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STATE POLLUTION CONTROL BOARD, ODISHA
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CONTENTS

Highlights of Activities

HIGHLIGHTS OF ACTIVITIES OF THE STATE POLLUTION CONTROL BOARD, ODISHA

The State Pollution Control Board (SPCB), Odisha was constituted on July, 1983 and was entrusted with the responsibility of implementing the Environmental Acts, particularly the Water (Prevention and Control of Pollution) Act, 1974, the Water (Prevention and Control of Pollution) Cess Act, 1977, the Air (Prevention and Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986. Several Rules addressing specific environmental problems like Hazardous waste management, Bio-medical waste management, Solid waste management, e-Waste Management, Plastic Waste Management, Environmental Impact Assessment etc. have been brought out under the Environment (Protection) Act. The SPCB also executes and ensures proper implementation of the Environmental Policies of the Union and the State Government. The activities of the SPCB broadly cover the following:

- Planning comprehensive programs towards prevention, control or abatement of pollution and enforcing the environmental laws.
- Advising the State Government on any matter concerning prevention and control of water and air pollution.
- Environmental Monitoring and Research.
- Creating public awareness.

The achievements and activities of the Board during April'2017 to March'2018 are as follows.

Industrial Pollution Abatement and Control through Consent Administration

Improvement in compliance to pollution control norms, guidelines and regulations has been witnessed consistently through vigorous surveillance, regular inspections and monitoring, stipulation of a series of guidelines and directives.

(i) The Board has constituted different technical committees for considering consent applications of various projects for establishment.

(ii) Implementation of the on-line consent management system (from receipt of application to consent order) for all industries, mines and on-line authorization management for Hazardous Waste, Solid Waste and Health care establishment.

(iii) Implementation of GPRS based real time data transmission system with Y-Cable for online stack, ambient air quality and waste water monitoring network round the clock for highly polluting large scale industries and mines in order to keep the regulator and industries alert. So far online monitoring and data transmission system has been installed in 150 industries and 23 mines.

(iv) The Fly Ash Resource Centre (FARC) has been setup in the State Pollution Control Board for promoting safe management and utilization of fly ash in the State. This center has prepared guidelines on utilization of fly ash in various sectors and it is also co-coordinating among the Users and

Thermal Power Plants. In addition, FARC is also organizing Workshops and Interaction meet among the stakeholders for enhancing fly ash utilization. During this year, the utilization of fly ash was 80.74%, against 67.82% during the preceding year, i.e. 2016-17 and against the national average of 63.28%.

(v) Initiatives have been taken to facilitate bulk utilization of other industrial solid wastes like dolochar, phospho-gypsum, blast furnace slag, anode butt, ferro-manganese sludge in different sectors like brick making, road construction, cement manufacturing and power generation etc.

(vi) The bedded Health care establishments have been brought under the Consent administration as per the provisions of Water (Prevention & Control of Pollution) Act, 1974 in order to dispose highly contaminated waste water in an environmentally sound manner.

(vii) To study the cause of high ambient temperature and design remedial measures the Board has instituted Heat Island study for Angul-Talcher area through IIT, Delhi. Similar study for Ib Valley-Jharsuguda area has been instituted by DFID in association with SPCB. The study was being conducted by TERI, Delhi. Both the studies have been completed.

(viii) In order to augment the capacity of the Board in the area of coastal environmental monitoring the World Bank assisted Integrated Coastal Zone Management Project (ICZMP) is being implemented. Office of the Pilot Executing Agency (PEA) of the Board has been operating in Central Laboratory Building, Patia, Bhubaneswar. The coastal water over a stretch of about 80 km from Paradeep to Dhamra is being monitored. 73 sampling locations have been selected for the entire monitoring area, out of which 32 are along the Mahanadi transect, 17 in Dhamra transect and 24 in Gahiramatha-Bhitarkanika transect. PEA has collected 1609 samples during the reporting period for analysis of 40 parameters.

(ix) The Centre for Management of Coastal Eco-system (CMCE) building at Paradeep is the first Govt. building in the State of Odisha to receive the coveted Platinum Rating LEED (Leadership in Energy & Environment Design) Certification from the prestigious U.S. Green Building Council (USGBC), duly certified by Green Building Certification Inc. (GBCI), Washington, DC. This centre would act as a referral and play a vital role in the sustainable management of coastal eco-system.

(x) The Sea Worthy Monitoring Vessel with an in built Laboratory, procured under the ICZM Project has been registered with Mercantile Marine Departmemt (MMD) of DG Shipping, Government of India.

(xi) The Board has granted consent with stipulations of appropriate pollution control measures to 1015 Industries, hotels, mineral stack yards, mineral processing units, railway sidings, stone crushers, brick kilns and DG Sets (as stand by) etc. for their Establishment.

(xii) Consent to operate has been granted to 2400 industries, mines, hotels, hospitals, mineral stack yards, mineral processing units, railway sidings, stone crushers, brick kilns, DG Sets (as stand by), housing projects and mineral based industries etc. during the reporting period.

(xiii) The Board has issued 182 Show Cause Notices, 166 Refusals and 271 Closure Directions to defaulting units.

(xiv) All the Urban Local Bodies have been directed to seek consent and submit time bound action plan for construction of sewage treatment plant. The Board has granted authorization to 02 ULBs for solid waste management.

(xv) The Board has conducted 24 public hearings for major industrial / mining / development projects, requiring environmental clearance from Govt. of India.

(xvi) 3467 industrial wastewater samples, samples from 1129 stack emissions, 2069 ambient air samples and 51 samples of solid waste/ hazardous waste/soil samples from different industrial premises have been collected and analysed.

(xvii) Under the provisions of the Water (Prevention and Control of Pollution) Cess Act, 1977 the Board has assessed an amount of ₹ 7,96,66,573.00 from various industries and urban local bodies of the state. An amount of ₹4,25,39,331.97 has been collected during the financial year 2017-18. Ministry of Environment, Forest and Climate Change (MoEF & CC), Govt. of India has been remitted with ₹ 5,23,75,846.00 and ₹ 4,08,51,908.00 was reimbursed to the Board by MoEF & CC during the reporting period.

Regulation of Hazardous Waste Management

The Board has granted authorization to 85 hazardous waste generating units under the said Rules for collection, storage, treatment and disposal of hazardous wastes. 172 Industries/mines have taken membership agreement with the Common Hazardous Waste Treatment, Storage & Disposal facility (CHWTSDF) developed at Kanchichuan, Jajpur operated by M/s. Ramky Enviro Engineers Limited, Hyderabad.

Trial run on co-incineration of Spent Pot Lining (SPL) along with coal and lime stone in Circulating Fluidized Bed Combustion (CFBC) based boilers of captive power plant of M/s. Hindalco Industries Ltd., Hirakud has been taken up during May, 2017. 20 nos. of Actual Users (Inside Odisha) and 28 nos. of Actual Users (Outside Odisha) have been authorized by the Board during the reporting period for utilization of hazardous wastes.

Implementation of the Batteries (Management & Handling) Rules, 2001

The Board has received 54 half yearly returns during April'2017-September'2017 and 17 half yearly returns during October'2017-March' 2018 for smooth management and handling of batteries (Lead – Acid) by Battery units under the provisions of aforesaid Rules.

Management of Bio-Medical Waste

The Board has granted authorization to 1027 Health care facilities (HCF) under the provisions of the aforesaid Rules with conditions for proper management, handling, treatment and disposal of biomedical wastes. Show cause notices to 124 units and refusal of authorization to 67 HCEs have been issued for improper management of biomedical wastes.

Management of Plastic Waste

During the reporting period, the Board has issued registration to 14 nos. of plastic product manufacturing units, 07 nos. Brand owners and 02 plastic waste recyclers.

Management of E-Waste

The Board has granted authorization to one captive E-waste collection centre for collection of electronic wastes and the Board has granted authorisasion to 02 E-waste dismantler units in Odisha.

Management of Municipal Solid Waste

The Board has granted authorization to 02 Urban Local Bodies and 01 Township during the reporting period. Showcause notices have been issued to 108 ULBs for non-compliance with the provisions of the Rules.

Legal Activities

The Board has filed /counter filed 234 cases and 165 cases have been disposed during the reporting period.

Right to Information

Under the Right to Information Act, 2005, the Board has disposed 741 no. of applications by providing information, out of 958 no. of applications received during the reporting period.

Disposal of Public Complaints

The Board has addressed 256 public complaints on various environmental issues during April'2017-March'2018, out of 456 received.

Planning and Monitoring

For prevention and control of pollution, the Board has undertaken following activities:

- Board is regularly monitoring the river water quality at 129 stations on 11 major river systems of the State namely Mahanadi, Brahmani, Baitarani, Rushikulya, Subernarekha, Nagavali, Budhabalanga, Kolab, Vansadhara, Indravati and Bahuda. Water quality is assessed in respect of 32 water quality parameters under National Water Quality Monitoring Programme (NWMP). Besides these, water quality of Taladanda Canal at six locations, Puri Canal at 03 locations, religious ponds such as Bindusagar (Bhubaneswar at its four bathing ghats) and Narendra, Markanda, Parbati Sagar, Indradyumna, Swetaganga of Puri town, 01 pond in Jeypore town, 01 pond in Angul town , lakes such as Chilika (02 locations) & Anshupa (04 locations), Tampara lake (01 location) and coastal water quality at Puri, Gopalpur and Paradeep on the Bay of Bengal has also been monitored.

- Bio-monitoring at 28 stations of 08 major rivers i.e. Mahanadi, Brahmani, Rushikulya, Subernarekha, Budhabalanga, Kolab, Vansadhara and Nagabali has been carried out to assess the biological health of these river systems.
- To assess the impacts of mass bathing during Kartika Purnima on the water quality of Mahanadi and Kathajodi rivers, water quality has been monitored at eight major bathing ghats of these rivers in Cuttack city.
- Ground water quality at 03 stations and surface water quality at 05 stations on Atharabanki creek and ground water quality at 03 stations in peripherals of phosphatic fertilizer plants and water samples from 07 test wells as well as samples from 05 waste water discharge points of the fertilizer manufacturing units at Paradeep have been monitored on quarterly basis to assess fluoride contaminations in the area.
- Water quality of Ganda Nallah and Kharasrota river has also been monitored at seven stations at regular intervals to assess the impact of waste water discharge from the Industrial Units in Kalinganagar area.
- Water quality of Damasala river at five stations in Sukinda chromite area has been monitored at regular intervals to assess the hexavalent chromium content in river water.
- Surface water quality in and around M/s Vedant Aluminium Limited, Jharsuguda has been monitored at sixteen stations to assess the fluoride contamination in the area.
- Monitoring of ground water quality at 48 stations of 11 towns i.e., Cuttack, Bhubaneswar, Puri, Berhampur, Sambalpur, Paradeep, Angul, Talcher, Ib-valley Jharsuguda area, Sukinda and Balasore has also been conducted in respect of 32 water quality parameters.
- Impact of idol immersion during Durga puja on water quality of Kuakhai and Daya river (in Bhubaneswar city) and Kathajodi river (in Cuttack city) has been investigated. No significant impact on water bodies was observed due to implementation of guidelines of Central Pollution Control Board on safe idol immersion practices.
- Ambient air quality at 38 stations of 17 important towns and industrial areas of Angul, Talcher, Balasore, Berhampur, Bhubaneswar, Bonaigarh, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Konark, Paradeep, Puri, Rayagada, Rourkela, Rajgangpur and Sambalpur have been monitored by the Board under National Ambient Air Quality Monitoring Programme (NAMP)/ State Ambient Air Quality Monitoring Programme (SAMP). Ambient air quality in 16 towns at 37 Stations has been assessed in respect of 04 parameters namely PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) and Nitrogen Oxides (NO_x). Whereas at 09

stations in Bhubaneswar, Puri and Konark, ambient air quality has been assessed in respect of 07 parameters like PM_{10}, $PM_{2.5}$, SO_2, NO_X, NH_3, O_3 and Pb.

- To assess the impact of bursting of fire crackers during Deepawali, the ambient air quality with respect to parameters like SO_2, NO_X, PM_{10} & $PM_{2.5}$ have been monitored in pre and on the day of Deepawali at 46 locations in 15 towns/ cities i.e Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Talcher, Kalinganagar, Keonjhar, Paradeep, Puri, Rayagada, Rourkela, Bonaigarh, Jharsuguda and Sambalpur.
- In total 2069 ambient air samples including other ambient air samples collected during festive occasions, 11,384 samples under NAMP & SAMP have been analyzed during the reporting period.
- Study on ambient noise levels during celebrations of Dashera and Deepawali have been conducted in 13 cities/towns such as Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Paradeep, Puri, Rayagada, Rourkela and Sambalpur covering Industrial, Commercial, Residential and Silence Zones.
- Technical support to Commissionerate Police has been provided for performance evaluation of 66 sound limiters of different band parties in respect of noise level [limited to 65 dB (A)].
- The Board has implemented the following for Ease of Doing Business.
  - Online Consent and Authorization Management System & the certificates are available in public domain.
  - Mobile App for online Consent Management System and App available in Google Play Store.
  - Application Disposal Time for consent reduced from 120 days to maximum 30 days with commitment under Odisha Right to Public Service Act, 2012 (ORTPS Act 2012).
  - Consent to operate validity period increased from one year to five years for Red and ten years for Orange industries.
  - Auto-Renewal and Auto-Revalidation of Consent based on self-certification.
  - Frequency of Inspection reduced for industries.
  - Synchronized-Inspection with Central Inspection Coordination Group (CICG).
- The Board has empanelled 15 consultants dealing with environment related activities during the reporting period (Category –A-11 Nos. and Category-B – 4 Nos.)

- **Partnership of OSPCB with EPIC-India under University of Chicago**

The Government of Odisha in collaboration with Energy Policy Institute at the University of Chicago (EPIC-India), signed a Statement of Intent (SOI) for a period of five years. As part of the partnership, EPIC-India has set up a knowledge cell wherein Bhubaneswar-based researchers work closely with state government officials in designing innovative framework on energy and environment solutions. The cell inaugurated on 3rd April, 2017 is housed within the Head Office of Odisha State Pollution Control Board(OSPCB), Bhubaneswar.

In the field of environment related projects the broad areas of cooperation between OSPCB and EPIC-India will be capacity building of Board officials on topics such as verification, data quality, calibration and evaluations of Continuous Emission Monitoring System (CEMS) installed as part of regulation for 17 categories of highly polluting industries and developing analytics and visualization to make CEMS data more accessible to OSPCB officials. EPIC-India will be developing a Standard Operating Process that includes CEMS Checklist and Protocols for online data acquisition and monitoring.

12. Board's Publications

The Board has published the following Book & Reports during April, 2017 to March, 2018.

- Three volumes of Newsletters "Paribesh Samachar" i.e., April-June, 2017 & July-December, 2017, January–March. 2018.
- Release of booklet with information of LEED criteria certification from the prestigious U.S. Green Building Council (USGBC) achieved by the ICZMP.
- Release of Book on Monitoring Protocol of Coastal Environment (Paradeep-Gahirmatha-Dhamra Coastal Stretch).

13. Observation of Important Days

- The Earth day is celebrated on 22nd April, 2017 by Regional Offices in collaboration with District level Environment committee.
- The Board observed the World Environment Day on 5th June' 2017 through 12 Regional Offices to create awareness on environmental protection. Messages on protection of environment were given to the public through meetings, mass campaign, paintings, debates & plantations etc.
- The 34th Foundation Day of the Board was observed on 14th September, 2017 at Jayadev Bhawan, Bhubaneswar. Dr. Sachidananda Satapathy, Former Director, Climate Change, MoEF, New Delhi delivered Prof. M. K. Rout Memorial Lecture on "**Climate Change Smart Choice : Responding to Challenges of Climate Change"** *on* the occasion. The Board has instituted pollultion control excellence/appreciation awards to encourage the industries/mines for adoption of adequate pollution control.

- The International Coastal Clean-up Day was observed by the Board on the Sea Beach of Puri, Konark, Chandbali, Gopalpur & Paradeep on 16th September, 2017 for creation of mass awareness on protection and management of environment involving District Administration, different NGOs & Volunteers.
- The National Pollution Prevention Day was observed by the Board through Regional Offices on 2nd December 2017 by conducting mass rally, meeting,workshop etc.

14 Awareness Programme

The Board has released several advertisements related to awrness on Environment Protection, Pollution Control etc. in different print and electronic media.

- The Board has created public awareness on ill-impact of immersion of idols in rivers during festivals.
- During Deepawali festival mobile vehicles with staff move in & around Bhubaneswar and Cuttack for creating awareness among the public on effect of crackers on air pollution & noise pollution.
- Regional Office, Angul & Sambalpur have made awareness campaign on prohibition of raw coal as fuel in road side Dhabas and Hotels.

15. Human Resource Development

- The Board has deputed its officials on exposure training and to acquire knowledge in the field of Pollution Control and Environment Protection.
- The Board has imparted Training on "Water/Air quality Parameters monitoring and analylsis and impact of pollutants on human health". to 176 M.Sc. students of KIIMS and students of All India Institute of Medical Science, Bhubaneswar.
- The Board has imparted training to 597 Traffic Police personal on "Vehicular Pollution and its effect on human health" at Urban Traffic Training Institute, Bhubaneswar during the reporting period.
- Guidence has been provided to Environmental Science students of Utkal University to conduct their dissertation work.

CHAPTER – I

INTRODUCTION

1.1 CONSTITUTION OF THE BOARD

The Odisha State Prevention and Control of Pollution Board was constituted in pursuance of sub-section (1) of section 4 of the Water (Prevention and Control of Pollution) (Amendment) Act, 1974, vide Notification No. 1481-VII-HI-11/83 (Vol. II)-S.T.E., dt. 15.7.1983 in the erstwhile Department of Science, Technology & Environment, Government of Odisha. The Board was re-designated as State Pollution Control Board, Odisha vide Govt. Notification No. Env.-E (F)/8/89/1882 F&E, dt.16.07.1999.

1.2 FUNCTIONS AND RESPONSIBILITIES OF THE BOARD

The constitution and functions of the Board are clearly spelt out in the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. The Board is entrusted with the responsibility of implementation of Environmental Laws, particularly the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Water (Prevention & Control of Pollution) Cess Act, 1977 and the Environment (Protection) Act, 1986 and a number of Rules and Notifications issued thereunder as amended from time to time.

Responsibilities of the Board, however, can broadly be classified into the following four main categories:

1. To plan a comprehensive programme for prevention, control or abatement of pollution and enforce the environmental laws
2. To advise the State Government on any matter concerning prevention and control of water and air pollution
3. To conduct Environmental Monitoring and Research
4. To create public awareness

In addition, the Board is also expected to execute and ensure proper implementation of the Environmental Policies of the Union and the State Government.

1.3 ENVIRONMENTAL LAWS

The major Acts and Rules / Notifications issued thereunder, with which the Board is entrusted for implementation and execution, are as follows:

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Water (Prevention and Control of Pollution) Cess Act, 1977
3. The Air (Prevention and Control of Pollution) Act, 1981
4. The Environment (Protection) Act, 1986
5. The Public Liability Insurance Act, 1991
6. The Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 amended as the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

7. The Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms, Genetically Engineered Organisms or Cells Rules, 1989
8. The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
9. The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996
10. The Biomedical Waste (Management and Handling) Rules, 1998 amended as the Biomedical Waste Management Rules, 2016.
11. The Municipal Solid Waste (Management and Handling) Rules, 2000 amended as the Solid Waste Management Rules, 2016.
12. The Noise Pollution (Regulation and Control) Rules, 2000
13. The Ozone Depleting Substance (Regulation and Control) Rules, 2000
14. The Batteries (Management and Handling) Rules, 2001
15. The Environment Audit Notification, 1993
16. The Fly-ash Utilization Notification,1999
17. The Environment Impact Assessment Notification, 2006
18. The Plastic Waste (Management and Handling)(Amendment)Rules, 2011 amended as the Plastic Waste Management Rules, 2016
19. The E-Waste (Management and Handling) Rules, 2011 amended as the E-Waste (Management) Rules, 2016.
20. The Construction & Demolition Waste Rules, 2016.

1.4 LOCATIONS AND MAILING ADDRESSES OF BOARD'S OFFICES

Headquarters of the State Pollution Control Board, Odisha is located at Paribesh Bhawan, A/118, Nilakantha Nagar, Bhubaneswar in Khordha District. The Board has established its state-of-art Central Laboratory at B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar.

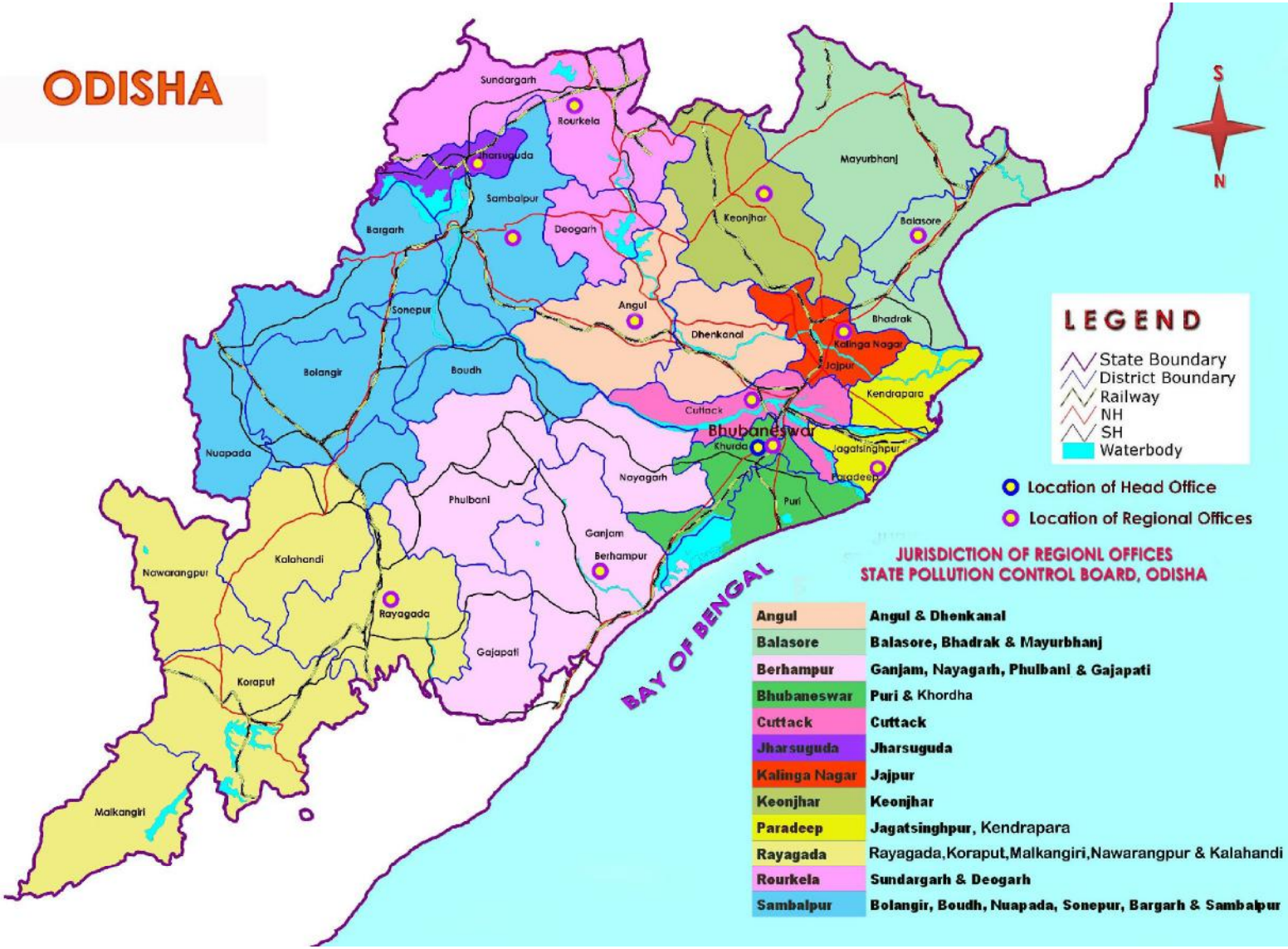
The jurisdictions, various functions, role, responsibilities and powers of Regional Officers of all the 12 Regional Offices have been defined vide Office Order No. 16908, dtd.19.09.2013. The mailing addresses, Telephone/Fax Nos., E-mail/website and jurisdiction of the Head Office, the Central Laboratory and Regional Offices are given in Table-1. The locations of twelve Regional Offices of State Pollution Control Board are illustrated in Odisha Map in Fig. 1.

