	45	45	23	23	11	53	17	32
Pagla	50	86	86	142	40	42	34	34	14	52	14	36
Bangladesh China Frp. Brg.	40	86	86	139	55	40	24	24	18	52	13	33
EQS Industrial (150 mg/l)												



Table-9. Level of Total Alkalinity (mg/l) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	224	280	280	180	130	130	48	56	44	40	62	190
Hajaribag	222	274	274	210	134	134	50	54	48	42	56	200
Kamrangir Char	220	282	282	220	136	136	50	48	46	60	72	210
Chadnighat	224	284	284	240	140	140	52	50	42	46	70	190
Sadar Ghat	216	280	276	232	174	174	50	52	46	44	72	190
Dlolaikhal	226	282	282	242	176	176	50	54	46	42	62	200
Pagla	220	258	278	254	144	152	50	50	44	46	64	210
Bangladesh China Frp. Brg.	218	270	276	250	142	154	48	54	44	44	62	210
EQS Industrial (150 mg/l)												

Table-10. Level of EC (1200µmohs/cm) of Buriganga River Water in 2017

Location of Buriganga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mirpur Bridge	745	904	1054	744	544	544	172.1	164.4	154.8	155.2	330	530
Hajaribag	741	902	1138	880	528	528	163	172.1	161.9	183.2	323	547
Kamrangir Char	735	850	1155	966	511	541	163.7	163	162.7	175.2	318	541
Chadnighat	787	856	1178	981	541	556	167.1	157.7	151.2	173.5	304	756
Sadar Ghat	738	848	1148	975	556	566	168.8	159.8	163.7	175.4	315	544
Dlolaikhal	744	849	1161	1073	566	581	165.4	159.4	166.8	199.6	306	516
Pagla	747	764	1050	1142	590	511	165.4	160.2	170.8	188.6	310	550
Bangladesh China Frp. Brg.	744	900	1153	1110	581	590	164.4	168.2	165.4	177.6	301	520
EQS Industrial (1200µmohs/cm)												

2.0 Shitalakhya River (Table: 11-19)

Table-11. Level of pH of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	7.24	7.42	7.41	7.53	7.37	-	7.68	7.07	-	7.38	7.38	7.48
Ghorashal F.F.	7.59	8.11	8.15	8.18	7	-	7.23	-	-	7.49	7.49	7.59
Near ACI Factory	7.48	7.48	7.48	7.48	7.57	-	-	7.25	-	-	6.98	-
Near Kanchpur Bridge		7.83	7.81	7.64	7.75	-	-	-	-	-	-	-
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-12. Level of DO (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	0	0	0	2.8	0.42	-	4.7	7	-	5	3.8	0
Ghorashal F.F.	3.4	6.2	6.8	7.2	7.2	-	5.6	-	-	5	5.2	3.8
Near ACI Factory	0	0	0.8	0.8	0.9	-	-	4.8	-	-	4.8	-
Near Kanchpur Bridge		0.17	0.15	2.53	0.71	-	-	-	-	-	-	-
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-13. Level of BOD (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	20.4	36.5	36.6	12.2	12.2		2.8	5		2.8	8.2	12.3
Ghorashal F.F.	8.4	2	2.8	3.1	3.1		1			2.4	5.1	5.1
Near ACI Factory	24.2	44.6	44.2	14.8	14.8			1.6			6.8	
Near Kanchpur Bridge		41.5	41.5	13.8	13.8							
EQS Fisheries (≤6 mg/l)												
EQS Industrial (≤50 mg/l)												

Table-14. Level of COD (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	68	99	95	36	64	-	18	5	-	15	24	57
Ghorashal F.F.	24	10	10	12	12	-	-	-	-	10	17	17
Near ACI Factory	72	110	104	49	49	-	-	10	-	-	22	-
Near Kanchpur Bridge		107	107	44	32	-	-	-	-	-	-	-
EQS Industrial (≤200 mg/l)												

Table-15. Level of TDS (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	314	416	420	283	340	-	58.2	58.3	-	66.2	66.2	205.8
Ghorashal F.F.	304	228	210	200	120	-	59.9	-	-	61.2	61.2	145
Near ACI Factory	320	556	556	349	180	-	-	70.8	-	-	216.7	-
Near Kanchpur Bridge		506	509	320	179.2	-	-	-	-	-	-	-
EQS Industrial (≤2100 mg/l)												

Table-16. Level of Chloride (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	38	38	38	50	32	-	9	8	-	11	6	16
Ghorashal F.F.	15	15	15	13	120	-	6	-	-	8	7	10
Near ACI Factory	42	106	106	56	280	-	-	16	-	-	12	-
Near Kanchpur Bridge	-	104	105	33	224	-	-	-	-	-	-	-
EQS Industrial (150-600 mg/l)												

Table-17. Level of SS (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	73	147	145	17	77	-	25	32	-	19	17	20
Ghorashal F.F.	30	10	21	22	22	-	34	-	-	39	23	12
Near ACI Factory	68	198	198	39	59	-	-	30	-	-	17	-
Near Kanchpur Bridge		196	192	18	34	-	-	-	-	-	-	-
EQS Industrial (150 mg/l)												

Table-18. Level of EC (1200µmohs/cm) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	590	872	874	479	679	-	118.5	114.1	-	131.7	131.7	390
Ghorashal F.F.	611	449	410	398	240	-	122.2	-	-	121.7	121.7	273
Near ACI Factory	610	1108	1108	610	360	-	-	130.4	-	-	427	-
Near Kanchpur Bridge		1012	1016	560	357	-	-	-	-	-	-	-
EQS Industrial (1200µmohs/cm)												



Table-19. Level of Total Alkalinity (mg/l) of Shitalakhya River Water in 2017

Location of Shitalakhya river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Demra Ghat	220	260	260	200	200	-	50	74	-	42	120	170
Ghorashal F.F.	170	80	150	222	120	-	56	-	-	36	110	76
Near ACI Factory	240	280	280	310	280	-	-	80	-	-	110	-
Near Kanchpur Bridge		270	260	338	224	-	-	-	-	-	-	-
EQS Industrial (150 mg/l)												

3.0 Turagh River (Table: 20-28)

Table-20. Level of pH of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	7.58	7.63	7.43	7.49	6.68	7.83	7	7.95	7.47	7.31	7.69
Mirpur Diabary BIWTA L.S	-	7.35	7.42	7.26	7.65	6.72	7.52	7.09	7.55	7.3	7.12	7.7
Ashulia BIWTA L.S	-	7.69	7.64	7.8	7.66	7.11	7.7	7.15	7.36	7.49	7.25	7.72
Tongi Istima Mat	8.13	7.59	7.42	7.45	7.55	6.74	7.56	7.26	7.3	7.79	7.22	7.7
North Side of Tongi Bridge	7.81	-	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-21. Level of DO (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	0	0.73	0.68	1.08	2.9	5.1	4.4	4.8	5.12	4.8	1.2
Mirpur Diabary BIWTA L.S	-	0	0.89	1.2	1.95	5.84	4.8	4.3	4.7	5	4.2	1
Ashulia BIWTA L.S	-	0	0.46	0.56	0.34	3.51	6.3	4.6	4.8	5.87	4.9	0.8
Tongi Istima Mat	0	0	0.32	0.8	0.27	2.48	5.8	4.7	4.5	5.09	5.1	1.2
North Side of Tongi Bridge	0	-	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-22. Level of BOD (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	28.2	28.2	24.2	20	7.2	2.1	1.4	1.2	1.2	4.8	6.4
Mirpur Diabary BIWTA L.S	-	30.8	30.8	54	20	5.2	1.1	1.8	1.4	1.4	5.2	6.6
Ashulia BIWTA L.S	-	28.4	28.4	18.4	37	2.4	0.8	2.2	2	1.2	4.8	6.1
Tongi Istima Mat	30.8	32.4	32.4	29	51	2.7	0.5	2.2	1.2	1.6	4.8	5.8
North Side of Tongi Bridge	28.2	-	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (5 mg/l)												
EQS Industrial (6.0-9.0)												

Table-23. Level of COD (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	90	62	74	38	29	11.8	7	18	10	13	23
Mirpur Diabary BIWTA L.S	-	84	105	118	38	27	5	7	16	10	16	27
Ashulia BIWTA L.S	-	82	88	55	79	22	5	7	18	15	13	39
Tongi Istima Mat	121	92	108	92	130	18	7.4	7	22	12	10	49
North Side of Tongi Bridge	113	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (\leq 200 mg/l)												

Table-24. Level of TDS (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	542	608	441	335	99	73.2	65.7	61.8	75.5	80	244
Mirpur Diabary BIWTA L.S	-	545	638	394	365	99.7	77.5	72.5	71.8	83.6	84.8	249
Ashulia BIWTA L.S	-	718	789	677	458	100.1	65	65.2	60.4	73.2	66.9	250
Tongi Istima Mat	464	645	574	410	514	130	66.9	62.5	60.1	74.1	87.7	242
North Side of Tongi Bridge	314	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (≤2100 mg/l)												

Table-25. Level of Chloride (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	49	74	60	60	5	8	6	6	6	8	21
Mirpur Diabary BIWTA L.S	-	52	73	58	64	6	6	8	12	14	9	29
Ashulia BIWTA L.S	-	105	110	135	74	8	3	7	8	8	7	24
Tongi Istima Mat	52	94	84	72	81	8	4	6	5	5	8	22
North Side of Tongi Bridge	49	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (150-600 mg/l)												

Table-26. Level of SS (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge		145	170	68	44	63	19	39	32	28	26	16
Mirpur Diabary BIWTA L.S		260	180	143	37	27	9	35	29	31	28	28
Ashulia BIWTA L.S		297	280	74	82	25	16	37	27	34	24	21
Tongi Istima Mat	52	104	110	122	92	74	13	35	37	48	18	15
North Side of Tongi Bridge	45											
EQS for Industrial Discharge (150 mg/l)												

Table-27. Level of EC (1200µmohs/cm) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	1152	1219	897	670	205	141	131.2	118.5	150.6	155.1	472
Mirpur Diabary BIWTA L.S	-	1153	1345	808	728	207.4	150.7	142.3	136.3	165.6	164.1	473
Ashulia BIWTA L.S	-	1512	1679	1362	915	210	126.3	127.8	116	145.6	129.8	457
Tongi Istima Mat	813	1359	1238	845	1027	270	130.1	122.9	116	147.8	147.8	462
North Side of Tongi Bridge	557	-	-	-	-	-	-	-	-	-	-	-
EQS for Industrial Discharge (1200 µmohs/cm)												

Table-28. Level of Total Alkalinity (mg/l) of Turagh River Water in 2017

Location of Turagh river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
New Gabtoli Bridge	-	260	286	262	224	68	90	60	50	38	70	200
Mirpur Diabary BIWTA L.S	-	280	278	256	216	58	60	59	54	40	72	200
Ashulia BIWTA L.S	-	210	320	314	270	62	50	62	46	42	68	176
Tongi Istima Mat	280	234	304	238	240	60	50	56	48	44	64	182
North Side of Tongi Bridge	260	-	-	-	-	-	-	-	-	-	-	-
EQS for Industrial Discharge (150 mg/l)												

4.0 Dhalaeswari River (Table: 29-37)

Table-29. Level of pH of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	7.92	7.98	8.12	-	7.59	7.81	6.98	-	7.36	7.78
Dropping Point of CETP	-	-	7.85	7.93	8.21	-	7.48	7.98	7.51	-	7.38	7.69
200m Down of CETP	-	-	8.03	7.94	8.27	-	7.56	8.11	7.02	-	7.4	7.71
Muktarpur Bridge	-	-	-	-	-	6.55	-	-	7.18	-	7.21	-
Hamayatpur	7.04	7.65	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-30. Level of DO (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	3.4	4.5	1.96	-	5.73	4.92	4.81	-	3.12	0.7
Dropping Point of CETP	-	-	3.2	4.09	1.33	-	5.52	4.87	4.61	-	2.8	0.5
200m Down of CETP	-	-	3	4.08	1.75	-	5.83	4.89	4.69	-	2.8	0.6
Muktarpur Bridge	-	-	-	-	-	3.8	-	-	6.8	-	5.6	-
Hamayatpur	1.5	3.2	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (5 mg/l ₂)												
EQS Industrial (4.5-8 mg/l)												

Table-31. Level of BOD (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	8	4	10.8	-	3.4	2.1	1	-	4.2	6.4
Dropping Point of CETP	-	-	12	5	13.88	-	4.6	3.2	0.6	-	6.8	8.2
200m Down of CETP	-	-	14	6	17.2	-	4.2	2.2	1	-	4.8	6.8
Muktarpur Bridge	-	-	-	-	-	3.8	-	-	0.4	-	2.8	-
Hamayatpur	12.8	8.6	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												

Table-32. Level of COD (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	18	12	40	-	10	-	-	-	12	18
Dropping Point of CETP	-	-	20	14	55	-	12	-	-	-	18	21
200m Down of CETP	-	-	25	16	79	-	11	-	-	-	14	18
Muktarpur Bridge	-	-	-	-	-	12	-	-	-	-	10	-
Hamayatpur	48	36	-	-	-	-	-	-	-	-	-	-
EQS Industries (≤ 200 mg/l)												

Table-33. Level of TDS (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	460	550	540	-	69	75	60.9	-	191.2	340
Dropping Point of CETP	-	-	460	580	580	-	100	84	64.2	-	194	375
200m Down of CETP	-	-	450	570	570	-	69	78	57	-	193	365
Muktarpur Bridge	-	-	-	-	-	112	-	-	71.7	-	121.5	-
Hamayatpur	328	430	-	-	-	-	-	-	-	-	-	-
EQS Industries (≤ 2100 mg/l)												

Table-34. Level of Chloride (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	73	73	68	-	4	5	4	-	18	9
Dropping Point of CETP	-	-	72	72	68	-	5	5	5	-	25	10
200m Down of CETP	-	-	70	70	71	-	4	5	7	-	23	9
Muktarpur Bridge	-	-	-	-	-	8	-	-	7	-	10	-
Hamayatpur	48	56	-	-	-	-	-	-	-	-	-	-
EQS Industrial (150-600 mg/l)												

Table-35. Level of SS (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP			18	18	18		71	29	56		15	31
Dropping Point of CETP			5	15	18		78	42	25		32	34
200m Down of CETP			4	14	20		74	39	62		19	29
Muktarpur Bridge						32			47		23	
Hamayatpur	34	40										
EQS Industrial (150 mg/l)												

Table-36. Level of EC (1200µmohs/cm) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	951	1278	1080	-	137	148.6	123.5	-	383	680
Dropping Point of CETP	-	-	951	1365	1365	-	200	167.3	130.4	-	384	710
200m Down of CETP	-	-	940	1340	1340	-	137.8	155.1	116.4	-	381	689
Muktarpur Bridge	-	-	-	-	-	223	-	-	135.7	-	235	-
Hamayatpur	627	850					-	-	-	-	-	-
EQS industrial (1200 µmohs/cm)												

Table-37. Level of Total Alkalinity (mg/l) of Dhaleshwari River Water in 2017

Location of Dhaleshwari river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
200m up of CETP	-	-	-	-	220	-	220	112	52	-	84	110
Dropping Point of CETP	-	-	-	-	232	-	232	124	56	-	108	120
200m Down of CETP	-	-	-	-	236	-	236	120	58	-	78	110
Muktarpur Bridge	-	-	-	-	-	72	-	-	50	-	72	-
Hamayatpur	110	-	-	-	-	-	-	-	-	-	-	-
EQS Industries (150 mg/l)												

5.0 Brahmaputra River (Table: 38-43)

Table-38. Level of pH of Brahmaputra River Water in 2017

Location of Brahmaputra river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mymensingh	7.66	-	-	7.55	-	-	8.05	-	-	-	7.82	6.38
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-39. Level of DO (mg/l) of Brahmaputra River Water in 2017

Location of Brahmaputra river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mymensingh	7.8	-	-	6.4	-	-	6.8	-	-	-	8.5	6.5
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-40. Level of BOD (mg/l) of Brahmaputra River Water in 2017

Location of Brahmaputra river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mymensingh	2	-	-	2.8	-	-	1.2	-	-	-	2.1	2.1
EQS Fisheries (≤6 mg/l)												
EQS Industrial (≤50 mg/l)												

Table-41. Level of TDS (mg/l) of Brahmaputra River Water in 2017

Location of Brahmaputra river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mymensingh	171.5	-	-	76.4	-	-	557	-	-	-	143.2	183.5
EQS Industries (52100 mg/l)												

Table-42. Level of SS (mg/l) of Brahmaputra River Water in 2017

Location of Burigonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mymensingh	20	-	-	15	-	-	7	-	-	-	25	14
EQS Industrial (150 mg/l)												

Table-43. Level of Chloride (mg/l) of Brahmaputra River Water in 2017

Location of Brahmaputra river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Mymensingh	8	-	-	6	-	-	10	-	-	-	10	10
EQS Industrial (150-600 mg/l)												

6.0 Kaligonga River (Table: 44-49)

Table-44. Level of pH of Kaligonga River Water in 2017

Location of Kaligonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Bheutha Ghat	7.75	-	-	7.3	7.06	-	7.99	-	7.18	7.35	7.38	7.4
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.9-9.0)												

Table-45. Level of DO (mg/l) of Kaligonga River Water in 2017

Location of Kaligonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Bheutha Ghat	6.8	-	-	3.8	7.9	-	5.8	-	6.1	8.8	6.8	7.9
EQS Fisheries (5 mg/l2)												
EQS Industrial (4.5-8 mg/l)												

Table-46. Level of BOD (mg/l) of Kaligonga River Water in 2017

Location of Kaligonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Bheutha Ghat	2	-	-	4.2	1.2	-	3.1	-	0.8	2.6	2.2	2.5
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												

Table-47. Level of TDS (mg/l) of Kaligonga River Water in 2017

Location of Kaligonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Bheutha Ghat	226	-	-	113.1	67	-	57	-	63	65.1	129	225
EQS Industries (52100 mg/l)												

Table-48. Level of SS (mg/l) of Kaligonga River Water in 2017

Location of Kaligonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Bheutha Ghat	18	-	-	18	20	-	32	-	20	90	21	25
EQS Industrial (150 mg/l)												

Table-49. Level of Chloride (mg/l) of Kaligonga River Water in 2017

Location of Kaligonga river	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Bheutha Ghat	12	-	-	6	10	-	3	-	8	13	8	12
EQS Industrial (150-600 mg/l)												

7.0 Jamuna River (Table: 50-55)

Table-50. Level of pH of Jamuna River Water in 2017

Location of Jamuna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhadurabad Ghat	-	7.12	7.32	-	-	-	7.95	-	-	-	-	-
Near Jamuna Fertilizer Factory	-	7.52	6.95	-	-	-	8.48	-	-	-	-	-
Fulchhari Ghat, Gibanda (US)	7.42	-	7.41	7.41	7.67	7.64	7.56	7.41	-	7.46	7.66	7.66
Fulchhari Ghat, Gibanda (DS)	7.41	-	7.41	7.41	7.66	7.63	7.55	7.41	-	7.63	7.63	7.63
Fulchhari Ghat, Gibanda (Avg)	7.41	-	7.41	7.41	7.66	7.63	7.55	7.41	-	7.54	7.65	7.65
Shariakandi Groin Badth (US)	7.41	-	7.37	7.4	7.61	-	-	7.4	-	7.61	7.58	7.64
Shariakandi Groin Badth (DS)	7.4	-	7.36	7.4	7.61	-	-	7.4	-	7.61	7.57	7.63
Shariakandi Groin Badth (Avg)	7.40	-	7.36	7.4	7.61	-	-	7.4	-	7.61	7.57	7.63
Near Banabandhu Bridge (US)	7.44	-	7.41	7.44	7.61	7.6	7.54	7.44	-	7.6	7.64	7.58
Near Banabandhu Bridge (US)	7.45	-	7.41	7.43	7.61	7.61	7.53	7.43	-	7.61	7.64	7.57
Near Banabandhu Bridge (Avg)	7.44	-	7.41	7.43	7.61	7.60	7.53	7.43	-	7.60	7.64	7.57
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-51. Level of DO (mg/l) of Jamuna River Water in 2017

Location of Jamuna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhadurabad Ghat	-	6.4	6.4	-	-	-	5.8	-	-	-	-	-
Near Jamuna Fertilizer Factory	-	6.8	6.8	-	-	-	5.7	-	-	-	-	-
Fulchhari Ghat, Gibanda (US)	6.9	-	6.9	6.9	7.2	7.3	4.4	6.9	-	7.3	7.5	7.5
Fulchhari Ghat, Gibanda (DS)	7	-	7	7	7.1	7.2	4.4	7	-	7.2	7.4	7.4
Fulchhari Ghat, Gibanda (Avg)	6.95	-	6.95	6.95	7.15	7.25	4.4	6.95	-	7.25	7.45	7.45
Shariakandi Groin Badth (US)	6.9	-	6.2	6.9	7.3	-	-	6.9	-	7.3	7.3	7.3
Shariakandi Groin Badth (DS)	7	-	6.1	7	7.3	-	-	7	-	7.3	7	7.2
Shariakandi Groin Badth (Avg)	6.95	-	6.15	6.95	7.3	-	-	6.95	-	7.3	7.15	7.25
Near Banabandhu Bridge (US)	7.1	-	6.9	7.1	7.5	7.3	7.4	7.1	-	7.3	7	7.3
Near Banabandhu Bridge (US)	7	-	7	7	7.4	7	7.5	7	-	7	6.9	7
Near Banabandhu Bridge (Avg)	7.05	-	6.95	7.05	7.45	7.15	7.45	7.05	-	7.15	6.95	7.15
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-52. Level of BOD (mg/l) of Jamuna River Water in 2017

Location of Jamuna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhadurabad Ghat	-	2.1	4.1	-	-	-	2.1	-	-	-	-	-
Near Jamuna Fertilizer Factory	-	3	2.4	-	-	-	3.8	-	-	-	-	-
Fulchhari Ghat, Gibanda (US)	2.9	-	2.9	2.9	2.2	2.2	5.8	2.9	-	2.2	2.4	2.4
Fulchhari Ghat, Gibanda (DS)	2.8	-	2.8	2.8	2.1	2.1	5.6	2.8	-	2.1	2.3	2.3
Fulchhari Ghat, Gibanda (Avg)	2.85	-	2.85	2.85	2.15	2.15	5.7	2.85	-	2.15	2.35	2.35
Shariakandi Groin Badth (US)	2.9	-	2.6	2.9	2.1	-	-	2.9	-	2.1	2.1	2.2
Shariakandi Groin Badth (DS)	2.8	-	2.6	2.8	2	-	-	2.8	-	2.1	2.1	2.1
Shariakandi Groin Badth (Avg)	2.85	-	2.6	2.85	2.05	-	-	2.85	-	2.1	2.1	2.15
Near Banabandhu Bridge (US)	2.1	-	2.8	2.1	2.3	2.1	2.2	2.1	-	2.1	2.6	2.1
Near Banabandhu Bridge (US)	2	-	2.8	2	2.2	2	2.1	2	-	2.1	2.5	2.1
Near Banabandhu Bridge (Avg)	2.05	-	2.8	2.05	2.25	2.05	2.15	2.05	-	2.1	2.55	2.1
EQS Fisheries (<=6 mg/l)												
EQS Industrial (<=50 mg/l)												

Table-53. Level of SS of Jamuna River Water in 2017

Location of Jamuna River	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhadurabad Ghat	-	40	38	-	-	-	93	-	-	-	-	-
Near Jamuna Fertilizer Factory	-	30	46	-	-	-	34	-	-	-	-	-
Fulchhari Ghat, Gibanda (US)	60	-	50	60	60	60	70	60	-	60	70	70
Fulchhari Ghat, Gibanda (DS)	50	-	40	50	60	60	70	50	-	60	60	60
Fulchhari Ghat, Gibanda (Avg)	55	-	45	55	60	60	70	55	-	60	65	65
Shariakandi Groin Badth (US)	60	-	50	60	60	-	-	60	-	70	60	60
Shariakandi Groin Badth (DS)	70	-	50	70	60	-	-	70	-	60	60	60
Shariakandi Groin Badth (Avg)	65	-	50	65	60	-	-	65	-	65	60	60
Near Banabandhu Bridge (US)	60	-	50	60	60	60	60	60	-	60	60	60
Near Banabandhu Bridge (US)	70	-	50	70	60	60	60	70	-	60	60	60
Near Banabandhu Bridge (Avg)	65	-	50	65	60	60	60	65	-	60	60	60
EQS Industrial (150 mg/l)												