Table – 1: Address, Telephone / Fax, e-mail / Website and Jurisdiction of State Pollution Control Board, Odisha

Sl. No.	Address	Telephone / FAX / e-Mail / Website	Jurisdiction (Districts)
		HEAD OFFICE	
1.	State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-8, Bhubaneswar-751 012	(0674) 2561909, 2562847 Fax- (0674) 2562827, 2560955 E-Mail:paribesh1@ospcboard.org Website : www.ospcboard.org	Whole of the Odisha State
2.	Central Laboratory, State Pollution Control Board, Odisha ,B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar	E-Mail : centrallab@ospcboard.org Website : www.ospcboard.org	Whole of the Odisha State

Sl. No.	Address	Telephone / FAX / e-Mail / Website	Jurisdiction (Districts)
REGIONAL OFFICES			
1.	Regional Office, Angul S-3/3, Industrial Estate, Hakimpada, Angul- 759 143	Tel - (06764) 236389 Fax - (06764) 237189 E-mail:rospcb.angul@ ospcboard.org	1) Angul 2) Dhenkanal
2.	Regional Office, Balasore, 160, Sahadev Khunta, Balasore – 01	Tel/Fax-(06782) 265110 Email:rospcb.balasore@ ospcboard.org	1) Balasore 2) Bhadrak 3) Mayurbhanj
3.	Regional Office, Berhampur,Brahma Nagar (3rd Lane), Berhampur – 01, Ganjam	Tel- (0680) 2281075 Fax- (0680) 2280139 Email:rospcb.berhampur@ ospcboard.org	1) Ganjam 2) Gajapati 3) Phulbani 4) Nayagarh
4.	Regional Office, Bhubaneswar, B-59/2 & 59/3, Chandaka Industrial Estate, Patia, Bhubaneswar	R.O Tel - (Mob) 09438883947 E-mail : rospcb.bhubaneswar @ospcboard.org Website: www.ospcboard.org	1) Puri 2) Khordha
5.	Regional Office, Cuttack, Plot No. 586, Surya Vihar, Link Road, Cuttack – 753 012	Tel/Fax-(0671) 2335478 E-Mail : rospcb.cuttack@ ospcboard.org	1) Cuttack
6.	Regional Office, Keonjhar At - Baniapat, College Road, Keonjhar-758 001	Tel / Fax - (06766) 259077 E-Mail: rospcb.keonjhar@ ospcboard.org	1) Keonjhar
7.	Regional Office, Rayagada 287/A, Kasturi Nagar, Rayagada – 765 001	Tel-(06856) 223073 Fax-(06856) 224281 E-Mail: rospcb.rayagada@ ospcboard.org	1) Rayagada 2) Koraput 3) Nawarangpur 4) Malkangiri 5) Kalahandi
8.	Regional Office, Rourkela Town Engineering Office Premises, Sector – 5, Rourkela – 769 002	Tel - (0661) 2646736 Fax – (0661) 2648999 E-Mail: rospcb.rourkela@ ospcboard.org	1) Sundergarh except Himgiri block of Sundergarh district (Basundhara mining areas) 2) Deogarh
9.	Regional Office, Sambalpur, Plot No.1070 Hospital Road, Modipara Sambalpur-768 002	Tel- (0663) 2541910 Fax – (0663) 2541978 E-Mail:rospcb.sambalpur@ ospcboard.org	1) Sambalpur 2) Bargarh 3) Boudh 4) Bolangir 5) Nuapada 6) Sonepur
10.	Regional Office, Jharsuguda, Plot No. 370/5971, At – Babubagicha (Cox Colony) St. marry Hospital Road, PO- Industrial Estate, Dist.-Jharsuguda- 768203	Tel- (06645) 273284 Fax – (06645) 2732294 E-Mail: rospcb.jharsuguda@ ospcboard.org	1) Jharsuguda 2) Himgiri block of Sundergarh district
11.	Regional Office, Kalinga Nagar, Common Facility Centre, Jajpur Closter Development, Kalinga Nagar, Dist - Jajpur	Mob-9438883955 E-mail: rospcb.kalinganagar@ ospcboard.org	1) Jajpur
12.	Regional Office, Paradeep, At- Centre for Management of Coastal Eco-system (CMCE), Plot No. 47, Nuasandhakuda, Near Panthaniwas, Marine Road, Paradeep-754142	Mob-9438883963 E-Mail: rospcb.paradeep@ ospcboard.org	1) Jagatsinghpur 2) Kendrapara

Fig. 1 Odisha Map Showing 12 Regional Offices of State Pollution Control Board



CHAPTER – II

CONSTITUTION OF THE STATE BOARD

2.1 As per the provisions of sub-section 2 of section 4 of the Water (Prevention and Control of Pollution) Act, 1974 and under sub-section 2 of section 5 of the Air (Prevention and Control of Pollution) Act, 1981, the State Board shall consist of the following members, namely:

i. A Chairman (either whole-time or part-time as the State Government may think fit), being a person having special knowledge or practical experience in respect of matters relating to environment protection or a person having knowledge and experience in administrating institutions dealing with the matters aforesaid, to be nominated by the State Government;

ii. Such number of officials, not exceeding five, to be nominated by the State Government to represent that Government;

iii. Such number of persons, not exceeding five, to be nominated by the State Government from amongst the members of the local authorities functioning within the State;

iv. Such number of officials, not exceeding three, to be nominated by the State Government to represent the interest of agriculture, fishery or industry or trade or any other interest which, in the opinion of the State Government, ought to be represented;

v. Two persons to represent the companies or corporations owned, controlled or managed by the State Government, to be nominated by that Government;

vi. A full time Member Secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the State Government

2.2 In exercise of the powers conferred under Sub-Section (1) of Section 4 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 5 of the Air (Prevention & Control of Pollution) Act, 1981, Government in the Forest & Environment Department, Odisha constituted the present Board vide Notification No. 19568-Env-II-22/2015-F&E dated 6th November, 2015 for a period of three years with the following members.

A. Chairman

Chairman, State Pollution Control Board, Odisha.

Sri R.Balakrishnan, IAS (30.11.2015 contd.)

B. Official Members

1. Secretary to Government, H & UD Department, Government of Odisha or his nominee, not below the rank of Joint Secretary

2. Secretary to Government, Industries Department, Government of Odisha or his nominee, not below the rank of Joint Secretary
3. Secretary to Government, Steel and Mines Department, Government of Odisha or his nominee, not below the rank of Joint Secretary
4. Director (Environment), Forest & Environment Department, Government of Odisha or his nominee
5. Director, Factories & Boilers, Government of Odisha or his nominee

C. Members Representating Local Authorities

1. Chairman / Executive Officer, Paradeep Municipality
2. Chairman / Executive Officer, Jharsuguda Municipality
3. Chairman / Executive Officer, Talcher Municipality
4. Chairman / Executive Officer, Barbil Municipality

D. Non-Official Members

1. Prof. Damodar Acharya, Former Vice Chancellor, BPUT & Former Chairman, AICTE
2. Dr. Subhasish Tripathy, Prof. of School of Earth, Ocean & Climate Sciences, IIT Bhubaneswar
3. Dr. Satyaban Jena, Professor of Chemistry, Utkal University,Vani Vihar, Bhubaneswar

E. Members Representating Companies & Corporations

1. Managing Director, Odisha Mining Corporation Ltd, Bhubaneswar
2. Managing Director, Industrial Infrastructure Development Corporation (IDCO), Bhubaneswar

F. Member Secretary

Member Secretary, State Pollution Control Board, Odisha.

Sri Debidutta Biswal, I.F.S (29.07.2016 contd.)

CHAPTER - III

CONSTITUTION OF COMMITTEES

3.1 CONSENT COMMITTEE

3.1.1 Constitution of Consent Committees

The Board has re-constituted consent committee vide office order No. 12547 dt. 20.07.2015 in pursuance to partial modification of order no.7817 dt. 16.05.2014 with the members enlisted in Table-3.1 for establishment of various projects mentioned below:

- Projects having investment of ₹1000 crore or more.
- Mining project with lease hold area of 1000 Ha. or more.
- 17 categories of highly polluting industries having investment of ₹ 50 crores or more (including expansion proposal with an investment of ₹ 50 crores or more)
- Other than 17 categories of highly polluting industries having investment of ₹ 50 crores or less than ₹ 1000 crores (including expansion proposal).
- Proposal for establishment of screening plant, crusher, within the lease hold area of Coal, Bauxite, Manganese, Limestone, Dolomite & Chromite Mines having investment of less than ₹ 50 crores.
- Expansion proposal of Sponge iron plant (other than sponge) having investment of less than ₹ 50 crores.

Members of the Committee are given in Table 3.1.

Table - 3.1 Members of the Consent Committees

1.	Member Secretary, SPC Board, Odisha, Bhubaneswar	Chairman
2.	One of the sectoral expert each of different Technical Committee constituted by the Board (such as Mining, Iron & Steel, Power, Chemical & Allied, Petroleum refinery, Aluminum Smelter and Port Projects) in case of large industrial projects whose investment is ₹ 1000 crores or more or mining project with lease hold area 1000 ha. or more. (As per Table No.3.2)	Member
3.	External Expert Members to be nominated by the Chairman, SPC Board in specific cases, if required.	Member
4.	Sr. Env.Engineer/Sr. Env.Scientist, dealing the subject of Hazardous Waste, SPC Board, Odisha, Bhubaneswar	Member
5.	Sr. Env.Engineer /Sr. Env.Scientist, dealing with consent to operate of Industry /Mines, SPC Board, Odisha, Bhubaneswar	Member
6.	Sr. Env.Engineer / Sr.Env.Scientist, dealing the subject of Environmental monitoring, SPC Board, Bhubaneswar	Member

7.	Secretary, Industries Department, Govt. of Odisha or his representative not below the rank of Deputy Secretary	Member
8.	Secretary, Steel & Mines Department, Govt. of Odisha or his representative not below the rank of Deputy Secretary	Member
9.	Secretary, Water Resources Department, Govt. of Odisha or his representative not below the rank of Deputy Secretary	Member
10..	Director -cum-Special Secretary to Govt. Forest & Env.Deptt. Govt. of Odisha or his representative	Member
11.	Director, Factories & Boilers, Odisha, Bhubaneswar or his representative not below the rank of Deputy Director	Member
12.	Chief Conservator of Forest (Nodal), Odisha or his nominee not below the rank of D.F.O. in the office of PCCF, Odisha, Bhubaneswar	Member
13.	Concerned District Collectors or their nominees	Member
14.	Sr. Env. Engineer / Sr. Env. Scientist, dealing the subject of consent to establish, SPC Board, Odisha, Bhubaneswar	Convener

The Technical Committee has been merged with Consent Committee vide Office Order No. 12547, dtd.20.07.2015.

Table – 3.2 Members of the Technical Committee

Sl. No.	Technical Committee constituted for	Sectoral Experts
1.	Mining Projects whose leasehold area is 1000 Ha or more. (vide Office Order No. 10729, dt. 03.05.07)	1) Prof. S. Jayantu, Dept. of. Mining Engineering, NIT Rourkela 2) Sri B. N. Mishra, Ex-Director (T) MCL, CMD, EDL, Bhubaneswar
2.	Iron and Steel Projects (vide Office Order No. 27958, dt. 16.11.06 & No. 10735 dt. 03.05.2007	1) Dr. Somanath Mishra, Ex- Principal, REC, Rourkela, 2) Dr. R. C. Gupta, Professor and Head, /Department of Metallurgical Engineering , Institute of Technology, Banaras Hindu University
3.	Power Projects (vide Office Order No. 10761, dt. 03.05.07)	1) Sri B. C. Jena, Ex-CMD, Grid Corp. of Odisha Ltd, Bhubaneswar 2) Mr. G. S. Panda, Ex. Head TTPS, Sailashree Vihar, Bhubaneswar
4.	Chemical and Allied industries (vide Office Order No. 10850, dt. 05.05.07)	1) Prof. G. K. Roy, Dept. of Chemical Engineering, NIT, Rourkela 2) Sri R. K. Dash, Former Executive Director, PPL & OCFL,VIM 484 (near post office) Sailashree Vihar, Bhubaneswar

5.	Petroleum Refineries (vide Office Order No. 10761, dt. 03.05. 07)	1) Dr. M. O. Garg, Director, Institute of Petroleum, Dehradun 2) Prof. P. Rath, HOD, Department of Chemical Engineering, NIT, Rourkela
6.	Aluminium Smelter (vide Office Order No. 14791, dt. 22.06.07)	1) Dr. R. K. Paramguru, Scientist – G, Head, Hydro & Electrometallurgy Dept., Institute of Minerals & Materials Technology (formerly known as Regional Research Laboratory) Bhubaneswar, Odisha 2) Sri R. N. Jena, Ex-General Manager, NALCO Smelter Plant, Angul
7	Port Projects (vide office order No. 16387,dt. 05.07.2008)	1) Dr. R. Sundarvadivelu, Professor and Head, Department of Ocean Engineering, Indian Institute of Technology, Chennai – 600 036 Or Dr. Sannasi Raj, Associate Professor, Department of Ocean Engineering, Indian Institute of Technology, Chennai – 600 036 2) Sri Dibakar Mohapatra, (Retd. Chief Engineer, Paradeep Port Trust), Plot No. 7A, Brahmeswar Bag,Tankapani Road, Bhubaneswar

3.1.2 Consent Committee Meetings

Tweleve Consent Committee meetings were held for consideration of 79 proposals for establishment during the financial year 2017-18. The details are given in Table - 3.3.

Table – 3.3 Details of Consent Committee Meeting

Sl. No.	Date of Consent Committee meeting	No. of cases disposed
1.	10/05/2017	08
2.	29/05/2017	04
3.	29/06/2017	07
4.	24/07/2017	06
5.	29/08/2017	05
6.	23/09/2017	04
7.	30/10/2017	08
8.	30/11/2017	08
9.	29/12/2017	07
10.	29/01/2018	07
11.	17/02/2018	05
12.	20/03/2018	10
	Total	**79**

3.1.3 Constitution of Internal Consent Committee

In pursuance of office order No.7821 dt. 16.05.2014, an internal consent committee has been reconstituted with the members reflected in Table 3.4 to evaluate the applications for grant of consent to establish (NOC) for the following projects.

- 17 categories of highly polluting industries having investment of less than ₹ 50 crores (including expansion proposal with an investment of less than ₹ 50 crores)
- Other than 17 categories of polluting industries having investment of ₹ 50 crores to less than ₹ 1000 crores (including expansion proposal)
- Proposal for establishment of screening plant, crusher, within the lease hold area of coal, bauxite, manganese, lime stone, dolomite and chromite mines having investment of less than ₹ 50 crores.
- Expansion proposal of Sponge Iron Plant (other than sponge) having investment of less than ₹ 50 crores.

Table – 3.4 Members of the Internal Consent Committee

1.	Sr. Env. Engineer / Sr. Env. Scientist, dealing the subject of consent to establish, SPC Board, Odisha, Bhubaneswar	Chairman
2.	Env. Engineer / Env. Scientist dealing the subject of Hazardous waste	Member
3.	Env. Engineer / Env. Scientist dealing the subject of environmental monitoring	Member
4.	Env. Engineer / Env. Scientist dealing with consent to establish	Member
5.	Env. Engineer / Env. Scientist dealing with consent to operate of industries / mines	Member
6.	Branch Officer(s) concerned (SEE/SES), SPC Board, Odisha, Bhubaneswar	Convenor

No internal consent committee meeting was held during the financial year 2017-18.

3.1.4 Constitution of Technical Committee for issue of "No Increase in Pollultion Load" Certificate for Changes in Plant Configuration and Product Mix for the Project.

In pursuance to MoEF&CC, Govt.of India Notification vide So.3518(E) dtd.23.11.2016, State Pollution Control Board has constituted a Technical Committee with the following members to examine the application and to make recommendations for issue of "No Increase in pollution load" certificate for changes in plant configuration & product mix for the project.

Table - 3.5 Members of Technical Committee for issue of "No Increase in Pollultion Load" Certificate

Sl. No.	Name	Designation
1.	Member Secretary, State Pollultion Control Baord, Odisha	Chairman
2.	Dr. Sanjot Ku. Sahu, Professor, Dept. of Env. Science, Sambalpur University, Sambalpur (Nominated by F&E Department).	Member
3.	Dr. Himanshu B. Sahu, Associate Professor, Dept. of Mining Engineering NIT, Rourkela (Nominated by F&E Department).	Member
4.	Dr. Chitta Ranjan Mohanty, Associate Projessor, Dept. of Civil Engineering SSUT, Burla (Nominated by F&E Department).	Member
5.	Dr. Abhaya Ku Dalai, Former Reader in Botany, Ravenshaw University, 6GH/1150, C-15, Sector-9, CDA, Cuttack-753014, (Nominated by F&E Department).	Member
6.	Sri R.C. Saxena, Regional Director, CPCB, Kolkata or his nominee not below the rank of Addl. Director,	Member
7.	Sr. Env. Scientist, L-I/Sr. Env.Engineer, L-I, SPC Board, dealing with Consent to Establish of Industries / Mines	Member
8.	Sr. Env. Scientist, L-I/Sr. Env. Enginer, L-I, SPC Board,dealing with Consent to Operate of Industries	Member
9.	Sr. Env. Scientist, L-I/Sr. Env.Engineer, L-I, SPC Board, dealing with Consent to Operate of Mines	Member
10.	Sr. Env.Engineer, L-II, SPC Board, dealing with Consent to Establish of Industries & Mines.	Member

3.2 PURCHASE COMMITTEE FOR SCIENTIFIC STORE

3.2.1 Constitution of the Purchase Committee

In pursuance of the provision Under Section 9 of the Water (Prevention & Control of Pollution) Act, 1974 and Under Section 11 of the Air (Prevention & Control of Pollution) Act, 1981, a purchase committees has been constituted for the financial year 2017-18 with the following members for the purchase and maintenance jobs of scientific items of the Central Laboratory as well as Regional Offices laboratories of the Board valuing ₹ 15,000.00 and above. is given in Table 3.6.

Table - 3.6 Members of the Purchase Committee for ₹ 15,000.00 and above.

1.	Member Secretary, State Pollution Control Board, Odisha	Chairman
2.	Dr. C.R. Panda, Chief Scientist & Head, Environment & Sustainability Dept., Institute of Materials and Minerals Technology (IMMT), Bhubaneswar	Member
3.	Financial Adviser-cum-Addl.Secretary to Govt., Forest & Environment Dept., Govt. of Odisha, Bhubaneswar	Member

4.	Director or his representative, Directorate of Export Promotion & Marketing, Ashoka Market, Bhubaneswar	Member
5.	Senior Environmental Scientist (L-I), Central Lab.,State Pollution Control Board, Odisha, Bhubaneswar	Member Convenor
6.	Accounts Officer, State Pollution Control Board, Odisha, Bhubaneswar	Member

Technical Committee has been constituted vide order No. 548 dt.10.05.2017 for the specification of various equipments & instruments and to study the nature of requirement of different chemicals, glass wares, plastic wares, filtration products etc. required by the laboratory in Table - 3.7.

Table – 3.7- Members of the Technical Committee

1.	Senior Environmental Scientist (L-I), State Pollution Control Board, Odisha	Chairman
2.	Dr. S.G. Kumar,Senior Scientist, Regional Plant Resource Centre, Bhubaneswar	Member
3.	Administrative Officer, State Pollution Control Board, Odisha, Bhubaneswar	Member
4.	Env. Scientist, (In charge of Chemical and Biological Laboratory), State Pollution Control Board, Odisha, Bhubaneswar	Member
5.	Deputy Env. Scientist, (In charge of Air, Soil and Hazardous Laboratory), State Pollution Control Board, Odisha, Bhubaneswar	Member
6.	Accounts Officer, State Pollution Control Board, Odisha, Bhubaneswar.	Special Invitee
7.	Env. Engineer, (Purchase), State Pollution Control Board, Odisha, Bhubaneswar	Member Convenor

3.2 LIBRARY PURCHASE COMMITTEE

In pursuance of Section 9 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 11 of the Air (Prevention & Control of Pollution) Act, 1981 an Internal Purchase Committee has been constituted vide office order No. 11994 dt. 23.07.2014 for examining and recommending purchase of Books, Journals, Reports, Non-book materials, furniture and other requisites for the Library. Members of the committee are given in Table - 3.8.

Table - 3.8 Members of the Library Purchase Committee

1.	Member Secretary, State Pollution Control Board, Odisha	Chairman
2.	Senior Environmental Engineer- L-I (N), State Pollution Control Board, Odisha	Member
3.	Senior Environmental Engineer- L-I (C), State Pollution Control Board, Odisha	Member
4.	Senior Environmental Scientist – L-I (P), State Pollution Control Board, Odisha	Member
5.	Administrative Officer, State Pollution Control Board, Odisha	Member
6.	Sr. Law Officer,State Pollution Control Board, Odisha	Member
7.	Sr. Environmental Scientist, In-Charge of Library (Order No. 15332 dtd. 23.11.2017)	Member Convener

CHAPTER – IV

BOARD MEETING

4.1 In the year 2017-18 two Board Meetings were held.

The 115th & 116th Board meetings of the State Pollution Control Board, Odisha were held on 13th November, 2017 & 16th March,2018 respectively.

4.2 IMPORTANT DECISIONS OF THE 115th BOARD MEETING ARE AS FOLLOWS:

- Approval of the processing fees ₹ 5,000/- for registration of dealers of lead Acid Batteries or components thereof to regulate the recycling of the used Lead Acid Batteries and delegation of power of Registration / Renewal/Refusal/Suspension/Cancellationof registration of dealers to the Member Secretary, SPC Board, Odisha.
- Approval of continuation of existing fee structure for disposal of applications under Hazardous & Other Wastes (Management and Transboundary Movement) Rules,2016 and delegation of power to Member Secretary, SPC Board, Odisha to take decision in the mater of Grant/Renewal/Refusal/Suspension/Cancellation of Authorization.
- Decision to open 03 more Regional Offices at Bolangir, Koraput & Gajapati District.
- Decision to transfer 50% of the forfeited amount of Bank Guarantee to the Orissa Env. Management Fund Trust and keep the rest 50% towards Administrtive charges, cost of good quality IEC materials etc.
- Aporoval of revised classification of additional industril units.
- Ratification of the action taken by the Chairman on constitution of Technical Committee for issue of "No Increase in Pollution Load under Changes in plant configuration and product mix".
- Ratification of the Revised Structure of Application fee for Authorization under Biomedical Waste Management Rules-2016 for Health care Establishments.
- Approval of empanelled list of Institutions as Environmental Auditors to certity "No Increase in the Pollution Load"

4.3 IMPORTANT DECISIONS OF THE 116th BOARD MEETING ARE AS FOLLOWS:

- The proceedings of the 115th Board meeting were confirmed and compliance and follow up action taken on the decision of the Board meeting were discussed.
- The Board approved the proposal for contribution of 36.24 Crore to the corpus fund of pension managed by LIC of India in two equal installments during the financial year 2017-18 & 2018-19 as per budgetary allocation.
- The Board ratified the action taken by the Chairman towards purchase of 2nd floor of the building of IDCO constructed at Industrial Estate, Ankuli, Berhampur on lease basis to run Laboratory and Regional Office.
- The Board approved the Revised Budget for the financial year 2017-18 and Budget for the financial year 2018-19.
- The Board approved the fee structure for Health Care Establishment / Common

Biomedical Waste Treatment and Disposal Facilities as follows:

A. Fees for Consent to Establish

Sl.No	Categories	Approved Fee For Consent To Establish
1.	Private Health Care Establishments And Common Biomedical Waste Treatment And Disposal Facilities.	To be charged as per investment in case of industries including hotels and development projects indicated in the Odisha Gazette Notification No. 13123-Env-1-01/2012-F&E, Dated. 16th July, 2012 and 13127-Env-1-01/2012-F & E, Dated 16th July, 2012.
2.	All "Not For Profit" Institutions/ Health Care Establishments / Common Biomedical Waste Treatment And Disposal Facilities.	Rs. 1000/-
3.	Govt. Institutions/ Health Care Establishments / Common Biomedical Waste Treatment And Disposal Facilities.	Rs.1000/-

B. Fees for Consent to Operate

Sl.No.	Categories	Approved Fee For Consent To Operate (Per Annum)		
1.	Private Health Care Establishments (Hces) And Common Biomedical Waste Treatment And Disposal Facilities (Cbwtdfs).	Categories	For Air Act	For Water Act
		A) Hces Having Less Than 100 Beds	Rs.500/-	Rs.500/-
		B) Hces Having 100 To 199 Beds	Rs.1000/-	Rs. 1000/-
		C) Hces Having 200 To 399 Beds	Rs.3000/-	Rs.3000/-
		D) Hces Having 400 Beds And Above	Rs.5000/-	Rs.5000/-
		E) Cbwtdfs	Rs.6000/-	Rs.6000/-
2.	All "Not For Profit" Institutions/Health Care Establishments /Common Biomedical Waste Treatment and Disposal Facilities.	For Air Act.	For Water Act.	
		Rs.500/-	Rs.500/-	
3.	Govt. Institutions/ Health Care Establishments /Common Biomedical Waste Treatment And Disposal Facilities.	For Air Act.	For Water Act.	
		Rs.500/-	Rs.500/-	

CHAPTER – V

ACTIVITIES

5.1 CONSENT TO ESTABLISH (CTE)

5.1.1 Projects related to Manufacturing and Service Sectors

Board received 1175 applications from different manufacturing and service sectors for consent to establish during 2017-18 and 497 pending proposals were carried forward from the year 2016-17.

Consent to establish was granted to 1015 units. The detailed status of 1672 Consent to Establish applications processed during 2017-18 is given in Table-5.1 and 5.2.

Table - 5.1 Status of Consent to Establish (CTE)

Sl. No.	Status	Head office (H.O.)	Regional Office(R.O)	Total
1.	No. of applications received during 2017-18	68	1107	**1175**
2.	No. of applications carried forward from 2016-17	64	433	**497**
	Total applications	**132***	**1540**	**1672**
	i) Consent to establish granted	71	944	**1015**
	ii) Consent to establish refused	03	95	**98**
	iii) No.of applications rejected	04	00	**04**
	iv) No. of applications under evaluation	00	501	**501**
	v) No. of incomplete applications and asked to comply	54	00	**54**

N.B: *Number of applications rejected -04, Number of incomplete applications - 54

Table - 5.2 Details of Consent to Establish Status by Regional Offices

10	No. of applications received during 2017-18	No. of applications carried forward from year 2016-17	Total no. of applications	No. of units granted	No. of units refused	No. of cases disposed off	Under evaluation
(1)	(2)	(3)	(4)	(5)	(6)	(7) (5+6)	(8) (4-7)
Angul	55	23	78	45	00	45	33
Balasore	52	19	71	59	00	59	12
Berhampur	198	80	278	166	51	217	61
Bhubaneswar	197	152	349	195	00	195	154
Cuttack	80	22	102	62	00	62	40
Jharsuguda	29	19	48	27	00	27	21
Kalinga Nagar	66	36	102	46	24	70	32
Keonjhar	41	03	44	34	02	36	08
Paradeep	32	12	44	23	00	23	21
Rayagada	148	29	177	93	16	109	68
Rourkela	53	08	61	50	01	51	10
Sambalpur	156	30	186	144	01	145	41
Total	**1107**	**433**	**1540**	**944**	**95**	**1039**	**501**

5.1.2 Mines and Minor Minerals

The detailed status of 223 applications processed for consent to establish mining and Minor Minerals operations during 2017-18 is given in Table-5.3.

Table - 5.3 Status of Consent to Establish Mines & Minor Minerals

Sl. No.	Status	Mines & Minor Minerals
1.	Applications received during 2017-18	167
2.	Applications carried forward from 2016-17	56
3.	**Total number of applications**	**223**
	Consent to Establish granted	146
	Consent Establish refused	14
	No. of applications under evaluation	63

5.1.3 Status of Consent to Establish of Brick Manufacturing Units

Details of consent to establish of brick manufacturing units during 2017-18 are given in Table-5.4.

Table - 5.4 Status of Consent to Establish Brick Manufacturing Units

Sl. No.	Status	Number of Cases
1.	No. of applications received during 2017-18	21
2.	No. of applications carried forward from 2016-17	14
3.	**Total number of complete applications**	**35**
4.	Consent to Establish granted	08
5.	Consent to Establish refused	00
6.	No. of applications under evaluation	27

5.1.4 Status of Consent to Establish of Stone Crushers, Iron Ore Crushers and Mineral Beneficiation Units

Consent to establish status of stone crushers, iron ore crushers and mineral beneficiation units and mineral stack yard during 2017-18 is given in Table-5.5.

Table - 5.5 Status of Consent to Establish Stone Crushers, Iron Ore Crushers and Mineral Benefication Units

Sl. No.	Status	Number of Cases
1.	No. of applications received during 2017-18	179
2.	No. of applications carried forward from 2016-17	60
3	**Total Number of complete applications**	**239**
4.	Consent to Establish granted	142
5.	Consent to Establish refused	03
6.	No. of applications under evaluation	94

5.2 CONSENT TO OPERATE (CTO)

5.2.1 Status of Consent to Operate

Board has received 3358 applications from industries, mines, stone crushers, iron ore crushers, brick kilns, hotels, hospitals, ceramic and refractories, telecom services, urban local bodies / townships etc. and disposed 2566 applications for consent to operate during the year 2017-18. The details are given in Table-5.6.

Table - 5.6 Status of Consent to Operate

Name of the Office (RO and HO)	No. of applications received 2017-18	No. of cases carried forward from 2016-17	Total no. of applications	No. of units granted CTO	No. of units refused	No. of cases disposed	Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul	290	95	385	272	00	272	113	38
Balasore	227	34	261	261	00	261	00	03
Berhampur	325	158	483	315	102	417	66	00
BBSR,	334	253	587	440	00	440	147	00
Cuttack	112	52	164	119	02	121	43	20
Keonjhar	93	47	140*	80	03	83	05	07
Rayagada	175	99	274**	126	06	132	18	15
Rourkela	125	45	170	114	00	114	56	00
Sambalpur	273	62	335	233	29	262	73	15
Kalinga Nagar	102	38	140	120	14	134	06	16
Jharsuguda	59	48	107	50	00	50	57	29
Paradeep	42	11	53	44	00	44	09	00
Head office	255	04	259	226	10	236	23	39
Total	**2412**	**946**	**3358**	**2400**	**166**	**2566**	**616**	**182**

N.B: *Out of 140, 52 - incomplete **Out of 274, 124-incomplete

Category wise consent to operate status during 2017-18 is given in Table-5.7 (a),(b)&(c)

Table - 5.7 Categorywise Consent to Operate Status

(a) Mines & Minor Minerals

Name of the Office (RO and H.O)	No. of application received during 2017-18	No. Of cases carried forward from 2016-17	Total no. of applications	No. of units granted CTO	No. of units refused	No. of cases disposed	No. of cases Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul	33	29	62	46	00	46	16	00
Balasore	00	00	00	00	00	00	00	00
Berhampur	101	00	101	101	00	101	00	00
Bhubaneswar	10	00	10	10	00	10	00	00
Cuttack	07	04	11	10	00	10	01	00

Name of the Office (RO and H.O)	No. of application received during 2017-18	No. Of cases carried forward from 2016-17	Total no. of appli-cations	No. of units granted CTO	No. of units refused	No. of cases disposed	No. of cases Under evalua-tion	No. of Show Cause Notices Issued
Jharsuguda	00	02	02	00	00	00	02	00
Kalinga Nagar	39	00	39	26	13	39	00	00
Keonjhar	02	01	03	02	00	02	01	00
Paradeep	01	00	01	01	00	01	00	00
Rayagada	37	14	51	38	00	38	13	01
Rourkela	19	07	26	16	00	16	10	00
Sambalpur	22	17	39	29	00	29	10	00
Head office	59	04	63	61	02	63	00	00
Total	**330**	**78**	**408**	**340**	**15**	**355**	**53**	**01**

(b) Stone Crusher, Iron Ore Crusher and Other Mineral Beneficiation Units

Name of the Regional office	No. of appli-cations received 2017-18	No. of cases carried forward from 2016-17	Total no. of appli-cations	No. of units granted CTO	No. of units refused	No. of cases disposed	Under evalua-tion	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul R.O.	176	42	218	142	00	142	76	05
Balasore R.O.	09	14	23	23	00	23	00	00
Berhampur R.O.	32	17	49	44	02	46	03	00
Bhubaneswar R.O	131	53	184	169	00	169	15	00
Cuttack R.O.	00	01	01	01	00	01	00	00
Jharsuguda	16	13	29	09	00	09	20	00
Kalinga Nagar	20	12	32	31	00	31	01	02
Keonjhar R.O.	11	08	19	10	00	10	09	03
Paradeep	00	00	00	00	00	00	00	00
Rayagada R.O.	30	06	36	26	03	29	07	07
Rourkela R.O.	23	12	35	20	00	20	15	00
Sambalpur R.O.	54	20	74	33	11	44	30	00
Total	502	198	700	508	16	524	176	17

(c) Brick Manufacturing Units

Name of the Regional office	No. of applications received 2017-18	No. of cases carried forward from 2016-17	Total no. of applications	No. of units granted CTO	No. of units refused	No. of cases disposed	Under evaluation	No. of Show Cause Notices Issued
1	2	3	4 (2+3)	5	6	7 (5+6)	8 (4-7)	9
Angul	07	00	07	03	00	03	04	00
Balasore	00	00	00	00	00	00	00	00
Berhampur	07	00	07	00	00	00	07	00
Bhubaneswar	00	06	06	05	00	05	01	00
Cuttack	04	02	06	00	00	00	06	10
Jharsuguda	00	08	08	00	00	00	08	08
Kalinga Nagar	00	00	00	00	00	00	00	03
Keonjhar	00	00	00	00	00	00	00	00
Paradeep	04	00	04	02	00	02	02	00
Rayagada	00	00	00	00	00	00	00	00
Rourkela	03	03	06	00	00	00	06	00
Sambalpur	02	00	02	01	00	01	01	00
Total	**27**	**19**	**46**	**11**	**00**	**11**	**35**	**21**

5.2.2 Status of Consent to Operate for Wastewater Treatment Facility by the Urban Local Bodies/ Townships under Water (Prevention & Control of Pollution) Act, 1974

The Urban Local Bodies (ULBs) and the industrial townships are required to be regulated under consent administration for disposal of sewage effluent as per provisions under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974.

The Board has issued directions to all Municipal authorities as per the CPCB direction dtd. 21.04.2015 to seek Consent under Water (PCP) Act,1974 and submit the detail compliance with time bound action plan for setting up sewerage system/septage management covering proper collection, treatment & disposal of sewage generated in the local / urban area. The Board intimated all the ULBs to improve sanitary conditions of open drain carrying sewage/sullage as per the CPCB guidelines. The new standards formulated by CPCB, Delhi for treated sewage effluent has been intimated to all the ULBs and concerned departments with instruction that the treated effluent shall meet the new prescribed standard.

The Hon'ble High Court initiated leagal action against ULBs which is continuing.

5.2.3 Status of Installation of GPRS based Real Time Data Acquisition System (RT-DAS) from the Online Monitoring Stations of the Industries in Odisha

The Board has implemented online monitoring system as a tool for self-regulation for the industries and at the same time, maintain transparency with the regulators i.e, SPCBs and CPCB. The CPCB advised all the SPCBs to install central server and software for acquisition of real time data. The system has been introduced with an objective to receive online monitoring data from all the States and to maintain a central data base by CPCB for the whole country.

The State Pollution Control Board, Odisha has developed a GPRS based Real Time Data Acquisition System (RT-DAS) using 'Y' cable to receive tamper proof data directly from online Stack, AAQ & Effluent monitoring systems installed by the industries. The central RT-DAS server has been installed in the Computer Cell of State Pollution Control Board, Odisha at its Head Office, Bhubaneswar. This RT-DAS server is receiving data from 150 industries and 23 mines operating in the State. The status of RT-DAS for the online is given in Table -5.8.

Table - 5.8 Status of Real Time Data Acquisition from the Online Continuous Monitoring Stations of Industries & Mines in Odisha

INDUSTRIES				
Sl. No.	Name & Address	No. of Online Monitoring Stations Connected to RT-DAS Server of the SPC Board, Odisha till 31.03.2018		
		AAQMS	CEMS	EQMS
1.	Aarti Steels Ltd, Athagarh, Cuttack, Odisha,	4	7	0
2.	ACC Limited, Baragarh	3	4	0
3.	Action Ispat and Power (P) Ltd, Jharsuguda	4	4	0
4.	Adhunik Metaliks Ltd., Chadrihariharpur,Sundargarh	4	11	0
5.	Aditya Aluminium (A Unit of Hindalco Industries Limited), Lapanga, Sambalpur	4	14	1
6.	Aditya Kraft & Papers Pvt. Ltd., Athagarh,Cuttack	0	2	2
7.	Agrasen Sponge Private Limited., Chungimati, Sundargarh	0	3	0
8.	Aryan Ispat and Power Pvt Ltd., Lapanga, Sambalpur	3	2	0
9.	Aska CO-OP.Sugar Industries Ltd., Aska	0	2	1
10.	B.R. Sponge and Power Ltd.. Bonai, Sundargarh	0	2	0
11.	Bhagawati Steels Pvt. Ltd., Jharsuguda	0	1	0
12.	Bhaskar Steel and Ferro Alloy Limited, Bonaigarh, Sundargarh	0	1	0
13.	Bhubaneshwar Power Pvt. Ltd., Cuttack,	4	2	0
14.	Bhushan Energy Limited , Angul	1	3	0
15.	Bhushan Power and Steel Limited, Rengali, Sambalpur	2	35	4
16.	Bhushan Steel Limited, Meramundali, Dhenkanal	7	35	7
17.	BILT Graphics Paper Products Ltd., Jaypore, Korapur	4	3	1
18.	Birla Tyres, Chhanpur, Balasore	1	3	0
19.	Boudh Distillery Pvt. Ltd., (Ramvikata)	0	1	1
20.	Brand Steel and Power Pvt. Ltd., Keonjhar	0	1	0
21.	BRG Iron and Steel Co. Pvt. Ltd.,Dhenkanal	4	3	0
22.	Concast Steel and Power Ltd., Badmal, Jharsuguda,	0	7	0
23.	Cosboard Industries Limited , Jagatpur, Cuttack	0	2	1

24.	Cracker India Alloys Limited, Barbil,Keonjhar	0	1	0
25.	Emmami Paper Mills Limited, Balasore	3	3	1
26.	Essar Power (Odisha) Ltd., Paradeep, Jagatsinghpur	3	2	1
27.	Essar Steel India Limited, Paradeep, Jagatsinghpur	3	1	0
28.	FACOR Power Limited, Randia, Bhadrak,	2	1	0
29.	Ferro Manganese Plant, Joda of Tata Steel (Joda)	0	4	0
30.	Ganesh Sponge Pvt. Ltd.,Angul	0	1	0
31.	GMR Kamalanga Energy Ltd., Kamalanga, Dhenkanal	4	3	1
32.	Goa Carbon Limited, Paradeep, Jagatsinghpur	2	1	0
33.	Govindam Projects Pvt Ltd., Kuarmunda, Sundargarh	0	1	0
34.	Grasim Industries Limited, Ganjam	0	3	1
35.	Green Waves Pvt Ltd., Bali, Cuttack	0	0	1
36.	Grewal Associates Pvt. Ltd., Barbil, Keonjhar	0	2	0
37.	HINDALCO Ltd., FRP Plant, Hirakud, Sambalpur	0	3	2
38.	HINDALCO Ltd.,CPP, Hirakud, Sambalpur	3	5	1
39.	HINDALCO Ltd.,Smelter Plant, Hirakud, Sambalpur	1	7	5
40.	Hindustan CocaCola Beverages Pvt. ltd., Khurda	0	0	1
41.	Indian Farmers Fertilizer Coperative Ltd., Paradeep, Jagatsinghpur	3	8	1
42.	Indian Metal and Ferro Alloys Ltd (120 MW Power Plant), Choudwar, Cuttack	0	2	0
43.	Indian Metal and Ferro Alloys Ltd (Charge Chrome Plant, Choudwar, Cuttack	0	3	0
44.	Indian Metal and Ferro Alloys Ltd., Choudwar, Cuttack	4	6	0
45.	Indian Oil Corpation Limited, Paradeep, Jagatsinghpur	7	22	1
46.	Jai Balaji Jyoti Steels Limited, Tainser, Sundargarh	0	2	0
47.	Jai Hanuman Udyog Ltd., Kolabira, Jharsuguda	0	1	0
48.	Jalan Carbon and Chemicals Pvt. Ltd., Talcher, Angul	1	0	0
49.	Jay Iron & Steels Ltd., Rourkela, Sundargarh	0	1	0
50.	Jay Jagannath Steel and Power Limited Sambalpur	0	2	0
51.	Jindal India Thermal Power Ltd., Talcher, Angul	4	2	1
52.	Jindal Stainless Ltd.,Jajpur	4	7	2
53.	Jindal Steel and Power Limited, Angul	6	38	3
54.	Jindal Steel and Power Ltd., Barbil, Keonjhar	2	2	0
55.	JK Paper Ltd.,Jaykaypur, Rayagada	3	3	0
56.	K. J. Ispat Limited, Duburi, Jajpur	0	1	0
57.	Kalinga Calciner Limited (Udayabata)	0	2	0
58.	Kalinga Sponge Iron Ltd., (Kalunga)	0	1	0
59.	Kamal Jeet Singh Ahluwalia, Keonjhar	0	3	0
60.	Kapilas Cement Manufacturing Works (A unit of OCL India Ltd., Tangi, Cuttack	3	1	0
61.	Kasvi International, formerly known as Patnaik Mineral	0	2	0
62.	Kaushal Ferrometals Pvt. Ltd., Sundargarh	0	1	0
63.	Khedaria Ispat Ltd., Nikenbahal, Sundrgarh	0	1	0
64.	L N Metallics Ltd.,Sripura, Jharsuguda	0	1	0
65.	Ores Ispat Pvt. Limited, (Bonaigarh)	0	1	0
66.	Maa Manasha Devi Alloys Pvt. Ltd., (Lahunipada)	0	1	0
67.	Maa Samleswri Industries (P) Ltd., (Rengali)	0	1	0
68.	Maa Shakumbari Sponge Pvt. Ltd., Rourkela, Sundargarh	0	1	0
69.	Mahakali Ispat Pvt. Ltd., Bonaigarh, Sundargarh	0	1	0

70.	Maithan Ispat Limited, Jakhapura, Jajpur	0	2	0
71.	Mayur Electro Ceramics Pvt. Ltd., Baripada, Mayurbhanj	0	2	0
72.	Meta Sponge Pvt. Ltd., Sundargarh	0	1	0
73.	MGM Minerals Limited (Steel Division), Nimidha, Dhenkanal,	0	1	0
74.	Mideast Integrated Steels Ltd., Jajpur	5	3	0
75.	MSP Metalics Limited, Jharsuguda	1	8	0
76.	MSP Sponge Iron Limited, Keonjhar	0	3	1
77.	N. K. Bhojani Pvt. Ltd., Keonjhar	0	1	0
78.	NALCO Ltd.,Captive Power Plant, Angul	4	10	1
79.	NALCO Ltd.,Refinery, Damanjodi, Koraput	4	9	1
80.	NALCO Ltd.,Smelter Plant, Angul	4	11	1
81.	Narbheram Power and Steel Pvt. Ltd., Dhenkanal	0	1	0
82.	Nava Bharat Ventures Ltd., Dhenkanal	3	3	1
83.	Neelachal Ispat Nigam Limited, Duburi, Jajpur	3	4	2
84.	New Laxmi Steel and Power Pvt. Ltd., Khordha	0	2	0
85.	NTPC Limited (TSTPS), Deepshikha, Angul	4	6	1
86.	NTPC Limited (TTPS) Talcher Thermal, Angul	4	6	1
87.	NTPC-SAIL Power Company Private Limited, Rourkela, Sundargarh,	4	2	0
88.	OCL India Ltd,Cement Unit, Rajgangpur, Sundargarh	4	10	1
89.	OCL Iron and Steel Limited, Rajgangpur, Sundargarh	0	4	0
90.	Odisha Power Generation Corporation Ltd., Banaharpali, Jharsuguda	4	2	1
91.	Paradeep Phosphate Ltd., Paradeep, Jagatsinghpur	4	9	3
92.	Patnaik Steels and Alloys Ltd., Keonjhar	0	1	0
93.	Pawanjay Sponge Iron Limited, Bijabahal, Sundargarh	0	1	0
94.	Pooja Sponge Pvt. Ltd., Kalunga, Sundargarh	0	2	0
95.	Prabhu Sponge(p) Limited, Rajgangpur, Sundargarh	0	2	0
96.	R. B. Sponge Pvt. Ltd., Jayantpur, Sambalpur	0	1	0
97.	Reliable Sponge Pvt. Ltd. (Bonai Unit), Bonaigarh, Sundargarh	0	1	0
98.	Reliable Sponge Pvt. Ltd.,(KALUNGA), Sundergarh	0	3	0
99.	Rexon Strips Ltd., Rourkela, Sundargarh	0	1	0
100.	Rourkela Sponge LLP (Kalunga)	0	2	0
101.	Rourkela Steel Plant, Rourkela, Sundargah	4	20	8
102.	Rungta Mines Limited, Koira, Sundargarh	4	5	0
103.	Rungta Mines Ltd., Karakola (Barbil)	0	2	0
104.	Sakthi Sugars Limited (Distillery), Haripur, Dhenkanal	0	1	2
105.	Sakthi Sugars Limited, Haripur, Dhenkanal	0	1	3
106.	Samaleswari Ferro Metals Ltd., Bishalkhinda, Sambalpur,	0	1	0
107.	Sani Clean Pvt. Ltd., (Khordha)	0	1	0
108.	Scan Steels Limited (Unit-2), Budhakata, Sundargarh	0	3	0
109.	Scan Steels Limited (Unit-I), Rajgangpur, Sundargarh	0	1	0
110.	Seeta Integrated Steel and Energy Ltd., Sundargarh	0	2	0
111.	Seven Star Steels Ltd., (Jharsuguda)	0	2	0
112.	Shiv Mettalicks (P) Ltd., Rourkela, Sundargarh, Odisha	0	2	0
113.	Shiva Cement Ltd., Rourkela, Sundargarh, Odisha	0	4	0
114.	Shree Ganesh Metalics(Kuarmunda), Rourkela, Sundargarh	0	3	0