Table-54. Level of TDS (mg/l) of Jamuna River Water in 2017

Location of Jamuna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhadurabad Ghat	-	237	294	-	-	-	56.9	-	-	-	-	-
Near Jamuna Fertilizer Factory	-	125.4	272	-	-	-	136.6	-	-	-	-	-
Fulchari Ghat, Gibanda (US)	130	-	120	120	160	160	180	120	-	140	120	120
Fulchari Ghat, Gibanda (DS)	140	-	130	100	150	150	170	100	-	140	120	120
Fulchari Ghat, Gibanda (Avg)	135	-	125	110	155	155	175	110	-	140	120	120
Shariakandi Groin Badth (US)	110	-	100	110	160	-	-	110	-	130	120	140
Shariakandi Groin Badth (DS)	110	-	100	110	150	-	-	110	-	130	120	140
Shariakandi Groin Badth (Avg)	110	-	100	110	155	-	-	110	-	130	120	140
Near Banabandhu Bridge (US)	120	-	110	120	160	160	160	120	-	120	140	120
Near Banabandhu Bridge (US)	110	-	110	110	150	150	150	110	-	120	140	120
Near Banabandhu Bridge (Avg)	115	-	110	115	155	155	155	115	-	120	140	120
EQS Industries (≤ 2100 mg/l)												

Table-55. Level of Chloride (mg/l) of Jamuna River Water in 2017

Location of Jamuna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhadurabad Ghat	-	22	13	-	-	-	3	-	-	-	-	-
Near Jamuna Fertilizer Factory	-	12	10	-	-	-	14	-	-	-	-	-
Fulchari Ghat, Gibanda (US)	25	-	30	25	25	25	30	30	-	25	25	25
Fulchari Ghat, Gibanda (DS)	25	-	30	25	25	25	30	30	-	25	25	25
Fulchari Ghat, Gibanda (Avg)	25	-	30	25	25	25	30	30	-	25	25	25
Shariakandi Groin Badth (US)	30	-	25	30	30	-	-	25	-	25	30	25
Shariakandi Groin Badth (DS)	30	-	25	30	25	-	-	25	-	25	25	25
Shariakandi Groin Badth (Avg)	30	-	25	30	27.5	-	-	25	-	25	27.5	25
Near Banabandhu Bridge (US)	30	-	25	30	30	30	30	30	-	30	25	30
Near Banabandhu Bridge (US)	30	-	25	30	30	25	30	30	-	50	25	25
Near Banabandhu Bridge (Avg)	30	-	25	30	30	27.5	30	30	-	40	25	27.5
EQS Industrial (150-600 mg/l)												

8.0 Meghna River (Table:56-61)

Table-56. Level of pH of Meghna River Water in 2017

Location of Meghna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhairab Bazar	7.4	-	7.21	-	-	-	6.14	-	-	-	8.02	6.99
Meghna Ghat	7.14	-	6.94	-	-	-	-	-	7.18	6.52	6.3	7.69
Near Shahjalal Paper Mills	7.61	-	6.68	-	-	-	-	-	-	6.56	6.12	7.52
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-57. Level of DO (mg/l) of Meghna River Water in 2017

Location of Meghna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhairab Bazar	7.99	-	7.2	-	-	-	7.4	-	-	-	7	5.3
Meghna Ghat	7.51	-	6.8	-	-	-	-	-	6.8	5.8	5.6	7
Near Shahjalal Paper Mills	6.8	-	4.8	-	-	-	-	-	-	5.1	5.2	5.6
EQS Fisheries (5 mg/l ₂)												
EQS Industrial (4.5-8 mg/l)												

Table-58. Level of BOD (mg/l) of Meghna River Water in 2017

Location of Meghna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhairab Bazar	1.1	-	2	-	-	-	2.3	-	-	-	1.2	5.3
Meghna Ghat	1.8	-	3.4	-	-	-	-	-	0.8	1.8	2.8	2.2
Near Shahjalal Paper Mills	2	-	4.2	-	-	-	-	-	-	5	3.2	4
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												

Table-59. Level of TDS (mg/l) of Meghna River Water in 2017

Location of Meghna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhairab Bazar	57	-	46.2	-	-	-	39	-	-	-	37	44
Meghna Ghat	56.1	-	74.2	-	-	-	-	-	63	31.5	40.8	48.3
Near Shahjalal Paper Mills	57	-	111.5	-	-	-	-	-	-	47.3	35.3	48.5
EQS Industries (≤ 2100 mg/l)												

Table-60. Level of SS (mg/l) of Meghna River Water in 2017

Location of Meghna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhairab Bazar	10	-	26	-	-	-	22	-	-	-	25	16
Meghna Ghat	10	-	26	-	-	-	-	-	20	24	30	22
Near Shahjalal Paper Mills	15	-	36	-	-	-	-	-	-	6	24	27
EQS Industrial (150 mg/l)												

Table-61. Level of Chloride (mg/l) of Meghna River Water in 2017

Location of Meghna river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bhairab Bazar	4	-	5	-	-	-	5	-	-	-	4	6
Meghna Ghat	5	-	10	-	-	-	-	-	8	9	4	8
Near Shahjalal Paper Mills	5	-	12	-	-	-	-	-	-	13	4	7
EQS Industrial (150-600 mg/l)												

9.0 Padma River (Table: 62-67)

Table-62. Level of pH of Padma River Water in 2017

Location of Padma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mawa Ghat	7.81	7.75	7.31	7.38	7.71	-	-	-	7.28	-	7.61	-
Pakshi Ghat (E)	7.41	-	7.42	7.4	8.65	7.58	8.58	7.4	-	8.58	7.58	7.66
Pakshi Ghat (M)	7.4	-	7.41	7.4	8.64	7.56	8.57	7.4	-	8.57	7.57	7.65
Pakshi Ghat (Avg.)	7.40	-	7.41	7.4	8.64	7.57	8.57	7.4	-	8.57	7.57	7.65
Baro kuti Ghat (U.S)	7.42	-	7.41	7.42	7.51	7.54	7.24	7.42	-	7.56	7.54	7.54
Baro kuti Ghat (D.S)	7.41	-	7.41	7.41	7.51	7.53	7.26	7.41	-	7.54	7.53	7.53
Baro kuti Ghat (Avg.)	7.41	-	7.41	7.41	7.51	7.53	7.25	7.41	-	7.55	7.53	7.53
Mawa Ghat	7.81	7.75	7.31	7.38	7.71	-	-	-	7.28	-	7.61	-
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-63. Level of DO (mg/l) of Padma River Water in 2017

Location of Padma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mawa Ghat	7.2	7.2	6.8	7.8	7.2	-	-	-	6.8	-	7.1	-
Pakshi Ghat (E)	7	-	7	7	7.6	7.6	7.5	7	-	7.5	7.4	7.5
Pakshi Ghat (M)	6.9	-	6.9	6.9	7.5	7.5	7.4	6.9	-	7.4	7.4	7.4
Pakshi Ghat (Avg.)	6.95	-	6.95	6.95	7.55	7.55	7.45	6.95	-	7.45	7.4	7.45
Baro kuti Ghat (U.S)	7	-	7	7	7.2	7.3	7.4	7	-	7.4	7.4	7.4
Baro kuti Ghat (D.S)	7.1	-	7.1	7.1	7.2	7.2	7.3	7.1	-	7.3	7.3	7.3
Baro kuti Ghat (Avg.)	7.05	-	7.05	7.05	7.2	7.25	7.35	7.05	-	7.35	7.35	7.35
Mawa Ghat	7.2	7.2	6.8	7.8	7.2	-	-	-	6.8	-	7.1	-
EQS for Fisheries (5 mg/l ₂)												
EQS Industrial Discharge (4.5-8 mg/l)												



Table-64. Level of BOD (mg/l) of Padma River Water in 2017

Location of Padma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mawa Ghat	2.8	2.4	2.2	2.6	1.8	-	-	-	1.6	-	2.7	-
Pakshi Ghat (E)	2.8	-	2.8	2.8	2.1	2.1	2.4	2.8	-	2.4	2.4	2.4
Pakshi Ghat (M)	2.9	-	2.9	2.9	2	2	2.3	2.9	-	2.3	2.3	2.3
Pakshi Ghat (Avg.)	2.85	-	2.85	2.85	2.05	2.05	2.35	2.85	-	2.35	2.35	2.35
Baro kuti Ghat (U.S)	2	-	2	2.1	2.2	2.2	2.1	2.1	-	2.2	2.2	2.2
Baro kuti Ghat (D.S)	2.1	-	2.1	2.1	2.1	2.1	2.1	2.1	-	2.2	2.2	2.2
Baro kuti Ghat (Avg.)	2.05	-	2.05	2.1	2.15	2.15	2.1	2.1	-	2.2	2.2	2.2
Mawa Ghat	2.8	2.4	2.2	2.6	1.8	-	-	-	1.6	-	2.7	-
EQS for Fisheries (≤ 6 mg/l)												
EQS Industrial Discharge (≤ 50 mg/l)												

Table-65. Level of TDS (mg/l) of Padma River Water in 2017

Location of Padma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mawa Ghat	91.2	106.1	88.6	91.6	92	-	-	-	63.5	-	80.3	-
Pakshi Ghat (E)	110	-	100	110	170	170	160	110	-	120	110	120
Pakshi Ghat (M)	90	-	90	100	160	160	160	100	-	120	100	120
Pakshi Ghat (Avg.)	100	-	95	105	165	165	160	105	-	120	105	120
Baro kuti Ghat (U.S)	120	-	140	130	160	160	140	110	-	110	110	110
Baro kuti Ghat (D.S)	120	-	140	140	150	150	140	110	-	110	110	110
Baro kuti Ghat (Avg.)	120	-	140	135	155	155	140	110	-	110	110	110
Mawa Ghat	91.2	106.1	88.6	91.6	92	-	-	-	63.5	-	80.3	-
EQS for Industrial Discharge (≤ 2100mg/l)												

Table-66. Level of SS (mg/l) of Padma River Water in 2017

Location of Padma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mawa Ghat	30	31	26	18	18	-	-	-	205	-	47	-
Pakshi Ghat (E)	50	-	50	50	70	70	70	50	-	70	70	70
Pakshi Ghat (M)	60	-	60	60	60	60	60	60	-	60	60	60
Pakshi Ghat (Avg.)	55	-	55	55	65	65	65	55	-	65	65	65
Baro kuti Ghat (U.S)	70	-	40	70	60	60	60	70	-	60	60	60
Baro kuti Ghat (D.S)	60	-	50	60	60	60	60	60	-	60	60	60
Baro kuti Ghat (Avg.)	65	-	45	65	60	60	60	65	-	60	60	60
Mawa Ghat	30	31	26	18	18	-	-	-	205	-	47	-
EQS for Industrial Discharge (≤ 150mg/l)												

Table-67. Level of EC (1200 μ mohs/cm) of Padma River Water in 2017

Location of Padma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mawa Ghat	190.2	202.4	187.8	189	19	-	-	-	128.5	-	161.3	-
Pakshi Ghat (E)	200	-	200	200	334	334	316	200	-	240	220	240
Pakshi Ghat (M)	210	-	200	210	332	332	314	210	-	240	220	240
Pakshi Ghat (Avg.)	205	-	200	205	333	333	315	205	-	240	220	240
Baro kuti Ghat (U.S)	310	-	280	280	312	310	280	220	-	220	220	220
Baro kuti Ghat (D.S)	300	-	280	290	310	310	280	220	-	220	220	220
Baro kuti Ghat (Avg.)	305	-	280	285	311	310	280	220	-	220	220	220
Mawa Ghat	190.2	202.4	187.8	189	19	-	-	-	128.5	-	161.3	-
EQS for Industrial Discharge (1200μmohos/cm)												



10.0 Korotoa River (Table: 68-73)

Table-68. Level of pH of Korotoa River Water in 2017

Location of Korotoa river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Dutta Bari Bridge (U.S)	6.96	-	6.91	6.95	6.9	6.94	6.96	6.96	-	6.92	6.9	6.9
Near Dutta Bari Bridge (D.S)	6.94	-	6.92	6.93	6.9	6.94	6.95	6.94	-	6.93	6.9	6.9
Near Dutta Bari Bridge (Avg)	6.95	-	6.91	6.94	6.9	6.94	6.95	6.95	-	6.92	6.9	6.9
Near Foteh Ali Bridge (U.S)	6.91	-	6.91	6.9	6.91	6.95	6.97	6.91	-	6.95	6.92	6.92
Near Foteh Ali Bridge (D.S)	6.93	-	6.91	6.9	6.91	6.94	6.96	6.91	-	6.95	6.92	6.92
Near Foteh Ali Bridge (Avg.)	6.92	-	6.91	6.9	6.91	6.94	6.96	6.91	-	6.95	6.92	6.92
Near Matidali Bridge (U.S)	7.01	-	6.98	7.02	6.88	6.92	6.94	7.04	-	6.92	6.92	6.92
Near Matidali Bridge (D.S)	7	-	6.98	7.01	6.87	6.92	6.94	7.03	-	6.92	6.93	6.93
Near Matidali Bridge (Avg.)	7.00	-	6.98	7.01	6.87	6.92	6.94	7.03	-	6.92	6.92	6.92
Near S.P Bridge (U.P)	6.94	-	6.91	6.93	6.86	6.9	-	6.96	-	6.91	6.9	6.9
Near S.P Bridge D.S)	6.95	-	6.91	6.94	6.86	6.9	-	6.95	-	6.9	6.9	6.9
Near S.P Bridge (Avg.)	6.94	-	6.91	6.93	6.86	6.9	-	6.95	-	6.90	6.9	6.9
Shahjadpur (U.S)	7.4	-	7.41	7.24	7.56	7.12	7.32	7.42	-	7.32	7.64	7.64
Shahjadpur (D.S)	7.41	-	7.4	7.4	7.55	7.12	7.3	7.4	-	7.3	7.63	7.63
Shahjadpur (Avg)	7.40	-	7.40	7.32	7.55	7.12	7.31	7.41	-	7.31	7.63	7.63
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-69. Level of DO (mg/l) of Korotoa River Water in 2017

Location of Korotoa river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Dutta Bari Bridge (U.S)	1.8	-	1.9	1.8	2	2.2	3.4	3.4	-	3.2	3	3
Near Dutta Bari Bridge (D.S)	1.8	-	1.8	1.8	1.9	2.1	3.4	3.3	-	3.1	3	3
Near Dutta Bari Bridge (Avg)	1.8	-	1.85	1.8	1.95	2.15	3.4	3.35	-	3.15	3	3
Near Foteh Ali Bridge (U.S)	2	-	2	2	2.1	2.3	3.5	3	-	3.2	3.1	3.1
Near Foteh Ali Bridge (D.S)	1.9	-	1.9	1.9	2	2.2	3.5	3.1	-	3.2	3.1	3.1
Near Foteh Ali Bridge (Avg.)	1.95	-	1.95	1.95	2.05	2.25	3.5	3.05	-	3.2	3.1	3.1
Near Matidali Bridge (U.S)	2.2	-	2	2.2	2	2.2	3.5	3.2	-	3	3	3
Near Matidali Bridge (D.S)	2.3	-	2.1	2.2	2.1	2	3.5	3.2	-	3	3	3
Near Matidali Bridge (Avg.)	2.25	-	2.05	2.2	2.05	2.1	3.5	3.2	-	3	3	3
Near S.P Bridge (U.P)	2	-	2.1	2.1	2.1	2.2	-	3.8	-	2.9	2.8	2.8
Near S.P Bridge D.S)	2	-	2	2	2	2.1	-	2	-	2.9	2.8	2.8
Near S.P Bridge (Avg.)	2	-	2.05	2.05	2.05	2.15	-	2.9	-	2.9	2.8	2.8
Shahjadpur (U.S)	6.8	-	7.41	6.8	7.1	7.2	1.8	6.8	-	6.6	7.3	7.3
Shahjadpur (D.S)	6.9	-	7.4	6.9	7	7.1	1.7	6.9	-	6.6	7.2	7.2
Shahjadpur (Avg)	6.85	-	7.40	6.85	7.05	7.15	1.75	6.85	-	6.6	7.25	7.25
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-70. Level of DO (mg/l) of Korotoa River Water in 2017

Location of Korotoa river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Dutta Bari Bridge (U.S)	6.8	-	6.9	6.8	6.9	6.8	4.8	4.2	-	4.3	4.4	4.4
Near Dutta Bari Bridge (D.S)	6.8	-	6.8	6.7	6.8	6.7	4.7	4.1	-	4.4	4.4	4.4
Near Dutta Bari Bridge (Avg)	6.8	-	6.85	6.75	6.85	6.75	4.75	4.15	-	4.35	4.4	4.4
Near Foteh Ali Bridge (U.S)	6.6	-	6.6	6.7	6.8	6.6	4.6	4	-	4.3	4.3	4.3
Near Foteh Ali Bridge (D.S)	6.5	-	6.7	6.5	6.7	6.6	4.6	4	-	4.2	4.3	4.3
Near Foteh Ali Bridge (Avg.)	6.55	-	6.65	6.6	6.75	6.6	4.6	4	-	4.25	4.3	4.3
Near Matidali Bridge (U.S)	5.2	-	5.4	5.3	5.4	5.2	5	3.8	-	4.1	4.1	4.1
Near Matidali Bridge (D.S)	5.2	-	5.5	5.2	5.3	5.1	5	3.9	-	4.1	4.1	4.1
Near Matidali Bridge (Avg.)	5.2	-	5.45	5.25	5.35	5.15	5	3.85	-	4.1	4.1	4.1
Near S.P Bridge (U.P)	6.1	-	6.1	6.2	6.2	6	-	4	-	4.4	4.4	4.4
Near S.P Bridge D.S)	6.1	-	6.2	6.1	6.1	6	-	4	-	4.5	4.5	4.5
Near S.P Bridge (Avg.)	6.1	-	6.2	6.1	6.1	6	-	4	-	4.5	4.5	4.5
Shahjadpur (U.S)	2.4	-	2.1	2.5	2.3	7.2	5.8	2.5	-	2.2	2.2	2.1
Shahjadpur (D.S)	2.4	-	2	2.4	2.2	7.1	6.4	2.4	-	2.2	2.1	2.2
Shahjadpur (Avg)	2.4	-	2.05	2.45	2.25	7.15	6.1	2.45	-	2.2	2.15	2.15
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												



Table-71. Level of TDS (mg/l) of Korotoa River Water in 2017

Location of Korotoa river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Dutta Bari Bridge (U.S)	140	-	150	160	190	190	190	150	-	160	160	160
Near Dutta Bari Bridge (D.S)	150	-	150	150	180	180	180	150	-	160	160	160
Near Dutta Bari Bridge (Avg)	145	-	150	155	185	185	185	150	-	160	160	160
Near Foteh Ali Bridge (U.S)	140	-	140	160	190	190	190	140	-	150	150	150
Near Foteh Ali Bridge (D.S)	150	-	150	150	190	190	190	150	-	140	140	140
Near Foteh Ali Bridge (Avg.)	145	-	145	155	190	190	190	145	-	145	145	145
Near Matidali Bridge (U.S)	140	-	140	140	180	180	180	150	-	150	150	150
Near Matidali Bridge (D.S)	150	-	150	150	180	180	180	160	-	150	150	150
Near Matidali Bridge (Avg.)	145	-	145	145	180	180	180	155	-	150	150	150
Near S.P Bridge (U.P)	140	-	140	160	190	190	-	130	-	150	150	150
Near S.P Bridge (D.S)	150	-	150	150	180	180	-	130	-	140	140	140
Near S.P Bridge (Avg.)	145	-	145	155	185	185	-	130	-	145	145	145
Shahjadpur (U.S)	110	-	110	120	170	140	160	120	-	130	140	140
Shahjadpur (D.S)	110	-	110	110	160	140	160	110	-	130	140	140
Shahjadpur (Avg)	110	-	110	115	165	140	160	115	-	130	140	140
EQS Industrial (≤ 2100mg/l)												

Table-72. Level of SS (mg/l) of Korotoa River Water in 2017

Location of Korotoa river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Dutta Bari Bridge (U.S)	50	-	50	50	90	90	90	60	-	100	100	100
Near Dutta Bari Bridge (D.S)	60	-	60	60	80	80	80	60	-	90	100	100
Near Dutta Bari Bridge (Avg)	55	-	55	55	85	85	85	60	-	95	100	100
Near Foteh Ali Bridge (U.S)	50	-	50	50	90	90	90	60	-	90	90	90
Near Foteh Ali Bridge (D.S)	60	-	60	60	80	80	80	60	-	80	80	80
Near Foteh Ali Bridge (Avg.)	55	-	55	55	85	85	85	60	-	85	85	85
Near Matidali Bridge (U.S)	50	-	50	50	80	80	80	50	-	80	80	80
Near Matidali Bridge (D.S)	60	-	60	60	80	80	80	60	-	80	80	80
Near Matidali Bridge (Avg.)	55	-	55	55	80	80	80	55	-	80	80	80
Near S.P Bridge (U.P)	50	-	50	50	80	80	-	50	-	80	80	80
Near S.P Bridge (D.S)	60	-	60	60	80	80	-	60	-	80	80	80
Near S.P Bridge (Avg.)	55	-	55	55	80	80	-	55	-	80	80	80
Shahjadpur (U.S)	60	-	60	60	80	60	60	60	-	60	60	60
Shahjadpur (D.S)	60	-	50	60	70	60	60	60	-	60	60	60
Shahjadpur (Avg)	60	-	55	60	75	60	60	60	-	60	60	60
EQS Industrial (≤ 150mg/l)												

Table-73. Level of EC (μ mhos/cm) of Korotoa River Water in 2017

Location of Korotoa river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Dutta Bari Bridge (U.S)	380	-	390	380	390	384	384	300	-	320	330	330
Near Dutta Bari Bridge (D.S)	380	-	390	380	390	384	384	300	-	320	320	320
Near Dutta Bari Bridge (Avg)	380	-	390	380	390	384	384	300	-	320	325	325
Near Foteh Ali Bridge (U.S)	390	-	390	370	390	382	382	280	-	300	310	310
Near Foteh Ali Bridge (D.S)	380	-	380	380	380	380	380	290	-	290	300	300
Near Foteh Ali Bridge (Avg.)	385	-	385	375	385	381	381	285	-	295	305	305
Near Matidali Bridge (U.S)	370	-	370	370	370	370	370	300	-	300	310	310
Near Matidali Bridge (D.S)	370	-	380	370	370	360	360	310	-	300	300	300
Near Matidali Bridge (Avg.)	370	-	375	370	370	365	365	305	-	300	305	305
Near S.P Bridge (U.P)	380	-	380	380	380	360	-	260	-	290	290	290
Near S.P Bridge (D.S)	380	-	380	380	380	360	-	260	-	290	290	290
Near S.P Bridge (Avg.)	380	-	380	380	380	360	-	260	-	290	290	290
Shahjadpur (U.S)	244	-	230	230	332	280	320	230	-	260	280	280
Shahjadpur (D.S)	234	-	230	230	330	280	310	230	-	260	280	280
Shahjadpur (Avg)	239	-	230	230	331	280	315	230	-	260	280	280
EQS Industrial (1200μmhos/cm)												

11.0 Teesta River (Table: 74-79)

Table-74. Level of pH of Teesta River Water in 2017

Location of Teesta river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Tista Bridge (U.S)	7.41	-	7.41	7.41	7.62	7.58	7.6	7.41	-	7.58	7.48	7.58
Near Tista Bridge (D.S)	7.41	-	7.41	7.41	7.61	7.57	7.61	7.41	-	7.57	7.47	7.57
Teesta Bridge (Avg)	7.41	-	7.41	7.41	7.61	7.57	7.60	7.41	-	7.57	7.47	7.57
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-75. Level of DO (mg/l) of Teesta River Water in 2017