115.	Shree Hari Sponge Pvt. Ltd., Bonaigarh, Sundargarh,	0	1	0
116.	Shri Hardev Steels Pvt. Ltd., Athagarh, Cuttack	0	3	0
117.	Shri Jagannath Steels and Power Ltd., Barbil, Keonjhar	0	3	0
118.	Shri Mahavir Ferro Alloys Pvt. Ltd., Rourkela, Sundargarh	0	4	0
119.	Shyam Metalics and Energy Ltd., Lapanga, Sambalpur	4	9	1
120.	SMC Power Generation Limited, Hirma, Jharsuguda	4	2	0
121.	Sponge Udyog Pvt. Ltd., Kalunga, Sundargarh	0	1	0
122.	Sree Metaliks Ltd., Rugudihi, Keonjhar	0	5	0
123.	Sri Balaji Metallics Pvt. Ltd., Birkela, Sundargarh	0	1	0
124.	Sumrit Metaliks Pvt. Ltd., Barbil, Keonjhar	0	1	0
125.	Suraj Products Pvt. Ltd., Rajgangpur, Sundargarh	0	3	0
126.	Surendra Mining Industries (P) Ltd., Bonai, Sundargarh	0	2	0
127.	Swastik Ispat Pvt. Ltd., Kuarmunda, Sundargarh	0	4	0
128.	Tata Sponge Iron Ltd., Joda, Keonjhar	3	3	0
129.	TATA STEEL Kalinganagar, Keonjhar	4	18	3
130.	TATA Steel Limited (Joda)	0	1	0
131.	Thakur Prasad Sao and Sons Pvt. Ltd., Lahandabud, Jharsuguda	0	2	0
132.	The Bargarh Co-operative Sugar Mills Ltd., Bargarh	0	1	0
133.	Times Steel and Power Pvt. Ltd., Rourkela, Sundargarh	0	1	0
134.	Toshali Cement Private Limited, Ampavalli, Koraput	0	3	0
135.	T R Chemicals Ltd., Rajgangpur, , Sundargarh	0	1	0
136.	TRL Krosaki Refactories Ltd., Belpahar, Jharsuguda	2	4	0
137.	UltraTech Cement Ltd., Arda, , Jharsuguda	4	2	0
138.	Utkal Alumina International Ltd., Doraguda, Rayagada	4	5	1
139.	Utkal Metallics Limited, Rourkela, Sundargarh	0	1	0
140.	Vasundhara Metaliks Pvt Ltd., Sundargarh	0	1	0
141.	Vedanta Limited (Smelter & CPP) Bhurkamunda	4	29	3
142.	Vedanta Ltd., (IPP) Jharsuguda	4.	4	1
143.	Vedanta Ltd., Lanjigarh, Kalahandi	2	3	0
144.	Vikram Pvt. Ltd., Bonai, Sundargarh	0	1	0
145.	Viraj Steel and Energy Ltd., Lapanga, Sambalpur	0	2	0
146.	Viraja Steel & Power Private Limited, Athgarh, Cuttack	0	2	0
147.	Visa Steel Limited, Kalinganagar, Jajpur	4	5	1
148.	VISA SunCoke Limited, Kalinganagar, Jajpur	0	2	0
149.	Vishal Metallics Pvt Ltd., Bonai, Sundargarh	0	1	0
150.	Yazdani Steel and Power Limited, Kalinga Nagar, Jajpur	0	2	0
	Total	**191**	**496**	**67**
	MINES			
	Name of the Mine	**CAAQMS**	**CEMS**	**EQMS**
1	Barsuan-Taldih-Kalta Iron Ore Mines of SAIL, Sundargarh	3	0	0
2	Balda Block Iron Mines of Serajuddin & Co, Keonjhar	4	0	0
3	Bolani Iron Ore Mines of SAIL, Keonjhar	4	0	0
4	Jajang Iron and Manganese Mines of Rungta Mines Ltd., Keonjhar	4	0	0
5	Joda East Iron Mines of Tata Steel Ltd, Keonjhar	3	0	0

6	Kamarda Chromite Mines of B. C. Mohanty & Sons Pvt. Ltd., Jajpur	0	0	2
7	Kalarangiatta Chromite Mines of FACOR Ltd., Jajpur	0	0	2
8	Kaliapani Chromite Mines of Balasore Alloys Ltd., Jajpur	0	0	2
9	Katamati Iron Ore Mines of TATA Steel Ltd., Keonjhar	3	0	0
10	Koira Iron Ore Mine of M/s. Essel Mining Industries Ltd, Sundargarh	3	0	0
11	Nadidih Iron and Manganese Ore Mines of Bonai Industrial Co. Ltd., Sundargarh	3	0	0
12	Nadidih Iron and Manganese Ore Mines of Feegrade & Co. Pvt. Ltd., Sundargarh	4	0	0
13	Nuagaon Iron Ore Mines of KJS Alhuwalia, Keonjhar	3	0	0
14	Oraghat Iron Ore Mines of Rungta Sons (P) Ltd., Sundargarh	3	0	0
15	Ostapal Chromite Mines of FACOR, Jajpur	0	0	2
16	Saruabil Chromite Mines of Mishrilal Mines (P) Ltd., Jajpur	0	0	2
17	Serenda Bhadrasahi Iron & Manganese Mine of M/s. OMC Ltd, , Keonjhar	1	0	0
18	South Kaliapani Chromite Mines of OMC Ltd., Jajpur	0	0	5
19	Sukinda Chromite Mines	0	0	2
20	Mahagiri Chromite Mines of M/s IMFA, Jajpur			
21	Sukinda Chromite Mines of TATA Steel Ltd, Jajpur	0	0	3
22	Tailangi Chromite Mines of IDCOL, Jajpur	0	0	2
23	Thakurani Iron Ore Mines of Kaypee Enterprises, Keonjhar	4	0	0
	Total	**42**	**0**	**22**

5.3 CLOSURE DIRECTIONS

As a part of the Board's regulatory role, all units brought under consent administration, if found defaulting the prescribed standards, are allowed reasonable time to comply with the standards. On persistent non-compliance, the defaulting units are served with Show Cause Notices (Table 5.6) followed by personal hearing and are generally prescribed time bound action plan for compliance. Consistent non-compliances lead to issue of closure directions. Table-5.9 shows the status of closure directions, issued by the Board.

Table - 5.9 Status of Closure Directions Issued During 2017-18.

No. of directions issued	No of industries under closure	No. of revocations after due compliance
271	177	96*

N.B: *out of 96 cases, 02 cases being issued previously have been revoked during 2017-18

5.4 PUBLIC HEARING

The State Pollution Control Board has been entrusted with the responsibility of conducting public hearing for the projects requiring environmental clearance from the Ministry of Environment and Forests with the assistance from the District Administration as per EIA Notification No. S.O.-1533 (E), dt. 14.09.2006.

Details of public hearings conducted during the period 2017-18 are given in Table-5.10 and 5.11.

Table - 5.10 Status of Public Hearings

1.	Number of projects received by the Board for public hearing during the financial year 2017-18.	30
2.	Number of projects carried forward from previous financial year 2016-17	12
3	**Total Number of projects received for public hearing**	**42**
4	Number of projects for which public hearing have been conducted	24
5	Number of cases for which public hearing date fixed	02
6	Number of cases for which public hearing not completed but forwarded to SEIAA/MOEF&CC Govt. Of India.	02
7	Number of cases for which public hearing have been exempted	03
8	Number of cases withdrawn	01
9	Number of cases where ToR have been invalid	02
10	Number of cases wherein Collectors were requested to fix up date	08

Table - 5.11 Details of Projects for which Public Hearings Conducted

Sl No.	Name & Address of the project	Purpose	Date	Category
1.	M/s. JSW CEMENT LTD, AT– Kalinganagar Industrial Complex Danagadi, Jajpur	1.2 MTPA capacity Cement Grinding Unit.	03.05.2017	B
2.	Gharbhurani-Sagasahi Iron ore Block, M/s Essar Steel Ltd,At-Ghabhurani,Sagasahi, Dist-Sundargarh	Production of 7.16MTPA of iron ore(ROM) along with crushing and screening plant and beneficiation plant with capacity of 6.7MTPA over an area of 139.165ha	19.05.2017	A
3.	Paradeep Phosphate Ltd At-Paradeep, Dist- Jagatsinghpur	Expansion projectof Ammonia,Urea,Nitric Acid plant ,DAP,GSSP & Aluminium Flouride in existing plant	19.05.2017	A
4.	The Chemical Division of M/s Grasim Industries Limited, At-Jayshree,Ward No. 10, Dist-Ganjam	Production capacity of Caustic Soda from 72, 000 TPA to 10,5000 TPA, its bi-products & value added derivatives	23.05.2017	B
5.	MSW Bhubaneswar Ltd,Bhuasuni,Daruthenga, Dist-Khordha	Municipal solid waste Management and landfill site	06.06.2017	A
6.	SukindaCromite Mines M/s IMFA Ltd,Sukinda, Dist-Jajpur	Expansion of Chromite production from 3.51 LTPA to 6.0 LTPA, change in mining technology from open cast to open cast and undergroundand establishment COB plant of capacity 40 TPH over an area of 116.76 ha.	23.06.2017	A

Sl No.	Name & Address of the project	Purpose	Date	Category
7.	M/s NTPC Ltd, Talcher Thermal,Dist- Angul	Expansion of proposed stage-III (2x660 MW) Talcher Thermal Power Project	12.07.2017	A
8.	M/s Rungta Mines Ltd., Expansion of Kamando Steel Plant,Komando,Sundargarh.	Expansion of production from 0.60 MTPA to 0.75MTPA.	19.07.2017	A
9.	M/s Saraf Agencies Pvt. Ltd. at Kanamana, Tikiri-Berhampur and Sriramchandrapur village, ChhatrapurTahasil, Dist- Ganjam	Expansion of 15 MW captive power plant, 5000 TPA Ferro Taitanium, 3000 TPA Ferro Manganese, 12 TPD Aluminium Powder and 2.4 TPA scandium oxide recovery plant.	16.08.2017	B
10.	M/s Talcher Fertilizer Ltd, Closed Unit of FCIL,Talcher,Dist-Angul	Establish of coal based new Ammonia plant-2200MTPD,Urea -3850MTPD project.	30.8.2017	A
11.	M/s OCL India ,Rajgangpur, Dist-Sundargarh.	Establishment of New Cement Plant (Dalmia DSP Unit) for Clinker (3.0 MTPA), Cement (2.25 MTPA), WHRS (15 MW) and DG set of 1000 KVA	20.09.2017	B
12.	M/s Suraj Product Ltd, Barpalli,Kesarmal, Rajgangpur,Dist-Sundargarh	Expansion of existing sponge iron plant	22.09.2017	**A**
13.	Indian oil Corporation Ltd, LPG import,Bhitagarh, Dist-Jagatsinghpur	Expansion of LPG import facility at Paradeep, Bhitargarh.	22.09.2017	**B**
14.	Kuakhai River Sand M/s Sri Kamal Ku. Patra Umadeibrhamapur,Balianta Tahasil , Dist-Khordha..	Excavation of 410500 cum/annum sand with opencast mining method over an area of 48.81 ha.	23.09.2017	**B**
15.	Karakhendra steel plant M/s Rungta Mines Ltd(sponge iron div), Karakhendra, Barbil, Keonjhar	Establishment of 0.10 MTPA capacity Karakhendra Steel Plant	13.10.2017	**A**
16.	M/s Rungta Mines Ltd(power plant) Karakolha,Keonjhar.	Establishment of 20 MW power plant (8 MW WHRB + 12 AFBC) within the existing sponge iron plant	12.10.2017	**A**
17.	M/s Deepak Fertilizer and Petrochemical Ltd, Bagadia,chaukimata,Rangiagarh,Paradeep, Dist: Jagatsinghpur	Establishing an Ammonium Nitrate manufacturing complex for the manufacture of Technical Ammonium Nitrate of 1000 MTPD and Ammonia of 380 MTPD .	13.10.2017	**A**

Sl No.	Name & Address of the project	Purpose	Date	Category
18.	M/s Utkal Alumina International Ltd, – Doraguda, Tahasil – Kashipur, Dist: Rayagada.	Enhancement of production capacity of Alumina Refinery from 1.5 MTPA to 3.0 MTPA along with co-generation power plant capacity from 90 MW to 150 MW	15.11.2017	A
19.	Bainibasa graphite mining and beneficiation project, M/s Pradhan Industries Ltd., Bainibasa,Bhairabguda, Dist: Rayagada	Production of 13272 TPA Graphite over an area of 58.704 Ha	28.11.2017	A
20.	Hirakud Dam Water Resources Dept, Burla,Dist: Sambalpur	Construction of additional Spillway of Hirakud Dam	08.12.2017	A
21.	M/s Vikram Private Ltd, village Badatumkela,P.S-Lahunipara, Dist-Sundargarh.	Expansion of sponge iron plant (2x100TPD DRI plant 8,50,000TPA iron ore beneficiation plant 6,00,000 TPA pellet plant and 10MW Power plant) by Process modification along with setting up of 1,07,000TPA SMS and 1,00,000TPA Rolling mill	13.12.2017	A
22.	Kulda OCP,M/s MCL,Basundhara area, tahsil-Himgiri, Dist: Sundargarh.	Expansion of coal production capacity from 10.0 MTPA to 15.0 MTPA over an area of 634.205 Ha.	10.01.2018	A
23.	Kusumdihi Manganese ore mines, M/s Orissa Manganese & Minerals Ltd ,At-Po-Kusumdihi&kamando Koidatahasil, Dist: Sundargarh.	Expansion of production of manganese ore from 17,376TPA to 50,680 TPA over an area of 31.549 ha	19.01.2018	B
24.	M/s Odisha Cement Plant Chandabalishyampur, Athagarh, Dist: Cuttack.	Establishing a Clinker Grinding Unit of 5.5 MTPA capacity (Phase –I of 3.0 MTPA Cement and Phase –II of 2.5 MTPA Cement) along with 20 MW	20-3-2018	A

5.5 STATUS OF WATER CESS

Status of Water Cess Assessment, Collection, Remittance and Reimbursement for the Year 2017-18 is given in Table-5.12.

Table - 5.12 Status of Water Cess

Sl.No	Water Cess Assessment	Amount in Rupees (₹)
1	Total Assessment of Industry & ULBs	7,96,66,573.00
2	Total Collection from Industry & ULBs	4,25,39,331.97
3	Remittance to MoEF	5,23,75,846.00
4	Reimbursement to the Board	4,08,51,908.00

5.6 ENFORCEMENT UNDER THE ENVIRONMENT (P) ACT, 1986

5.6.1 Implementation of the Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016.

Ministry of Environment, Forest and Climate Change, Govt. of India in supersession of Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008 has notified the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 on 4th April, 2016. These rules apply to the management of hazardous and other waste as specified in the Schedules to these rules.

5.6.1.1.Authorisation

The Authorization status of hazardous waste generating industries during 2017-18 is given in Table 5.13.

Table 5.13 Authorization Status of Hazardous Waste

Sl. No.	Authorization status	Number
(i)	**Total no. of applications received**	125*
(ii)	No. of units granted authorisation	85
(iii)	No. of units being issued Show Cause Notices	10
(iv)	No. of units refused	04
(v)	No. of direction issued	03
(vi)	**Total No. of applications disposed**	89

N.B: *Number of applications carried forward from previous year-25

5.6.1.2 Utilization and Disposal of Hazardous Waste

The SPCB, Odisha has taken special initiatives to enhance the utilization of the major hazardous waste generated from Aluminium Smelter plants and Steel Plants. Further, the Board has enforced the provision of Rule-09 of the Hazardous and other Wastes (Management & Transboundary Movement) Rules, 2016 to streamline the utilization of major hazardous waste like L. D. Sludge, Vanadium sludge, Aluminium Dross, Spent Pot Lining, Used Anode Butt etc. and to prevent reprocessing without compliance to this rule. The Board has taken lot of initiation to conduct joint trial run on co-incineration of Spent Pot Lining (SPL) alongwith coal and lime stone in Circulating Fludidized Bed Combustion (CFBC) based boilers of captive power plant of M/s. Hindalco Industries Ltd., Hirakud has been taken up during May 2017 in collaboration with CPCB, New Delhi. This is intended to recover more resources from the hazardous wastes.

(A) Authorization Status of Actual Users of Hazardous Waste

During the financial year 2017-18, 20 number of Actual Users (Inside Odisha) and 28 numbers (out side of Odisha) have been authorized for recycling/ re-processing of different hazardous waste under Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016.

List of Actual users (Processor / Recyclers) having valid authorization of SPCB (Inside Odisha)

Sl. No.	Name & Address of the Actual Users Authorized by SPCB, Odisha	Quantity of Hazardous Waste	Validity
1	Chemical & Metallurgical Co., Shed No. S/III-24, Industrial Estate, Kalunga, Rourkela	Used Oil-720 KL/A	31.03.2021
2	N. S. Chemicals, Plot No.-E/72, Chhend Colony, Rourkela, Sundargarh	Used Oil-936 KL/A	31.03.2020
3	Ratna Industries, At- Jamunanki, Po-Kuarmunda, Dist-Sundargarh-770039.	Used Oil-750 KL/A	31.03.2020
4	Raj Lubricants, At/ P.O-Januganj, Balasore	Used Oil-1500 KL/A	31.03.2019
5	Susim Enterprises, At- 154/F & G, New Industrial Estate, Jagatpur, Dist- Cuttack	Used Oil-1200 KL/A	31.03.2019
6	Gouri Shankar Lubricants, At- Gurujang, Po- Talcher, Dist- Angul	Used Oil-600 KL/A	31.03.2022
7	Asian Petro Chemicals, At- Asanabahali, Po.-Barada, Gundichapada, Dhenkanal	Used Oil -960 KL/A	31.03.2021
8	Shree Durga Petrochemicals, Plot No. 89A, New Industrial Estate, Phase-II, Jagatpur, Dist - Cuttack	Used lubricating oil / Transformer oil 2160 KL/A	31.03.2022
9	Swaraj Lubricants, At- Gobinda, Po-Haldipada, Dist-Balasore	Used Oil -1500 KL/A & Waste Oil-6000 KL/A	31.03.2023
10	Purbanchal Petroleum Private Limited, At - Kalagada, Po - Jadupur, Dist - Kendrapara	Used Oil/Spent Oil :3650KL/A & Waste Oil : 12045 KL/A	31-03-2021
11	Shriya Metals & Chemicals, At-Khairbandh, PO- Ranto Birkera, PS-Bramhanitarang, Dist - Sundargarh,	Waste Oil-7350 KL/A	31.03.2023
12	N. C. Oil Refinery Pvt. Ltd. Vill- Sova, Po-Osakana, Balikuda, Dist- Jagatsinghpur, Odisha	Waste Oil-5000 KL/A	31.03. 2023
13	Omm Sai Refinery, Kochilagadia, Darpanigarh, Jajpur	Waste Oil-10,400 KL/A	31.03.2021
14	Dhan Shree Smelters, At- Plot No. 154/C & D, New Industrial Estate, Jagatpur, Dist- Cuttack	Lead acid battery plates and other lead scraps 1800 T/A	31.03.2019
15	East Coast Biotech Project, At - Paniora (Near Sungranite Exports Ltd.), PO-Palaspur, Dist- Khurda	Zinc Skimming / Zinc Ash / Zinc Dross : 3000 T/A	31.03.2019
16	Omm Cee Business, At- IDCO Plot N0. 3, Sanabramanitarang, Industrial Estate, Kalunga, Dist - Sundargarh	Used Anode Butt - 3300 T/A	31-03-2020
17	Metacast International, At/Po - Katapali, Dist-Sambalpur	Used Anode Butt, 10,080 T/A	27-07-2019
18	A K Enterprises, Plot No. - 7, Khordha Industrial Estate, Dist - Khordha	Aluminium Dross 8400 T/A	31-03-2018
19	Green Energy Resources, Shanti Nagar Road, Near Furniture Point, Budharaja, Sambalpur	Spent Pot Lining (SPL) to manufacture Carbon Fuel-25200T/A	31.03.2020

20	Suraj Products Ltd., At- Barapali, Post - Kesharmal, Rajgangpur, Dist - Sundargarh	Flue Gas Dust / Gas Cleaning Plant (GCP) Sludge of LD Furnace / Electric Arc Furnace (EAF) / Blast Furnace of Steel Plant / Captive Blast Furnace 68500 T/A GCP Sludge of Ferro Alloy Plant 2400 T/A	31.03.2019

List of Actual users (Processor / Recyclers) having valid authorization of SPCB (Outside Odisha)

Sl. No.	Name & Address of the actual Users Authorized by SPCB, Odisha	Capacity of Re-processing	Validity of Authorisation
1	Bristol Petroleum Pvt. Ltd, 26/5/D-E, A. M. Ghosh Road, Budge Budge, 24 Parganas (S), West Bengal	Used Oil - 500 KL/A Waste Oil- 500 KL/A	31-03-2019
2	Kundu Refinery Works, Vill-Joykrishnapur, P.O- Begumpur, Durgapur Express Highway, Dist- Hoogly, West Bengal-712306	Used Oil - 2000 KL/A Waste Oil- 500 KL/A	31-03-2019 31-10-2017
3	Mangalam Lubricants, 3/50, Bisra Nagar, Ranchi, Jharkhand - 834003	Used Oil - 1000 KL/A Waste Oil-2500 KL/A	31.12.2018
4	OM Industries, 7 K. M. Stone, VPO- Titoli, Jind Road, Rohtak, Haryana-124001, India	Used Oil- 1000 KL/A	31-03-2021
5	Plus Lubricants, Gvt No.-228, Survey No.-43, Satepada Road, City-Abhitghar-421303, Thane, Maharashtra	Used Oil -1000 KL/A Waste Oil - 3000 KL/A	31.12.2018
6	R. S. Oil Industries, Junglepur, Jalan Industrial Complex, Baniyara, Begri (G.P.), Domjur, Howrah- 711 411	Used Oil - 100 KL/A Waste Oil - 1500 KL/A	31.03.2020
7	Sejal Sales Corporation, 11/S, H.T.A, Hathkhoj, Bhilai, Chhattisgarh	Used Oil - 5000 KL/A Waste Oil-6000 KL/A	20.10.2018
8	United Petrochem Industries, Basti Peer Dad Khan, Behind Leather Complex, Kapurthala Road, Jalandhar	Used Oil - 7000 KL/A Waste Oil - 5000 KL/A	31.03.2019
9	Lubrina Recycling Pvt. Ltd., Joy Chandipur, PO- Bakrahat, PS-Bishnupur, Dist - 24 Parganas (South), West Bengal – 743377	Used Oil - 4800 KL/A Waste Oil - 1800 KL/A	10.08.2019
10	JMR PETRO Industries, At-Plot No.-EE-24, AIE Pedagantyada, Gajuwaka, Visakhapatnam, A.P	Used Oil – 250 KL/A Waste / Residue Containing Oil – 2000 KL/A	30-11-19
11	Haryana Petro Oils, At - Plot No. 31, Phase - IIIrd, Industrial area, Sirsa, Haryana	Used Oil/Waste Oil - 500 KL/A	29.06.2019
12	Sri Lakshmi Narayana Industries At - Pidimgoyyi (V), Rajahmundry, Dist - East Godavari, Andhra Pradesh	Used Oil Spent Oil – 500 KL/A Waste Oil-1000 KL/A	11-01-2020
13	BA MA Oil Industries, Panchayar Road, Vill - Kharial, Po - Dankuni CC, Dist - Hoogly, West Bengal, India	Used Oil/ Spent Oil-200 KL/A Waste Oil-1500 KL/A	30-09-2018

Sl. No.	Name & Address of the actual Users Authorized by SPCB, Odisha	Capacity of Re-processing	Validity of Authorisation
14	Shree Pooshphans Chemicals, At - Plot No - W 186/D MIDC Taloja,Panvel, Raigad, Maharashtra – 410208	Waste Oil-3000 KL/A	31.03.2019
15	J. S. Pigments Pvt. Ltd., At- Jorura, PS - Polba, Delhi Road, Hooghly - 712138, West Bengal Tel : +91 33 2320 2656	Lead acid battery plates/ashes/residue/scraps – 4000 T/A Copper Dross / Druid jelly filled cables / waste copper alloys / Copper residue-1488 T/A	31-03-2019
16	Green Living, Sy. No. 24/3, D-2 of Chimalapalli (V), Porlupalem Gram Panchayat, Visakhapatnam Dist. (AP)	Spent Anode Butt – 15 T/Day	31.03.2021
17	Siddhi Industries, G-152, Bagru Industrial Area, Bagru Ext., Sanganeer, Rajasthan	Aluminium Dross – 400 T/M	31.03.2021 (AO Refused)
18	Matriachhaya Industries, At – Plot No. 57-B, Industrial Area, Rajgamar Road, Dist - Korba, Chhattisgarh	Aluminium Dross – 250 T/M	31.03.2019
19	Nikita Metallurgicals Private Limited, At – Shed No. 06, Phase – I, Industrial Area, Siltara, Dist – Raipur, Chhattisgarh	Aluminium Dross – 250 T/M	31.03.2018 (AO Refused)
20	Shree NLA Industries, Plot No.78, Industrial Area, Rajgamar Road, Korba, Chhatishgarh	Aluminium Dross – 100 T/M	04.03.2018
21	Trade Well Industries, At – Plot No. 81 A, Industrial Area, Korba, Chhattisgarh	Aluminium Dross – 250 T/M	31.03.2019
22	Ashirwad Enterprise, Plot No. 17, Jalaram Industrial Estate, B/H RUDA Trans port, Sonkhada, NavagamTa & Di : Rajkot	Aluminium Dross-500T/Month Zinc Dross-48T/Month	31.03.2019
23	R. R. Ferro Alloys (P) Ltd, Plot No.65 Industrial Area, Korba, Transport Nagar, Korba-495677 Chhattisgarh	Aluminium Dross – 833 T/M Vanadium Sludge – 200 T/M	13.02.2019
24	Shiva Industries, At -72 & 79, Industrial Area, Rajgamar Road, Korba, Chhattisgarh	Aluminium Dross – 166 T/M Vanadium Sludge – 33 T/M	02.02.2019
25	Gurushree Industries Private Limited, At-Delari, Gerwani, Raigarh, Chhattisgarh	Vanadium Sludge-46.66 T/M	30.04.2018
26	Arth Metallurgicals Pvt. Ltd., At-215, Ambuja City Centre, Vidhan Sabha Road, Saddu, Raipur, Chhattisgarh	Vanadium Sludge -200 T/M	31.08.2019
27	Rover Ferro-Tech Pvt. Ltd., 5G/A Heavy Industrial Area, Hotkhoj, Rhilai, Chhattisgarh	Vanadium Sludge – 100 T/M	31.03.2019
28	Star Alloys & Chemicals Pvt. Ltd., Plot No. 68,69 & 70 Industrial Area, Rajgamar Road, Korba, Chhattisgarh	Vanadium Sludge – 139 T/M	04.05.2018

(B) Common Facility for Disposal of Hazardous Wastes

A Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF) has been established during financial year 2010-11 at Kanchichuan, Jajpur, Odisha operated by M/s Ramky Enviro Engineers Ltd., Hyderabad with consented capacity of 25,000 T/A for secured landfill, 12,000 T/A of waste treatment & stabilisation and 3,000 T/A of incinerable hazardous waste storage. So far, 172 no. of Industries / Mines have taken membership agreement with Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF).

The status of disposal of hazardous waste at CHWTSDF is as follows:

- Hazardous waste received from various Industries/Mines by CHWTSDF -52,563.8 T
  - i. Landfill after treatment - 40,787.4 T
  - ii. Direct Landfill - 11,776.4 T

5.6.2 Implementation of Manufacture, storage and Import of Hazardous Chemical Rules, 1989 and amendments thereof

The Board has not received any application for import of Hazardous Chemicals to the State during 2017-18.

5.6.3. Implementation of Public Liability Insurance Act, 1991

As per provisions of the Public Liability Insurance Act, 1991, the industries handling hazardous substances above the regulatory quantity are required to take insurance policy for providing immediate relief to the victims in case of chemical accidents. Efforts have been made to create awareness among the concerned industries to take such insurances. In total 43 no. of industries have taken insurance policies under PLI Act, 1991.

5.6.4. Implementation of Batteries (M & H) Rule, 2001

The Board has received 54 no. of half yearly returns from April' 2017 to Sep' 2017 and 17 no. of half yearly returns from Oct' 2017 to March' 2018 from battery units. These returns have been received from Manufacturer, Re-conditioner, Assembler, Dealer, Bulk Consumer, Auctioneer, Importer & Recycler.

5.6.5 Implementation of the Biomedical Waste Management Rules, 2016

Biomedical wastes generated in different Health Care Establishments (HCEs) need to be disposed off safely without any adverse impacts on human health and environment. It is the prime responsibility of every occupier of the HCE generating Biomedical Wastes (BMWs) to ensure requisite management and disposal of wastes as per the Biomedical Waste Management Rules, 2016.

5.6.5.1 Inventorisation of Health Care Establishments

The Board has brought 2272 no. of HCEs under the authorization administration under the Biomedical Waste Management Rules 2016 and the district wise distribution of such HCEs with respect to bed strength is given in Table- 5.14.

Table – 5.14 Districtwise Distribution of Health Care Establishment under Authorization Administration

SL. No.	District	With 500 beds & above	With 200 beds but <500 beds	With 50 beds but < 200 bed	< 50 beds	Other * Category	Total
1	Angul	00	01	08	42	04	55
2	Balangir	00	00	02	40	14	56
3	Balasore	00	01	03	49	77	130
4	Bargarh	00	00	03	39	24	66
5	Bhadrak	00	01	03	20	10	34
6	Boudh	00	00	01	05	00	06
7	Cuttack	01	02	23	211	121	358
8	Deogarh	00	00	01	07	03	11

9	Dhenkanal	00	00	03	42	05	50
10	Gajapati	00	00	04	15	00	19
11	Ganjam	01	00	07	112	34	154
12	Jagatsinghpur	00	00	03	24	05	32
13	Jajpur	00	01	00	34	42	77
14	Jharsuguda	00	00	04	27	29	60
15	Kalahandi	00	00	03	25	01	29
16	Kandhamal	00	00	02	09	07	18
17	Kendrapara	00	00	01	24	32	57
18	Keonjhar	00	00	06	42	56	104
19	Khurda	06	05	21	136	137	305
20	Koraput	00	00	04	23	23	50
21	Malkangiri	00	00	01	35	00	36
22	Mayurbhanj	00	01	05	38	04	48
23	Nawarangpur	00	00	02	13	16	31
24	Nayagarh	00	01	03	32	29	65
25	Nuapada	00	00	03	07	00	10
26	Puri	00	01	02	47	33	83
27	Rayagada	00	01	02	28	14	45
28	Sambalpur	01	01	02	57	19	80
29	Sonepur	00	00	01	08	04	13
30	Sundargarh	01	01	12	67	109	190
	Total	**10**	**17**	**135**	**1258**	**852**	**2272**
N.B: * Pathological Laboratories and Diagnostic Centres etc.							

5.6.5.2 Management of Biomedical Waste

- As per the provisions of the Biomedical Waste Management Rules, 2016 all the HCEs are required to treat and dispose different types of biomedical waste properly. Most of the Health Care Units in Odisha have taken up inhouse biomedical waste segregation, treatment and disposal method as specified in the rule.
- Three important Govt. Medical Colleges and Hospitals namely, S.C.B Medical College and Hospital (SCB MCH), Cuttack, M.K.C.G Medical College and Hospital (MKCG MCH), Berhampur and V.S.S Medical College and Hospital (VSS MCH), Burla, Sambalpur have developed their own infrastructures such as incinerator, shredder, microwave etc. which are being operated by engaging private agencies for the treatment of Biomedical Wastes. The agencies are: M/s. Medi-Aid Marketing Services - engaged by SCB MCH, MKCG MCH and M/s. Biotech Solution- engaged by VSS MCH. These two facilities are also being shared by other nearby small Government HCEs.
- The Common Biomedical Waste Treatment Disposal Facility (CBWTDF) namely M/s Saniclean Pvt. Ltd., at Tangiapada, Khordha is taking care of segregated biomedical waste of hospitals in Cuttack city, Bhubaneswar city, Jagatpur, Choudwar, Duburi, Jatni, Paradeep & Khordha town. In addition, M/s. Medi-Aid Marketing Services is operating the biomedical waste management facility of Rourkela Govt. Hospital campus, Rourkela on Public Private Partnership mode. All the above private agencies have been authorized by the Board for the purpose.
- Out of 2272 HCEs, 528 units are utilizing the services of aforesaid common facilities.

5.6.5.3 Status of Authorisation Application of Health Care Establishments

The authorisation application status of the HCEs during 2017-18 is presented in Table-5.15

Table - 5.15 Authorisation Status of HCEs During 2017-18

Sl. No.	Status of HCEs	
1	No. of applications received during 2017-18	1015
2	No. of cases carried over from year 2016-17	875
3	**Total no. of applications received**	**1890**
4	No. of HCEs granted authorisation	1027
5	No. of HCEs refused authorisation	67
6	Total No. of applications disposed	1094
7	No. HCEs under evaluation / Incomplete application	796
8	No. of HCEs violating the Rules	80
9	No. of HCEs issued show cause notices	124
10	No. of inspection conducted	1376

5.6.6. Implementation of the Solid Waste Management Rules, 2016

As per the Solid Waste Management Rules, 2016 the Urban Local Bodies (ULBs) are required to take action for proper management of municipal solid wastes, seek authorization for setting up and operation of waste processing and disposal facilities from the Board and submit the annual report in Form-II every year to the State Pollution Control Board, Odisha. The Board has been pursuing this matter with all urban local bodies since the enactment of the Rules.

There are 114 Nos. of ULBs in the State. During 2017-18, 02 ULBs and 01 Township have applied for authorization and the Board has granted authorization to 02 ULBs (Keonjhar Municipality & Basudevpur Municipality) and 01 Township (Steel Township, RSP, Rourkela) during this period. Show cause notice has been issued to 108 ULBs for non compliance.

5.6.7. Implementation of Plastic Waste Management Rules, 2016

As per the provision of Plastic Waste Management Rules, 2016, the Board has been declared as prescribed authority to issue or renew registration to manufacturer of plastic products, multilayered packaging and plastic waste recycling & processing units. Brand owners who sell their commodity/products using multilayered plastics for packaging need to obtain registration from the Board for managing the plastic waste. During the reporting period Board has issued registration to 14 plastic product manufacturing units, 07 Brand owners and 02 plastic waste recyclers.

5.6.8 Implementation of the E-Waste Management Rules, 2016.

After enforcement of E-wste Management Rules, 2016 i.e. on 01.10.2016, no individual E-waste collection centre is allowed to collect E-waste. However, the captive collection centres of Producer / Dismantler/ Recycler/ Refurbishers are only allowed to collect E-waste. The Board has granted authorization to 01 captive E-waste collection centre for collection of electronic wastes. Besides the Board has granted authorisasion to 02 E-waste dismantler units in Odisha.

5.6.9. Construction and Demolition Waste Management Rules, 2016

- Ministry of Environment, Forest and Climate Change, Govt. of India has notified Construction and Demolition Waste Management Rules, 2016 on 29th March, 2016.This Rule shall be applicable to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organisation or authority who generates construction and demolition waste such as building materials, debris & rubble etc.
- The authorities of Revenue Department, Housing & Urban Development Department, Works Department and Town Planning, Government of Odisha have been requested to take appropriate action towards wide publicity of the Rules to create awareness amongst the local authorities and sensitize the general public about their responsibilities in handling such type of waste.
- All the construction and demolition waste generators have been requested through public notice in Daily News Papers to go through the aforesaid Rules which is available at the SPC Board website www.ospcboard.org and Ministry website www.moef.nic.in. Furthermore, the operators of the waste processing facilities have been asked to apply for authorization from State Pollution Control Board.

5.7 MONITORING NETWORK FOR WATER AND AIR QUALITY

5.7.1 National Water Quality Monitoring Programme (NWMP)

(A) *Inland Surface Water*

The Board is monitoring the water quality of eleven major river systems viz. Mahanadi, Brahmani, Baitarani, Rushikulya, Nagavali, Subarnarekha, Budhabalanga, Kolab, Vansadhara, Indravati and Bahuda at 127 stations under the CPCB assisted National Water Quality Monitoring Programme (NWMP); one station on Brahmani river and one station on Baitarani river under National river Conservation Programme (NRCP).

Board is also monitoring the water quality of other surface water bodies such as canals (Taladanda and Puri canals), ponds in Puri , Bhubaneswar, Angul and Jeypore, Lakes (Chilka, Anshupa and Tampara lakes), Atharabanki Creek and coastal water at Puri, Gopalpur and Paradeep under NWMP. Details of monitoring stations are presented in Table-1.

The following water quality parameters are determined on monthly basis at all locations.

(a) *Physical parameters*: Temperature, pH, Alkalinity, Total suspended solids (TSS)

(b) *Indicators of Organic pollution*: Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Free ammonia – Nitrogen, Ammonical (Ammonium + ammonia) – Nitrogen, Total Kjeldahl Nitrogen (TKN)

(c) *Bacteriological parameters*: Total Coliform (TC) and Fecal Coliform (FC)

(d) *Mineral constituents*: Electrical Conductivity (EC), Total Dissolved Solids (TDS), Boron, Sodium Absorption Ratio (SAR), Total Hardness (TH) , Chloride, Sulphate, Fluoride.

(e) *Nutrients*: Nitrate (Nitrate + Nitrite) – Nitrogen, Phosphate – Phosphorous

Metals : Chromium (Cr) (total and hexavalent), Iron (Fe), Nickel (Ni), Copper (Cu), Zinc (Zn), Cadmium (Cd), Mercury (Hg), Lead (Pb) are determined only during lean period, that is, in the month of April or May

Biological Indices : Saprobic Index (SI) and Diversity Index (DI) are monitored only in the months of January, April and October.

Table-5.16 Surface Water Quality Monitoring Stations conducted by the Board under NWMP and NRCP

Sl. No.	Source of monitoring	Total No. of Stations		NWMP Sampling Locations
		NWMP	NRCP	Monthly
(A)	**River system**			
1.	Mahanadi	55	-	**Ib :** (1) Sundargarh, (2) Jharsuguda, (3) Brajarajnagar U/s, (4) Brajarajnagar D/s; **Bheden :** (5) Jharsuguda; **Hirakud reservoir :** (6) Hirakud; **Power Channel**: (7) Power Channel U/s (8), Power Channel D/s; **Mahanadi :** (9) Sambalpur U/s, (10) Sambalpur D/s, (11) Sambalpur FD/s at Shankarmath, (12) Sambalpur FD/s at Huma, (13) Sonepur U/s, (14) Sonepur D/s, (15) Tikarpada, (16) Narasinghpur, (17) Mundali, (18) Cuttack U/s, (19) Cuttack D/s, (20) Cuttack FD/s , (21) Paradeep U/s, (22) Paradeep D/s; **Ong :** (23) Dharuakhaman ; **Tel :** (24) Monmunda; **Kathajodi:** (25) Cuttack U/s, (26) Cuttack D/s, (27) Cuttack FD/s at Mattagajpur, (28) Cuttack FFD/s at Kamasasan; **Serua :** (29) Cuttack FD/s at Sankhatrasa; **Kuakhai:** (30) Bhubaneswar FU/s, (31) Bhubaneswar U/s; **Daya :** (32) Gelapur, (33) Bhubaneswar D/s, (34) Bhubaneswar FD/s, (35) Kanas; **Gangua :** (36) Near Rajdhani Engg. College, (37) Hanspal, (38) Samantarpur, (39) Vadimula; **Birupa:** (40) Choudwar D/s; **Kushabhadra :** (41) Bhingarpur, (42) Nimapara, (43) Gop; **Bhargavi :** (44) Chandanpur; **Mangala :** (45) Malatipatpur, (46) Golasahi; **Devi:** (47) Machhagaon; **Gobari :** (48) Kendrapada U/s, (49) Kendrapada D/s; **Nuna :** (50) Bijipur ; **Kusumi:** (51) Tangi; **Kansari:** (52) Banapur ; **Badasnkha:** (53) Langaleswar; **Sabulia :** (54) Rambha; and **Ratnachira :** (55) Kumardihi
2.	Brahmani	40	1	**Sankh** : (1) Sankh U/s;

				Koel : (2) Koel U/s; **Brahmani :** (3) Panposh U/s, (4) Panposh D/s, (5) Rourkela D/s, (6) Rourkela FD/s at Attaghat, (7) Rourkela FD/s at Biritola, (8) Bonaigarh, (9) Rengali, (10) Samal, (11) Talcher FU/s, (12) Talcher U/s, (13) Mandapal, (14) Talcher D/s, (15) Talcher FD/s, (16) Dhenkanal U/s, (17) Dhenkanal D/s, (18) Bhuban, (19) Kabatabandha, (20) Dharmasala U/s, (21) Dharmasala D/s *, (22) Pottamundai; **Nandira:** (23) Nandira U/s, (24) Nandira D/s ; **Kisindajhor :** (25) Kisinda jhor; **Kharasrota :** (26)Khanditara,(27) Binjharpur,(28) Aul; **Guradih nallah:** (29) Guradih nallah; **Badajhor:** (30) Badajhor; **Damsala :** (31) Dayanabill; **Gonda nallah :** (32) Marthapur; **Lingira** : (33) Angul U/s, (34) Angul D/s; **Ramiala** : (35) Kamakhyanagar; **Banguru nallah :** (36) Bangurunallah; **Singada jhor :** (37) Singadajhor; **Tikira :** (38) Kaniha U/s, (39) Kaniha D/s; **Bangurusingada jhor :** (40) Bangrusingada jhor ; and **Karo** : (41) Barbil
3.	Baitarani	13	1	**Kundra :** (1) Joda; **Kusei:** (2) Deogaon; **Baitarani :** (3) Naigarh, (4) Unchabali, (5) Champua, (6) Tribindha, (7) Joda, (8) Anandpur, (9) Jajpur, (10) Chandbali U/s and (11) Chandbali D/s*; **Salandi:** (12) Bhadrak U/s, (13) Bhadrak D/s; and **Dhamra :** (14) Dhamra
4.	Rushikulya	6	-	**Russelkunda reservoir :** (1) Russelkunda; **BadaNadi** : (2) Aska; **Rushikulya** : (3) Aska, (4) Nalabanta, (5) Madhopur ; and (6) Potagarh
5.	Nagavali	3	-	**Nagavali :** (1) Penta U/s, (2) Jaykaypur D/s, and (3) Rayagada D/s
6.	Subarnarekha	1	-	**Subarnarekha** : (1) Rajghat
7.	Budhabalanga	4	-	**Budhabalanga** : (1) Baripada D/s, (2) Balasore U/s, (3) Balasore D/s; and **Sone :** (4) Hatigond
8.	Kolab	1	-	**Kerandi :** (1) Sunabeda
9.	Vamsadhara	2	-	**Vansadhara :** (1) Muniguda, and (2) Gunupur
10.	Indravati	1	-	**Indravati :** (1) Nawarangpur
11.	Bahuda	1	-	**Bahuda :** (1) Damodarpally
	Sub Total	**127**	**2**	
(B)	**Canal**	**9**	-	**Taladanda canal :** (1) Jobra, (2) Ranihat, (3) Chatrabazar, (4) Nuabazar (5) Biribati, (6) Atharabanki; **Puri Canal :** (7) Hansapal, (8) Jagannathpur, and (9) Chandanpur
(C)	**Ponds**	**8**	-	**Bhubaneswar : (**1) Bindusagar ; (4 bathing ghats on each side of the pond) **Puri :** (2) Narendra pokhari, (3) Markanda Pokhari, (4) Indradyumna tank, (5) Swetaganga, (6) Parvati sagar; **Angul :** (7) Raniguda ; and

				Jeypore : (8) Jagannathsagar
(D)	**Lakes**	**7**	**-**	**Chilka lake :** (1) Rambha, (2) Satapada ; **Anshupa lake** : (3) Kadalibari, (4) Sarandagarh, (5)Subarnapur , (6) Bishnupur ; and **Tampara lake** : (7) Tampara lake
(E)	**Sea**	**3**	**-**	(1) Puri, (2) Gopalpur and (3) Paradeep
(F)	**Creek**	**1**	**-**	(1) Atharabanki creek
(G)	**STP**	**3**	**-**	
	Total	**160**		

* NRCP stations

(A) River Water Quality Monitoring

The Annual average and range values of the criteria parameters such as pH, DO, BOD and TC, obtained during the year 2017 for the river water quality monitoring stations listed under Table-5.16 are given in Table-5.18. Water quality in respect of other parameters is given in Table-5.19.

From the point of view of assessment of the river water quality on the basis of its use to which the river is put by the community, the water quality should conform to either Class-B (outdoor bathing) or Class-C (drinking water source with conventional treatment followed by the disinfection). Comparison of the water quality has been made with respect to the tolerance limits stipulated for Class-C surface water bodies (IS : 2296-1982). Water quality data given in Table-5.18 indicate that out of the four critical parameters such as pH, DO, BOD and TC, parameters like pH and DO at most of the stations remained within the criteria limits, whereas BOD and/or TC have exceeded the criteria limits at several places. Non-compliance has been observed at 65 stations for TC alone, 1 station for BOD alone, and 23 stations for both BOD & TC (Table-2). The probable cause of downgrading the water quality from its desired use, are of organic origin. A major contribution towards this is from the discharge of untreated domestic water from the townships to the nearby water bodies. Out of 129 stations, one station is monitored on drain.

Table-5.17 Water quality status of river monitoring stations during 2017

Sl. No.	River System	Total no. of Monitoring Stations	Conforming Stations	Non-conforming stations		
				Both BOD & TC	BOD alone	TC alone
1	Mahanadi	55	19	16	1	19
2	Brahmani	41	11	5	-	24
3	Baitarani	14	3	-	-	11
4.	Rushikulya	6	1	-	-	5
5.	Nagavali	3	1	1	-	1
6.	Subarnarekha	1	1	-	-	-
7.	Budhabalanga	4	-	1	-	3
8	Kolab	1	1	-	-	-
9.	Vamsadhara	2	2	-	-	-
10.	Indravati	1	1	-	-	-
11.	Bahuda	1	-	-	-	1
Total		**129**	**40**	**23**	**1**	**65**

Water quality with respect to other parameters at all the monitoring stations except at Paradeep D/s, Devi at Macchagaon, Potagarh, Chandbali U/s, Chandbali D/s and Dhamra remain within the criteria limit for Class - C water quality as laid down under IS : 2296-1982 (Tolerance limits for inland surface water bodies). Water quality at Paradeep D/s, Devi at Macchagaon, Potagarh, Chandbali U/s, Chandbali D/s and Dhamra are greatly influenced by the tidal effect as these stations are very close to the river muhans.