Location of Teesta river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Tista Bridge (U.S)	7.1	-	7	7.1	7.4	7.4	7.3	7.1	-	7.4	6.8	7.4
Near Tista Bridge (D.S)	7.1	-	7.1	7.1	7.3	7.4	7.2	7.1	-	7.4	6.8	7.4
Teesta Bridge (Avg)	7.1	-	7.05	7.1	7.35	7.4	7.25	7.1	-	7.4	6.8	7.4
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-76. Level of BOD (mg/l) of Teesta River Water in 2017

Location of Teesta river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Tista Bridge (U.S)	2.2	-	2.2	2.2	2.4	2.4	2.1	2.2	-	2.4	2.6	2.4
Near Tista Bridge (D.S)	2.3	-	2.3	2.3	2.3	2.3	2	2.3	-	2.4	2.5	2.3
Teesta Bridge (Avg)	2.25	-	2.25	2.25	2.35	2.35	2.05	2.25	-	2.4	2.55	2.35
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												

Table-77. Level of TDS (mg/l) of Teesta River Water in 2017

Location of Teesta river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Tista Bridge (U.S)	100	-	100	100	160	160	160	100	-	110	200	110
Near Tista Bridge (D.S)	90	-	90	100	160	160	150	100	-	100	200	100
Teesta Bridge (Avg)	95	-	95	100	160	160	155	100	-	105	200	105
EQS Industrial (≤ 2100 mg/l)												

Table-78. Level of SS (mg/l) of Teesta River Water in 2017

Location of Teesta river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Tista Bridge (U.S)	50	-	50	50	70	70	60	50	-	70	60	70
Near Tista Bridge (D.S)	50	-	50	50	60	60	60	50	-	60	60	60
Teesta Bridge (Avg)	50	-	50	50	65	65	60	50	-	65	60	65
EQS Industrial (≤ 2100 mg/l)												

Table-79. Level of Turbidity (NTU) of Teesta River Water in 2017

Location of Teesta river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Tista Bridge (U.S)	14.3	-	14.2	14.3	13.6	13.6	14.2	14.3	-	13.1	12	13
Near Tista Bridge (D.S)	14	-	14.2	14	13.6	13.6	14.2	14	-	13.1	12	13
Teesta Bridge (Avg)	14.15	-	14.2	14.15	13.6	13.6	14.2	14.15	-	13.1	12	13
EQS for Industrial Discharge (10 NTU)												



12.0 Karnaphuli River (Table: 80-85)

Table-80. Level of pH of Karnaphuli River Water in 2017

Location of Karnaphuli river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	8.1	7.3	7.3	7.6	7.6	7.2	6.8	7.9	7.9	7.9	8.1	6.5
TSP Side, Patenga	7.9	7.9	7.5	8.4	7.4	7.7	7.2	7.1	7.2	7.2	7.6	7.8
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-81. Level of DO (mg/l) of Karnaphuli River Water in 2017

Location of Karnaphuli river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	5.6	4.8	6.1	5.2	6.8	6.5	6.2	6.9	6.5	6.5	6.8	6.8
TSP Side, Patenga	6.1	5.4	5.9	4.7	6.6	6.7	6.5	6.1	6.1	7.3	6.1	6.1
EQS Fisheries (5 mg/l2)												
EQS Industries (4.5-8 mg/l)												

Table-82. Level of COD (mg/l) of Karnaphuli River Water in 2017

Location of Karnaphuli river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	186	314	332	286	180	92	116	125	175	188	155	160
TSP Side, Patenga	166	278	320	292	152	80	100	110	150	150	140	150
EQS Industries (≤ 200 mg/l)												

Table-83. Level of TDS (mg/l) of Karnaphuli River Water in 2017

Location of Karnaphuli river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	10228	11292	13168	12144	3032	1026	1066	2956	6090	6340	6520	6288
TSP Side, Patenga	9992	10678	12496	11096	2676	1228	765	2021	5080	5210	5089	5167
EQS Industries (≤ 200 mg/l)												

Table-84. Level of SS (mg/l) of Karnaphuli River Water in 2017

Location of Karnaphuli river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	186	202	308	266	220	242	210	160	490	510	490	510
TSP Side, Patenga	198	228	342	248	298	228	132	166	415	435	455	432
EQS Industries (≤ 150 mg/l)												

Table-85. Level of EC (mg/l) of Karnaphuli River Water in 2017

Location of Karnaphuli river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	20450	22580	26330	24280	6064	2050	2110	5910	12180	12684	13045	12571
TSP Side, Patenga	19984	21356	24990	22192	5352	2456	1523	4040	10160	10426	10170	10338
EQS Industries (1200 μ mhos/cm)												

13.0 Halda River (Table: 86-91)

Table-86. Level of pH of Halda River Water in 2017

Location of Halda river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	7.3	7.3	7.2	7.2	7.2	7.4	7.6	7.9	7.6	7.7	6.9	6.6
TSP Side, Patenga	7.6	7.8	7.9	7.1	7.3	7.3	6.9	7.2	7.4	7.9	7.8	6.9
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												



Table-87. Level of DO (mg/l) of Halda River Water in 2017

Location of Halda river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	5.8	5.6	5.5	6.2	6.8	6.9	6.8	7.5	6.8	7.5	6.6	7
TSP Side, Patenga	6.1	5.8	5.6	6.5	7.2	6.4	7.2	6.8	7.2	7	7.5	6.7
EQS Fisheries (5 mg/lz)												
EQS Industries (4.5-8 mg/l)												

Table-88. Level of COD (mg/l) of Halda River Water in 2017

Location of Halda river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	52	80	62	48	36	26	19	25	20	21	30	25
TSP Side, Patenga	61	102	68	56	42	30	22	30	38	38	40	30
EQS Industries (≤200 mg/l)												

Table-89. Level of TDS (mg/l) of Halda River Water in 2017

Location of Halda river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	218	214	218	192	92	68	68	102	88	92	110	70
TSP Side, Patenga	234	246	236	210	124	108	89	140	112	78	85	85
EQS Industries (≤200 mg/l)												

Table-90. Level of SS (mg/l) of Halda River Water in 2017

Location of Halda river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	62	69	102	96	180	206	60	80	132	134	120	105
TSP Side, Patenga	57	68	116	102	198	234	100	108	106	66	78	67
EQS Industries (≤150 mg/l)												

Table-91. Level of EC (mg/l) of Halda River Water in 2017

Location of Halda river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
CUFL Side Anowara	436	428	436	384	184	272	141	210	178	183	212	145
TSP Side, Patenga	468	490	472	420	248	216	125	279	220	159	171	171
EQS Industries (1200µmohs/cm)												

14.0 Moyuri River (Table: 92-99)

Table-92. Level of pH of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	7.64	7.66	7.61	7.65	7.67	7.58	7.59	7.48	7.41	7.48	7.4	7.33
Gallamari Bridge (M)	7.65	7.68	7.62	7.66	7.67	7.58	7.59	7.48	7.41	7.45	7.4	7.32
Gallamari Bridge (O)	7.66	7.65	7.62	7.64	7.67	7.57	7.58	7.48	7.42	7.46	7.4	7.31
Gallamari Bridge (Avg.)	7.65	7.66	7.61	7.65	7.67	7.57	7.58	7.48	7.41	7.46	7.4	7.32
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-93. Level of DO (mg/l) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	2.6	0.2	0.3	0.3	0.3	0.4	0.6	1.3	0.8	0.7	1.3	0.36
Gallamari Bridge (M)	2.6	0.2	0.3	0.3	0.3	0.4	0.6	1.3	0.8	0.7	1.3	0.38
Gallamari Bridge (O)	2.6	0.2	0.3	0.3	0.3	0.4	0.6	1.3	0.8	0.7	1.3	0.34
Gallamari Bridge (Avg.)	2.6	0.2	0.3	0.3	0.3	0.4	0.6	1.3	0.8	0.7	1.3	0.36
EQS Fisheries (5 mg/lz)												
EQS Industries (4.5-8 mg/l)												



Table-94. Level of TDS (mg/l) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	1044	1102	1410	1424	1350	1206	802	544	540	464	598	707
Gallamari Bridge (M)	1044	1102	1410	1424	1350	1206	802	544	540	464	598	701
Gallamari Bridge (O)	1044	1102	1410	1424	1350	1206	802	544	540	464	598	705
Gallamari Bridge (Avg.)	1044	1102	1410	1424	1350	1206	802	544	540	464	598	704.33

EQS Industries (<2100mg/l)

Table-95. Level of Chloride (mg/l) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	602	608	814	816	810	748	422	306	246	212	286	295
Gallamari Bridge (M)	602	608	814	816	810	748	422	306	246	212	286	287
Gallamari Bridge (O)	602	608	814	816	810	748	422	306	246	212	286	288
Gallamari Bridge (Avg.)	602	608	814	816	810	748	422	306	246	212	286	290

EQS Industries (150-600 mg/l)

Table-96. Level of Turbidity (NTU) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	46.2	54.6	52.6	54.2	55.1	52.8	50.6	50.6	51.2	44.2	45.2	28.5
Gallamari Bridge (M)	46.3	54.7	52.7	54.3	55.2	52.8	50.7	50.7	51.3	44.3	45.3	28
Gallamari Bridge (O)	46.4	54.8	52.8	54.8	55.3	52.8	50.6	50.6	51.4	44.4	45.4	28.4
Gallamari Bridge (Avg.)	46.3	54.7	52.7	54.43	55.2	52.8	50.63	50.63	51.3	44.3	45.3	28.3

EQS Industries (<10 NTU)

Table-97. Level of SS (mg/l) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	68	72	68	86	82	94	88	88	55	48	48	42
Gallamari Bridge (M)	68	72	68	86	82	94	88	88	55	48	48	34
Gallamari Bridge (O)	68	72	68	86	82	94	88	88	55	48	48	43
Gallamari Bridge (Avg.)	68	72	68	86	82	94	88	88	55	48	48	39.66

EQS Industries (150 mg/l)

Table-98. Level of EC (µmhos/cm) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	2088	2204	2820	2845	2698	2412	1604	1103	1076	928	1194	1494
Gallamari Bridge (M)	2088	2204	2820	2845	2698	2412	1604	1103	1076	928	1194	1403
Gallamari Bridge (O)	2088	2204	2820	2845	2698	2412	1604	1103	1076	298	1194	1410
Gallamari Bridge (Avg.)	2088	2204	2820	2845	2698	2412	1604	1103	1076	718	1194	1435.66

EQS Industries (1200 µmhos/cm)

Table-99. Level of Total Alkalinity (mg/l) of Moyuri River Water in 2017

Location of Moyuri river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Gallamari Bridge (S)	34	34	34	34	34	34	34	34	34	34	34	35
Gallamari Bridge (M)	34	34	34	34	34	34	34	34	34	34	34	34
Gallamari Bridge (O)	34	34	34	34	34	34	34	34	34	34	34	35
Gallamari Bridge (Avg.)	34	34	34	34	34	34	34	34	34	34	34	34.66

EQS Industries (150 mg/l)

15.0 Bhairab River (Table: 100-107)

Table-100. Level of pH of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noapara Ghat (S)	7.72	7.76	7.79	7.83	7.88	7.85	7.89	7.7	7.76	7.66	7.7	7.7
Noapara Ghat (M)	7.72	7.76	7.79	7.84	7.89	7.86	7.89	7.7	7.76	7.68	7.7	7.5
Noapara Ghat (O)	7.73	7.77	7.78	7.84	7.88	7.86	7.88	7.7	7.77	7.68	7.7	7.6
Noapara Ghat (Avg.)	7.72	7.76	7.78	7.83	7.88	7.85	7.88	7.7	7.76	7.67	7.7	7.6
Fultala Ghat(S)	7.74	7.73	7.73	7.85	7.85	7.85	7.88	7.7	7.73	7.64	7.7	7.8
Fultala Ghat (M)	7.75	7.76	7.76	7.86	7.86	7.86	7.89	7.7	7.74	7.66	7.7	7.6
Fultala Ghat (O)	7.73	7.73	7.73	7.85	7.85	7.85	7.89	7.7	7.73	7.66	7.7	7.7
Fultala Ghat (Avg.)	7.74	7.74	7.74	7.85	7.85	7.85	7.88	7.7	7.73	7.65	7.7	7.7
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-101. Level of DO (mg/l) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noapara Ghat (S)	7.72	7.76	7.79	7.83	7.88	7.85	7.89	7.7	7.76	7.66	7.7	7.7
Noapara Ghat (M)	7.72	7.76	7.79	7.84	7.89	7.86	7.89	7.7	7.76	7.68	7.7	7.5
Noapara Ghat (O)	7.73	7.77	7.78	7.84	7.88	7.86	7.88	7.7	7.77	7.68	7.7	7.6
Noapara Ghat (Avg.)	7.72	7.76	7.78	7.83	7.88	7.85	7.88	7.7	7.76	7.67	7.7	7.6
Fultala Ghat(S)	7.74	7.73	7.73	7.85	7.85	7.85	7.88	7.7	7.73	7.64	7.7	7.8
Fultala Ghat (M)	7.75	7.76	7.76	7.86	7.86	7.86	7.89	7.7	7.74	7.66	7.7	7.6
Fultala Ghat (O)	7.73	7.73	7.73	7.85	7.85	7.85	7.89	7.7	7.73	7.66	7.7	7.7
Fultala Ghat (Avg.)	7.74	7.74	7.74	7.85	7.85	7.85	7.88	7.7	7.73	7.65	7.7	7.7
EQS Fisheries (5 mg/l2)												
EQS Industries (4.5-8 mg/l)												

Table-102. Level of BOD (mg/l) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noapara Ghat (S)	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.8
Noapara Ghat (M)	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5
Noapara Ghat (O)	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.6
Noapara Ghat (Avg.)	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.63
Fultala Ghat(S)	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.5	0.8
Fultala Ghat (M)	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.5	0.5
Fultala Ghat (O)	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.5	0.6
Fultala Ghat (Avg.)	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.5	0.63
EQS Fisheries (<=6 mg/l)												
EQS Industrial (<=50 mg/l)												

Table-103. Level of TDS (mg/l) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noapara Ghat (S)	926	1352	7364	9612	10860	10124	6210	133	126	120	162	175
Noapara Ghat (M)	926	1352	7364	9612	10860	10124	6210	133	126	120	162	170
Noapara Ghat (O)	926	1352	7364	9612	10860	10124	6210	133	126	120	162	173
Noapara Ghat (Avg.)	926	1352	7364	9612	10860	10124	6210	133	126	120	162	172.66
Fultala Ghat(S)	932	1382	7368	9618	10894	10134	6202	124	128	118	168	198
Fultala Ghat (M)	932	1382	7368	9618	10894	10134	6202	124	128	118	168	193
Fultala Ghat (O)	932	1382	7368	9618	10894	10134	6202	124	128	118	168	195
Fultala Ghat (Avg.)	932	1382	7368	9618	10894	10134	6202	124	128	118	168	195.33
EQS Industries (<=2100mg/l)												



Table-104. Level of Chloride (mg/l) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noopara Ghat (S)	388	762	4920	8826	8874	8804	3012	62	62	62	88	93
Noopara Ghat (M)	388	762	4920	8826	8874	8804	3012	62	62	62	88	90
Noopara Ghat (O)	388	762	4920	8826	8874	8804	3012	62	62	62	88	91
Noopara Ghat (Avg.)	388	762	4920	8826	8874	8804	3012	62	62	62	88	91.33
Fultala Ghat(S)	392	768	4924	8834	8886	8842	3012	62	62	62	89	97
Fultala Ghat (M)	392	768	4924	8834	8886	8842	3012	62	62	62	89	92
Fultala Ghat (O)	392	768	4924	8834	8886	8842	3012	62	62	62	89	94
Fultala Ghat (Avg.)	392	768	4924	8834	8886	8842	3012	62	62	62	89	94.33
EQS Industries (150-600 mg/l)												

Table-105. Level of Turbidity (NTU) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noopara Ghat (S)	48.3	66.2	70.3	92.3	91.2	90.6	72.6	70.6	65.8	42.3	45.3	32
Noopara Ghat (M)	48.4	66.3	70.3	92.4	91.3	90.6	72.6	70.7	65.8	42.8	45.8	30
Noopara Ghat (O)	48.5	66.2	70.4	92.5	91.4	90.7	72.7	70.6	65.9	42.9	45.9	31
Noopara Ghat (Avg.)	48.4	66.23	70.35	92.4	91.3	90.63	72.63	70.63	65.83	42.66	45.66	31
Fultala Ghat(S)	52.8	66.4	71	92.5	92.1	91.2	72.8	70.6	65.3	46.3	46.3	33
Fultala Ghat (M)	52.9	66.5	71.1	92.6	92.2	91.3	72.9	70.7	65.4	46.4	46.4	30
Fultala Ghat (O)	52.8	66.6	71.2	92.7	92.3	91.4	72.8	70.8	65.5	46.5	46.5	32
Fultala Ghat (Avg.)	52.83	66.5	71.1	92.6	92.2	91.3	72.83	70.7	65.4	46.4	46.4	31.66
EQS Industries (\leq10 NTU)												

Table-106. Level of EC (μ mhos/cm) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noopara Ghat (S)	1850	2704	14728	19224	21720	20246	12420	266	248	240	324	344
Noopara Ghat (M)	1850	2704	14728	19224	21720	20246	12420	266	248	240	324	340
Noopara Ghat (O)	1850	2704	14728	19224	21720	20246	12420	266	248	240	324	342
Noopara Ghat (Avg.)	1850	2704	14728	19224	21720	20246	12420	266	248	240	324	342
Fultala Ghat(S)	1864	2762	14736	19236	21788	20268	12420	261	256	236	334	408
Fultala Ghat (M)	1864	2762	14736	19236	21788	20268	12420	261	256	236	334	400
Fultala Ghat (O)	1864	2762	14736	19236	21788	20268	12420	261	256	236	334	402
Fultala Ghat (Avg.)	1864	2762	14736	19236	21788	20268	12420	261	256	236	334	403.33
EQS Industries (μmhos/cm)												

Table-107. Level of Total Alkalinity (mg/l) of Bhairab River Water in 2017

Location of Bhairab river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Noopara Ghat (S)	34	34	34	36	36	36	34	34	34	34	34	35
Noopara Ghat (M)	34	34	34	36	36	36	34	34	34	34	34	33
Noopara Ghat (O)	34	34	34	36	36	36	34	34	34	34	34	33
Noopara Ghat (Avg.)	34	34	34	36	36	36	34	34	34	34	34	33.66
Fultala Ghat(S)	34	34	34	36	36	36	34	34	34	34	34	36
Fultala Ghat (M)	34	34	34	36	36	36	34	34	34	34	34	35
Fultala Ghat (O)	34	34	34	36	36	36	34	34	34	34	34	35
Fultala Ghat (Avg.)	34	34	34	36	36	36	34	34	34	34	34	35.33
EQS Industries (150 mg/l)												

16.0 Rupsha River (Table: 108-115)

Table-108. Level of pH of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	7.76	7.8	7.82	7.88	7.88	7.82	7.88	7.5	7.52	7.52	7.8	7.33
Rupsha Ghat (M)	7.78	7.82	7.83	7.89	7.89	7.83	7.89	7.5	7.52	7.54	7.8	7.31
Rupsha Ghat (O)	7.77	7.82	7.82	7.88	7.88	7.84	7.89	7.5	7.52	7.53	7.8	7.3
Rupsha Ghat (Avg.)	7.77	7.81	7.82	7.88	7.88	7.83	7.88	7.5	7.52	7.53	7.8	7.31
Labanchara Ghat (S)	7.78	7.82	7.83	7.89	7.88	7.82	7.88	7.5	7.53	7.53	7.8	7.8
Labanchara Ghat (M)	7.79	7.83	7.83	7.89	7.89	7.83	7.88	7.5	7.53	7.55	7.8	7.7
Labanchara Ghat (O)	7.77	7.82	7.82	7.88	7.88	7.84	7.87	7.5	7.53	7.53	7.8	7.7
Labanchara Ghat (Avg.)	7.78	7.82	7.82	7.88	7.88	7.83	7.87	7.5	7.53	7.53	7.8	7.73
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-109. Level of DO (mg/l) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	6.4	6.5	5.5	5.7	5.8	6.1	6.5	4.8	5.1	5.1	5.9	5.6
Rupsha Ghat (M)	6.4	6.5	5.5	5.7	5.8	6.1	6.5	4.8	5.1	5.1	5.9	5.8
Rupsha Ghat (O)	6.4	6.5	5.5	5.7	5.8	6.1	6.5	4.8	5.1	5.1	5.9	5.6
Rupsha Ghat (Avg.)	6.4	6.5	5.5	5.7	5.8	6.1	6.5	4.8	5.1	5.1	5.9	5.66
Labanchara Ghat (S)	6.4	6.6	5.5	5.7	5.8	6.2	6.5	4.8	5.1	5.1	5.9	5.7
Labanchara Ghat (M)	6.4	6.6	5.5	5.7	5.8	6.2	6.5	4.8	5.1	5.1	5.9	5.8
Labanchara Ghat (O)	6.4	6.6	5.5	5.7	5.8	6.2	6.5	4.8	5.1	5.1	5.9	5.7
Labanchara Ghat (Avg.)	6.4	6.6	5.5	5.7	5.8	6.2	6.5	4.8	5.1	5.1	5.9	5.73
EQS Fisheries (5 mg/l)												
EQS Industrial (4.5-8 mg/l)												

Table-110. Level of BOD (mg/l) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	1	0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.8
Rupsha Ghat (M)	1	0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.5
Rupsha Ghat (O)	1	0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6
Rupsha Ghat (Avg.)	1	0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.63
Labanchara Ghat (S)	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.7
Labanchara Ghat (M)	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.5
Labanchara Ghat (O)	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.6
Labanchara Ghat (Avg.)	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.6
EQS Fisheries (≤6 mg/l)												
EQS Industrial (≤50 mg/l)												

Table-111. Level of Chloride (mg/l) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	404	942	5548	9038	9066	8992	3026	68	68	68	312	236
Rupsha Ghat (M)	404	942	5548	9038	9066	8992	3026	68	68	68	312	235
Rupsha Ghat (O)	404	942	5548	9038	9066	8992	3026	68	68	68	312	235
Rupsha Ghat (Avg.)	404	942	5548	9038	9066	8992	3026	68	68	68	312	235.33
Labanchara Ghat (S)	408	944	5548	9046	9066	8992	3026	68	68	68	312	347
Labanchara Ghat (M)	408	944	5548	9046	9066	8992	3026	68	68	68	312	346
Labanchara Ghat (O)	408	944	5548	9046	9066	8992	3026	68	68	68	312	344
Labanchara Ghat (Avg.)	408	944	5548	9046	9066	8992	3026	68	68	68	312.66	345.66
EQS Industrial (150-600 mg/l)												

Table-112. Level of SS (mg/l) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	72	82	88	96	92	92	86	80	72	72	58	47
Rupsha Ghat (M)	72	82	88	96	92	92	86	80	72	72	58	41
Rupsha Ghat (O)	72	82	88	96	92	92	86	80	72	72	58	45
Rupsha Ghat (Avg.)	72	82	88	96	92	92	86	80	72	72	58	44.33
Labanchara Ghat (S)	78	88	90	98	92	92	84	80	78	78	58	46
Labanchara Ghat (M)	78	88	90	98	92	92	84	80	78	78	58	40
Labanchara Ghat (O)	78	88	90	98	92	92	84	80	78	78	58	43
Labanchara Ghat (Avg.)	78	88	90	98	92	92	84	80	78	78	58	43
EQS Industrial (150 mg/l)												