Table-5.18 Annual Average and Range values of Four Criteria Parameters (January-December, 2017)

(A) Mahanadi River System (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Ib river												
1.	Sundargarh	12	7.8 (7.3-8.3)	7.5 (5.4-9.2)	1.1 (0.3-2.6)	2719 (78-9200)	0	2 (17)	C	C		
2.	Jharsuguda	12	7.8 (7.2-8.2)	7.4 (6.0-8.5)	1.0 (0.4-1.8)	3155 (45-9200)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
3.	Brajarajnagar U/s	12	7.8 (7.4-8.3)	7.4 (5.5-9.5)	1.0 (0.5-2.1)	1705 (490-5400)	0	1 (8)	C	C		
4.	Brajarajnagar D/s	12	7.9 (7.4-8.4)	7.4 (5.9-9.5)	1.3 (0.8-2.6)	3583 (790-16000)	0	2 (17)	C	C		
Bheden river												
5.	Jharsuguda	12	7.9 (7.3-8.3)	7.4 (6.8-8.8)	1.3 (0.1-3.6)	712 (20-3500)	1 (8)	0	C	Doesn't conform to Class C	BOD	Human activities
Hirakud reservoir												
6.	Hirakud reservoir	12	8.0 (7.5-8.4)	7.7 (6.6-8.7)	0.8 (0.4-1.4)	1102 (23-5400)	0	1 (8)	C	C		
Power Channel												
7.	Power Channel U/s	12	8.0 (7.5-8.4)	7.1 (5.3-8.2)	0.6 (0.3-1.0)	283 (<1.8-1300)	0	0	C	C		
8.	Power Channel D/s	12	8.0 (7.7-8.4)	7.0 (5.6-8.5)	0.8 (0.4-1.3)	411 (20-1400)	0	0	C	C		
Mahanadi river												
9	Sambalpur U/s	12	7.9 (7.2-8.3)	7.5 (5.1-8.6)	1.1 (0.4-1.6)	3691 (78-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
10	Sambalpur D/s	12	7.8 (7.3-8.3)	6.9 (5.4-8.3)	2.1 (1.5-2.9)	15158 (3500-35000)	0	10 (83)	C	Doesn't conform to Class C	TC	Waste water of Sambalpur town
11.	Sambalpur FD/s at Shankarmath	12	7.7 (7.3-8.4)	7.4 (5.7-9.5)	1.5 (0.8-2.3)	4157 (490-11000)	0	3 (25)	C	Doesn't conform to Class C	TC	
12.	Sambalpur FFD/s at Huma	12	8.0 (7.4-8.4)	7.6 (5.6-9.5)	0.9 (0.5-1.7)	3074 (130-11000)	0	3 (25)	C	Doesn't conform to Class C	TC	
13.	Sonepur U/s	12	8.1 (7.3-8.4)	7.8 (6.8-9.0)	0.7 (0.3-1.2)	756 (130-3500)	0	0	C	C		
14.	Sonepur D/s	12	8.0 (7.4-8.4)	7.3 (5.5-9.0)	1.0 (0.6-1.5)	2650 (230-7900)	0	2 (17)	C	C		
15.	Tikarapada	12	8.1 (7.6-8.4)	7.8 (6.7-9.2)	0.7 (0.3-1.2)	1215 (46-5400)	0	1 (8)	C	C		
16.	Narasinghpur	12	8.0 (7.3-8.4)	7.6 (6.2-8.7)	0.8 (0.3-1.2)	1247 (170-3500)	0	0	C	C		
17.	Mundali	12	8.1 (7.3-8.4)	7.5 (6.4-9.2)	0.7 (0.4-1.0)	1754 (110-3500)	0	0	C	C		
18.	Cuttack U/s	12	8.1 (7.4-8.4)	7.5 (6.2-8.8)	0.8 (0.7-1.2)	920 (78-2200)	0	0	C	C		

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
19.	Cuttack D/s	12	8.0 (7.3-8.4)	7.0 (5.9-8.2)	1.3 (0.7-2.1)	28717 (1300-160000)	0	6 (50)	C	Doesn't conform to Class C	TC	Waste water of Cuttack city
20.	Cuttack FD/s[$]	11	7.9 (7.4-8.4)	7.4 (6.0-9.6)	1.0 (0.6-1.4)	8864 (1100-35000)	0	4 (36)	C	Doesn't conform to Class C	TC	
21.	Paradeep U/s	12	7.8 (7.2-8.4)	7.0 (6.1-8.8)	0.9 (0.4-1.6)	684 (<1.8-3500)	0	0	C	C		
22.	Paradeep D/s	12	7.8 (7.3-8.1)	7.0 (5.6-7.7)	1.0 (0.3-2.3)	1805 (<1.8-16000)	0	1 (8)	C	C		
Ong River												
23.	Dharuakhaman*	8	8.1 (7.5-8.5)	7.5 (5.2-9.8)	0.9 (0.3-1.8)	579 (20-3500)	0	0	C	C		
Tel River												
24.	Monmunda	12	7.9 (7.4-8.4)	7.4 (5.3-9.6)	0.9 (0.3-1.6)	436 (<1.8-3500)	0	0	C	C		
Kathajodi river												
25.	Cuttack U/s	12	8.0 (7.2-8.4)	7.6 (6.8-9.9)	0.8 (0.5-1.4)	1223 (40-4300)	0	0	C	C		
26.	Cuttack D/s	12	7.9 (7.0-8.4)	6.7 (5.4-9.8)	3.2 (1.3-5.4)	68000 (1100-160000)	7 (58)	11 (92)	C	Doesn't conform to Class C	BOD,TC	Waste water of Cuttack city
27.	Mattagajpur (Cuttack FD/s)	12	7.8 (7.0-8.5)	6.0 (3.3-14.1)	6.3 (1.2-11.2)	11673 (780-35000)	10 (83)	8 (67)	C	Doesn't conform to Class C	DO#,BOD,TC	Waste water of Cuttack city

$: No sampling during February, 2017 # : Frequency of violation for DO is 1 time (8% of total observation)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
28.	Kamasasan (Cuttack FFD/s)**	8	7.9 (7.4-8.4)	6.9 (6.3-7.7)	1.6 (0.9-2.5)	6671 (<1.8-16000)	0	3 (38)	C	Doesn't conform to Class C	TC	Waste water of Cuttack city
Serua River												
29.	Sankhatrasa (Cuttack FD/s)	12	7.9 (7.3-8.4)	6.3 (4.4-7.7)	2.3 (0.6-4.4)	75748 (130-160000)	5 (42)	10 (83)	C	Doesn't conform to Class C	BOD, TC	Waste water of Cuttack city
Kuakhai river												
30	Bhubaneswar FU/s	12	8.1 (7.7-8.4)	7.7 (5.4-9.7)	0.6 (0.3-1.0)	3275 (700-16000)	0	1 (8)	C	C		
31.	Bhubaneswar U/s	12	8.1 (7.7-8.4)	7.2 (5.0-9.7)	1.1 (0.4-2.9)	25375 (2400-160000)	0	8 (67)	C	Doesn't conform to Class C	TC	Human activities
Daya river												
32.	Gelapur*	9	8.1 (7.7-8.4)	7.9 (5.8-10.0)	1.0 (0.7-1.5)	11333 (2200-35000)	0	5 (56)	C	Doesn't conform to Class C	TC	Human activities
33.	Bhubaneswar D/s	12	7.8 (7.1-8.3)	4.0 (1.0-5.8)	5.0 (3.7-7.7)	116250 (13000-160000)	12 (100)	12 (100)	C	Doesn't conform to Class C	DO#, BOD, TC	Waste water of Bhubaneswar city
34.	Bhubaneswar FD/s	12	7.5 (6.8-8.0)	4.7 (1.8-7.5)	4.2 (2.5-7.3)	110583 (13000-160000)	10 (83)	12 (100)	C	Doesn't conform to Class C	DO##, BOD, TC	
35.	Kanas*	9	7.9 (7.4-8.1)	5.0 (2.5-8.5)	2.0 (0.8-4.0)	42044 (1100-92000)	1 (11)	7 (78)	C	Doesn't conform to Class C	DO###, BOD, TC	Human activities

Frequency of violation for DO is 7 times (58 % of total observation)
Frequency of violation for DO is 4 times (33% of total observation)
Frequency of violation for DO is 2 times (22 % of total observation)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Gangua River												
36.	Near Rajdhani Engg. College*	9	7.5 (7.0-8.0)	1.8 (0.3-3.8)	11.0 (4.1-24.0)	144000 (16000-160000)	9 (100)	9 (100)	C	Doesn't conform to Class C	DO#, BOD, TC	Waste water of Bhubaneswar city
37.	Palasuni*	9	7.6 (6.9-8.1)	1.2 (0-2.3)	13.7 (3.9-39.0)	144667 (22000-160000)	9 (100)	9 (100)	C	Doesn't conform to Class C	DO#, BOD, TC	
38.	Samantray pur*	9	7.6 (7.1-8.3)	0.8 (0-3.2)	17.5 (5.9-35.0)	160000 (160000-160000)	9 (100)	9 (100)	C	Doesn't conform to Class C	DO#, BOD, TC	
39.	Vadimula	12	7.6 (6.8-8.1)	2.7 (0.3-5.2)	8.9 (4.1-19.9)	391167 (54000-1600000)	2 (100)	2 (100)	C	Doesn't conform to Class C	DO##, BOD, TC	
Birupa River												
40.	Choudwar D/s	12	8.0 (7.1-8.4)	7.5 (6.0-11.3)	0.8 (0.3-1.4)	16453 (<1.8-160000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
Kushabhadra River												
41.	Bhingarpur*	9	8.0 (7.6-8.4)	6.1 (4.2-8.5)	1.2 (0.6-1.7)	5740 (460-17000)	0	3 (33)	C	Doesn't conform to Class C	TC	Human activities
42.	Nimapara*	9	8.0 (7.3-8.4)	6.0 (4.5-7.4)	1.2 (0.5-1.6)	16004 (940-54000)	0	7 (78)	C	Doesn't conform to Class C	TC	Human activities
43.	Gop*	9	8.0 (7.4-8.4)	5.3 (2.6-6.8)	0.8 (0.4-2.2)	11156 (1100-35000)	0	6 (67)	C	Doesn't conform to Class C	DO###, TC	Human activities

Frequency of violation for DO is 9 times (100 % of total observation)
Frequency of violation for DO is 6 times (75% of total observation)
Frequency of violation for DO is 1 times (11 % of total observation)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Bhargavi River												
44.	Chandanpur*	9	8.1 (7.9-8.4)	6.1 (4.2-8.5)	1.2 (0.6-1.7)	6432 (790-16000)	0	5 (56)	C	Doesn't conform to Class C	TC	Human activities
Mangala River												
45.	Malatipatpur**	8	8.2 (7.7-8.4)	5.6 (4.8-7.4)	1.2 (0.3-2.3)	9578 (1300-22000)	0	5 (63)	C	Doesn't conform to Class C	TC	Human activities
46.	Golasahi**	8	8.1 (7.8-8.5)	6.6 (4.2-14.3)	3.3 (1.6-5.7)	27182 (68-92000)	4 (50)	5 (63)	C	Doesn't conform to Class C	BOD, TC	Human activities
Devi River												
47.	Machhagaon**	8	7.6 (7.3-8.2)	6.9 (5.8-8.0)	1.1 (0.5-1.7)	641 (<1.8-2800)	0	0	C	C		
Gobari River												
48.	Kendrapara U/s **	8	7.9 (7.4-8.4)	6.8 (4.2-7.6)	1.1 (0.6-2.0)	3885 (490-16000)	0	2 (25)	C	Doesn't conform to Class C	TC	Human activities
49.	Kendrapara D/s **	8	7.8 (7.4-8.4)	6.7 (4.8-7.8)	1.7 (1.2-2.8)	10813 (1800-24000)	0	6 (75)	C	Doesn't conform to Class C	TC	Human activities
Nuna River												
50.	Bijipur**	8	7.9 (7.3-8.4)	6.0 (4.3-7.4)	1.4 (0.8-3.1)	39638 (2800-160000)	1 (13)	7 (87)	C	Doesn't conform to Class C	BOD, TC	Human activities
Kusumi River												
51.	Tangi*	9	8.0 (7.5-8.4)	6.2 (4.1-7.8)	1.5 (0.4-3.2)	11888 (790-35000)	1 (11)	5 (56)	C	Doesn't conform to Class C	BOD, TC	Human activities

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Kansari River												
52.	Banapur*	9	8.1 (7.5-8.4)	6.1 (4.2-7.5)	1.3 (0.5-2.0)	13803 (700-92000)	0	2 (22)	C	Doesn't conform to Class C	TC	Human activities
Badasankha River												
53.	Langaleswar*	9	7.9 (7.1-8.5)	6.7 (5.2-9.2)	3.1 (0.9-12.7)	4232 (78-17000)	1 (11)	2 (22)	C	Doesn't conform to Class C	BOD, TC	Human activities
Sabulia River												
54.	Rambha*	9	8.1 (7.6-8.4)	6.2 (4.1-7.8)	2.0 (0.6-5.0)	10592 (330-35000)	1 (11)	6 (67)	C	Doesn't conform to Class C	BOD, TC	Human activities
Ratnachira River												
55.	Kumardihi**	8	7.9 (7.6-8.3)	4.9 (2.1-7.8)	2.0 (0.6-3.3)	10099 (790-17000)	2 (25)	5 (63)	C	Doesn't conform to Class C	DO#,BOD, TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:

TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.(Ref : IS 2296-1982 foot note)

* Monitoring started from April, 2017 ** Monitoring started from May, 2017

Frequency of violation for DO is 1 time (13 % of total observation)

(b) Brahmani river System (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Sankh river												
1.	Sankh U/s	12	7.9 (7.6-8.1)	7.4 (5.9-8.6)	1.2 (0.4-2.1)	6782 (23-16000)	0	7 (56)	C	Doesn't conform to Class C	TC	Human activities
Koel River												
2.	Koel U/s	12	7.9 (7.3-8.5)	7.3 (5.8-9.7)	1.2 (0.6-1.7)	10400 (1600-16000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Brahmani river												
3.	Panposh U/s	12	7.8 (7.5-8.4)	7.4 (5.4-8.8)	1.0 (0.4-1.5)	6958 (1300-16000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
4.	Panposh D/s	12	7.2 (6.5-7.9)	6.0 (4.4-7.5)	4.1 (1.5-5.8)	44742 (7900-160000)	10 (83)	12 (100)	C	Doesn't conform to Class C	BOD, TC	Waste water of Rourkela town and Steel Plant
5.	Rourkela D/s	12	7.5 (6.8-8.1)	6.5 (4.9-8.5)	2.9 (1.2-4.8)	47558 (4900-160000)	5 (42)	11 (92)	C	Doesn't conform to Class C	BOD, TC	-do-
6.	Rourkela FD/s (Attaghat)	12	7.8 (7.2-8.1)	7.0 (5.4-9.8)	1.7 (0.7-3.2)	5544 (20-16000)	1 (8)	2 (25)	C	Doesn't conform to Class C	BOD, TC	-do-
7.	Rourkela FD/s (Biritola)	12	7.8 (7.3-8.2)	7.6 (5.5-9.6)	1.3 (0.4-2.7)	4845 (230-16000)	0	4 (33)	C	Doesn't conform to Class C	TC	-do-

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
8.	Bonaigarh	12	7.7 (7.0-8.2)	8.3 (6.1-10.7)	0.9 (0.2-1.8)	4316 (20-22000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
9.	Rengali	12	7.9 (7.3-8.3)	7.2 (5.8-8.8)	0.8 (0.2-1.9)	1009 (45-4300)	0	0	C	C		
10.	Samal	12	7.9 (7.6-8.3)	7.6 (6.2-9.4)	0.9 (0.3-1.6)	2750 (330-9200)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
10.	Talcher FU/s	12	7.9 (7.3-8.4)	7.8 (6.3-9.9)	0.6 (0.3-1.4)	1653 (170-5400)	0	1 (8)	C	C		
10.	Talcher U/s	12	8.0 (7.7-8.4)	7.7 (6.3-9.2)	0.9 (0.3-1.6)	3508 (220-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
13.	Mandapal*	9	7.8 (7.2-8.2)	7.3 (6.1-8.4)	1.1 (0.4-2.9)	6722 (1300-16000)	0	4 (44)	C	Doesn't conform to Class C	TC	Human activities
14.	Talcher D/s	12	7.9 (7.4-8.4)	7.3 (5.6-8.2)	1.6 (0.5-2.5)	4677 (110-17000)	0	4 (33)	C	Doesn't conform to Class C	TC	Human activities
15.	Talcher FD/s	12	8.0 (7.4-8.4)	7.7 (5.9-8.6)	1.2 (0.7-2.5)	3159 (110-16000)	0	2 (17)	C	C	TC	Human activities
16.	Dhenkanal U/s	12	8.0 (7.6-8.3)	8.1 (6.8-11.1)	0.7 (0.2-1.4)	4027 (490-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
17.	Dhenkanal D/s	12	7.9 (7.4-8.3)	7.5 (6.4-9.5)	0.9 (0.2-1.5)	4868 (580-16000)	0	4 (33)	C	Doesn't conform to Class C	TC	Waste water of Dhenkanal township

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
18.	Bhuban	12	7.9 (7.4-8.4)	7.7 (6.2-8.2)	1.0 (0.6-1.6)	3341 (460-16000)	0	2 (17)	C	C		
19.	Kabatabandha	12	8.0 (7.6-8.4)	7.9 (7.2-8.7)	0.8 (0.4-1.6)	1107 (330-3500)	0	0	C	C		
20.	Dharmasala U/s	12	7.9 (7.3-8.4)	7.6 (6.6-10.2)	0.7 (0.4-1.1)	3500 (68-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
21.	Dharmasala D/s	12	7.9 (7.4-8.4)	7.7 (6.5-10.0)	1.0 (0.6-1.5)	7828 (330-24000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
22.	Pottamundai	12	7.6 (7.2-8.3)	7.9 (6.2-9.5)	1.0 (0.3-1.8)	8408 (1300-16000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities
Nandira river												
23.	Nandira U/s	12	8.1 (7.7-8.5)	7.6 (5.9-9.4)	1.1 (0.5-1.8)	1986 (230-5400)	0	2 (17)	C	C		
24.	Nandira D/s	12	8.1 (7.4-8.5)	7.5 (5.8-10.8)	1.8 (0.8-3.2)	7461 (330-35000)	1 (8)	6 (50)	C	Doesn't conform to Class C	BOD, TC	Human activities
Kisindajhor												
25.	Kisindajhor	12	8.1 (7.3-8.5)	7.2 (5.3-8.9)	0.9 (0.2-1.8)	2012 (18-9200)	0	1 (8)	C	C		
Kharasuan River												
26.	Khanditara	12	7.9 (7.5-8.4)	7.5 (6.6-8.7)	0.8 (0.4-1.6)	1067 (110-5400)	0	1 (8)	C	C		
27.	Binjharpur	12	7.9 (7.5-8.4)	8.0 (6.8-9.7)	0.9 (0.3-1.8)	4808 (490-24000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
28.	Aul	12	7.6 (7.2-8.2)	7.6 (6.4-8.8)	1.2 (0.4-2.0)	8992 (1100-24000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities
Guradih nallah												
29.	Guradih nallah	12	7.0 (5.8-7.7)	5.9 (3.4-8.5)	6.5 (2.7-11.3)	139833 (54000-160000)						
Badjhor nallah												
30.	Badjhor nallah***	10	8.1 (7.3-8.5)	6.3 (5.4-7.8)	1.2 (0.5-1.8)	25920 (4900-92000)	0	8 (80)	C	Doesn't conform to Class C	TC	Human activities
Damsala River												
31.	Dayanabil*	9	8.0 (7.7-8.3)	7.5 (7.2-7.9)	0.7 (0.3-1.4)	1697 (170-4900)	0	0	C	C		
Ganda nallah												
32.	Marthapur*	9	7.9 (7.4-8.3)	7.1 (5.8-7.8)	1.3 (0.4-1.9)	4677 (790-13000)	0	2 (22)	C	Doesn't conform to Class C	TC	Human activities
Lingira River												
33.	Angul U/s*	9	8.3 (7.7-8.5)	7.7 (6.1-9.8)	1.0 (0.6-1.4)	942 (20-2400)	0	0	C	C		
34.	Angul D/s*	9	8.3 (7.7-8.5)	7.4 (6.0-9.4)	1.4 (0.8-1.9)	3822 (78-16000)	0	2 (22)	C	Doesn't conform to Class C	TC	Wastewater of Angul town
Ramiala River												
35.	Kamakhyanagar*	9	7.9 (6.8-8.3)	7.0 (6.6-7.4)	0.8 (0.5-1.4)	1649 (40-4900)	0	0	C	C		

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Banguru nallah												
36.	Banguru nallah*	9	7.9 (7.3-8.5)	7.0 (6.2-8.4)	1.3 (0.3-3.2)	3522 (230-16000)	1 (11)	1 (11)	C	Doesn't conform to Class C	BOD, TC	Human activities
Singada jhor												
37.	Singada jhor*	0	8.0 (7.5-8.4)	7.2 (6.0-8.1)	0.9 (0.2-1.9)	3167 (220-16000)	0	2 (22)	C	Doesn't conform to Class C	TC	Human activities
Tikira River												
38.	Kaniha U/s*	9	7.9 (7.4-8.3)	7.4 (5.6-9.2)	0.9 (0.4-1.5)	3036 (490-16000)	0	1 (11)	C	C		
39.	Kaniha D/s*	9	7.9 (7.5-8.3)	7.1 (5.8-8.6)	1.3 (0.4-2.3)	3617 (230-16000)	0	2 (22)	C	Doesn't conform to Class C	TC	Human activities
Bangurusingada jhor												
40.	Bangurusingada jhor*	9	8.2 (7.8-8.5)	7.5 (6.8-9.0)	1.1 (0.3-2.0)	5269 (330-16000)	0	4 (44)	C	Doesn't conform to Class C	TC	Human activities
Karo River												
41.	Barbil **	8	7.7 (7.5-7.9)	6.9 (5.8-7.8)	0.9 (0.3-1.8)	4869 (45-28000)	0	1 (13)	C	Doesn't conform to Class C	TC	Human activities
Class 'B' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**5 and above**	**3 or less**	**500 or less**			**Outdoor bathing**			
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note) * Monitoring started from April, 2017, ** Monitoring started from May, 2017, *** Monitoring started from March, 2017

(C) Baitarani river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Kundra nallah												
1.	Joda *	8	7.7 (7.1-8.1)	6.5 (5.5-7.5)	1.0 (0.2-1.9)	15511 (490-92000)	0	4 (50)	C	Doesn't conform to Class C	TC	Human activities
Kusei River												
2.	Deogaon	12	8.2 (7.8-8.5)	7.4 (6.2-8.7)	1.0 (0.2-2.5)	4788 (130-16000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
Baitarani River												
3.	Naigarh*	8	7.8 (7.4-8.1)	7.1 (6.5-7.6)	1.1 (0.3-2.5)	9209 (170-54000)	0	2 (25)	C	Doesn't conform to Class C	TC	Human activities
4.	Unchabali*	8	7.8 (7.4-8.1)	7.3 (6.7-8.4)	0.9 (0.4-1.3)	1108 (20-3500)	0	0	C	C		
5.	Champua*	8	7.7 (7.4-8.0)	7.3 (6.4-8.8)	1.0 (0.6-2.8)	1164 (20-3500)	0	0	C	C		
6.	Tribindha*	8	7.7 (7.3-8.1)	7.3 (5.9-8.1)	1.2 (0.6-2.8)	3425 (92-16000)	0	2 (25)	C	Doesn't conform to Class C	TC	Human activities
7.	Joda (Basudevpur)	12	7.8 (7.4-8.2)	7.2 (4.9-9.1)	0.9 (0.3-2.2)	1361 (<1.8-5400)	0	1 (8)	C	C		
8.	Anandpur	12	7.9 (7.5-8.4)	7.0 (6.0-8.6)	1.1 (0.4-2.2)	3967 (170-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
9.	Jajpur	12	7.9 (7.5-8.4)	7.4 (5.6-8.8)	1.2 (0.6-1.8)	39981 (270-160000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
10.	Chandbali U/s	12	8.0 (7.4-8.4)	7.3 (6.2-8.4)	0.8 (0.4-1.5)	11408 (490-35000)	0	8 (67)	C	Doesn't conform to Class C	TC	Human activities
11.	Chandbali D/s	12	7.9 (7.6-8.3)	6.7 (5.2-8.0)	1.0 (0.6-1.6)	23449 (790-160000)	0	10 (83)	C	Doesn't conform to Class C	TC	Human activities
Salandi River												
12.	Bhadrak U/s	12	7.9 (7.5-8.5)	6.7 (5.6-8.4)	0.9 (0.3-1.6)	22594 (490-160000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
13.	Bhadrak D/s	12	7.9 (7.4-8.4)	6.5 (5.2-8.3)	1.2 (0.8-2.1)	51358 (1700-160000)	0	9 (75)	C	Doesn't conform to Class C	TC	Human activities
Dhamra River												
14.	Dhamra	12	7.7 (7.2-8.1)	6.4 (5.2-8.0)	1.1 (0.3-2.8)	5553 (330-16000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:

TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.