Table-113. Level of Turbidity (NTU) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	62.1	70.1	78.3	102.4	105.4	98.5	72.5	72.6	69.2	58.2	58.2	38
Rupsha Ghat (M)	62.2	70.2	78.4	102.3	105.3	98.6	72.6	72.6	69.3	58.3	58.3	34
Rupsha Ghat (O)	62.2	70.2	78.5	102.4	105.4	98.7	72.7	72.7	69.4	58.4	58.4	36
Rupsha Ghat (Avg.)	62.16	70.16	78.4	102.36	105.36	98.6	72.6	72.63	69.3	58.3	58.3	36
Labanchara Ghat (S)	62.5	70.5	78.2	103.2	105.2	99.1	72.1	72.5	69.4	61.4	58.6	37
Labanchara Ghat (M)	62.6	70.6	78.3	103.3	105.3	99.2	72.2	72.6	69.5	61.5	58.7	32
Labanchara Ghat (O)	62.4	70.4	78.4	103.3	105.3	99.3	72.3	72.7	69.6	61.6	58.8	35
Labanchara Ghat (Avg.)	62.5	70.5	78.3	103.26	105.26	99.2	72.2	72.6	69.5	61.5	58.7	34.66
EQS Industrial (≤10 NTU)												

Table-114. Level of EC ($\mu\text{mhos/cm}$) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	1980	3134	15044	29144	23214	20926	12492	337	280	262	1962	565
Rupsha Ghat (M)	1980	3134	15044	29144	23214	20926	12492	337	280	262	1962	564
Rupsha Ghat (O)	1980	3134	15044	29144	23214	20926	12492	337	280	262	1962	563
Rupsha Ghat (Avg.)	1980	3134	15044	29144	23214	20926	12492	337	280	262	1962	564
Labanchara Ghat (S)	1978	3150	15168	29152	23228	20948	12478	342	284	260	1968	1265
Labanchara Ghat (M)	1978	3150	15168	29152	23228	20948	12478	342	284	260	1968	1262
Labanchara Ghat (O)	1978	3150	15168	29152	23228	20948	12478	342	284	260	1968	1262
Labanchara Ghat (Avg.)	1978	3150	15168	29152	23228	20948	12478	342	284	260	1968	1263
EQS (1200 $\mu\text{mhos/cm}$)												

Table-115. Level of Total Alkalinity (mg/l) of Rupsha River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Rupsha Ghat (S)	34	34	34	36	36	36	34	34	34	34	34	36
Rupsha Ghat (M)	34	34	34	36	36	36	34	34	34	34	34	35
Rupsha Ghat (O)	34	34	34	36	36	36	34	34	34	34	34	35
Rupsha Ghat (Avg.)	34	34	34	36	36	36	34	34	34	34	34	35.33
Labanchara Ghat (S)	34	34	34	36	36	36	34	34	34	34	34	36
Labanchara Ghat (M)	34	34	34	36	36	36	34	34	34	34	34	34
Labanchara Ghat (O)	34	34	34	36	36	36	34	34	34	34	34	35
Labanchara Ghat (Avg.)	34	34	34	36	36	36	34	34	34	34	34	35
EQS Industrial (150 mg/l)												

17.0 Mathavanga River (Table: 116-123)

Table-116. Level of pH of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	7.67	7.65	-	7.72	7.78	7.77	7.86	7.86	7.62	7.46	7.46	7.9
Pipe Ghat, (U.S)	7.655	7.67	-	7.72	7.78	7.76	7.81	7.81	7.62	7.46	7.46	7.64
PipeGhat, (D.S)	7.67	7.66	-	7.73	7.79	7.77	7.82	7.82	7.62	7.46	7.46	7.78
Pipe Ghat (Avg.)	7.66	7.66	-	7.72	7.78	7.76	7.83	7.83	7.62	7.46	7.46	7.77
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-117. Level of DO (mg/l) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	5.3	5.3	-	5.3	5.3	5.2	6.3	7.86	5.2	5.1	5.6	5.5
Pipe Ghat, (U.S)	5.3	5.3	-	5.3	5.3	5.2	6.3	7.81	5.2	5.1	5.6	6.12
PipeGhat, (D.S)	5.3	5.3	-	5.3	5.3	5.2	6.3	7.82	5.2	5.1	5.6	5.86
Pipe Ghat (Avg.)	5.3	5.3	-	5.3	5.3	5.2	6.3	7.83	5.2	5.1	5.6	5.82
EQS Fisheries (5 mg/l2)												
EQS Industries (4.5-8 mg/l)												

Table-118. Level of BOD (mg/l) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	0.8	0.8	-	0.8	0.8	0.8	1.2	1.3	1	1	1	2.5
Pipe Ghat, (U.S)	0.8	0.8	-	0.8	0.8	0.8	1.2	1.3	1	1	1	1
PipeGhat, (D.S)	0.8	0.8	-	0.8	0.8	0.8	1.2	1.3	1	1	1	2.1
Pipe Ghat (Avg.)	0.8	0.8	-	0.8	0.8	0.8	1.2	1.3	1	1	1	1.86
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-119. Level of TDS (mg/l) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	174	204	-	3352	3374	2110	260	194	156	144	155	339
Pipe Ghat, (U.S)	174	204	-	3352	3374	2110	260	194	156	144	155	322
PipeGhat, (D.S)	174	204	-	3352	3374	2110	260	194	156	144	155	335
Pipe Ghat (Avg.)	174	204	-	3352	3374	2110	260	194	156	144	155	332
EQS Industries (<2100mg/l)												

Table-120. Level of Chloride (mg/l) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	38	42	-	704	704	346	32	28	28	28	32	60
Pipe Ghat, (U.S)	38	42	-	704	704	346	32	28	28	28	32	45
PipeGhat, (D.S)	38	42	-	704	704	346	32	28	28	28	32	62
Pipe Ghat (Avg.)	38	42	-	704	704	346	32	28	28	28	32	55.66
EQS Industries (150-600 mg/l)												

Table-121. Level of Turbidity (NTU) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	34.1	36.3	-	20.3	22.3	24.3	23.5	20.5	24.5	24.5	36.3	36
Pipe Ghat, (U.S)	34.2	36.1	-	20.1	22.1	24.1	23.3	20.3	24.3	24.3	36.2	21
PipeGhat, (D.S)	34.3	36.2	-	20.2	22.2	24.2	23.4	20.4	24.4	24.4	36.1	32
Pipe Ghat (Avg.)	34.2	36.2	-	20.2	22.2	24.2	23.4	20.4	24.4	24.4	36.2	29.66
EQS Industries (<=10 NTU)												

Table-122. Level of EC (μ mhos/cm) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	348	408	-	6704	6746	4220	520	386	312	288	310	720
Pipe Ghat, (U.S)	348	408	-	6704	6746	4220	520	386	312	288	310	694
PipeGhat, (D.S)	348	408	-	6704	6746	4220	520	386	312	288	310	733
Pipe Ghat (Avg.)	348	408	-	6704	6746	4220	520	386	312	288	310	715.66
EQS Industries (1200 μmhos/cm)												

Table-123. Level of Total Alkalinity (mg/l) of Mathavanga River Water in 2017

Location of Mathavanga river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Darshana	32	32	-	32	32	32	32	32	32	32	32	34
Pipe Ghat, (U.S)	32	32	-	32	32	32	32	32	32	32	32	31
PipeGhat, (D.S)	32	32	-	32	32	32	32	32	32	32	32	32
Pipe Ghat (Avg.)	32	32	-	32	32	32	32	32	32	32	32	32.33
EQS Industries (150 mg/l)												

18.0 Pashur River (Table: 124-131)

Table-124. Level of pH of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	7.88	7.92	7.93	7.94	7.94	7.94	7.98	7.96	7.81	7.78	7.99	7.6
Mongla Poart (M.P)	7.88	7.93	7.93	7.95	7.95	7.95	7.99	7.96	7.82	7.79	7.99	7.58
Mongla Poart (O.P)	7.87	7.92	7.92	7.96	7.96	7.96	7.98	7.96	7.82	7.78	7.99	7.6
Mongla Poart (Avg.)	7.87	7.92	7.92	7.95	7.95	7.95	7.98	7.96	7.81	7.78	7.90	7.59
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												



Table-125 Level of DO (mg/l) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	6.6	6.8	6.2	6.3	6.2	6.3	6.9	7.1	5.6	5.4	6.3	6.2
Mongla Poart (M.P)	6.6	6.8	6.2	6.3	6.2	6.3	6.9	7.1	5.6	5.4	6.3	6.3
Mongla Poart (O.P)	6.6	6.8	6.2	6.3	6.2	6.3	6.9	7.1	5.6	5.4	6.3	6.1
Mongla Poart (Avg.)	6.6	6.8	6.2	6.3	6.2	6.3	6.9	7.1	5.6	5.4	6.3	6.2
EQS Fisheries (5 mg/l ₂)												
EQS Industries (4.5-8 mg/l)												

Table-126. Level of BOD (mg/l) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	1	1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.6
Mongla Poart (M.P)	1	1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5
Mongla Poart (O.P)	1	1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.6
Mongla Poart (Avg.)	1	1	0.8	0.5	0.56							
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-127. Level of TDS (mg/l) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	3522	4614	11052	13374	13244	11552	7068	494	366	302	262	267
Mongla Poart (M.P)	3522	4614	11052	13374	13244	11552	7068	494	366	302	262	264
Mongla Poart (O.P)	3522	4614	11052	13374	13244	11552	7068	494	366	302	262	265
Mongla Poart (Avg.)	3522	4614	11052	13374	13244	11552	7068	494	366	302	262	265.33
EQS Industries (≤ 2100 mg/l)												

Table-128. Level of Chloride (mg/l) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	2182	2744	7242	10012	11208	9142	3632	386	304	212	124	125
Mongla Poart (M.P)	2182	2744	7242	10012	11208	9142	3632	386	304	212	124	124
Mongla Poart (O.P)	2182	2744	7242	10012	11208	9142	3632	386	304	212	124	124
Mongla Poart (Avg.)	2182	2744	7242	10012	11208	9142	3632	386	304	212	124	124.33
EQS Industries (150-600 mg/l)												

Table-129. Level of Turbidity (NTU) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	72.2	76.2	112.2	128.4	125.4	106.4	90.2	92.2	80.3	62.1	62.6	45
Mongla Poart (M.P)	72.3	76.3	112.3	128.5	125.5	106.4	90.3	92.3	80.2	62.2	62.7	44
Mongla Poart (O.P)	72.4	76.4	112.4	128.4	125.4	106.4	90.4	92.4	80.3	62.3	62.8	43
Mongla Poart (Avg.)	72.3	76.3	112.3	128.43	125.43	106.4	90.3	92.3	80.2	62.2	62.7	44
EQS Industries (≤ 10 NTU)												

Table-130. Level of EC (μ mhos/cm) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	7044	9226	22102	26746	26486	23104	14114	988	724	602	523	528
Mongla Poart (M.P)	7044	9226	22102	26746	26486	23140	14114	988	724	602	523	525
Mongla Poart (O.P)	7044	9226	22102	26746	26486	23104	14114	988	724	602	523	526
Mongla Poart (Avg.)	7044	9226	22102	26746	26486	23116	14114	988	724	602	523	526.33
EQS Industries (1200 μ mhos/cm)												

Table-131. Level of Total Alkalinity (mg/l) of Pashur River Water in 2017

Location of Pashur river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mongla Poart (S.P)	36	36	36	38	38	38	38	36	36	34	34	35
Mongla Poart (M.P)	36	36	36	38	38	38	38	36	36	34	34	33
Mongla Poart (O.P)	36	36	36	38	38	38	38	36	36	34	34	34
Mongla Poart (Avg.)	36	36	36	38	38	38	38	36	36	34	34	34
EQS Industries (150 mg/l)												



19.0 Khakshiali River (Table: 132-139)

Table-132. Level of pH of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	7.62	7.74	7.72	7.78	7.74	7.74	7.77	7.73	7.62	7.58	7.5	7.48
Kaliganj (M.P)	7.64	7.74	7.73	7.78	7.74	7.74	7.77	7.74	7.62	7.59	7.5	7.45
Kaliganj (O.P)	7.65	7.75	7.74	7.77	7.73	7.73	7.75	7.74	7.62	7.58	7.5	7.46
Kaliganj (Avg.)	7.63	7.74	7.73	7.77	7.73	7.73	7.76	7.73	7.62	7.58	7.5	7.46
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-133 Level of DO (mg/l) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	5.9	5.9	5.6	5.6	5.6	5.7	6.2	6.3	5.5	5.1	5.3	5.2
Kaliganj (M.P)	5.9	5.9	5.6	5.6	5.6	5.7	6.2	6.3	5.5	5.1	5.3	5.4
Kaliganj (O.P)	5.9	5.9	5.6	5.6	5.6	5.7	6.2	6.3	5.5	5.1	5.3	5.1
Kaliganj (Avg.)	5.9	5.9	5.6	5.6	5.6	5.7	6.2	6.3	5.5	5.1	5.3	5.23
EQS Fisheries (5 mg/l)												
EQS Industries (4.5-8 mg/l)												

Table-134. Level of BOD (mg/l) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	0.8	0.8	0.8	0.8	0.8	-	0.9	0.9	0.8	0.8	0.8	1
Kaliganj (M.P)	0.8	0.8	0.8	0.8	0.8	-	0.9	0.9	0.8	0.8	0.8	0.8
Kaliganj (O.P)	0.8	0.8	0.8	0.8	0.8	-	0.9	0.9	0.8	0.8	0.8	1
Kaliganj (Avg.)	0.8	0.8	0.8	0.8	0.8	-	0.9	0.9	0.8	0.8	0.8	0.93
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-135. Level of TDS (mg/l) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	4434	5578	12072	13434	13744	12852	7614	314	782	654	404	408
Kaliganj (M.P)	4434	5578	12072	13434	13744	12852	7614	314	782	654	404	406
Kaliganj (O.P)	4434	5578	12072	13434	13744	12852	7614	314	782	654	404	407
Kaliganj (Avg.)	4434	5578	12072	13434	13744	12852	7614	314	782	654	404	407
EQS Industries (≤ 2100 mg/l)												

Table-136. Level of Chloride (mg/l) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	2804	3402	7322	11224	11436	9492	3974	628	440	388	272	274
Kaliganj (M.P)	2804	3402	7322	11224	11436	9492	3974	628	440	388	272	273
Kaliganj (O.P)	2804	3402	7322	11224	11436	9492	3974	628	440	388	272	273
Kaliganj (Avg.)	2804	3402	7322	11224	11436	9492	3974	628	440	388	272	273.33
EQS Industries (150-600 mg/l)												

Table-137. Level of Turbidity (NTU) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	68.1	64.1	72.6	92.8	96.8	92.6	91.6	81.1	77.4	52.4	54.4	52
Kaliganj (M.P)	68.2	64.2	72.7	92.8	96.8	92.7	91.7	81.1	77.5	52.5	54.5	50
Kaliganj (O.P)	68.3	64.3	72.8	92.8	96.8	92.8	91.8	81.2	77.6	52.6	54.6	55
Kaliganj (Avg.)	68.2	64.2	72.7	92.8	96.8	92.7	91.7	81.13	77.5	52.5	54.5	52.33
EQS Industries (≤ 10 NTU)												

Table-138. Level of EC ($\mu\text{mhos/cm}$) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	8866	11156	24142	26866	27488	25704	15228	1824	1562	1308	802	512
Kaliganj (M.P)	8866	11156	24142	26866	27488	25704	15228	1824	1562	1308	802	810
Kaliganj (O.P)	8866	11156	24142	26866	27488	25704	15228	1824	1562	1308	802	811
Kaliganj (Avg.)	8866	11156	24142	26866	27488	25704	15228	1824	1562	1308	802	711
EQS Industries (1200 $\mu\text{mhos/cm}$)												

Table-139. Level of SS (mg/l) of Khakshiali River Water in 2017

Location of Khakshiali river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kaliganj (S.P)	78	98	108	96	104	96	92	84	84	52	46	44
Kaliganj (M.P)	78	98	108	96	104	96	92	84	84	52	46	41
Kaliganj (O.P)	78	98	108	96	104	96	92	84	84	52	46	43
Kaliganj (Avg.)	78	98	108	96	104	96	92	84	84	52	46	42.66
EQS Industries (150 mg/l)												

20.0 Gorai River (Table: 140-147)

Table-140. Level of pH of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	7.73	7.71	7.72	7.78	7.76	7.72	7.72	7.71	7.63	7.61	7.88	7.82
Kustia (M.P)	7.75	7.73	7.73	7.78	7.76	7.72	7.72	7.72	7.63	7.62	7.88	7.83
Kustia (O.P)	7.75	7.73	7.73	7.77	7.77	7.72	7.72	7.73	7.63	7.62	7.88	7.84
Kustia (Avg.)	7.74	7.72	7.72	7.77	7.76	7.72	7.72	7.72	7.63	7.61	7.88	7.83
Magura (S.P)	7.77	7.72	7.72	7.76	7.76	7.74	7.74	7.72	7.63	7.58	7.8	7.82
Magura (M.P)	7.78	7.74	7.73	7.76	7.78	7.76	7.76	7.73	7.63	7.58	7.8	7.81
Magura (O.P)	7.75	7.72	7.72	7.74	7.75	7.74	7.74	7.74	7.62	7.58	7.8	7.84
Magura (Avg.)	7.76	7.72	7.72	7.75	7.76	7.74	7.74	7.73	7.63	7.58	7.8	7.82
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-141. Level of DO (mg/l) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	5.4	5.4	5.6	5.4	5.6	5.6	6.5	6.6	5.1	4.9	4.9	4.8
Kustia (M.P)	5.4	5.4	5.6	5.4	5.6	5.6	6.5	6.6	5.1	4.9	4.9	4.9
Kustia (O.P)	5.4	5.4	5.6	5.4	5.6	5.6	6.5	6.6	5.1	4.9	4.9	4.8
Kustia (Avg.)	5.4	5.4	5.6	5.4	5.6	5.6	6.5	6.6	5.1	4.9	4.9	4.83
Magura (S.P)	5.4	5.4	5.5	5.5	5.7	5.7	6.6	6.6	5.1	4.9	4.9	4.7
Magura (M.P)	5.4	5.4	5.5	5.5	5.7	5.7	6.6	6.6	5.1	4.9	4.9	4.8
Magura (O.P)	5.4	5.4	5.5	5.5	5.7	5.7	6.6	6.6	5.1	4.9	4.9	4.5
Magura (Avg.)	5.4	5.4	5.5	5.5	5.7	5.7	6.6	6.6	5.1	4.9	4.9	4.66
EQS Fisheries (5 mg/l ₂)												
EQS Industries (4.5-8 mg/l)												

Table-142. Level of BOD (mg/l) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.4
Kustia (M.P)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2
Kustia (O.P)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.1
Kustia (Avg.)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.16
Magura (S.P)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.3
Magura (M.P)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2
Magura (O.P)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.7
Magura (Avg.)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.5	2.33
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-143. Level of TDS (mg/l) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	194	208	490	3504	3544	2014	354	160	162	144	168	171
Kustia (M.P)	194	208	490	3504	3544	2014	354	160	162	144	168	169
Kustia (O.P)	194	208	490	3504	3544	2014	354	160	162	144	168	170
Kustia (Avg.)	194	208	490	3504	3544	2014	354	160	162	144	168	170
Magura (S.P)	196	214	482	3518	3548	2056	368	170	158	144	168	174
Magura (M.P)	196	214	482	3518	3548	2056	368	170	158	144	168	172
Magura (O.P)	196	214	482	3518	3548	2056	368	170	158	144	168	175
Magura (Avg.)	196	214	482	3518	3548	2056	368	170	158	144	168	173.66
EQS Industries (≤2100mg/l)												

Table-144. Level of Chloride (mg/l) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	64	66	92	722	726	320	82	48	28	28	38	41
Kustia (M.P)	64	66	92	722	726	320	82	48	28	28	38	39
Kustia (O.P)	64	66	92	722	726	320	82	48	28	28	38	38
Kustia (Avg.)	64	66	92	722	726	320	82	48	28	28	38	39.33
Magura (S.P)	68	72	84	722	728	334	84	48	28	28	38	43
Magura (M.P)	68	72	84	722	728	334	84	48	28	28	38	42
Magura (O.P)	68	72	84	722	728	334	84	48	28	28	38	41
Magura (Avg.)	68	72	84	722	728	334	84	48	28	28	38	42
EQS Industries (150-600 mg/l)												

Table-145. Level of Turbidity (NTU) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	30.5	38.5	42.5	44.5	45.3	46.3	36.3	30.3	34.3	30.3	45.3	26
Kustia (M.P)	30.5	38.5	42.6	44.6	45.4	46.4	36.4	30.4	34.4	30.4	45.4	25
Kustia (O.P)	30.7	38.7	42.7	44.7	45.6	46.6	36.6	30.6	34.5	30.5	30.5	26
Kustia (Avg.)	30.56	38.56	42.6	44.6	45.43	46.4	36.4	30.4	34.4	30.4	40.4	25.6
Magura (S.P)	30.1	39.1	41.1	44.1	44.5	45.5	36.5	31.5	34.2	30.2	45.2	32
Magura (M.P)	30.2	39.2	41.2	44.2	44.6	45.6	36.6	31.6	34.3	30.3	45.3	30
Magura (O.P)	30.3	39.3	41.3	44.2	44.7	45.7	36.7	31.7	34.4	30.4	45.4	31
Magura (Avg.)	30.2	39.2	41.2	44.16	44.6	45.6	36.6	31.6	34.3	30.3	45.3	31
EQS Industries (≤10 NTU)												

Table-146. Level of EC (µmhos/cm) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	386	416	980	7012	7088	4026	708	320	324	288	336	338
Kustia (M.P)	386	416	980	7012	7088	4026	708	320	324	288	336	337
Kustia (O.P)	386	416	980	7012	7088	4026	708	320	324	288	336	337
Kustia (Avg.)	386	416	980	7012	7088	4026	708	320	324	288	336	337.33
Magura (S.P)	392	428	962	7036	7094	4112	736	338	316	284	334	338
Magura (M.P)	392	428	962	7036	7094	4112	736	338	316	284	334	336
Magura (O.P)	392	428	962	7036	7094	4112	736	338	316	284	334	337
Magura (Avg.)	392	428	962	7036	7094	4112	736	338	316	284	334	337
EQS Industries (1200µmhos/cm)												

Table-147. Level of SS (mg/l) of Gorai River Water in 2017

Location of Rupsha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Kustia (S.P)	52	52	52	52	52	52	50	44	42	42	42	23
Kustia (M.P)	52	52	52	52	52	52	50	44	42	42	42	21
Kustia (O.P)	52	52	52	52	52	52	50	44	42	42	42	22
Kustia (Avg.)	52	52	52	52	52	52	50	44	42	42	42	22
Magura (S.P)	54	54	54	54	54	54	54	46	38	38	38	27
Magura (M.P)	54	54	54	54	54	54	54	46	38	38	38	25
Magura (O.P)	54	54	54	54	54	54	54	46	38	38	38	26
Magura (Avg.)	54	54	54	54	54	54	54	46	38	38	38	26
EQS Industries (150 mg/l)												

21.0 Modhumoti River (Table: 148-155)

Table-148. Level of pH of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	7.48	7.53	7.62	7.64	7.62	7.65	7.66	7.68	7.62	7.48	7.4	7.44
Bagerhat (M.S)	7.49	7.54	7.63	7.64	7.62	7.66	7.67	7.67	7.62	7.46	7.4	7.42
Bagerhat (O.S)	7.48	7.54	7.63	7.63	7.62	7.66	7.66	7.66	7.62	7.47	7.4	7.43
Bagerhat (Avg.)	7.48	7.53	7.62	7.63	7.62	7.65	7.66	7.67	7.62	7.47	7.4	7.43
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-149. Level of DO (mg/l) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	5.3	5.4	5.3	5.3	5.3	5.4	5.9	6.2	5.2	4.8	5.1	5
Bagerhat (M.S)	5.3	5.4	5.3	5.3	5.3	5.4	5.9	6.2	5.2	4.8	5.1	5.1
Bagerhat (O.S)	5.3	5.4	5.3	5.3	5.3	5.4	5.9	6.2	5.2	4.8	5.1	5
Bagerhat (Avg.)	5.3	5.4	5.3	5.3	5.3	5.4	5.9	6.2	5.2	4.8	5.1	5.03
EQS Fisheries (5 mg/l₂)												
EQS Industries (4.5-8 mg/l)												

Table-150. Level of BOD (mg/l) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	0.8	0.8	0.8	0.8	0.8	-	-	-	-	-	1	1
Bagerhat (M.S)	0.8	0.8	0.8	0.8	0.8	-	-	-	-	-	1	8
Bagerhat (O.S)	0.8	0.8	0.8	0.8	0.8	-	-	-	-	-	1	1
Bagerhat (Avg.)	0.8	0.8	0.8	0.8	0.8	-	-	-	-	-	1	3.33
EQS Fisheries (≤6 mg/l)												
EQS Industries (≤50 mg/l)												

Table-151. Level of TDS (mg/l) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	192	214	405	412	418	324	272	164	182	144	166	174
Bagerhat (M.S)	192	214	405	412	418	324	272	164	182	144	166	173
Bagerhat (O.S)	192	214	405	412	418	324	272	164	182	144	166	173
Bagerhat (Avg.)	192	214	405	412	418	324	272	164	182	144	166	173.33
EQS Industries (≤2100mg/l)												

Table-152. Level of Chloride (mg/l) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	76	58	72	72	72	60	42	36	34	34	34	35
Bagerhat (M.S)	76	58	72	72	72	60	42	36	34	34	34	34
Bagerhat (O.S)	76	58	72	72	72	60	42	36	34	34	34	35
Bagerhat (Avg.)	76	58	72	72	72	60	42	36	34	34	34	34.66
EQS Industries (150-600 mg/l)												

Table-153. Level of Turbidity (NTU) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	48.1	46.1	42.1	44.1	44.1	43.1	46.1	44.1	42.1	41.1	41.1	30
Bagerhat (M.S)	48.2	46.2	42.2	44.2	44.2	43.2	46.2	44.2	42.2	41.2	41.2	28
Bagerhat (O.S)	48.3	46.3	42.3	44.3	44.3	43.3	46.3	44.3	42.3	41.3	41.3	29
Bagerhat (Avg.)	48.2	46.2	42.2	44.2	44.2	43.2	46.2	44.2	42.2	41.2	41.2	29
EQS Industries (≤ 10 NTU)												

Table-154. Level of EC (μ mhos/cm) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	384	428	810	822	836	646	544	328	362	288	331	342
Bagerhat (M.S)	384	428	810	822	836	646	544	328	362	288	331	340
Bagerhat (O.S)	384	428	810	822	836	646	544	328	362	288	331	341
Bagerhat (Avg.)	384	428	810	822	836	646	544	328	362	288	331	341
EQS Industries (1200 μ mhos/cm)												

Table-155. Level of SS (mg/l) of Modhumoti River Water in 2017

Location of Modhumoti river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Bagerhat (O.S)	48	42	46	46	46	42	42	48	42	42	42	25
Bagerhat (M.S)	48	42	46	46	46	42	42	48	42	42	42	21
Bagerhat (O.S)	48	42	46	46	46	42	42	48	42	42	42	24
Bagerhat (Avg.)	48	42	46	46	46	42	42	48	42	42	42	23.33
EQS Industries (150 mg/l)												

22.0 Beel Dakatia River (Table: 156-163)

Table-156. Level of pH of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	7.56	7.48	7.61	7.64	7.62	7.62	7.68	7.68	7.62	7.68	7.6	6.8
Khulna (M.S)	7.56	7.49	7.62	7.66	7.62	7.62	7.69	7.69	7.62	7.65	7.6	6.7
Khulna (Avg.)	7.56	7.48	7.61	7.65	7.62	7.62	7.68	7.68	7.62	7.66	7.6	6.75
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-157. Level of DO (mg/l) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	5.5	5.5	5.5	5.3	5.5	5.6	5.9	5.6	5.5	5.3	5.3	2.2
Khulna (M.S)	5.5	5.5	5.5	5.3	5.5	5.6	5.9	5.6	5.5	5.3	5.3	2.3
Khulna (Avg.)	5.5	5.5	5.5	5.3	5.5	5.6	5.9	5.6	5.5	5.3	5.3	2.25
EQS Fisheries (5 mg/l ₂)												
EQS Industries (4.5-8 mg/l)												



Table-158. Level of BOD (mg/l) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	2.8
Khulna (M.S)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	2.7
Khulna (Avg.)	0.8	0.6	2.75									
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-159. Level of TDS (mg/l) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	1204	1414	1682	1692	2772	2424	1614	813	644	556	575	276
Khulna (M.S)	1204	1414	1682	1692	2772	2424	1614	813	644	556	575	275
Khulna (Avg.)	1204	1414	1682	1692	2772	2424	1614	813	644	556	575	275.5
EQS Industries (≤ 2100 mg/l)												

Table-160. Level of Chloride (mg/l) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	714	722	914	914	2012	1942	804	324	294	244	244	145
Khulna (M.S)	714	722	914	914	2012	1942	804	324	294	244	244	144
Khulna (Avg.)	714	722	914	914	2012	1942	804	324	294	244	244	144.5
EQS Industries (150-600 mg/l)												

Table-161. Level of Turbidity (NTU) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	58.3	62.8	63.8	62.8	61.8	62.5	64.8	66.3	62.6	52.6	52.6	43
Khulna (M.S)	58.4	62.8	63.8	62.9	61.9	62.5	64.7	66.3	62.7	52.7	52.7	43
Khulna (Avg.)	58.3	62.8	63.8	62.8	61.8	62.5	64.75	66.3	62.6	52.6	52.6	43
EQS Industries (≤ 10 NTU)												

Table-162. Level of EC (μ mhos/cm) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	2408	2826	3364	3382	5542	4846	3226	1622	1242	1110	1150	586
Khulna (M.S)	2408	2826	3364	3382	5542	4846	3226	1622	1242	1110	1150	585
Khulna (Avg.)	2408	2826	3364	3382	5542	4846	3226	1622	1242	1110	1150	585.5
EQS Industries (1200 μ mhos/cm)												

Table-163. Level of SS (mg/l) of Beel Dakatia River Water in 2017

Location of Beel Dakatia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Khulna (O.S)	70	68	74	82	68	68	62	68	54	52	55	47
Khulna (M.S)	70	68	74	82	68	68	62	68	54	52	55	45
Khulna (Avg.)	70	68	74	82	68	68	62	68	54	52	55	46
EQS Industries (150 mg/l)												

23.0 Kirtankhola River (Table: 164-171)

Table-164. Level of pH of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	7	7	7.1	7	7	7.1	7.18	7.26	7.22	6.71	-	7.66
Launch Ghat (M)	7.2	7.2	7.2	7.1	7.4	7.2	7.12	7.25	7.26	6.78	-	7.61
Launch Ghat (Avg)	7.1	7.1	7.15	7.05	7.2	7.15	7.15	7.25	7.24	6.74	-	7.63
Dopdopia Kheyaghat (S)	7	7.1	7	7.2	7.1	7	7.2	7.31	7.18	6.8	-	7.68
Dopdopia Kheyaghat (M)	7.2	7.3	7.3	7.4	7.5	7.3	7.14	7.33	7.21	6.82	-	7.71
Dopdopia Kheyaghat (Avg)	7.1	7.2	7.15	7.3	7.3	7.15	7.17	7.32	7.19	6.81	-	7.69
Beltola Fery Gaht (S)	7.1	7.2	7	7.3	7.1	7	7.31	7.31	7.24	7.24	-	7.52
Beltola Fery Gaht (M)	7.3	7.3	7.2	7.2	7.3	7.1	7.26	7.31	7.28	7.28	-	7.58
Beltola Fery Gaht (Avg)	7.2	7.25	7.1	7.25	7.2	7.05	7.28	7.31	7.26	7.26	-	7.55
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-165. Level of DO (mg/l) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	7.0	6.8	6.8	6.9	7	6.8	6.9	5.6	5.5	5.16	-	5.86
Launch Ghat (M)	7.2	7.0	7.0	7.1	7.1	7	7.1	5.7	5.56	5.18	-	5.88
Launch Ghat (Avg)	7.1	6.9	6.9	7.0	7.05	6.9	7.0	5.65	5.53	5.17	-	5.87
Dopdopia Kheyaghat (S)	6.8	7.2	7.1	7.0	6.8	6.9	7.0	5.58	5.4	5.24	-	5.79
Dopdopia Kheyaghat (M)	7.1	7.1	6.8	7.2	7	7.1	7.2	5.6	5.5	5.3	-	5.8
Dopdopia Kheyaghat (Avg)	6.9	7.15	6.95	7.1	6.9	7.0	7.1	5.59	5.45	5.27	-	5.79
Beltola Fery Gaht (S)	7	6.8	7.0	6.8	7.1	6.8	6.7	5.63	5.6	5.6	-	6.0
Beltola Fery Gaht (M)	7.3	7.0	7.2	7.0	6.8	7.0	7.1	5.56	5.58	5.58	-	6.5
Beltola Fery Gaht (Avg)	7.1	6.9	7.1	6.9	6.95	6.9	6.9	5.59	5.59	5.59	-	6.25
EQS Fisheries (5 mg/l)												
EQS Industries (4.5-8 mg/l)												

Table-166. Level of BOD (mg/l) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	2	2	2	2	2	2	2.2	2.6	2	2.4	-	2.1
Launch Ghat (M)	2	2	2	2	2	2	2	2.4	1.9	2.2	-	2
Launch Ghat (Avg)	2	2	2	2	2	2	2.1	2.5	1.95	2.3	-	2.05
Dopdopia Kheyaghat (S)	2	2	2	2	2	2	2.1	2.35	2.1	2.1	-	2.2
Dopdopia Kheyaghat (M)	2	2	2	2	2	2	1.8	2.4	2	2	-	2
Dopdopia Kheyaghat (Avg)	2	2	2	2	2	2	1.95	2.37	2.05	2.05	-	2.1
Beltola Fery Gaht (S)	2	2	2	2	2	2	2	2.41	2.18	2.14	-	2.1
Beltola Fery Gaht (M)	2	2	2	2	2	2	2.18	2.3	2.1	2.18	-	2.1
Beltola Fery Gaht (Avg)	2	2	2	2	2	2	2.09	2.35	2.14	2.16	-	2.1
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-167. Level of TDS (mg/l) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	102	108	106	108	104	106	86	58	70	70	-	84
Launch Ghat (M)	104	110	104	107	106	108	80	78	74	68	-	86
Launch Ghat (Avg)	103	109	105	107.5	105	107	83	68	72	69	-	85
Dopdopia Kheyaghat (S)	102	114	108	105	110	106	85	96	79	65	-	83
Dopdopia Kheyaghat (M)	96	112	110	106	112	110	86	98	81	63	-	79
Dopdopia Kheyaghat (Avg)	99	113	109	105.5	111	108	85.5	97	80	64	-	81
Beltola Fery Gaht (S)	98	106	114	114	104	104	79	98	71	84	-	76
Beltola Fery Gaht (M)	100	104	108	108	110	108	85	100	75	82	-	78
Beltola Fery Gaht (Avg)	99	105	111	111	107	106	82	99	73	83	-	77
EQS Industries (≤ 2100 mg/l)												



Table-168. Level of TS (mg/l) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	122	128	126	128	124	126	115	121	98	92	-	103
Launch Ghat (M)	124	130	124	130	126	128	108	122	105	88	-	108
Launch Ghat (Avg)	123	129	125	129	125	127	111.5	121.5	101.5	90	-	105.5
Dopdopia Kheyaghat (S)	122	134	128	124	130	126	115	136	113	85	-	103
Dopdopia Kheyaghat (M)	116	132	130	126	132	130	106	140	117	81	-	97
Dopdopia Kheyaghat (Avg)	119	133	129	125	131	128	110.5	138	115	83	-	100
Beltola Fery Ghat (S)	118	126	134	134	128	124	105	136	100	110	-	98
Beltola Fery Ghat (M)	120	124	128	129	130	128	110	140	105	106	-	99
Beltola Fery Ghat (Avg)	119	125	131	131.5	129	126	107.5	138	102.5	108	-	98.5
EQS Industries (2250 mg/l)												

Table-169. Level of EC (μ mhos/cm) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	172	172	168	172	160	158	156	177	128	136	-	168
Launch Ghat (M)	174	170	170	174	164	162	160	179	132	132	-	172
Launch Ghat (Avg)	173	171	169	173	162	160	158	178	130	134	-	170
Dopdopia Kheyaghat (S)	172	174	172	168	168	164	162	186	158	128	-	166
Dopdopia Kheyaghat (M)	178	172	170	172	170	166	164	192	162	130	-	198
Dopdopia Kheyaghat (Avg)	175	173	171	170	169	165	163	189	160	129	-	182
Beltola Fery Ghat (S)	170	178	174	170	162	160	158	188	144	166	-	154
Beltola Fery Ghat (M)	172	176	172	174	166	162	160	190	151	162	-	156
Beltola Fery Ghat (Avg)	171	177	173	172	164	161	159	189	147.5	164	-	155
EQS Industries (\leq1200μmhos/cm)												

Table-170. Level of Total Alkalinity (mg/l) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	146	142	138	140	134	132	-	-	-	-	-	-
Launch Ghat (M)	148	144	140	142	136	134	-	-	-	-	-	-
Launch Ghat (Avg)	147	143	139	141	135	133	-	-	-	-	-	-
Dopdopia Kheyaghat (S)	144	148	148	146	138	136	-	-	-	-	-	-
Dopdopia Kheyaghat (M)	146	146	142	145	140	138	-	-	-	-	-	-
Dopdopia Kheyaghat (Avg)	145	147	145	145.5	139	137	-	-	-	-	-	-
Beltola Fery Ghat (S)	146	140	146	144	144	140	-	-	-	-	-	-
Beltola Fery Ghat (M)	148	142	144	141	142	140	-	-	-	-	-	-
Beltola Fery Ghat (Avg)	147	141	145	142.5	143	140	-	-	-	-	-	-
EQS Industries (150 mg/l)												

Table-171. Level of TSS (mg/l) of Kirtankhola River Water in 2017

Location of Kirtankhola river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Launch Ghat (S)	20	20	20	20	20	20	35	36	28	22	-	19
Launch Ghat (M)	20	20	20	23	20	20	28	35	31	20	-	22
Launch Ghat (Avg)	20	20	20	21.5	20	20	31.5	35.5	29.5	21	-	20.5
Dopdopia Kheyaghat (S)	20	20	20	19	20	20	30	40	34	20	-	20
Dopdopia Kheyaghat (M)	20	20	20	20	20	20	20	42	36	18	-	18
Dopdopia Kheyaghat (Avg)	20	20	20	19.5	20	20	25	41	35	19	-	19
Beltola Fery Ghat (S)	20	20	20	20	20	20	26	38	29	26	-	22
Beltola Fery Ghat (M)	20	20	20	21	20	20	25	40	30	24	-	21
Beltola Fery Ghat (Avg)	20	20	20	20.5	20	20	25.5	39	29.5	25	-	21.5
EQS Industries (150 mg/l)												

24.0 Tatulia River (Table: 172-179)

Table-172. Level of pH of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	7	-	7.1	-	7	-	7.3	-	7.3	-	7.32
Vadura Launch Ghat (M)	-	7.2	-	7.2	-	7.1	-	7.28	-	7.28	-	7.28
Vadura Launch Ghat (Avg)	-	7.1	-	7.15	-	7.05	-	7.29	-	7.29	-	7.3
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-173. Level of DO (mg/l) of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	7	-	6.8	-	6.7	-	5.6	-	5.8	-	6.15
Vadura Launch Ghat (M)	-	7	-	7	-	6.9	-	5.71	-	5.7	-	6
Vadura Launch Ghat (Avg)	-	7	-	6.9	-	6.8	-	5.65	-	5.75	-	6.07
EQS Fisheries (5 mg/l2)												
EQS Industries (4.5-8 mg/l)												

Table-174. Level of BOD (mg/l) of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	2	-	2	-	2	-	2.7	-	2.1	-	2.1
Vadura Launch Ghat (M)	-	2	-	2	-	2	-	2.4	-	2.15	-	2.15
Vadura Launch Ghat (Avg)	-	2	-	2	-	2	-	2.55	-	2.12	-	2.12
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-175. Level of TDS (mg/l) of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	138	-	130	-	124	-	82	-	86	-	84
Vadura Launch Ghat (M)	-	142	-	134	-	130	-	86	-	84	-	82
Vadura Launch Ghat (Avg)	-	140	-	132	-	127	-	84	-	85	-	83
EQS Industries (≤ 2100 mg/l)												

Table-176. Level of Total Alkalinity (mg/l) of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	146	-	145	-	138	-	-	-	-	-	143
Vadura Launch Ghat (M)	-	148	-	142	-	140	-	-	-	-	-	143.33
Vadura Launch Ghat (Avg)	-	147	-	143.5	-	139	-	-	-	-	-	143.16
EQS Industries (150-600 mg/l)												

Table-177. Level of EC (μ mhos/cm) of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	158	-	154	-	150	-	158.2	-	172	-	168
Vadura Launch Ghat (M)	-	160	-	156	-	152	-	160	-	168	-	164
Vadura Launch Ghat (Avg)	-	159	-	155	-	151	-	159.1	-	170	-	166
EQS Industries (1200 μ mhos/cm)												

Table-178. Level of TS (mg/l) of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	158	-	148	-	146	-	118	-	108	-	104
Vadura Launch Ghat (M)	-	162	-	154	-	150	-	121	-	104	-	98
Vadura Launch Ghat (Avg)	-	160	-	151	-	148	-	119.5	-	106	-	101
EQS Industrial (≤ 2250 mg/l)												



Table-179. Level of Salinity of Tatulia River Water in 2017

Location of Tatulia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Vadura Launch Ghat (S)	-	0	-	0.1	-	0.1	-	-	-	-	-	0.06
Vadura Launch Ghat (M)	-	0	-	0.1	-	0.1	-	-	-	-	-	0.06
Vadura Launch Ghat (Avg)	-	0	-	0.1	-	0.1	-	-	-	-	-	0.06

25.0 Sughanda River (Table: 180-187)

Table-180. Level of pH of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	7	-	7.4	-	6.8	-	7.26	7.31	7.21	-	7.29
Jhalkathi Launch Ghat (M)	-	7.1	-	7.5	-	7	-	7.24	7.36	7.18	-	7.26
Jhalkathi Launch Ghat (Avg)	-	7.	-	7.45	-	6.9	-	7.25	7.33	7.19	-	7.27
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-181. Level of DO (mg/l) of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	7.1	-	7.2	-	7	-	5.8	5.5	5.6	-	5.88
Jhalkathi Launch Ghat (M)	-	7.2	-	7.3	-	7.1	-	5.6	5.6	5.4	-	6.1
Jhalkathi Launch Ghat (Avg)	-	7.15	-	7.25	-	7.0	-	5.7	5.5	5.5	-	5.99
EQS Fisheries (5 mg/lz)												
EQS Industries (4.5-8 mg/l)												

Table-182. Level of BOD (mg/l) of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	2	-	2	-	2	-	2.2	2.2	1.8	-	2.2
Jhalkathi Launch Ghat (M)	-	2	-	2	-	2	-	2.4	2	2	-	2
Jhalkathi Launch Ghat (Avg)	-	2	-	2	-	2	-	2.3	2.1	1.9	-	2.1
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-183. Level of TDS (mg/l) of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	108	-	136	-	104	-	105	106	82	-	88
Jhalkathi Launch Ghat (M)	-	102	-	140	-	100	-	108	111	80	-	84
Jhalkathi Launch Ghat (Avg)	-	105	-	138	-	102	-	106.5	108.5	81	-	86
EQS Industries (≤ 2100 mg/l)												

Table-184. Level of Total Alkalinity (mg/l) of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	146	-	140	-	142	-	-	-	-	-	-
Jhalkathi Launch Ghat (M)	-	148	-	142	-	144	-	-	-	-	-	-
Jhalkathi Launch Ghat (Avg)	-	147	-	141	-	143	-	-	-	-	-	-
EQS Industries (150-600 mg/l)												

Table-185. Level of EC (μ mhos/cm) of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	164	-	175	-	160	-	210	141	165	-	176
Jhalkathi Launch Ghat (M)	-	160	-	181	-	162	-	214	144	160	-	172
Jhalkathi Launch Ghat (Avg)	-	162	-	178	-	161	-	212	142.5	162.5	-	174
EQS Industries (1200 μ mhos/cm)												



Table-186. Level of TS (mg/l) of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	128	-	150	-	124	-	149	74	102	-	104
Jhalkathi Launch Ghat (M)	-	122	-	160	-	120	-	146	76	98	-	102
Jhalkathi Launch Ghat (Avg)	-	125	-	158	-	122	-	147.5	75	100	-	103
EQS Industrial (≤ 2250 mg/l)												

Table-187. Level of Salinity of Sugandha River Water in 2017

Location of Sugandha river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Jhalkathi Launch Ghat (S)	-	0	-	0.1	-	0	-	-	-	-	-	0.03
Jhalkathi Launch Ghat (M)	-	0	-	0.1	-	0	-	-	-	-	-	0.03
Jhalkathi Launch Ghat (Avg)	-	0	-	0.1	-	0	-	-	-	-	-	0.03

26.0 Lohalia River (Table: 188-193)

Table-188. Level of pH of Lohalia River Water in 2017

Location of Lohalia river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Patuakhali Launch Ghat (S)	7.2	-	7.2	-	7.1	-	7.2	-	7.24	-	-	7.18
Patuakhali Launch Ghat (M)	7.4	-	7.3	-	7.2	-	7.18	-	7.26	-	-	7.26
Patuakhali Launch Gt. (Avg)	7.3	-	7.25	-	7.15	-	7.19	-	7.25	-	-	7.22
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-189. Level of DO (mg/l) of Lohalia River Water in 2017

Location of Lohalia river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Patuakhali Launch Ghat (S)	6.8	-	7.1	-	7	-	7	-	5.7	-	-	6.72
Patuakhali Launch Ghat (M)	7.2	-	7.2	-	7.1	-	7.1	-	5.6	-	-	6.85
Patuakhali Launch Gt. (Avg)	7	-	7.15	-	7.05	-	7.05	-	5.7	-	-	6.79
EQS Fisheries (5 mg/l)												
EQS Industries (4.5-8 mg/l)												

Table-190. Level of BOD (mg/l) of Lohalia River Water in 2017

Location of Lohalia river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Patuakhali Launch Ghat (S)	2	-	2	-	2	-	2.2	-	2.1	-	-	2.06
Patuakhali Launch Ghat (M)	2	-	2	-	2	-	2	-	2.3	-	-	2.06
Patuakhali Launch Gt. (Avg)	2	-	2	-	2	-	2.1	-	2.2	-	-	2.06
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-191. Level of TDS (mg/l) of Lohalia River Water in 2017

Location of Lohalia river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Patuakhali Launch Ghat (S)	106	-	102	-	100	-	76	-	68	-	-	90.4
Patuakhali Launch Ghat (M)	100	-	104	-	102	-	78	-	68	-	-	90.4
Patuakhali Launch Gt. (Avg)	103	-	103	-	101	-	77	-	68	-	-	90.4
EQS Industries (≤ 2100 mg/l)												

Table-192. Level of Total Alkalinity (mg/l) of Lohalia River Water in 2017

Location of Lohalia river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Patuakhali Launch Ghat (S)	144	-	144	-	140	-	-	-	-	-	-	142.66
Patuakhali Launch Ghat (M)	146	-	146	-	142	-	-	-	-	-	-	144.66
Patuakhali Launch Gt. (Avg)	145	-	145	-	141	-	-	-	-	-	-	143.66
EQS Industries (150-600 mg/l)												

Table-193. Level of EC ($\mu\text{mhos/cm}$) of Lohalia River Water in 2017

Location of Lohalia river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Pataakhali Launch Ghat (S)	170	-	160	-	154	-	152	-	122	-	-	151.6
Pataakhali Launch Ghat (M)	172	-	162	-	158	-	156	-	136	-	-	156.8
Pataakhali Lanh Gt. (Avg)	171	-	161	-	156	-	154	-	129	-	-	154.2
EQS Industries (1200 $\mu\text{mhos/cm}$)												

27.0 Surma River (Table: 194-199)

Table-194. Level of pH of Surma River Water in 2017

Location of Surma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mendibag Point	-	7.81	7.4	7.4	7.37	7.31	7.24	7.3	-	7.3	7.3	8.8
Kin Bridge Point	-	-	-	-	-	-	-	-	-	7.4	-	8.9
Sheaik Ghat	-	7.63	7.68	7.62	7.1	-	6.69	7.24	7.1	7.1	7.2	8.7
Chhatak	7.4	--	-	7.3	-	7.12	-	6.8	-	7.2	-	-
Kazir Bazar	7.3	-	-	-	7.1	7.27	7.3	7.2	7.2	7.24	-	-
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-195. Level of DO (mg/l) of Surma River Water in 2017

Location of Surma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mendibag Point	-	6.9	6.6	6.7	6.67	6.72	6.67	6.85	-	6.8	6.6	7.1
Kin Bridge Point	-	-	-	-	-	-	-	-	-	6.9	-	6.7
Sheaik Ghat	-	6.7	6.5	6.6	6.71	-	6.5	6.8	6.5	6.6	6.7	6.8
Chhatak	6.2	-	-	6.4	-	6.6	-	6.9	-	6.9	-	-
Kazir Bazar	5.8	-	-	-	6.67	6.57	6.5	6.7	6.6	6.7	-	-
EQS Fisheries (5 mg/l)												
EQS Industries (4.5-8 mg/l)												

Table-196. Level of BOD (mg/l) of Surma River Water in 2017

Location of Surma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mendibag Point	-	2.7	2.4	2.6	2	2.1	2	2.8	-	1.9	2	1.8
Kin Bridge Point	-	-	-	-	-	-	-	-	-	2	-	1.9
Sheaik Ghat	-	2.8	2.6	2.3	1.9	-	2.1	3	2.1	2.1	1.9	1.7
Chhatak	2.7	-	-	2.9	-	2	-	2.9	-	2.3	-	-
Kazir Bazar	2.9	-	-	-	2.1	1.9	1.9	2.5	2.3	2	-	-
EQS Fisheries (≤ 6 mg/l)												
EQS Industries (≤ 50 mg/l)												

Table-197. Level of COD (mg/l) of Surma River Water in 2017

Location of Surma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mendibag Point	-	11	14	15	18	12	13	11	-	13	12	12
Kin Bridge Point	-	-	-	-	-	-	-	-	-	12	-	13
Sheaik Ghat	-	25	12	13	35	-	12	9	11	12	11	11
Chhatak	8	-	-	19	-	11	-	13	-	14	-	-
Kazir Bazar	18	-	-	-	32	9	11	8	12	11	-	-
EQS Industries (≤ 200 mg/l)												

Table-198. Level of TDS (mg/l) of Surma River Water in 2017

Location of Surma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mendibag Point	-	133	149	201	285.4	208	196.5	198	-	178	243	461
Kin Bridge Point	--	-	-	-	-	-	-	-	-	244	-	437
Sheaik Ghat	-	143	206	208	400	-	194	193	196	194.5	206	-
Chhatak	174	-	-	162	-	330	-	211	-	193	-	-
Kazir Bazar	156	-	-	-	331	293	174	194	198	197.5	-	-
EQS Industries (≤ 2100 mg/l)												

Table-199. Level of EC ($\mu\text{mhos/cm}$) of Surma River Water in 2017

Location of Surma river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Mendibag Point	-	133	149	201	285.4	208	196.5	198	-	178	243	461
Kin Bridge Point	-	-	-	-	-	-	-	-	-	244	-	437
Sheaik Ghat	-	143	206	208	400	-	194	193	196	194.5	206	-
Chhatak	174	-	-	162	-	330	-	211	-	193	-	-
Kazir Bazar	156	-	-	-	331	293	174	194	198	197.5	-	-

EQS Industries ($\leq 1200 \mu\text{mhos/cm}$)

28.0 Kushiara River (Table: 200-205)

Table-200. Level of pH of Kushiara River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
BSF Ghat	-	-	-	-	7.6	-	-	-	-	-	-	-
BDR Camp	-	-	-	-	7.56	-	-	-	-	-	-	-
Fenchuganj Point	-	-	-	-	-	-	7.6	-	7.4	-	7.3	-

EQS Fisheries (6.5-8.5)

EQS Industrial (6.0-9.0)

Table-201. Level of DO (mg/l) of Kushiara River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
BSF Ghat	-	-	-	-	6.66	-	-	-	-	-	-	-
BDR Camp	-	-	-	-	6.56	-	-	-	-	-	-	-
Fenchuganj Point	-	-	-	-	-	-	6.8	-	6.9	-	6.8	-

EQS Fisheries (5 mg/l)EQS Industries (4.5-8 mg/l)Table-202. Level of BOD (mg/l) of Kushiara River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
BSF Ghat	-	-	-	-	3	-	-	-	-	-	-	-
BDR Camp	-	-	-	-	2.8	-	-	-	-	-	-	-
Fenchuganj Point	-	-	-	-	-	-	2.1	-	2.1	-	2	-

EQS Fisheries ($\leq 6 \text{ mg/l}$)EQS Industries ($\leq 50 \text{ mg/l}$)Table-203. Level of COD (mg/l) of Kushiara River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
BSF Ghat	-	-	-	-	15	-	-	-	-	-	-	-
BDR Camp	-	-	-	-	16	-	-	-	-	-	-	-
Fenchuganj Point	-	-	-	-	-	-	12	-	12	-	11	-

EQS Industries (200 mg/l)Table-204. Level of TDS (mg/l) of Lohalia River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
BSF Ghat	-	-	-	-	156	-	-	-	-	-	-	-
BDR Camp	-	-	-	-	158	-	-	-	-	-	-	-
Fenchuganj Point	-	-	-	-	-	-	206	-	198	-	201	-

EQS Industries (2100 mg/l)Table-205. Level of EC ($\mu\text{mhos/cm}$) of Kushiara River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
BSF Ghat	-	-	-	-	312	-	-	-	-	-	-	-
BDR Camp	-	-	-	-	316	-	-	-	-	-	-	-
Fenchuganj Point	-	-	-	-	-	-	412	-	396	-	402	-

EQS Industries (1200 $\mu\text{mhos/cm}$)

**29.0 Balu River (Table: 206-215)****Table-206. Level of pH of Balu River Water in 2017**

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	7.52	8.34	8.81	7.55	-	7.51	-	7.26	7.38	-	7.28
Near Hossain Dyeing Ltd. Pagar, Tongi	7.52	7.45	8.26	7.66	7.98	-	7.31	-	7.24	7.37	-	7.21
Near Damra University College, Demra, Dhaka	-	7.68	7.66	7.5	7.5	-	7.18	6.94	-	7.28	7.28	7.28
Near Balu Bridge, 300 feet Road, Dhaka	-	7.83	7.85	7.81	7.81	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	7.52	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	7.68	-	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (6.5-8.5)												
EQS Industrial (6.0-9.0)												

Table-207. Level of DO (mg/l) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	0	0.15	0.15	0.27	-	4.8	-	4.7	4.33	-	0.2
Near Hossain Dyeing Ltd. Pagar, Tongi	0	0	0	0	0.22	-	4.8	-	4.8	3.76	-	0
Near Damra University College, Demra, Dhaka	-	0.25	0.24	2.2	0.6	-	3.1	5.2	-	5.2	5.2	0.5
Near Balu Bridge, 300 feet Road, Dhaka	-	0.18	0.14	2.2	1.15	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	0	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	0	-	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (5 mg/lz)												
EQS Industrial (4.5-8 mg/l)												

Table-208. Level of BOD (mg/l) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apl	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	45.4	54.6	78	46	-	1.1	-	1.2	1.2	-	48
Near Hossain Dyeing Ltd. Pagar, Tongi	14.2	42.4	68.8	84	67	-	1.4	-	2	1.4	-	42
Near Damra University College, Demra, Dhaka	-	36.4	36.6	12.4	12.4	-	3.8	3.8	-	1.2	1.2	7.8
Near Balu Bridge, 300 feet Road, Dhaka	-	38.2	38.3	16.4	16.4	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	11.2	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	12.2	-	-	-	-	-	-	-	-	-	-	-
EQS Fisheries (≤ 6 mg/l)												
EQS Industrial (≤ 50 mg/l)												



Table-209. Level of COD (mg/l) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	197	232	164	154	-	7	-	28	27	-	201
Near Hossain Dyeing Ltd. Pagar, Tongi	61	189	282	200	204	-	7	-	26	15	-	200
Near Damra University College, Demra, Dhaka	-	98	99	36	72	-	26	16	-	10	10	44
Near Balu Bridge, 300 feet Road, Dhaka	-	111	114	44	45	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	54	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	38	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (≤ 200 mg/l)												

Table-210. Level of TDS (mg/l) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	395	971	771	514	-	144.3	-	100.1	130	-	309
Near Hossain Dyeing Ltd. Pagar, Tongi	390	390	1110	513	920	-	76.4	-	95.2	90	-	368
Near Damra University College, Demra, Dhaka	-	391	396	396	396	-	100.9	92.1	-	83.7	83.7	202.1
Near Balu Bridge, 300 feet Road, Dhaka	-	506	510	568	568	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	395	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	391	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (≤ 200 mg/l)												

Table-211. Level of Chloride (mg/l) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	62	62	77	54	-	8	-	8	8	-	24
Near Hossain Dyeing Ltd. Pagar, Tongi	57	57	176	94	72	-	7	-	7	7	-	24
Near Damra University College, Demra, Dhaka	-	56	55	54	30	-	10	8	-	8	10	21
Near Balu Bridge, 300 feet Road, Dhaka	-	73	75	92	28	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	62	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	56	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (150-600 mg/l)												

**Table-212. Level of SS (mg/l) of Balu River Water in 2017**

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	38	210	95	84	-	11	-	26	29	-	50
Near Hossain Dyeing Ltd. Pagar, Tongi	42	42	234	107	115	-	9	-	31	30	-	47
Near Damra University College, Demra, Dhaka	-	40	40	19	90	-	18	32	-	17	17	19
Near Balu Bridge, 300 feet Road, Dhaka	-	196	195	39	37	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	38	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	40	-	-	-	-	-	-	-	-	-	-	-
EQS Industrial (≤ 150 mg/l)												

Table-213. Level of EC (μ mhos/cm) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	702	2116	1454	1027	-	277	-	192.1	259	-	581
Near Hossain Dyeing Ltd. Pagar, Tongi	688	688	2433	1046	1840	-	148	-	182.2	179.7	-	688
Near Damra University College, Demra, Dhaka	-	689	685	685	685	-	203	179	-	166	166	383
Near Balu Bridge, 300 feet Road, Dhaka	-	1012	1015	1123	1123	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	702	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	689	-	-	-	-	-	-	-	-	-	-	-
EQS (1200 μmhos/cm)												

Table-214. Level of T.alkalinity (mg/l) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	210	310	430	430	-	80	-	58	50	-	179
Near Hossain Dyeing Ltd. Pagar, Tongi	230	230	318	314	314	-	60	-	60	42	-	174
Near Damra University College, Demra, Dhaka	-	220	218	232	232	-	80	64	-	42	72	160
Near Balu Bridge, 300 feet Road, Dhaka	-	280	280	354	354	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	210	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	220	-	-	-	-	-	-	-	-	-	-	-
EQS (150 mg/l)												

Table-215. Level of Turbidity (NTU) of Balu River Water in 2017

Location of Kushiara river	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Near Jaber & Jubair Fabrics Ltd. Tongi	-	48	171	50.7	32.6	-	13	-	22.3	28.9	-	42.6
Near Hossain Dyeing Ltd. Pagar, Tongi	52	52	188	53.7	77.7	-	13.3	-	22.8	26.2	-	40.8
Near Damra University College, Demra, Dhaka	-	54	54	9.36	62.4	-	20.5	10.2	-	19.4	19.4	16.7
Near Balu Bridge, 300 feet Road, Dhaka	-	250	250	22.7	17.6	-	-	-	-	-	-	-
Near Fulpukuria Dyeing Ltd. Pagar, Tongi	48	-	-	-	-	-	-	-	-	-	-	-
South Side of Tongi Rail Bridge, Pagar, Tongi	54	-	-	-	-	-	-	-	-	-	-	-
EQS (10 NTU)												



Annex-2

List of Tables for different parameters of Lake Water



I. Gulshan Lake (Table: 216-225)

Table-216. Level of pH of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	7.08	7.02	7.31	7.11	-	6.79	7.32	7.1	-	7.18	7.3	7.44
Near Housing, South Bridge	7.12	7.17	7.34	7.24	-	7.02	7.45	7.17	-	7.21	7.09	7.31
Near Lake View Clinic	7.11	7.09	7.41	7.18	-	7.1	7.72	7.1	-	7.21	7.11	7.36
North Side Gulshan Baridhara Lake	7.55	7.35	7.82	7.23	-	7.11	7.74	7.08	-	7.11	7.35	8.05
Taltola Shooting Complex, South Side	7.52	7.4	7.53	7.41	-	7.14	7.58	6.88	-	7.16	7.05	7.72
North Side of Gulshan-1, Gudara Ghat	7.34	7.53	7.41	7.11	-	7.08	7.14	6.91	-	6.94	7.09	7.23
South Side of Gulshan-1, Gudara Ghat	7.39	7.81	7.48	7.18	-	7.17	7.15	6.87	-	7.17	7.09	7.34
Gulshan-Bonani Connection Bridge	7.41	7.73	7.48	7.21	-	7.18	7.13	7.2	-	6.92	7.31	7.61
Bonani Bridge	7.38	7.68	7.31	7.23	-	7.12	7.19	7.18	-	6.98	7.1	7.85
EQS for fisheries 6.5-8.5												

Table-217. Level of DO (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	1.4	0.8	3.4	2.4	-	0	0	11.41	-	6.8	0.1	2.9
Near Housing, South Bridge	2.1	4.1	10.8	5.6	-	7.8	6.6	11.4	-	7.6	1	2
Near Lake View Clinic	1.2	3.8	7.2	10.4	-	9	8.6	10.8	-	8.6	2	5
North Side Gulshan Baridhara Lake	4.5	8.2	9.4	8.8	-	6.7	6.7	7.6	-	10.5	2	12
Taltola Shooting Complex, South Side	4.2	9.1	10.8	5.2	-	4.8	7.5	7.1	-	12.2	2	3.8
North Side of Gulshan-1, Gudara Ghat	4	2.1	7.9	4.1	-	0	4.3	2.49	-	2.8	1.5	0
South Side of Gulshan-1, Gudara Ghat	4.6	4.1	7.8	3.9	-	3.1	0	2.53	-	3.2	2	0
Gulshan-Bonani Connection Bridge	4	3.8	3.4	6.1	-	5.4	2.9	7.85	-	1.2	2	8.8
Bonani Bridge	3.8	3.1	3.2	1.8	-	5.4	4.9	1.19	-	2.4	0.6	10.3
EQS for fisheries ≥ 5 mg/l												



Table-218. Level of BOD (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	18.2	72	14.2	24	-	20	38.4	22	-	36	18	39
Near Housing, South Bridge	19.4	60	16.4	28	-	61	34.8	20	-	36.6	24	36
Near Lake View Clinic	22.4	80	12.8	30.8	-	16	21	22	-	35.6	18	39
North Side Gulshan Baridhara Lake	26.6	72	18.4	26.4	-	22	20.8	24	-	32.4	16	33
Taltola Shooting Complex, South Side	25.4	68	20.8	28	-	15	11.4	16	-	33	21	31
North Side of Gulshan-1, Gudara Ghat	12.8	54	20.4	24.8	-	16	15.6	12	-	36	12	30
South Side of Gulshan-1, Gudara Ghat	14.8	55	21.8	32.4	-	29	15	20	-	29.4	16	32
Gulshan-Bonani Connection Bridge	12.8	45	22.4	30.8	-	12	6	18	-	30	18	33
Bonani Bridge	11.2	38	18.4	32.4	-	35	16.8	16	-	32.4	21	38
EQS for fisheries 6≤mg/l												

Table-219. Level of COD (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	70	172	56	76	-	123	108	61	-	88	59	115
Near Housing, South Bridge	68	134	72	81	-	186	72	56	-	92	66	115
Near Lake View Clinic	82	182	68	102	-	108	59	57	-	98	49	143
North Side Gulshan Baridham Lake	103	180	78	92	-	130	60	60	-	93	42	103
Taltola Shooting Complex, South Side	104	176	92	98	-	123	51	34	-	88	45	108
North Side of Gulshan-1, Gudara Ghat	34	180	94	78	-	89	64	20	-	81	25	100
South Side of Gulshan-1, Gudara Ghat	52	182	92	90	-	113	81	54	-	88	44	98
Gulshan-Bonani Connection Bridge	45	135	100	96	-	110	19.7	52	-	76	48	123
Bonani Bridge	58	140	91	92	-	110	27.1	49	-	90	52	111
EQS for wastewater after treatment from industrial units 200 mg/l												



Table-220. Level of TDS (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	273	310	310	280	-	245	196.6	144.2	-	168.1	221	251
Near Housing, South Bridge	278	300	408	275	-	251	189.7	146.2	-	166.5	110	250
Near Lake View Clinic	276	300	272	310	-	246	161.8	144.8	-	161.5	109	246
North Side Gulshan Baridhara Lake	302	315	270	320	-	252	172.1	140	-	174.3	39	230
Taltola Shooting Complex, South Side	297	321	270	290	-	313	193.4	153.1	-	178.1	45	440
North Side of Gulshan-1, Gudara Ghat	365	330	310	285	-	312	177.3	154.4	-	207.6	46	434
South Side of Gulshan-1, Gudara Ghat	382	310	350	240	-	259	189.4	146.1	-	201.2	48	239
Gulshan-Bonani Connection Bridge	360	310	340	255	-	318	188.8	147	-	201.4	31	192.6
Bonani Bridge	378	300	355	265	-	258	165.3	145	-	207.1	35	208
EQS for wastewater after treatment from industrial units 2100 mg/l												

Table-221. Level of Turbidity (NTU) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	76	78	29.8	42	-	58.1	70	26.1	-	44.5	49.2	40.4
Near Housing, South Bridge	74	76	30.2	45	-	96.7	66	25.9	-	43.8	46.8	41
Near Lake View Clinic	82	82	27.6	38	-	43.3	72.2	26.4	-	44.2	45.6	42.6
North Side Gulshan Baridhara Lake	78	82	24.8	50	-	76	28.4	25.8	-	43.8	16.3	44.2
Taltola Shooting Complex, South Side	76	88	29.6	40	-	41.9	38.8	26.2	-	40.7	21.5	28.5
North Side of Gulshan-1, Gudara Ghat	77	81	28.7	42	-	34.4	42	18.4	-	38.8	32.4	32.4
South Side of Gulshan-1, Gudara Ghat	78	81	32	32.2	-	54.6	41	16.4	-	40.8	23.2	28.5
Gulshan-Bonani Connection Bridge	77	80	30	34	-	41	24	14.8	-	40.2	19.4	41.2
Bonani Bridge	76	79	34.2	34	-	60.7	34.8	20.2	-	41	29.6	43.1
EQS for wastewater after treatment from industrial units 10 NTU												

Table-222. Level of Chloride (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	40	34	29	34	-	15	18	20	-	24	30	27
Near Housing, South Bridge	42	33	30	32	-	17	12	19	-	25	28	26
Near Lake View Clinic	36	33	25	30	-	20	13	20	-	25	25	27
North Side Gulshan Baridhara Lake	55	35	28	28	-	21	13	18	-	24	24	28
Taltola Shooting Complex, South Side	43	35	27	29	-	24	16	20	-	26	22	21
North Side of Gulshan-1, Gudara Ghat	48	36	25	30	-	24	13	21	-	27	34	24
South Side of Gulshan-1, Gudara Ghat	45	38	30	31	-	25	14	20	-	25	24	22
Gulshan-Bonani Connection Bridge	42	37	30	32	-	20	11	16	-	28	24	24
Bonani Bridge	48	36	28	31	-	22	12	19	-	27	27	36
EQS for wastewater after treatment from industrial units 150-600 mg/l												

Table-223. Level of SS (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	31	78	48	65	-	82	72	80	-	118	111	156
Near Housing, South Bridge	29	82	52	70	-	94	68	78	-	121	110	154
Near Lake View Clinic	30	30	48	60	-	71	81	82	-	120	109	152
North Side Gulshan Baridhara Lake	28	81	47	70	-	93	32	80	-	121	39	78
Taltola Shooting Complex, South Side	26	80	52	66	-	54	41	80	-	110	45	103
North Side of Gulshan-1, Gudara Ghat	28	76	44	65	-	51	44	34	-	118	46	110
South Side of Gulshan-1, Gudara Ghat	26	86	56	49	-	52	43	29	-	120	48	78
Gulshan-Bonani Connection Bridge	28	76	48	51	-	61	25	29	-	118	31	85
Bonani Bridge	38	79	45	51	-	66	38	59	-	117	35	78
EQS for wastewater after treatment from industrial units 150 mg/l												



Table-224. Level of Total Alkalinity (mg/l) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	292	280	180	170	-	190	164	72	-	128	170	220
Near Housing, South Bridge	290	290	170	180	-	200	156	128	-	130	166	240
Near Lake View Clinic	292	278	190	210	-	186	168	134	-	132	168	220
North Side Gulshan Baridhara Lake	294	290	180	190	-	180	148	124	-	134	170	220
Taltola Shooting Complex, South Side	286	294	182	170	-	178	160	108	-	138	172	240
North Side of Gulshan-1, Gudara Ghat	290	288	168	180	-	224	136	110	-	132	170	210
South Side of Gulshan-1, Gudara Ghat	294	276	172	190	-	266	192	120	-	140	160	270
Gulshan-Bonani Connection Bridge	292	272	158	170	-	240	132	124	-	152	170	270
Bonani Bridge	288	282	162	180	-	200	148	128	-	150	168	240
EQS for wastewater after treatment from industrial units 150 mg/l												

Table-225. Level of EC (μ mhos/cm) of Gulshan Lake Water in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Near United Hospital, Kalachadpur	534	567	610	560	-	496	394	284	-	336	430	468
Near Housing, South Bridge	541	543	812	550	-	507	382	286	-	332	415	468
Near Lake View Clinic	538	544	540	620	-	498	324	284	-	305	405	459
North Side Gulshan Baridhara Lake	591	567	530	640	-	507	346	280	-	328	361	430
Taltola Shooting Complex, South Side	588	588	530	580	-	626	389	297	-	336	346	453
North Side of Gulshan-1, Gudara Ghat	711	605	614	570	-	621	357	299	-	391	550	809
South Side of Gulshan-1, Gudara Ghat	743	605	690	480	-	517	380	284	-	388	384	799
Gulshan-Bonani Connection Bridge	718	618	680	510	-	634	378	285	-	382	389	447
Bonani Bridge	724	620	710	530	-	514	332	284	-	389	410	362
EQS for wastewater after treatment from industrial units 1200 μ mhos/cm												



II. Dhanmondi Lake (Table: 226)

Table-226: Level of Different Parameters of Dhanmondi Lake Water in 2017

Sampling Location	Parameters	Months			EQS
		January	February	September	
8 No. Road Bridge	pH	7.4	7.39	7.1	6.5-8.5 for fisheries
Near Gigatola Pilkhana More		7.36	7.31	7.41	
Near Dhanmondi-32 Bangabandhu Jadughor		7.7	7.25	8.54	
Near Dhanmondi-32 Bridge		7.26	7.5	8.4	
8 No. Road Bridge	DO	6.53	6.4	6.23	≥5 mg/l for fisheries
Near Gigatola Pilkhana More		4.6	5.8	6.41	
Near Dhanmondi-32 Bangabandhu Jadughor		6.9	4.68	6.75	
Near Dhanmondi-32 Bridge		4.4	5.8	6.24	
8 No. Road Bridge	BOD	1.5	2.1	4.4	≤6 mg/l for fisheries
Near Gigatola Pilkhana More		4.4	2	4.6	
Near Dhanmondi-32 Bangabandhu Jadughor		1.68	1.8	4.2	
Near Dhanmondi-32 Bridge		2.56	2	3.8	
8 No. Road Bridge	COD	-	-	12	200 mg/l for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		-	-	12	
Near Dhanmondi-32 Bangabandhu Jadughor		-	-	8	
Near Dhanmondi-32 Bridge		-	-	9	
8 No. Road Bridge	TDS	161.7	175.7	92.3	2100 mg/l for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		174.3	180	93.9	
Near Dhanmondi-32 Bangabandhu Jadughor		155.6	167	106	
Near Dhanmondi-32 Bridge		184.2	162.4	100.6	
8 No. Road Bridge	SS	12	12	15	150 mg/l for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		16	15	20	
Near Dhanmondi-32 Bangabandhu Jadughor		14	20	32	
Near Dhanmondi-32 Bridge		18	18	21	
8 No. Road Bridge	Chloride	40	27	18	150-600 mg/l for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		38	28	18	
Near Dhanmondi-32 Bangabandhu Jadughor		35	28	20	
Near Dhanmondi-32 Bridge		32	29	20	
8 No. Road Bridge	Turbidity	2.8	2.86	9.16	10 NTU for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		2.3	2.45	8.36	
Near Dhanmondi-32 Bangabandhu Jadughor		2.4	2.4	12.8	
Near Dhanmondi-32 Bridge		2.6	2.3	7.4	
8 No. Road Bridge	EC	294	327	189.7	1200 μmhos/cm for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		317	335	192.5	
Near Dhanmondi-32 Bangabandhu Jadughor		283	312	215.7	
Near Dhanmondi-32 Bridge		335	303	204.6	
8 No. Road Bridge	T. Alkalinity	92	120	70	150 mg/l for wastewater after treatment from industrial units
Near Gigatola Pilkhana More		94	120	76	
Near Dhanmondi-32 Bangabandhu Jadughor		92	110	82	
Near Dhanmondi-32 Bridge		86	100	80	



III. Hatir Jheel Lake (Table: 227)

Table-227: Level of Different Parameter of of Hatir Jheel Lake Water in 2017

Sampling Location	Parameters	Months				EQS
		January	February	September	November	
Badda-Gulshan Link Road Bridge	pH	7.62	8	7.29	7.68	6.5-8.5 for fisheries
Raampura Bridge		7.83	7.83	7.15	7.99	
FDC More Bridge		7.65	7.72	6.93	7.6	
Badda-Gulshan Link Road Bridge	DO	2.5	4.65	9.76	3.3	≥5 mg/l for fisheries
Raampura Bridge		1.53	3.78	2.11	5	
FDC More Bridge		2.11	4.25	3.87	0	
Badda-Gulshan Link Road Bridge	BOD	29.1	16	14.8	6	≤6 mg/l for fisheries
Raampura Bridge		21.9	18	12.6	12	
FDC More Bridge		18.2	8.9	16.6	3	
Badda-Gulshan Link Road Bridge	COD	75	48	45	22	200 mg/l for wastewater after treatment from industrial units
Raampura Bridge		68	52	36	36	
FDC More Bridge		66	38	48	12	
Badda-Gulshan Link Road Bridge	TDS	315	326	192.9	193.3	2100 mg/l for wastewater after treatment from industrial units
Raampura Bridge		310	352	205	173.2	
FDC More Bridge		297	343	214.4	226	
Badda-Gulshan Link Road Bridge	SS	18	40	49	49	150 mg/l for wastewater after treatment from industrial units
Raampura Bridge		22	38	64	64	
FDC More Bridge		20	32	43	43	
Badda-Gulshan Link Road Bridge	Chloride	50	50	31	31	150-600 mg/l for wastewater after treatment from industrial units
Raampura Bridge		52	49	24	24	
FDC More Bridge		50	50	32	32	
Badda-Gulshan Link Road Bridge	Turbidity	12.2	25	37	37	10 NTU for wastewater after treatment from industrial units
Raampura Bridge		12.4	22	32.9	32.9	
FDC More Bridge		13.1	25	26.6	26.6	
Badda-Gulshan Link Road Bridge	EC	574	599	390	364	1200µmohos/cm for wastewater after treatment from industrial units
Raampura Bridge		565	646	411	326	
FDC More Bridge		540	634	429	421	
Badda-Gulshan Link Road Bridge	T. Alkalinity	230	240	162	162	150 mg/l for wastewater after treatment from industrial units
Raampura Bridge		242	246	158	158	
FDC More Bridge		214	240	160	160	



Annex-3

List of Tables for different parameters of Ground Water

IV. Ground Water (Deep Tubewell) in Chittagong district (Table: 228-233)

Table-228. Level of pH of Ground Water at Chittagong District in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
MES College Area	7.2	6.7	6.7	6.6	7.1	7	6.7	7.2	6.7	6.8	7.3	6.5
USTC Area	6.5	7.7	7.2	8	7	7.2	7.5	7.4	7.3	7.1	7.5	7.5
Nsirabad 2 No. Gate Area	6.8	7.3	7	7.5	6.9	6.6	7	6.9	7.1	7.7	6.8	6.9
Chittagong Polytechnic Institute Area	7.7	6.7	6.9	8.1	6.6	6.9	6.8	7.3	6.9	8.1	6.5	6.9
Chadgaon Residential Area	8.1	7.5	7.8	6.6	7.4	6.8	8	7.1	6.5	7.2	7.4	7.5
City College Area	6.6	7.8	7.5	7	6.8	6.6	7.6	7.4	7	7.5	7.2	7.1
Agrabad Women College Area	7.3	7.1	7.5	7.5	7	7.5	7	7.1	7.5	6.9	6.7	7.5
CEPZ Area	7.7	8.3	6.9	6.7	6.9	8.2	8.1	6.8	6.5	6.6	7.6	6.6
EQS for Drinking (6.5-8.5)												

Table-229. Level of TDS (mg/l) of Ground Water at Chittagong District in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
MES College Area	7.2	6.7	6.7	6.6	7.1	7	6.7	7.2	6.7	6.8	7.3	6.5
USTC Area	6.5	7.7	7.2	8	7	7.2	7.5	7.4	7.3	7.1	7.5	7.5
Nsirabad 2 No. Gate Area	6.8	7.3	7	7.5	6.9	6.6	7	6.9	7.1	7.7	6.8	6.9
Chittagong Polytechnic Institute Area	7.7	6.7	6.9	8.1	6.6	6.9	6.8	7.3	6.9	8.1	6.5	6.9
Chadgaon Residential Area	8.1	7.5	7.8	6.6	7.4	6.8	8	7.1	6.5	7.2	7.4	7.5
City College Area	6.6	7.8	7.5	7	6.8	6.6	7.6	7.4	7	7.5	7.2	7.1
Agrabad Women College Area	7.3	7.1	7.5	7.5	7	7.5	7	7.1	7.5	6.9	6.7	7.5
CEPZ Area	7.7	8.3	6.9	6.7	6.9	8.2	8.1	6.8	6.5	6.6	7.6	6.6
EQS for Drinking (1000 mg/l)												

Table-230. Level of Chloride (mg/l) of Ground Water at Chittagong District in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
MES College Area	55	72	55	66	44	61	83	83	77	100	66	38
USTC Area	95	61	83	50	88	85	50	55	88	55	77	100
Nsirabad 2 No. Gate Area	66	33	27	50	50	44	77	38	50	44	50	44
Chittagong Polytechnic Institute Area	44	50	38	55	61	55	61	38	55	94	55	105
Chadgaon Residential Area	61	100	61	88	111	83	84	105	66	72	77	122
City College Area	50	83	50	61	100	94	94	100	94	55	88	105
Agrabad Women College Area	100	44	22	50	50	38	105	61	33	44	61	150
CEPZ Area	83	55	72	72	72	72	77	83	61	88	50	33
EQS for Drinking (150-600 mg/l)												

Table-231. Level of EC ($\mu\text{mhos/cm}$) of Ground Water at Chittagong district in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
MES College Area	340	339	315	312	330	332	339	339	348	287	330	298
USTC Area	290	325	276	290	300	290	325	325	317	340	313	335
Nsirabad 2 No. Gate Area	230	160	150	167	153	130	160	160	170	210	199	163
Chittagong Polytechnic Institute Area	150	168	135	155	174	161	168	168	140	145	172	140
Chadgaon Residential Area	116	270	263	262	264	250	270	270	300	265	268	250
City College Area	250	310	318	280	301	285	310	310	330	281	310	196
Agrabad Women College Area	310	142	125	145	126	125	142	142	115	154	122	170
CEPZ Area	345	226	236	200	235	155	226	226	259	260	220	245
EQS for Industries (1200 $\mu\text{mhos/cm}$)												

Table-232. Level of Iron (mg/l) of Ground Water at Chittagong district in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
MES College Area	0.23	0.13	0.1	0.09	0.12	0.15	0.17	0.1	0.1	0.23	0.22	0.21
USTC Area	0.16	0.1	0.15	0.15	0.1	0.11	0.15	0.15	0.15	0.17	0.16	0.18
Nsirabad 2 No. Gate Area	0.18	0.24	0.2	0.18	0.25	0.3	0.34	0.28	0.2	0.3	0.2	0.3
Chittagong Polytechnic Institute Area	0.3	0.06	0.24	0.45	0.37	0.55	0.5	0.66	0.44	0.55	0.58	0.56
Chadgaon Residential Area	0.11	0.43	0.4	0.23	0.4	0.45	0.33	0.45	0.47	0.25	0.45	0.41
City College Area	0.2	0.12	0.1	0.1	0.15	0.08	0.22	0.1	0.1	0.16	0.1	0.06
Agrabad Women College Area	0.07	0.23	0.21	0.25	0.27	0.2	0.13	0.2	0.25	0.2	0.2	0.16
CEPZ Area	0.43	0.13	0.09	0.08	0.18	0.15	0.1	0.17	0.17	0.28	0.28	0.1
EQS for Drinking (0.3-1 mg/l)												

Table-233. Level of Hardness (mg/l) of Ground Water at Chittagong District in 2017

Location of Gulshan Lake	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
MES College Area	134	134	115	120	135	127	130	167	142	166	138	155
USTC Area	176	154	167	145	155	151	167	159	162	140	149	130
Nsirabad 2 No. Gate Area	158	155	150	150	159	160	150	150	150	170	157	156
Chittagong Polytechnic Institute Area	140	173	166	175	171	165	175	178	169	162	173	163
Chadgaon Residential Area	172	163	134	158	160	155	160	166	160	153	162	156
City College Area	143	144	140	140	140	140	140	145	140	147	146	150
Agrabad Women College Area	155	150	125	167	155	152	155	162	155	162	150	177
CEPZ Area	160	175	170	156	170	169	170	170	173	180	172	164
EQS for Drinking (200-500 mg/l)												

V. Ground Water (Deep Tubewell) in Khulna district (Table: 234-239)

Table-234. Level of pH of Ground Water at Khulna district in 2017

Locations of Khulna	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Divisional Commissioner Office, Boyra	7.62	7.58	7.52	7.54	7.52	7.36	7.38	7.36	7.32	7.36	7.4	7.4
Govt. Girls College, Boyra	7.33	7.33	7.34	7.36	7.36	7.25	7.32	7.32	7.31	7.3	7.4	7.4
Khulna Public College, Boyra	7.54	7.52	7.51	7.46	7.41	7.32	7.38	7.36	7.35	7.35	7.4	7.4
Boyra Bazar More, Boyra	7.62	7.66	7.61	7.58	7.52	7.52	7.52	7.53	7.44	7.42	7.41	7.38
Aizer More, Boyra	7.33	7.34	7.38	7.36	7.38	7.38	7.3	7.3	7.31	7.22	7.28	7.28
Rupsha Bus Stand, Rupsha	7.48	7.42	7.44	7.44	7.46	7.46	7.46	7.42	7.44	7.38	7.3	7.26
Natan Bazar, Rupsha	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.58	7.42	7.42	7.42
Govt. Comercial College, Sonadanga	7.54	7.56	7.54	7.54	7.54	7.54	7.51	7.52	7.45	7.4	7.4	7.42
Sonadanga Bus Stand, Sonadanga	7.51	7.51	7.56	7.53	7.52	7.52	7.44	7.46	7.43	7.43	7.43	7.43
Sarjical Clinic, Sonadanga	7.54	7.52	7.53	7.53	7.55	7.55	7.51	7.44	7.48	7.44	7.41	7.44
Govt. B.L College, Daulatpur	7.42	7.46	7.44	7.44	7.44	7.34	7.39	7.39	7.36	7.34	7.32	7.32
KUET University Main Gate, Fulbari Gate	7.61	7.63	7.62	7.63	7.64	7.24	7.29	7.32	7.27	7.29	7.36	7.36
Gollamari Bus Stand, Gollamari	7.61	7.64	7.64	7.65	7.64	7.66	7.56	7.56	7.51	7.56	7.44	7.41
Govt. Mohasin College, Khalishpur	7.22	7.36	7.38	7.38	7.34	7.31	7.37	7.36	7.32	7.32	7.3	7.3
Moylapota More	7.53	7.56	7.56	7.58	7.52	7.52	7.51	7.51	7.44	7.41	7.36	7.32
Nirala More	7.42	7.46	7.46	7.46	7.46	7.42	7.44	7.44	7.46	7.41	7.41	7.38
Islami Bank Hospital, Santidham Mor	7.51	7.58	7.58	7.52	7.52	7.48	7.42	7.42	7.43	7.4	7.34	7.3
Seba Clinic, Sher-E-Bangal Road	7.36	7.38	7.38	7.36	7.33	7.36	7.31	7.31	7.31	7.34	7.34	7.34
Jin Hall, Sib Bary	7.42	7.42	7.44	7.46	7.46	7.46	7.48	7.48	7.48	7.48	7.4	7.46
Khulna University, Vaskarja Chattar	7.53	7.58	7.58	7.58	7.58	7.54	7.54	7.54	7.52	7.48	7.42	7.42
Sarkit House	7.41	7.43	7.42	7.42	7.43	7.19	7.22	7.26	7.28	7.28	7.28	7.22
Govt. Khulna Gila School	-	-	7.43	7.43	7.43	7.24	7.26	7.26	7.26	7.26	7.26	7.22
D.C Office	7.4	7.42	7.42	7.42	7.44	7.25	7.28	7.29	7.22	7.22	7.22	7.25
Dak Banglo More	7.36	7.38	7.41	7.41	7.41	7.32	7.3	7.3	7.35	7.35	7.35	7.25
Govt. Azom Khan Commerce College	7.28	7.34	7.36	7.36	7.38	7.38	7.38	7.33	7.38	7.38	7.38	7.32
Govt. Majid Memorial City College	7.42	7.46	7.46	7.46	7.46	7.42	7.42	7.42	7.42	7.42	7.42	7.43

EQS (6.5-8.5) for drinking

Table-235. Level of EC ($\mu\text{mhos/cm}$) of Ground Water at Khulna District in 2017

Locations of Khulna	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Divisional Commissioner Office, Boyra	1862	1880	2212	2240	2370	2378	2402	2442	2436	2240	2210	1948
Govt. Girls College, Boyra	1784	1788	1972	1988	2186	2198	2244	2552	2242	2144	2102	2087
Khulna Public College, Boyra	1845	1850	1916	1926	2078	2084	2126	2128	2122	2140	2104	2114
Boyra Bazar More, Boyra	1870	1870	1942	2012	2108	2144	2178	2180	2180	2088	2024	2004
Aizer More, Boyra	1866	1874	1922	2028	2204	2265	2292	2299	2298	2212	2234	2202
Rupsha Bus Stand, Rupsha	1772	1744	1843	1868	2046	2046	2052	2060	2058	2012	2008	1976
Natin Bazar, Rupsha	1820	1828	1854	1874	1972	1972	1995	1995	1999	1909	1902	1902
Govt. Commercial College, Sonadanga	1692	1698	1846	1908	2092	2092	2148	2155	2154	2104	2078	2078
Sonadanga Bus Stand, Sonadanga	1682	1694	1742	1802	2022	2022	2036	2048	2040	2040	2048	2023
Surgical Clinic, Sonadanga	1688	1694	1724	1788	1978	1986	2042	2044	2046	2002	2016	2016
Govt. B.I. College, Daulatpur	1884	1894	1954	1980	2094	2098	2145	2166	2152	2112	2094	2088
KUET University Main Gate, Fulbari Gate	1844	1858	1940	2024	2244	2252	2306	2326	2322	2280	2232	2154
Gollamari Bus Stand, Gollamari	1752	1786	1824	1844	1996	2034	2068	2088	2061	2014	2014	2014
Govt. Mohasin College, Khalishpur	1782	1798	2045	2062	2062	2076	2114	2128	2108	2054	2012	1978
Moylapota More	1890	1890	1912	1968	2066	2135	2166	2173	2155	2103	2124	2104
Nirala Mere	1692	1780	1818	1840	1974	1986	2047	2045	2048	2006	2032	2032
Islami Bank Hospital, Santidham Mor	1888	1894	1942	1996	2076	2144	2164	2170	2160	2098	2012	2012
Seba Clinic, Sher-E-Bangal Road	1814	1842	1870	1894	2042	2087	2126	2139	2120	2088	2088	2056
Jia Hall, Sib Bary	1676	1698	1742	1786	2044	2069	2094	2094	2094	2014	2034	2012
Khulna University, Vaskarja Chattar	1866	1878	1884	1896	2006	2022	2038	2058	2038	2008	2008	2008
Sarkit House	1802	1822	1842	1842	2044	2064	2078	2082	2088	2006	1986	1980
Govt. Khulna Gila School	--	-	1846	1846	1995	1944	1958	1978	1964	1914	1902	1902
D.C Office	1868	1872	1888	1888	1988	2043	2056	2066	2054	2002	2002	1986
Dak Banglo More	1760	1824	1836	1836	1946	1984	1992	2025	2012	1988	1980	1980
Govt. Azom Khan Commerce College	1762	1794	1843	1843	1942	1964	1966	2044	1968	1922	1922	1920
Govt. Majid Memorial City College	1766	1788	1814	1814	1946	1984	1980	2043	1980	1913	1926	1926
EQS for wastewater after treatment from industrial units 1200 $\mu\text{mhos/cm}$												



Table-236. Level of Chloride (mg/l) of Ground Water at Khulna District in 2017

Locations of Khulna	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Divisional Commissioner Office, Boyra	388	364	388	386	386	386	302	302	302	244	244	238
Govt. Girls College, Boyra	394	394	394	392	396	398	326	326	326	292	292	288
Khulna Public College, Boyra	386	382	382	380	380	388	346	346	346	306	224	224
Boyra Bazar More, Boyra	378	372	374	372	377	370	314	314	314	286	244	240
Aizer More, Boyra	382	386	390	392	392	392	302	302	302	288	212	212
Rupsha Bus Stand, Rupsha	310	312	310	310	332	332	322	320	322	276	270	270
Natun Bazar, Rupsha	340	342	340	340	340	340	308	308	306	272	272	272
Govt. Comercial College, Sonadanga	334	334	332	336	338	340	302	306	302	278	222	216
Sonadanga Bus Stand, Sonadanga	362	362	360	362	362	362	343	343	343	266	260	260
Sarjical Clinic, Sonadanga	348	348	348	348	348	348	329	334	329	296	296	290
Govt. B.L College, Daulatpur	402	408	402	402	402	412	388	388	388	296	290	290
KUET University Main Gate, Fulhari Gate	372	376	356	356	350	350	322	322	322	288	288	280
Gollamari Bus Stand, Gollamari	330	330	336	336	336	336	324	320	324	304	289	289
Govt. Mobasin College, Khalishpur	389	394	396	396	398	404	348	348	348	302	276	270
Moylapota More	352	356	352	356	356	366	343	343	343	298	278	278
Nirala More	324	334	334	334	334	334	344	344	344	286	286	282
Islami Bank Hospital, Santidham Mor	344	344	343	343	343	360	322	320	322	266	244	244
Seba Clinic, Sher-E-Bangal Road	312	316	312	302	302	324	321	318	321	286	280	280
Jia Hall, Sib Bary	352	356	356	358	358	358	316	316	316	302	302	287
Khulna University, Vaskarja Chattar	360	360	362	362	362	360	321	321	321	292	276	276
Sarkit House	372	376	388	388	386	380	302	318	302	277	277	277
Govt. Khulna Gila School	-	-	362	362	364	366	312	314	308	282	282	282
D.C Office	352	352	366	366	362	364	318	322	310	286	286	286
Dak Banglo More	326	324	324	324	322	322	312	312	312	302	302	302
Govt. Azom Khan Commerce College	340	344	348	348	342	347	302	302	306	286	286	286
Govt. Majid Memorial City College	338	338	338	338	338	334	302	306	302	294	294	294
EQS for wastewater after treatment from industrial units 150-600 mg/l												

Table-237. Level of Total Hardness (mg/l) of Ground Water at Khulna District in 2017

Locations of Khulna	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Divisional Comissioner Office, Boyra	302	304	306	306	310	316	288	286	282	288	280	280
Govt. Girls College, Boyra	328	322	326	326	320	322	306	302	288	280	280	280
Khulna Public College, Boyra	324	318	312	312	312	316	312	312	306	302	284	282
Boyra Bazar More, Boyra	332	336	332	332	332	334	322	322	308	294	294	290
Aizer More, Boyra	318	310	314	314	312	312	298	296	284	274	274	274
Rupsha Bus Stand, Rupsha	302	306	302	302	302	302	289	288	280	274	274	272
Natun Bazar, Rupsha	312	312	314	314	314	314	314	314	310	262	262	262
Govt. Comercial College, Sonadanga	362	364	364	364	364	364	306	306	301	286	286	222
Sonadanga Bus Stand, Sonadanga	336	332	330	330	330	330	304	302	304	296	290	292
Sarjical Clinic, Sonadanga	344	343	343	343	343	344	286	286	289	289	280	280
Govt. B.L College, Daulatpur	288	288	282	282	282	280	288	282	286	292	292	292
KUET University Main Gate, Fulbari Gate	240	244	242	242	242	244	246	246	244	248	242	240
Gollamari Bus Stand, Gollamari	276	282	180	280	280	284	262	266	262	264	264	260
Govt. Mohasin College, Khalishpur	343	330	332	332	332	334	304	304	304	286	280	277
Moylapota More	324	326	326	326	324	324	316	316	310	304	294	292
Nirala More	288	296	296	296	292	296	290	290	294	290	290	290
Islami Bank Hospital, Santidham Mor	310	312	310	310	310	312	302	302	312	302	284	280
Seba Clinic, Sher-E-Bangal Road	314	314	312	312	312	304	296	298	296	290	276	272
Jia Hall, Sib Bary	316	318	316	316	318	318	284	284	280	288	288	288
Khulna University, Vaskarja Chattar	330	336	332	332	332	332	302	308	302	296	290	290
Sarkit House	308	308	302	302	302	306	288	288	282	246	246	240
Govt. Khulna Gila School			310	310	310	310	286	280	286	252	252	252
D.C Office	322	324	322	322	326	322	289	289	292	249	236	232
Dak Banglo More	310	314	316	316	318	324	316	312	316	286	286	286
Govt. Azom Khan Commerce College	310	316	316	316	316	318	318	318	310	289	280	282
Govt. Majid Memorial City College	320	322	328	328	328	328	320	322	320	286	282	282
EQS for wastewater after treatment from industrial units 200-500 mg/l												



Table-238. Level of Iron (mg/l) of Ground Water at Khulna District in 2017

Locations of Khulna	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Divisional Commissioner Office, Boyra	0.4	0.44	0.32	0.42	0.42	0.42	0.4	0.4	0.4	0.44	0.44	0.42
Govt. Girls College, Boyra	0.42	0.46	0.42	0.42	0.42	0.48	0.42	0.42	0.44	0.42	0.42	0.42
Khulna Public College, Boyra	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.44	0.44	0.44	0.44	0.42
Boyra Bazar More, Boyra	0.51	0.53	0.51	0.51	0.51	0.54	0.44	0.4	0.42	0.44	0.44	0.42
Aizer More, Boyra	0.32	0.32	0.36	0.36	0.36	0.36	0.26	0.26	0.26	0.3	0.3	0.3
Rupsha Bus Stand, Rupsha	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.38	0.38	0.3
Natun Bazar, Rupsha	0.54	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.51
Govt. Comercial College, Sonadanga	0.44	0.42	0.42	0.42	0.44	0.42	0.43	0.42	0.42	0.48	0.48	0.42
Sonadanga Bus Stand, Sonadanga	0.42	0.48	0.42	0.42	0.46	0.46	0.46	0.46	0.46	0.48	0.48	0.44
Sarjical Clinic, Sonadanga	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.44	0.42	0.42	0.42	0.39
Govt. B.L. College, Daulatpur	0.41	0.41	0.44	0.44	0.44	0.44	0.42	0.42	0.42	0.42	0.42	0.42
KUET University Main Gate, Fulbari Gate	0.36	0.38	0.32	0.32	0.32	0.34	0.32	0.32	0.32	0.36	0.32	0.32
Gollamari Bus Stand, Gollamari	0.56	0.56	0.52	0.52	0.52	0.58	0.52	0.56	0.52	0.54	0.52	0.47
Govt. Mohasin College, Khalishpur	0.51	0.54	0.56	0.56	0.56	0.52	0.46	0.46	0.46	0.48	0.48	0.44
Moylapota More	0.48	0.48	0.46	0.46	0.46	0.44	0.44	0.42	0.44	0.48	0.48	0.42
Nirala More	0.52	0.52	0.52	0.52	0.52	0.54	0.54	0.56	0.52	0.52	0.52	0.48
Islami Bank Hospital, Santidham Mor	0.32	0.34	0.32	0.32	0.32	0.28	0.32	0.36	0.32	0.36	0.32	0.32
Seba Clinic, Sber-E-Bangal Road	0.42	0.42	0.44	0.44	0.44	0.32	0.34	0.36	0.34	0.39	0.3	0.3
Jia Hall, Sib Bary	0.52	0.54	0.53	0.53	0.53	0.54	0.54	0.6	0.54	0.54	0.54	0.54
Khulna University, Vaskarja Chattar	0.52	0.54	0.54	0.54	0.54	0.54	0.54	0.58	0.56	0.56	0.56	0.56
Sarkit House	0.3	0.36	0.36	0.36	0.36	0.28	0.23	0.23	0.22	0.29	0.29	0.32
Govt. Khulna Gila School			0.36	0.36	0.36	0.36	0.32	0.34	0.32	0.36	0.36	0.36
D.C Office	0.42	0.42	0.44	0.44	0.44	0.44	0.44	0.44	0.42	0.48	0.4	0.42
Dak Banglo More	0.44	0.44	0.44	0.44	0.44	0.44	0.4	0.46	0.4	0.48	0.48	0.48
Govt. Azom Khan Commerce College	0.48	0.48	0.42	0.42	0.42	0.46	0.46	0.46	0.46	0.46	0.46	0.42
Govt. Majid Memorial City College	0.52	0.56	0.56	0.56	0.56	0.52	0.52	0.56	0.56	0.56	0.52	0.53
EQS for wastewater after treatment from industrial units 0.3-1.0 mg/l												



Table-239. Level of Salinity of Ground Water at Khulna District in 2017

Locations of Khulna	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec
Divisional Commissioner Office, Boyra	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Govt. Girls College, Boyra	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Khulna Public College, Boyra	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Boyra Bazar More, Boyra	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aizer More, Boyra	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Rupsha Bus Stand, Rupsha	0	0.1	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.2
Natun Bazar, Rupsha	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Govt. Comercial College, Sonadanga	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sonadanga Bus Stand, Sonadanga	0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Sarjical Clinic, Sonadanga	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Govt. B.L College, Daulatpur	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
KUET University Main Gate, Fulbari Gate	0	0	0	0	0	0	0	0	0	0	0	0
Gollamari Bus Stand, Gollamari	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
Govt. Mohasin College, Khalishpur	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0.1
Moylapota More	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nirala More	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Islami Bank Hospital, Santidham Mor	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Seba Clinic, Sher-E-Bangal Road	0	0	0	0	0	0	0	0	0	0.1	0	0
Jia Hall, Sib Bary	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Khulna University, Vaskarja Chattar	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sarkit House	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Govt. Khulna Gila School			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
D.C Office	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Dak Banglo More	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Govt. Azom Khan Commerce College	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Govt. Majid Memorial City College	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
EQS for wastewater after treatment from industrial units 400 ppt												



VI. Ground Water (Deep Tubewell) in Barisal district (Table: 240-241)

Table-240: Ground Water quality (pH, EC) at Barisal district in 2017

Locations /Parameters	pH						EC					
	Jan	Jun	Aug	Sep	Oct	Dec	Jan	Jun	Aug	Sep	Oct	Dec
Locations of Barisal District												
DC Office	7	7.1	7.2	7.31	-	-	216	210	228	231	-	-
Upozila Office	7	7.1	7.26	7.24	7.3	7.51	222	217	238	240	628	458
Sadar Hospital	7.2	7	7.27	7.26	7.3	7.38	218	217	240	230	641	442
Sher-E-Bangla Medical College Hospital	7.4	7.3	7.18	7.21	7.2	-	226	214	228	238	636	-
BM College, Sadar	7.2	7.1	7.31	7.18	7.3	7.41	224	212	229	242	624	454
Syed Hatim Ali Govt. College	7.4	7.1	-	-	-	-	220	210	-	-	-	-
Barisal Zila School	7.4	7.2	7.16	7.22	7.3	7.48	226	218	226	246	633	460
Natullabad Bus Stand	7.1	7.3	7.3	7.29	7.3	7.46	216	211	225	261	627	455
Chowmatha Bazar, Sadar	7.1	7.3	7.42	7.36	7.2	7.39	216	212	224	258	625	456
Battala Bazar, Sadar	7	7	7.24	7.34	7.2	-	218	213	229	249	630	-
EQS	6.5-8.5						1200 µmhos/cm					

Table-241: Ground Water quality (TDS, T. Alkalinity, T. Hardness) at Barisal district in 2017

Locations /Parameters	TDS				T. Alkalinity				T. Hardness			
	Aug	Sep	Oct	Dec	Aug	Sep	Oct	Dec	Aug	Sep	Oct	Dec
Locations of Barisal District												
DC Office	116	116	-	-	24	22	-	-	130	120	-	-
Upozila Office	125	122	314	228	28	18	26	26	120	130	130	120
Sadar Hospital	120	118	321	221	26	24	28	24	100	110	110	110
Sher-E-Bangla Medical College Hospital	118	120	318	-	22	26	30	-	110	140	120	-
BM College, Sadar	118	124	312	226	27	20	22	28	130	110	110	120
Syed Hatim Ali Govt. College	-	-	-	-	-	-	-	-	-	-	-	-
Barisal Zila School	112	126	318	232	26	28	24	26	120	120	120	130
Natullabad Bus Stand	112	134	314	226	26	24	24	24	140	120	120	110
Chowmatha Bazar, Sadar	110	132	313	225	30	30	30	30	130	150	150	100
Battala Bazar, Sadar	116	128	315		32	28	28		140	150	140	
EQS	1000 mg/l				150 mg/l				200-500 mg/l			

VII. Ground Water (Deep Tubewell) in Bogura district (Table: 242-243)

Table-242: Ground Water Quality (pH, EC) at Bogura district in 2017

Locations of Ground Water Parameters in Bogura District	pH						EC					
	Jan	Mar	May	Aug	Oct	Nov	Jan	Mar	May	Aug	Oct	Nov
Bogra Zilla School	7.41	7.36	7.38	7.38	7.28	7.28	376	330	340	340	345	345
VM School, Sadar	7.35	7.35	7.37	7.37	7.26	7.26	402	340	340	340	360	360
Zilla Parishad	7.32	7.32	7.34	7.34	7.35	7.35	392	355	320	320	340	340
Office of the Duputy Commissioner	7.24	7.27	7.3	7.3	7.27	7.27	378	348	330	330	360	360
Office of the Bogra Municipality	7.24	7.22	7.28	7.28	7.26	7.26	388	358	345	345	325	325
Yakubiya Girls High School	7.23	7.23	7.26	7.26	7.28	7.28	402	360	360	360	345	345
Head Post Office	6.96	7.35	7.35	7.35	7.35	7.35	404	340	340	340	340	340
Biddut Office	7.26	7.27	7.27	7.27	7.28	7.28	414	360	360	360	360	360
T & T Office	6.96	7.21	7.26	7.26	7.24	7.24	408	325	325	325	325	325
Commercial College	7.28	7.33	7.32	7.32	7.35	7.35	402	335	330	330	330	330
Office of the Police Super	7.28	7.12	7.21	-	-	-	416	345	340	-	-	-
EQS	6.5-8.5						1200 µmohos/cm					

Table-243: Ground Water Quality (Iron, Hardness) at Bogura district in 2017

Locations of Ground Water Parameters in Bogura District	Iron						Hardness					
	Jan	Mar	May	Aug	Oct	Nov	Jan	Mar	May	Aug	Oct	Nov
Bogra Zilla School	0.30	0.32	0.34	0.03	0.34	0.34	200	200	210	210	210	210
VM School, Sadar	0.34	0.31	0.30	0.30	0.32	0.32	210	210	220	220	220	220
Zilla Parishad	0.32	0.32	0.32	0.32	0.36	0.36	200	210	220	220	220	220
Office of the Duputy Commissioner	0.36	0.34	0.34	0.34	0.38	0.38	200	220	210	210	210	210
Office of the Bogra Municipality	0.34	0.36	0.34	0.34	0.34	0.34	220	220	210	210	210	210
Yakubiya Girls High School	0.36	0.30	0.32	0.32	0.34	0.34	210	210	220	220	220	220
Head Post Office	0.38	0.39	0.38	0.38	0.38	0.38	220	210	210	210	210	210
Biddut Office	0.38	0.38	0.38	0.38	0.38	0.38	220	220	220	220	220	220
T & T Office	0.40	0.36	0.36	0.36	0.34	0.34	220	210	210	210	210	210
Commercial College	0.34	0.38	0.39	0.39	0.38	0.38	210	200	220	220	220	220
Office of the Police Super	0.32	0.34	0.35	-	-	-	220	200	200	-	-	-
EQS	0.3-1.0 mg/l						200-500 mg/l					



VIII. Ground Water (Deep Tubewell) in Sylhet district (Table: 244)

Table-244: Ground Water Quality (pH, EC, Iron, T. Hardness) at Sylhet in 2017

Locations of Ground Water Parameters in Sylhet District	pH				EC				Iron				T. Hardness			
	Jan	Mar	Jul	Nov	Jan	Mar	Jul	Nov	Jan	Mar	Jul	Nov	Jan	Mar	Jul	Nov
MC College, Tilagor	-	7.3	7.4	7.4	-	348	352	354	-	0.72	0.73	0.74	-	11	12	16
Kadamoli Bus Terminal	-	7.2	7.3	7.5	-	336	342	344	-	0.78	0.76	0.75	-	13	24	14
Sylhet Railway Station	-	7.4	7.4	7.3	-	342	338	340	-	0.58	0.84	0.75	-	12	8	12
Durgakumar Govt. Primary School	-	6.8	6.9	7.2	-	356	362	346	-	0.82	0.83	0.84	-	16	12	18
Agrogami Girls High School	-	6.9	7	7	-	388	376	380	-	0.58	0.62	0.82	-	14	16	16
Sylhet Govt. Girls High School	-	7.1	7.2	6.9	-	338	343	348	-	0.68	0.63	0.62	-	11	12	22
Osmari Medical College	-	7.39	7.42	6.8	-	324	328	333	-	0.65	0.64	0.64	-	9	20	14
Kadamoli Primary School	-	7.2	7.25	7.7	-	286	298	312	-	0.85	0.84	0.63	-	22	24	24
Shahjalal Darga, Sadar	-	7.3	7.7	7.8	-	378	342	386	-	0.59	0.62	0.78	-	19	16	18
Shahporan Darga, Khadinnagar	-	7.6	7.5	7.5	-	345	353	358	-	0.63	0.64	0.72	-	21	12	12
EQS	6.5-8.5				1200 μ mhos/cm				0.3-1.0 mg/l				200-500 mg/l			



Annex-4

List of Tables for Trend Analysis of Water Quality of Major Rivers



Table-245. Trend of pH, DO, BOD of Buriganga River from 2010 to 2017

Sampling Location	Year	Season	pH	DO	BOD	
Buriganga river	2010	Dry	7.25	0.47	26.44	
		Wet	7.31	3.83	8.23	
	2011	Dry	7.27	1.35	26.06	
		Wet	7.03	2.24	22.48	
	2012	Dry	7.42	0.54	18.748	
		Wet	7.19	2.55	15.90	
	2013	Dry	7.38	2.3	21.18	
		Wet	6.84	2.56	9.17	
	2014	Dry	7.24	0.61	24.97	
		Wet	7.27	2.58	10.29	
	2015	Dry	7.54	0.14	17.09	
		Wet	7.22	2.96	7.42	
	2016	Dry	7.54	0.17	17.09	
		Wet	7.05	2.98	6.53	
	2017	Dry	7.34	0.78	14.58	
		Wet	7.29	2.64	5.69	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-246. Trend of pH, DO, BOD of Shitalakhya River from 2010 to 2017

Sampling Location	Year	Season	pH	DO	BOD	
Shitalakhya River	2010	Dry	7.22	3.77	9.58	
		Wet	7.05	5.53	4.67	
	2011	Dry	7.14	3.80	10.62	
		Wet	7.22	5.63	3.983	
	2012	Dry	7.22	2.18	11.17	
		Wet	7.37	3.56	5.21	
	2013	Dry	7.7	2.69	22.83	
		Wet	7.11	4.10	5.75	
	2014	Dry	7.19	0.66	16.8	
		Wet	7.43	3.86	6.64	
	2015	Dry	7.51	3.84	6.46	
		Wet	6.93	3.53	3.78	
	2016	Dry	7.26	4.25	19.99	
		Wet	7.22	4.14	5.49	
	2017	Dry	7.56	2.41	17.74	
		Wet	7.56	4.92	6.94	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-247. Trend of pH, DO, BOD of Turag River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Turag River	2010	Dry	7.49	0	30.91	
		Wet	6.39	3.73	9.5	
	2011	Dry	7.74	0.47	22.33	
		Wet	7.52	3.94	9.12	
	2012	Dry	7.6	0.65	24.87	
		Wet	7.48	2.67	12.95	
	2013	Dry	7.46	0.742	31.96	
		Wet	7.31	2.93	4.58	
	2014	Dry	7.67	0.69	35.44	
		Wet	7.36	2.75	7.21	
	2015	Dry	7.67	0.11	35.70	
		Wet	6.79	3.63	7.45	
	2016	Dry	7.18	0.4	30.48	
		Wet	7.31	4.51	4.84	
	2017	Dry	7.57	1.20	21.98	
		Wet	7.36	4.09	7.03	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-248. Trend of pH, DO, BOD of Dhaleshwari River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Dhaleshwari River	2010	Dry	7.03	5.36	2.85	
		Wet	6.86	6.15	3.42	
	2011	Dry	7.17	6.01	3.91	
		Wet	6.86	6.00	2.52	
	2012	Dry	7.57	4.50	6.61	
		Wet	7.82	6.0	8.64	
	2013	Dry	7.81	4.15	14.37	
		Wet	7.25	4.91	4.28	
	2014	Dry	7.48	2.87	11.55	
		Wet	7.16	4.475	6.65	
	2015	Dry	7.15	1.4	7.2	
		Wet	6.90	5.35	1.38	
	2016	Dry	7.21	2.75	4.98	
		Wet	7.56	6.05	2.41	
	2017	Dry	7.60	2.71	8.25	
		Wet	7.48	4.25	5.01	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l



Table-249. Trend of pH, DO, BOD of Brahmaputra River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Brahmaputra River	2010	Dry	7.14	5.44	4.5	
		Wet	6.97	5.62	2.42	
	2011	Dry	7.08	5.85	2.86	
		Wet	6.74	6.35	2.36	
	2012	Dry	7.31	6.9	3.1	
		Wet	7.28	6.25	2.6	
	2013	Dry	8.22	11.36	16	
		Wet	7.69	5.9	0	
	2014	Dry	7.89	9.7	5.1	
		Wet	-	-	-	
	2015	Dry	7.08	7.5	1.5	
		Wet	7.56	6.55	0.55	
	2016	Dry	7.19	7.06	1.66	
		Wet	7.48	6.4	1.58	
	2017	Dry	7.35	7.3	2.25	
		Wet	8.05	6.8	1.2	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-250. Trend of pH, DO, BOD of Halda River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Halda River	2010	Dry	7.13	-	-	
		Wet	7	-	-	
	2011	Dry	7.13	5.71	1.12	
		Wet	7.16	5.65	1.13	
	2012	Dry	7.22	5.31	0.77	
		Wet	7.15	4.54	0.78	
	2013	Dry	7.19	5.34	0.41	
		Wet	7.12	5.31	0.32	
	2014	Dry	7.22	5.26	0.37	
		Wet	7.186	5.44	0.24	
	2015	Dry	7.49	6.03	-	
		Wet	7.37	6.69	-	
	2016	Dry	7.22	6.68	-	
		Wet	6.95	7.15	-	
	2017	Dry	7.3	6.24	-	
		Wet	7.45	7.00	-	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-251. Trend of pH, DO, BOD of Moyuri River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Moyuri River	2010	Dry	7.6	0.36	26.6	
		Wet	7.52	2.33	5.66	
	2011	Dry	7.40	0.69	19.5	
		Wet	7.59	2.7	9.73	
	2012	Dry	7.59	0.93	16.0	
		Wet	7.53	0.5	9.2	
	2013	Dry	7.63	0.06	21.5	
		Wet	7.63	-	13	
	2014	Dry	7.67	-	-	
		Wet	7.75	-	-	
	2015	Dry	7.66	1.2	-	
		Wet	7.49	2.46	-	
	2016	Dry	7.68	1.55	-	
		Wet	7.65	1.98	-	
	2017	Dry	7.54	0.84	-	
		Wet	7.52	0.68	-	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-252. Trend of pH, DO, BOD of Surma River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Surma River	2010	Dry	7.48	6.3	1.2	
		Wet	7.45	6.76	1.16	
	2011	Dry	7.63	7.39	1.17	
		Wet	7.63	7.24	1.23	
	2012	Dry	7.66	5.88	1.12	
		Wet	7.35	5.8	1.21	
	2013	Dry	6.89	6.4	1.30	
		Wet	6.63	6.54	0.9	
	2014	Dry	6.95	5.02	32.37	
		Wet	6.76	5.49	36.12	
	2015	Dry	7.055	5.85	15.03	
		Wet	7.1	6.23	17.87	
	2016	Dry	7.22	6.07	26.54	
		Wet	7.14	6.58	26.88	
	2017	Dry	7.60	6.57	2.4	
		Wet	6.85	6.66	2.26	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

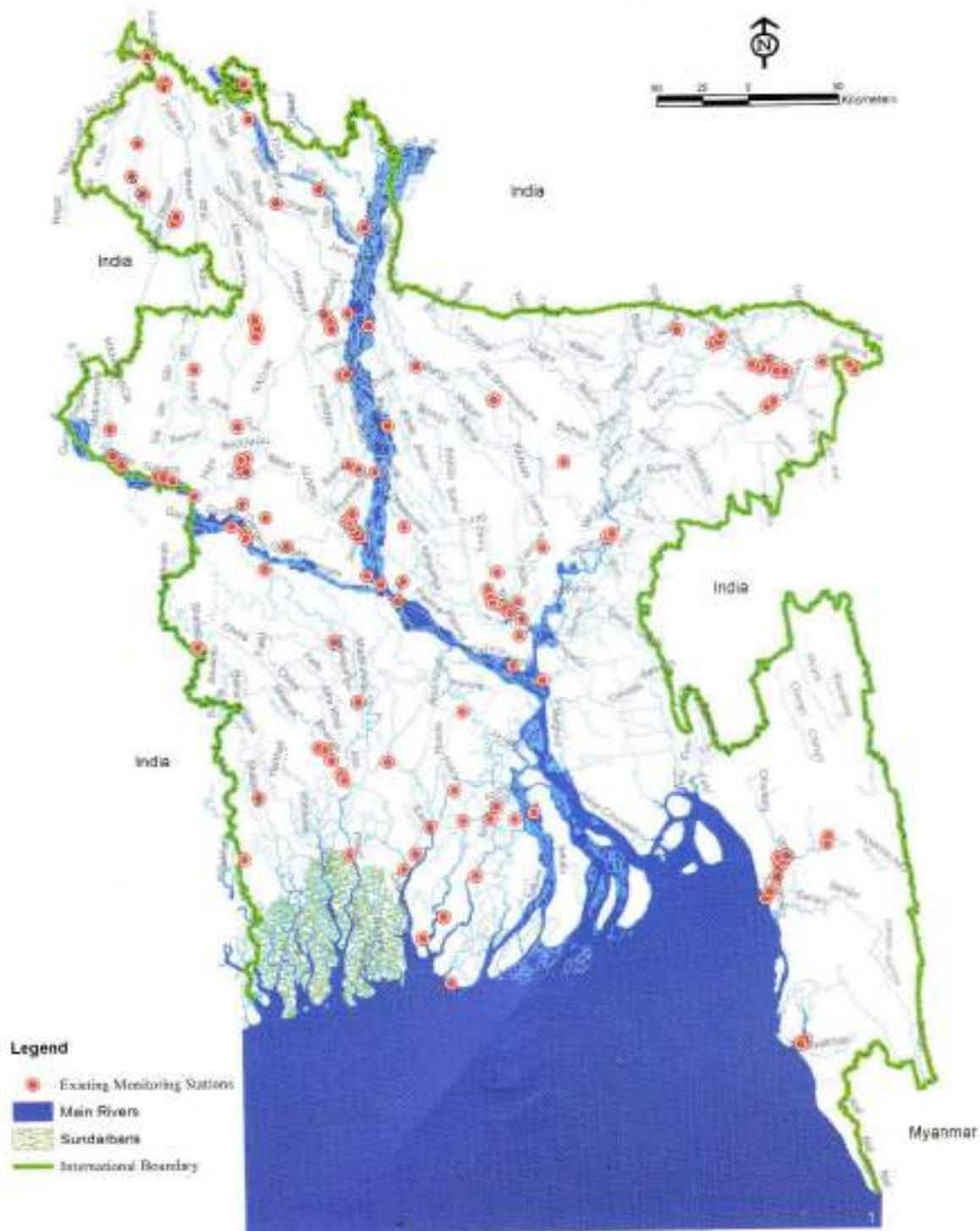


Table-253. Trend of pH, DO, BOD of Korotoa River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Korotoa River	2011	Dry	7.22	5.54	20.70	
		Wet	7.07	5.80	16.22	
	2012	Dry	6.91	5.74	13.44	
		Wet	6.79	6.38	2.51	
	2013	Dry	7.27	5.17	2.67	
		Wet	7.13	4.87	4.31	
	2014	Dry	7.37	4.58	3.57	
		Wet	7.33	4.38	2.79	
	2015	Dry	7.42	1.78	11.85	
		Wet	7.24	5.36	4.05	
	2016	Dry	6.77	2.57	5.74	
		Wet	7.39	2.56	6.09	
	2017	Dry	7.03	3.33	4.57	
		Wet	7.01	3.37	4.81	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l

Table-254. Trend of pH, DO, BOD of Mathavanga River from 2010 to 2017.

Sampling Location	Year	Season	pH	DO	BOD	
Mathavanga River	2010	Dry	7.46	2.11	144.08	
		Wet	7.62	3.6	82.85	
	2011	Dry	7.50	5.03	11.69	
		Wet	7.65	4.83	15.40	
	2012	Dry	7.71	6.53	17.61	
		Wet	7.85	6.7	0.53	
	2013	Dry	7.62	6.83	0.9	
		Wet	7.62	5.8	0.8	
	2014	Dry	7.62	5.4	0.6	
		Wet	7.465	5.67	0.69	
	2015	Dry	7.67	5.16	0.8	
		Wet	7.67	5.32	0.76	
	2016	Dry	7.67	5.16	0.8	
		Wet	7.47	5.21	0.8	
	2017	Dry	7.65	5.46	1.05	
		Wet	7.71	5.82	1.01	
	EQS for fisheries			6.5-8.5	≥5 mg/l	≤6 mg/l



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