(Ref : IS 2296-1982 foot note)

* Monitoring started from May, 2017

(D) Rushikulya river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Russelkunda Reservoir												
1.	Russelkunda*	8	8.0 (7.5-8.4)	7.7 (6.7-9.1)	1.1 (0.5-1.8)	6939 (<1.8-16000)	0	3 (38)	C	Doesn't conform to Class C	TC	Human activities
Bada Nadi												
2	Aska*	8	8.0 (7.6-8.5)	7.4 (5.9-8.6)	1.1 (0.6-2.2)	3191 (<1.8-9200)	0	2 (25)	C	Doesn't conform to Class C	TC	Human activities
Rushikulya River												
3.	Aska*	8	8.0 (6.7-8.4)	6.8 (5.8-7.6)	1.1 (0.6-1.9)	3601 (4.5-9200)	0	2 (25)	C	Doesn't conform to Class C	TC	Human activities
4.	Nalabanta	8	8.1 (7.8-8.4)	6.8 (5.8-8.1)	1.1 (0.5-1.9)	5849 (170-16000)	0	3 (38)	C	Doesn't conform to Class C	TC	Human activities
5.	Madhopur	12	8.2 (7.7-8.4)	7.1 (5.7-8.7)	1.1 (0.5-1.8)	6522 (49-16000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
6.	Potagarh	12	8.0 (7.5-8.5)	7.2 (5.9-8.3)	1.6 (0.5-2.8)	2919 (<1.8-16000)	0	2 (17)	C	C		
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref : IS 2296-1982 foot note)
* Monitoring started from May, 2017

(E) Nagavali river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Nagavali river												
1.	Penta U/s	12	8.1 (7.6-8.4)	7.0 (6.3-7.5)	0.8 (0.2-1.9)	1983 (130-5400)	0	1 (8)	C	C		
2.	J.K. Pur D/S	12	8.2 (7.5-8.4)	6.7 (5.9-7.5)	2.0 (0.5-3.5)	7019 (230-22000)	2 (16)	5 (41)	C	Doesn't conform to Class C	BOD,TC	Human activities
3.	Rayagada D/S	12	8.0 (7.1-8.5)	6.9 (6.2-7.5)	1.3 (0.5-2.6)	8133 (490-54000)	0	6 (50)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref : IS 2296-1982 foot note)

(F) Subarnarekha river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Subarnarekha river												
1.	Rajghat	12	8.1 (7.5-8.3)	7.3 (6.4-8.2)	1.0 (0.3-2.1)	8336 (330-54000)	0	3 (25)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)

(G) Budhabalanga river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Budhabalanga river												
1.	Baripada D/s	12	8.0 (7.3-8.4)	7.7 (6.0-8.8)	1.2 (0.6-1.9)	8853 (330-35000)	0	5 (42)	C	Doesn't conform to Class C	TC	Human activities
2.	Balasore U/s	12	8.1 (7.6-8.4)	7.4 (6.4-8.4)	1.1 (0.6-1.8)	27477 (330-160000)	0	7 (58)	C	Doesn't conform to Class C	TC	Human activities
3.	Balasore D/s	12	8.1 (7.8-8.5)	6.3 (5.2-8.5)	2.0 (1.0-3.2)	46600 (4900-160000)	1 (8)	11 (92)	C	Doesn't conform to Class C	BOD,TC	Human activities
Sone River												
4.	Hatigond*	9	7.9 (7.5-8.4)	7.2 (5.6-8.2)	1.1 (0.5-1.6)	5461 (78-16000)	0	3 (33)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)
* Monitoring started from April, 2017

(H) Kolab river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Kerandi River												
1.	Sunabeda	12	7.7 (7.3-8.0)	7.2 (6.5-8.0)	0.8 (0.2-1.5)	2933 (230-16000)	0	1 (8)	C	C		
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref : IS 2296-1982 foot note)

(I) Vansadhara river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Vansadhara River												
1.	Muniguda	12	8.2 (7.7-8.4)	6.9 (6.4-7.4)	0.8 (0.5-1.4)	1247 (78-4900)	0	0	C	C		
2.	Gunupur	12	8.1 (7.5-8.5)	6.9 (6.0-7.3)	0.9 (0.3-1.7)	3033 (130-16000)	0	2 (17)	C	C		
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml. (Ref : IS 2296-1982 foot note)

J) Indravati river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Indravati River												
1.	Nawaranngpur*	8	7.7 (7.0-8.1)	6.7 (6.1-7.4)	0.8 (0.2-1.9)	1122 (20-4900)	0	0	C	C		
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)

* monitoring started from May, 2017

(K) Bahuda river system (2017)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value		Designated Class	Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/100 ml)	BOD	TC				
Bahuda River												
1.	Damodarpally*	8	8.3 (7.9-8.4)	6.9 (5.2-8.3)	1.2 (0.4-1.8)	4985 (700-16000)	0	3 (38)	C	Doesn't conform to Class C	TC	Human activities
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	**4 and above**	**3 or less**	**5000 or less**			**Drinking water source with conventional treatment followed by disinfection**			

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)

* monitoring started from May, 2017

Table-5.19 Water quality with respect to Other Parameters during 2017 (January-December)

(A) Mahanadi River System (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Ib river																
1.	Sundargarh	166 (2-1016)	58 (20-76)	9.2 (5.0-23.5)	0.130 (0.056-0.280)	0.006 (0.002-0.027)	2.05 (0.56-7.28)	1110 (20-5400)	137 (94-167)	0.29 (0.19-0.41)	0.056 (0.003-0.295)	86 (59-102)	52 (36-60)	7.64 (3.99-10.99)	7.45 (2.10-15.42)	0.27 (0.19-0.45)
2.	Jharsuguda	62 (8-330)	62 (20-76)	8.2 (4.3-14.3)	0.263 (0.056-0.900)	0.009 (0.001-0.028)	2.29 (0.56-8.40)	1535 (20-5400)	148 (99-186)	0.31 (0.18-0.48)	0.050 (0.003-0.147)	86 (59-102)	55 (32-68)	8.14 (4.99-11.99)	7.44 (2.45-16.29)	0.32 (0.14-0.95)
3.	Brajrajnagar U/s	68 (9-224)	64 (28-96)	9.1 (4.3-13.7)	0.168 (0.056-0.670)	0.006 (0.002-0.022)	1.68 (0.56-5.60)	542 (78-1300)	159 (117-239)	0.33 (0.19-0.47)	0.040 (0.011-0.137)	89 (68-118)	56 (34-84)	8.98 (4.99-12.99)	19.52 (2.19-19.52)	0.31 (0.14-0.51)
4.	Brajrajnagar D/s	77 (6-482)	82 (28-180)	11.8 (5.8-15.3)	0.167 (0.056-0.450)	0.008 (0.002-0.035)	2.30 (1.12-5.04)	1534 (<1.8-9200)	205 (118-438)	0.39 (0.19-0.84)	0.035 (0.014-0.088)	116 (71-239)	74 (32-156)	12.30 (4.99-27.98)	9.73 (1.42-23.38)0	0.30 (0.14-0.40)
Bheden river																
5.	Jharsuguda	97 (4-564)	80 (32-124)	12.7 (5.8-21.8)	0.144 (0.050-0.670)	0.007 (0.001-0.034)	2.26 (0.56-7.84)	187 (<1.8-1100)	297 (121-525)	0.73 (0.27-1.95)	0.109 (0.004-0.260)	162 (72-310)	92 (48-154)	26.79 (6.99-79.96)	25.40 (3.24-58.80)	1.12 (0.29-2.70)
Hirakud Reservoir																
6.	Hirakud reservoir	37 (5-138)	72 (36-92)	9.0 (5.1-13.2)	0.163 (0.056-0.560)	0.011 (0.002-0.056)	2.50 (0.84-6.72)	405 (<1.8-2400)	183 (138-206)	0.32 (0.23-0.43)	0.046 (0.001-0.105)	107 (78-118)	71 (40-84)	9.47 (7.82-11.99)	11.62 (2.04-20.50	0.31 (0.23-0.52)
Power Channel																
7.	Power Channel U/s	30 (2-158)	70 (28-96)	7.3 (5.4-11.8)	0.102 (0.050-0.280)	0.005 (0.002-0.011)	2.12 (0.84-6.16)	113 (<1.8-490)	181 (137-207)	0.32 (0.21-0.53)	0.035 (0.001-0.074)	106 (78-124)	71 (38-88)	10.14 (6.99-17.99)	12.34 (1.95-25.62)	0.30 (0.20-0.52)
8.	Power Channel D/s	23 (2-104)	72 (28-92)	9.5 (6.7-11.8)	0.140 (0.050-0.560)	0.009 (0.002-0.045)	2.03 (0.56-7.28)	211 (<1.8-790)	177 (138-201)	0.31 (0.25-0.39)	0.049 (0.002-0.172)	107 (81-123)	73 (48-90)	9.64 (6.99-13.99)	11.90 (1.97-27.73)	0.33 (0.23-0.55)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Mahanadi river																
9.	Sambalpur U/s	22 (2-68)	75 (40-104)	10.1 (6.7-17.0)	0.135 (0.050-0.340)	0.007 (0.001-0.027)	1.75 (0.56-4.48)	2307 (45-16000)	200 (145-261)	0.42 (0.31-0.69)	0.046 (0.002-0.119	117 (88-149)	76 (54-94)	13.22 (8.99-17.99)	12.86 (2.25-21.40)	0.38 (0.23-0.55)
10.	Sambalpur D/s	30 (2-156)	83 (41-116)	16.5 (7.8-24.8)	0.191 (0.050-0.560)	0.011 (0.001-0.055)	2.19 (0.56-5.60)	7958 (1100-24000)	224 (150-293)	0.42 (0.31-0.68)	0.050 (0.005-0.123)	132 (96-168)	86 (54-114)	14.62 (9.99-21.99)	14.67 (5.84-25.00)	0.38 (0.23-0.54)
11.	Sambalpur FD/s at Shankarmath	40 (6-174)	81 (48-116)	13.2 (9.8-21.5)	0.177 (0.050-0.560)	0.010 (0.001-0.070)	2.57 (0.56-8.40)	1714 (170-5400)	219 (135-364)	0.36 (0.25-0.52)	0.040 (0.003-0.081)	108 (76-126)	80 (54-110)	11.22 (7.99-17.99)	10.98 (1.74-16.70)	0.39 (0.23-0.51)
12.	Sambalpur FFD/s at Huma	28 (1-136)	71 (36-92)	8.8 (6.0-11.8)	0.111 (0.050-0.280)	0.009 (0.002-0.035)	2.52 (0.56-8.96)	1000 (<1.8-3500)	185 (141-213)	0.33 (0.28-0.38)	0.051 (0.005-0.274)	108 (76-126)	74 (50-88)	9.97 (6.99-11.99)	11.52 (1.89-23.38)	0.34 (0.22-0.52)
13.	Sonepur U/s	20 (3-60)	85 (68-104)	8.0 (3.6-10.7)	0.130 (0.050-0.560)	0.012 (0.001-0.070)	1.96 (0.28-5.88)	267 (<1.8-1100)	211 (186-233)	0.33 (0.22-0.42)	0.046 (0.001-0.130)	117 (102-132)	85 (72-102)	10.72 (7.99-11.99)	9.34 (1.97-13.93)	0.36 (0.24-0.55)
14.	Sonepur D/s	31 (5-170)	92 (72-120)	11.0 (6.7-18.0)	0.163 (0.050-0.560)	0.009 (0.001-0.036)	2.94 (0.28-11.20)	1258 (<1.8-4900)	228 (194-262)	0.34 (0.17-0.46)	0.059 (0.001-0.140)	130 (112-148)	90 (68-112)	11.89 (5.99-15.99)	10.19 (1.49-16.66)	0.40 (0.27-0.66)
15.	Tikarapada	37 (4-154)	82 (36-100)	8.4 (3.6-11.7)	0.120 (0.050-0.560)	0.010 (0.001-0.055)	1.59 (0.56-4.48)	372 (20-2400)	196 (141-230)	0.30 (0.20-0.38)	0.052 (0.007-0.102)	113 (92-129)	79 (52-94)	9.47 (7.99-10.99)	27.48 (1.33-27.48)	0.37 (0.24-0.59)
16.	Narasinghpur	32 (2-100)	77 (50-100)	8.5 (3.5-12.8)	0.093 (0.056-0.280)	0.006 (0.001-0.014)	1.52 (0.28-5.04)	474 (20-1300)	188 (168-219)	0.30 (0.22-0.43)	0.053 (0.007-0.140)	109 (95-135)	77 (62-102)	9.39 (7.99-12.99)	9.87 (4.00-18.65)	0.32 (0.24-0.51)
17.	Munduli	40 (10-132)	82 (56-140)	8.5 (5.4-11.0)	0.080 (0.050-0.220)	0.007 (BDL-0.028)	1.33 (0.28-3.36)	584 (45-1700)	204 (163-366)	0.39 (0.22-0.83)	0.066 (0.005-0.123)	119 (92-214)	80 (62-132)	12.79 (5.99-31.98)	10.32 (5.60-17.53)	0.32 (0.22-0.55)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
18.	Cuttack U/s	39 (5-134)	76 (52-96)	8.9 (5.0-11.7)	0.137 (0.050-0.560)	0.008 (BDL-0.036)	1.61 (0.28-5.60)	352 (<1.8-930)	190 (168-212)	0.35 (0.25-0.66)	0.051 (0.005-0.123)	109 (94-119)	73 (56-88)	10.14 (7.99-15.99)	9.29 (4.50-19.90)	0.33 (0.22-0.50)
19.	Cuttack D/s	31 (4-102)	78 (48-96)	14.4 (9.2-18.4)	0.116 (0.050-0.560)	0.009 (BDL-0.055)	2.08 (0.28-8.40)	21198 (130-160000)	199 (156-235)	0.36 (0.26-0.51)	0.068 (0.007-0.175)	115)99-138)	78 (60-92)	11.47 (6.99-18.00)	11.25 (6.09-18.16)	0.34 (0.23-0.51)
20.	Cuttack FD/s[$]	58 (3-214)	78 (66-94)	11.3 (7.0-14.7)	0.145 (0.050-0.560)	0.008 (BDL-0.051)	1.32 (0.56-4.48)	6614 (45-24000)	193 (161-211)	0.33 (0.14-0.66)	0.078 (0.003-0.316)	113 (102-124)	76 (66-92)	10.70 (5.99-18.99)	10.44 (1.35-19.90)	0.33 (0.24-0.47)
21.	Paradeep U/s	85 (18-208)	90 (56-128)	17.5 (7.1-48.5)	0.130 (0.050-0.500)	0.006 (0.001-0.018)	1.86 (0.56-7.84)	204 (<1.8-1100)	7372 (177-21140)	17.36 (0.39-49.43)	1.173 (0.011-3.104)	13937 (578-36640)	918 (64-2500)	2779.1 (10.0-7496.0)	387.04 (7.83-1225.1)	0.45 (0.22-0.69)
22.	Paradeep D/s	167 (30-302)	116 (64-188)	30.7 (10.1-48.5)	0.221 (0.050-0.950)	0.008 (0.001-0.038)	1.59 (0.56-3.92)	1515 (<1.8-16000)	17109 (902-41140)	35.85 (3.55-82.07)	1.522 (0.021-3.230)	13937 (578-36640)	2165 (116-4500)	7512.9 (199.0-20789.6)	931.8 (70.8-2381.8)	0.74 (0.32-1.10)
Ong River																
23.	Dharuakhaman *	35 (2-110)	101 (40-156)	8.4 (3.6-12.2)	0.137 (0.056-0.340)	0.008 (0.003-0.014)	3.79 (0.28-13.40)	127 (<1.8-790)	240 (101-324)	0.36 (0.21-0.83)	0.062 (0.005-0.137)	136 (58-176)	95 (40-126	12.21 (6.99-26.98)	9.28 (1.29-16.66)	0.37 (0.24-0.61)
Tel River																
24.	Monmunda	62 (9-220)	92 (68-140)	10.1 (3.6-15.1)	0.141 (0.050-0.560)	0.007 (0.001-0.022)	2.08 (0.56-5.32)	147 (<1.8-1400)	211 (162-396)	0.31 (0.17-0.63)	0.072 (0.007-0.147)	117 (98-192)	83 (60-136)	9.98 (5.99-22.98)	6.03 (0.44-12.44)	0.33 (0.21-0.51)
Kathajodi River																
25.	Cuttack U/s	42 (4-124)	71 (52-104)	9.3 (5.0-11.0)	0.179 (0.050-0.900)	0.014 (0.001-0.072)	1.82 (0.56-4.76)	423 (20-2100)	180 (138-229)	0.34 (0.22-0.64)	0.040 (0.007-0.112)	103 (84-126)	69 (52-88)	10.56 (7.99-21.98)	9.09 (4.80-19.65)	0.36 (0.00-0.81)
26.	Cuttack D/s	37 (4-90)	98 (64-168)	23.2 (10.7-38.0)	1.186 (0.056-5.880)	0.078 (BDL-0.735)	3.73 (1.40-8.40)	61840 (180-160000)	279 (174-419)	0.60 (0.22-1.10)	0.076 (0.005-0.218)	160 (102-262)	96 (68-128)	21.61 (5.99-41.97)	14.27 (8.40-23.75)	0.30 (0.14-0.56)

$ No sampling during February, 2017

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
27.	Mattagajpur (Cuttack FD/s)	89 (2-262)	122 (92-148)	42.4 (12.2-99.6)	1.525 (0.056-4.648)	0.053 (BDL-0.210)	5.88 (0.56-11.76)	5727 (20-17000)	392 (267-516)	1.05 (0.22-1.52)	0.108 (0.004-0.367)	223 (152-291)	118 (84-140)	40.56 (9.99-63.97)	19.85 (10.90-35.40)	0.28 (0.20-0.43)
28.	Kamasasan (Cuttack FFD/s)**	50 (4-126)	84 (52-118)	12.9 (9.2-18.4)	0.272 (0.056-0.780)	0.017 (0.001-0.062)	2.38 (0.56-6.72)	4206 (<1.8-16000)	229 (165-360)	0.53 (0.30-0.88)	0.133 (0.005-0.639)	127 (96-184)	81 (64-102)	14.74 (6.99-28.98)	11.48 (7.58-18.53)	0.28 (0.22-0.43)
Serua River																
29.	Sankhatrasa (Cuttack FD/s)	46 (8-122)	101 (68-136)	16.7 (6.7-30.8)	1.577 (0.050-7.560)	0.131 (0.001-0.945)	4.06 (0.28-11.76)	65682 (78-160000)	297 (170-444)	0.67 (0.21-1.40)	0.084 (0.023-0.225)	164 (96-245)	93 (68-128)	25.17 (5.99-46.97)	11.76 (7.09-19.03)	0.27 (0.17-0.38)
Kuakhai River																
30.	Mancheswar (Bhubaneswar FU/s)	24 (2-104)	76 (52-108)	7.7 (5.6-11.1)	0.112 (0.056-0.560)	0.007 (0.002-0.018)	1.80 (0.28-6.72)	1516 (220-9200)	186 (148-217)	0.33 (0.25-0.41)	0.048 (0.007-0.116)	108 (79-132)	74 (56-90)	10.22 (6.99-11.99)	9.34 (6.20-13.93)	0.27 (0.12-0.48)
31.	Hansapal (Bhubaneswar U/s)	24 (2-98)	76 (42-92)	10.6 (5.5-23.5)	0.130 (0.056-0.560)	0.010 (0.002-0.036)	1.80 (0.28-3.36)	20040 (490-160000)	188 (136-209)	0.36 (0.28-0.48)	0.051 (0.007-0.102)	109 (78-121)	73 (48-86)	11.06 (9.78-13.99)	9.60 (7.20-15.79)	0.32 (0.15-0.68)
Daya River																
32.	Gelapur*	31 (6-116)	74 (44-96)	9.3 (6.6-11.8)	0.287 (0.056-0.670)	0.022 (0.002-0.084)	3.05 (0.56-8.96)	6120 (490-17000)	188 (144-205)	0.40 (0.32-0.49)	0.074 (0.010-0.119)	110 (85-124)	71 (46-80)	11.88 (9.99-15.98)	10.34 (7.09-19.40)	0.25 (0.14-0.41)
33.	Kanti (Bhubaneswar D/s)	45 (16-100)	82 (44-136)	29.2 (19.6-43.4)	2.235 (3.628-38.201)	0.061 (BDL-0.273)	4.85 (0.56-16.80)	84575 (7900-160000)	287 (146-470)	1.06 (0.45-2.23)	0.067 (0.014-0.126)	168 (85-286)	80 (48-96)	34.72 (10.99-74.96)	12.76 (7.55-20.60)	0.31 (0.13-0.89)
34.	Manitri (Bhubaneswar FD/s)	59 (17-178)	79 (52-116)	24.0 (15.7-33.9)	2.025 (BDL-10.528)	0.057 (BDL-0.158)	4.46 (0.29-17.92)	87075 (7900-160000)	283 (166-451)	1.04 (0.48-1.59)	0.061 (0.010-0.102)	157 (94-211)	76 (54-92)	32.80 (13.99-50.88)	10.53 (4.21-17.41)	0.261 (0.12-0.68)
35.	Kanas*	53 (4-130)	88 (60-128)	16.1 (11.8-19.6)	0.142 (0.050-0.340)	0.006 (BDL-0.022)	2.86 (1.12-5.60)	9588 (790-22000)	288 (172-482)	1.04 (0.43-2.470	0.039 (0.004-0.165)	171 (105-312)	80 (60-102)	34.87 (11.99-89.95)	15.13 (8.70-21.90)	0.26 (0.19-0.42)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Gangua River																
36.	Near Rajdhani Engg. College*	95 (8-262)	71 (44-98)	51.9 (23.5-131.1)	3.546 (0.056-22.960)	0.038 (BDL-0.176)	7.70 (1.12-31.36)	135869 (9200-160000)	298 (170-482)	1.22 (0.51-2.13)	0.058 (0.004-0.084)	162 (98-232)	69 (50-90)	37.09 (17.99-62.96)	14.96 (5.72-29.35)	0.18 (0.09-0.29)
37.	Palasuni*	92 (32-214)	77 (36-114)	60.4 (27.5-160.2)	3.540 (0.056-23.520)	0.019 (BDL-0.118)	8.87 (1.12-31.36)	143667 (13000-160000)	320 (170-478)	1.23 (0.58-1.87)	0.060 (0.004-0.095)	169 (92-236)	71 (50-86)	38.20 (17.99-59.97)	38.59 (8.95-38.59)	0.20 (0.15-0.32)
38.	Samantray pur*	99 (28-192)	93 (40-146)	71.0 (7.5-160.2)	4.584 (0.056-27.440)	0.060 (0.001-0.179)	9.80 (1.12-38.08)	160000	362 (165-603)	1.34 (0.57-2.08)	0.082 (0.007-0.182)	198 (91-287)	81 (50-110)	43.75 (11.99-67.96)	16.22 (8.95-31.80)	0.20 (0.10-0.33)
39.	Vadimula	53 (19-102)	90 (48-130)	45.1 (23.0-93.2)	4.657 (0.056-16.856)	0.152 (BDL-1.096)	9.42 (0.56-28.00)	171500 (54000-540000)	376 (165-601)	1.35 (0.49-2.08)	0.082 (0.004-0.105)	206 (98-289)	88 (52-108)	48.28 (15.99-97.96)	17.67 (6.71-31.60)	0.23 (0.10-0.51)
Birupa River																
40.	Choudwar D/s	39 (2-146)	76 (52-92)	9.0 (5.5-12.0)	0.126 (BDL-0.450)	0.009 (BDL-0.029)	1.26 (0.28-4.48)	9430 (<1.8-92000)	187 (143-224)	0.31 (0.20-0.42)	0.050 (0.014-0.172)	109 (88-128)	76 (60-88)	9.64 (6.99-13.99)	10.23 (4.30-15.50)	0.337 (0.230-0.630)
Kushabhadra River																
41.	Bhingarpur*	34 (6-100)	98 (52-138)	12.7 (7.1-23.5)	0.174 (0.056-0.450)	0.008 (0.003-0.017)	2.96 (0.56-9.52)	2218 (78-9200)	258 (159-388)	0.70 (0.43-1.08)	0.041 (0.004-0.190)	149 (96-209)	84 (60-120)	22.65 (11.99-35.98)	8.86 (1.38-15.30)	0.29 (0.21-0.43)
42.	Nimapara*	22 (5-60)	81 (56-112)	11.4 (5.4-15.7)	0.280 (0.056-1.340)	0.013 (0.002-0.043)	3.26 (0.56-9.50)	9776 (150-24000)	209 (156-278)	0.58 (0.32-1.23)	0.040 (0.004-0.154)	125 (96-156)	72 (60-88)	16.99 (10.99-32.98)	9.29 (1.02-14.90)	0.29 (0.17-0.49)
43.	Gop*	21 (6-54)	83 (52-104)	9.7 (5.4-13.3)	0.161 (0.056-0.450)	0.007 (0.002-0.011)	2.61 (0.56-8.40)	230 (153-312)	0.65 (0.33-1.34)	0.051 (0.004-0.204)	133 (86-198)	78 (52-96)	21.32 (9.99-43.97)	9.27 (0.99-15.42)	0.26 (0.20-0.46)	0.26 (0.20-0.46)
Bhargavi River																
44.	Chandanpur*	37 (4-188)	77 (54-90)	11.0 (5.5-14.7)	0.143 (0.056-0.450)	0.010 (0.003-0.029)	1.49 (0.28-6.72)	3242 (330-16000)	194 (161-225)	0.45 (0.36-0.70)	0.114 (0.009-0.560)	115 (94-131)	71 (52-80)	13.55 (9.99-18.99)	10.08 (1.74-17.78)	0.28 (0.21-0.45)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Mangala River																
45.	Malatipatpur**	61 (24-158)	101 (52-236)	11.6 (7.2-17.5)	0.185 (0.055-0.450)	0.013 (0.002-0.035)	2.24 (0.28-4.48)	3988 (330-16000)	1079 (173-7696)	3.05 (0.29-22.20)	0.279 (0.004-1.569)	920 (96-7160)	231 (64-1400)	464.32 (11.99-3998.00)	58.88 (5.81-432.20)	0.27 (0.21-0.37)
46.	Golasahi**	122 (40-214)	120 (56-208)	26.1 (12.2-67.9)	0.223 (0.056-0.560)	0.016 (0.002-0.034)	2.42 (0.28-5.60)	15656 (<1.8-54000)	10084 (196-41160)	24.78 (0.76-78.64)	0.720 (0.013-3.525)	8140 (118-33440)	1042 (64-4350)	4429.47 (19.99-18490.7)	582.77 (11.57-2562.00)	0.29 (0.19-0.44)
Devi River																
47.	Machhagaon**	105 (14-260)	108 (56-192)	19.3 (7.1-39.3)	0.181 (0.055-0.670)	0.006 (0.001-0.027)	2.06 (0.28-8.04	241 (<1.8-1400)	10018 (185-41390)	27.17 (0.63-107.40)	0.994 (0.024-3.146)	9486 (102-34160)	1129 (62-4950)	5203.22 (16.98-18990.5)	479.11 (10.94-1670.4)	0.40 (0.24-0.62)
Gobari River																
48.	Kendrapara U/s **	77 (6-138)	95 (40-152)	10.9 (5.4-18.4)	0.091 (0.055-0.280)	0.007 (0.001-0.027)	1.58 (0.28-3.08)	2718 (230-16000)	726 (160-1435)	3.60 (0.40-9.72)	0.101 (0.004-0.225)	432 (96-836)	116 (50-226)	180.64 (11.99-424.70)	28.24 (3.11-96.50)	0.32 (0.23-0.43)
49.	Kendrapara D/s **	55 (12-122)	100 (40-156)	13.0 (8.9-22.0)	0.205 (0.056-0.460)	0.006 (0.002-0.014)	2.24 (0.28-3.64)	6023 (790-16000)	801 (171-1893)	4.06 (0.44-13.18)	0.089 (0.004-0.214)	496 (108-1230)	129 (52-236)	205.39 (11.99-624.60)	31.93 (2.48-107.80)	0.30 (0.23-0.47)
Nuna River																
50.	Bijipur**	74 (16-240)	87 (44-128)	14.5 (7.4-24.4)	0.279 (0.056-0.840)	0.012 (0.001-0.055)	2.52 (1.12-9.52)	18738 (1400-92000)	218 (159-340)	0.53 (0.36-1.07)	0.037 (0.002-0.102)	127 (98-187)	76 (58-90)	15.99 (10.99-31.98)	8.81 (1.62-12.93)	0.31 (0.20-0.44)
Kusumi River																
51.	Tangi*	48 (2-114)	78 (44-114)	15.4 (6.7-29.1)	0.211 (0.050-0.450)	0.016 (0.003-0.042)	4.39 (0.56-11.76)	5376 (68-17000)	214 (140-318)	0.62 (0.33-1.07)	0.082 (0.005-0.169)	123 (80-185)	70 (40-96)	20.43 (9.99-39.98)	6.58 (0.87-20.52)	0.33 (0.12-0.33)
Kansari River																
52.	Banapur*	56 (1-262)	88 (44-112)	14.8 (5.9-23.3)	0.148 (0.056-0.280)	0.011 (0.001-0.035)	3.24 (0.28-8.40)	7372 (78-54000)	230 (147-308)	0.59 (0.34-0.93)	0.051 (0.018-0.077)	134 (88-178)	82 (48-108)	19.43 (9.99-37.98)	7.40 (0.60-19.15)	0.22 (0.12-0.48)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Badasankha River																
53.	Langaleswar*	71 (22-248)	111 (36-176)	28.1 (13.4-68.0)	0.297 (0.056-0.952)	0.014 (0.001-0.043)	2.61 (0.56-6.16)	1997 (<1.8-13000)	6283 (182-26260)	16.49 (0.34-71.43)	0.618 (0.032-2.521)	5370 (102-23960)	732 (78-2600)	2932.8 (10.0-13493.3)	260.26 (2.77-1031.10)	0.37 (0.19-0.35)
Sabulia River																
54.	Rambha*	52 (2-126)	157 (56-268)	22.7 (8.9-64.1)	0.272 (0.056-0.784)	0.026 (0.002-0.098)	2.58 (1.12-6.16)	6259 (<1.8-17000)	444 (183-763)	1.30 (0.69-2.48)	0.101 (0.004-0.200)	255 (105-454)	134 (50-238)	53.53 (20.98-129.94)	8.11 (1.37-15.67)	0.34 (0.20-0.65)
Ratnachira River																
55.	Kumardihi**	47 (6-214)	78 (48-126)	14.9 (11.0-17.9)	0.182 (0.056-0.560)	0.006 (BDL-0.013)	1.76 (0.28-3.36)	2861 (7-9200)	213 (148-326)	0.57 (0.38-1.18)	0.157 (0.023-0.769)	125 (88-188)	73 (56-116)	18.99 (9.99-40.97)	9.99 (1.95-15.42)	0.27 (0.19-0.38)
	❖ **Class 'C'**	-	-	-	-	-	-	-		-	-	1500	-	600	400	1.5
	❖ **Class 'E'**								2250	26	2.0	2100	-	600	1000	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality

* Monitoring started from April, 2017 ** Monitoring started from May, 2017

(A) Contd..

Sl. No	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Ib River												
1.	Sundargarh	4.426 (0.562-27.815)	0.032 (0.002-0.115)	0.008	0.020	0.040	0.004	0.003	0.003	0.0014	<0.00006	0.004
2.	Jharsuguda	3.479 (0.241-11.360)	0.154 (0.002-0.816)	0.007	0.018	0.060	0.004	0.002	0.005	0.0014	0.00006	0.003
3.	Brajraj nagar U/s	3.530 (0.724-10.788)	0.087 (0.002-0.188)	0.005	0.015	0.150	0.005	0.003	0.006	0.0016	0.00019	0.002
4.	Brajraj nagar D/s	4.451 (0.460-9.840)	0.079 (0.002-0.233)	0.007	0.018	0.040	0.004	0.002	0.008	0.0019	0.00019	0.004
Bheden river												
5.	Jharsuguda	3.095 (0.438-7.602)	0.060 (0.002-0.161)	0.012	0.032	0.080	0.008	0.003	0.016	0.0021	0.00032	0.005
Hirakud reservoir												
6.	Hirakud reservoir	5.133 (1.110-21.622)	0.138 (0.002-1.137)	0.005	0.013	0.020	0.006	0.002	0.005	0.0011	0.000	0.004
Power Channel												
7.	Power channel U/s	3.966 (1.115-9.179)	0.656 (0.002-0.656)	0.002	0.008	0.060	0.006	0.002	0.004	0.0014	0.00013	0.002
8.	Power Channel D/s	4.177 (1.299-10.905)	0.166 (0.002-0.676)	0.007	0.018	0.150	0.009	0.003	0.017	0.0016	0.00032	0.004

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Mahanadi River												
9.	Sambalpur U/s	475 (1.658-12.853)	0.129 (0.002-1.051)	0.005	0.018	0.040	0.006	0.004	0.005	0.0016	0.00013	0.005
10.	Sambalpur D/s	5.315 (1.868-12.327)	0.100 (0.002-0.388)	0.015	0.035	0.010	0.009	0.005	0.011	0.0018	0.00019	0.004
11.	Sambalpur FD/s at Shankarmath	5.447 (1.013-19.972)	0.117 (0.002-0.559)	0.005	0.015	0.040	0.008	0.005	0.006	0.0016	0.00013	0.004
12.	Sambalpur FD/s at Huma	3.301 (1.049-5.744)	0.208 (0.002-1.113)	0.003	0.013	0.100	0.006	0.002	0.004	0.00014	<0.00006	0.003
13.	Sonepur U/s	3.140 (1.019-6.979)	0.242 (0.002-1.013)	0.008	0.015	0.020	0.004	0.002	0.012	0.0021	<0.00006	0.003
14.	Sonepur D/s	4.792 (0.980-10.481)	0.228 (0.002-1.107)	0.012	0.029	0.100	0.005	0.002	0.016	0.0024	<0.00006	0.003
15.	Tikarapada	4.017 (1.144-15.583)	0.210 (0.003-0.842)	0.01	0.027	0.030	0.004	0.005	0.006	0.0024	<0.00006	0.004
16.	Narasinghpur	4.468 (0.517-18.661)	0.064 (0.002-0.222)	0.003	0.008	0.160	0.006	0.005	0.006	0.0019	<0.00006	0.007
17.	Munduli	4.500 (0.143-14.829)	0.076 (0.002-0.337)	0.005	0.010	0.270	0.006	0.002	0.004	0.0019	<0.00006	0.007
18.	Cuttack U/s	2.697 (0.663-7.704)	0.067 (0.002-0.252)	0.007	0.015	1.140	0.005	0.003	0.008	0.0018	<0.00006	0.004

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
19.	Cuttack D/s	5.201 (2.123-15.532)	0.089 (0.002-0.286)	0.015	0.027	2.530	0.005	0.006	0.016	0.0024	0.00013	0.008
20.	Cuttack FD/s$	5.038 (0.911-19.317)	0.095 (0.002-0.253)	0.013	0.030	1.830	0.004	0.002	0.008	0.0024	0.00013	0.006
21.	Paradeep U/s	2.815 (0.300-8.736)	0.061 (0.002-0.201)	0.002	0.007	0.160	0.011	0.008	0.024	0.0029	0.00019	0.009
22.	Paradeep D/s	3.941 (1.142-10.335)	0.323 (0.045-0.798)	0.003	0.007	0.100	0.012	0.009	0.028	0.0031	0.00019	0.009
Ong River												
23.	Dharuakhaman*	3.337 (1.087-9.245)	0.268 (0.002-1.217)	0.013	0.035	0.010	0.004	0.004	0.011	0.0016	<0.00006	0.006
Tel River												
24.	Monmunda	4.003 (0.705-9.189)	0.194 (0.002-1.156)	0.01	0.022	0.110	0.004	0.005	0.011	0.0017	<0.00006	0.002
Kathajodi River												
25.	Cuttack U/s	3.009 (1.031-7.694)	0.109 (0.002-0.527)	0.007	0.018	1.440	0.003	0.003	0.005	0.0017	<0.00006	0.004
26.	Cuttack D/s	9.763 (0.542-33.887)	0.315 (0.002-0.984)	0.013	0.032	3.760	0.004	0.003	0.005	0.0032	0.00025	0.009
27.	Mattagajpur (Cuttack FD/s)	10.882 (1.617-28.099)	0.346 (0.081-1.020)	0.008	0.024	2.310	0.006	0.005	0.012	0.0029	0.00032	0.010
28.	Kamasasan (Cuttack FFD/s)**	7.147 (2.913-13.959)	0.200 (0.007-0.460)	0.003	0.011	0.450	0.004	0.002	0.011	0.0014	<0.00006	0.007

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Serua River												
29.	Sankhatrasa (Cuttack FD/s)	10.282 (1.495-35.269)	0.429 (0.065-1.250)	0.017	0.035	3.660	0.002	0.005	0.014	0.0022	0.00019	0.009
Kuakhai River												
30.	Mancheswar (Bhubaneswar FU/s)	1.922 (0.480-4.421)	0.058 (0.002-0.174)	0.008	0.020	2.180	0.004	0.003	0.008	0.0016	<0.00006	0.006
31.	Hansapal (Bhubaneswar U/s)	2.400 (0.772-7.327)	0.060 (0.002-0.364)	0.012	0.032	2.230	0.005	0.006	0.005	0.0018	<0.00006	0.006
Daya River												
32.	Gelapur*	4.478 (0.623-18.765)	0.081 (0.002-0.248)	0.018	0.035	0.760	0.006	0.005	0.019	0.0026	0.00013	0.017
33.	Kanti (Bhubaneswar D/s)	13.978 (3.628-38.201)	0.451 (0.020-1.297)	0.007	0.022	1.630	0.008	0.009	0.009	0.0022	0.00019	0.008
34.	Manitri (Bhubaneswar FD/s)	14.626 (2.244-25.522)	0.434 (0.002-1.217)	0.005	0.015	0.220	0.008	0.005	0.004	0.0021	0.00019	0.005
35.	Kanas*	6.427 (1.761-18.080)	0.118 (0.002-0.345)	0.007	0.027	0.670	0.006	0.005	0.016	0.0026	0.00013	0.014
Gangua River												
36.	Near Rajdhani Engg. Collge*	19.893 (3.648-41.065)	0.618 (0.002-2.232)	0.002	0.008	0.310	0.002	0.006	0.025	0.0011	<0.00006	0.006
37.	Palasuni*	15.574 (1.788-41.937)	0.509 (0.002-2.066)	0.005	0.015	0.200	0.006	0.011	0.028	0.0016	0.00013	0.012

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
38.	Samantray pur*	17.235 (0.632-43.636)	0.349(0.002-0.797)	0.005	0.013	0.170	0.006	0.011	0.048	0.0019	0.00013	0.013
39.	Vadimula	21.533 (1.821-43.156)	0.696 (0.002-1.845)	0.007	0.018	0.210	0.008	0.016	0.052	0.0019	0.00019	0.016
Birupa River												
40.	Choudwar D/s	5.443 (0.494-24.054)	0.130 (0.003-0.922)	0.007	0.020	0.010	0.002	0.003	0.004	0.0014	<0.00006	0.006
Kushabhadra River												
41.	Bhingarpur*	3.094 (1.301-7.146)	0.071 (0.002-0.153)	0.015	0.032	0.330	0.004	0.003	0.008	0.0016	<0.00006	0.006
42.	Nimapara*	4.508 (0.797-19.379)	0.142 (0.002-0.712)	0.002	0.008	0.290	0.005	0.002	0.011	0.0018	0.00013	0.011
43.	Gop*	3.184 (0.618-9.456)	0.082 (0.003-0.156)	<0.002	0.005	0.530	0.005	0.004	0.019	0.0021	0.00013	0.012
Bhargavi River												
44.	Chandanpur*	3.902 (0.792-13.958)	0.103 (0.002-0.344)	0.01	0.024	0.640	0.004	0.003	0.016	0.0018	0.00019	0.009
Mangala River												
45.	Malatipatpur**	2.187 (1.098-3.459)	0.058 (0.003-0.218)	0.005	0.019	0.350	0.004	0.002	0.018	0.0011	<0.00006	0.005
46.	Golasahi**	4.630 (0.912-7.691)	0.112 (0.002-0.371)	0.007	0.021	0.550	0.005	0.002	0.016	0.0011	0.00019	0.007
Devi River												
47.	Machhagaon**	3.997 (0.665-9.184)	0.440 (0.002-3.062)	<0.002	0.007	0.830	0.004	0.004	0.018	0.0011	<0.00006	0.006

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Gobari River												
48.	Kendrapara U/s **	3.753 (0.766-6.228)	0.123 (0.002-0.549)	0.005	0.019	0.580	0.004	0.002	0.012	0.0012	0.00013	0.006
49.	Kendrapara D/s **	4.443 (0.851-10.315)	0.099 (0.002-0.447)	0.007	0.021	7.090	0.004	0.002	0.017	0.0016	0.00019	0.008
Nuna River												
50.	Bijipur**	3.644 (0.803-12.469)	0.112 (0.030-0.330)	0.009	0.019	3.780	0.004	0.005	0.022	0.0016	0.00032	0.009
Kusumi River												
51.	Tangi**	2.992 (1.009-6.440)	0.064 (0.002-0.232)	0.023	0.039	0.670	0.006	0.003	0.031	0.0024	0.00013	0.007
Kansari River												
52.	Banapur*	2.771 (1.048-5.335)	0.060 (0.015-0.132)	0.023	0.040	0.310	0.007	0.004	0.015	0.0021	0.00006	0.007
Badasankha River												
53.	Langaleswar*	3.533 (0.792-11.266)	0.066 (0.002-0.158)	0.015	0.030	0.950	0.004	0.004	0.027	0.0011	<0.00006	0.011
Sabulia River												
54.	Rambha*	4.530 (1.851-9.888)	0.063 (0.002-0.174)	0.015	0.030	0.810	0.005	0.011	0.031	0.0026	0.00019	0.011

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Ratnachira River												
55.	Kumardihi**	2.585 (0.923-6.010)	0.179 (0.016-0.660)	0.005	0.011	0.350	0.004	0.003	0.016	0.0011	0.00019	0.008
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
*Class 'E'		-	-	-	-	-	-	-	-	-	-	-

Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality

* **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Data for the period Aprl, 2017 and May, 2017 according to the commencement of monitoring of stations.
*** Monitoring started from April, 2017**
**** Monitoring started from May, 2017**

(B) Brahmani River System (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Sankh river																
1.	Sankh U/s	182 (8-1404)	49 (26-64)	11.1 (7.5-14.0)	0.228 (0.056-1.340)	0.009 (0.001-0.047)	2.90 (1.12-15.68)	4585 (<1.8-16000)	121 (101-145)	0.27 (0.21-0.35)	0.046 (0.003-0.126)	72 (58-88)	49 (36-60)	6.72 (4.99-8.99)	6.86 (1.19-16.29)	0.26 (0.17-0.39)
Koel river																
2.	Koel U/s	171 (11-1152)	76 (24-112)	10.8 (2.9-19.9)	0.135 (0.056-0.340)	0.007 (0.001-0.035)	2.76 (0.56-10.08)	8790 (490-16000)	184 (96-298)	0.31 (0.19-0.72)	0.035 (0.003-0.088)	106 (59-175)	72 (30-106)	9.55 (3.99-24.98)	10.46 (5.65-18.15)	0.26 (0.19-0.36)
Brahmani river																
3.	Panposh U/s	182 (1-1528)	59 (34-96)	9.4 (4.3-14.1)	0.224 (0.056-0.900)	0.009 (0.001-0.036)	2.45(0.56-9.52)	3839 (230-16000)	147 (91-216)	0.28 (0.20-0.37)	0.085 (0.003-0.337)	86 (56-132)	58 (34-100)	7.97 (4.99-11.99)	8.85 (2.48-15.54)	0.30 (0.21-0.41)
4.	Panposh D/s	189 (11-1120)	53 (16-108)	29.7 (11.5-44.6)	4.307 (0.050-19.936)	0.006 (BDL-0.054)	8.63 (1.12-24.64)	31276 (1100-160000)	287 (151-396)	0.65 (0.29-1.32)	0.085 (0.007-0.235)	163 (85-198)	91 (54-116)	23.58 (10.99-38.16)	42.97 (7.08-70.50)	1.25 (0.29-2.20)
5.	Rourkela D/s	187 (4-1170)	54 (20-88)	23.0 (11.5-38.0)	1.432 (0.050-6.272)	0.012 (BDL-0.063)	5.25 (1.12-12.32)	32425 (200-160000)	205 (112-406)	0.39 (0.09-0.80)	0.074 (0.007-0.239)	116 (64-212)	72 (32-116)	14.03 (5.99-34.98)	20.63 (3.98-48.50)	0.70 (0.19-1.50)
6.	Rourkela FD/s (Attaghat)	131 (7-666)	65 (32-100)	15.2 (7.3-22.1)	0.106 (0.050-0.330)	0.005 (0.001-0.021)	2.01 (0.56-7.28)	3218 (<1.8-16000)	206 (107-369)	0.49 (0.22-1.07)	0.079 (0.005-0.555)	116 (58-198)	70 (44-106)	15.11 (5.99-37.98)	16.80 (3.36-27.86)	0.44 (0.18-0.86)
7.	Rourkela FD/s (Biritola)	134 (4-570)	57 (24-98)	12.0 (5.6-18.4)	0.256 (0.050-1.460)	0.009 (0.001-0.058)	2.75 (0.56-10.64)	3400 (130-16000)	177 (100-243)	0.38 (0.16-0.54)	0.064 (0.001-0.383)	103 (56-134)	64 (36-84)	11.44 (3.99-17.99)	16.44 (2.61-29.22)	0.45 (0.17-0.94)
8.	Bonaigarh	95 (5-474)	65 (32-100)	10.6 (5.6-15.8)	0.224 (0.056-1.120)	0.010 (BDL-0.073)	2.66 (0.28-8.96)	2245 (<1.8-13000)	179 (99-246)	0.40 (0.22-0.60)	0.067 (0.007-0.327)	104 (58-136)	63 (36-84)	11.97 (5.99-17.99)	14.20 (2.98-24.87)	0.47 (0.18-0.97)
9.	Rengali	47 (5-156)	45 (20-68)	8.1 (4.3-12.1)	0.224 (0.056-1.120)	0.011 (0.001-0.054)	2.01 (0.56-6.72)	602 (20-6800)	124 (107-149)	0.30 (0.22-0.39)	0.035 (0.010-0.081)	75 (64-89)	45 (34-58)	7.73 (4.99-11.99)	10.29 (1.32-20.27)	0.36 (0.23-0.96)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
10.	Samal	77 (10-584)	55 (28-58)	8.9 (5.4-13.7)	0.130 (0.056-0.560)	0.007 (0.001-0.045)	2.29 (1.12-5.04)	1202 (20-5400)	130 (116-146)	0.31 (0.21-0.49)	0.038 (0.007-0.112)	76 (64-87)	48 (40-62)	7.90 (5.87-12.99)	11.05 (2.08-25.49)	0.36 (0.23-0.68)
11.	Talcher FU/s	46 (3-324)	48 (28-60)	7.9 (3.6-13.1)	0.181 (0.050-1.120)	0.006 (0.001-0.014)	2.10 (0.84-9.52)	867 (<1.8-3500)	125 (105-136)	0.28 (0.20-0.36)	0.039 (0.003-0.232)	73 (64-83)	47 (40-58)	6.89 (4.99-8.99)	9.37 (1.62-25.37)	0.28 (0.20-0.49)
12.	Talcher U/s	49 (5-348)	49 (24-82)	9.3 (3.6-16.8)	0.167 (0.056-0.560)	0.010 (0.002-0.044)	1.40 (0.28-3.92)	1309 (20-9200)	139 (110-227)	0.29 (0.19-0.36)	0.024 (0.004-0.063)	80 (68-124)	5 (38-86)	7.64 (4.99-9.99)	10.01 (1.19-25.17)	0.33 (0.23-0.42)
13.	Mandapal*	66 (1-340)	50 (24-92)	9.8 (5.4-15.3)	0.211 (0.050-0.900)	0.011 (0.001-0.072)	3.36 (0.84-8.40)	3337 (270-16000)	139 (112-225)	0.26 (0.19-0.33)	0.044 (0.004-0.126)	91 (64-134)	51 (38-94)	6.88 (3.99-7.99)	10.96 (1.42-27.48)	0.31 (0.22-0.50)
14.	Talcher D/s	64 (6-428)	56 (32-86)	14.1 (7.2-22.4)	0.130 (0.056-0.336)	0.006 (0.001-0.018)	2.43 (0.56-6.72)	2462 (20-16000)	145 (116-231)	0.31 (0.18-0.39)	0.031 (0.004-0.077)	87 (69-129)	58 (42-102)	8.22 (6.99-9.99)	10.09 (4.80-15.29)	0.38 (0.26-0.82)
15.	Talcher FD/s	43 (1-296)	60 (36-86)	12.9 (7.1-18.7)	0.101 (0.056-0.280)	0.005 (BDL-0.014)	1.89 (0.56-3.36)	1494 (20-9200)	166 (125-232)	0.34 (0.23-0.48)	0.058 (0.004-0.123)	97 (73-132)	67 (48-100)	9.81 (7.99-12.99)	11.08 (4.68-18.78)	0.46 (0.29-0.57)
16.	Dhenkanal U/s	56 (1-366)	56 (24-88)	7.9 (3.9-12.2)	0.102 (0.055-0.560)	0.005 (0.001-0.020)	1.63 (0.56-4.48)	1880 (110-5400)	143 (105-205)	0.30 (0.21-0.37)	0.032 (0.011-0.098)	87 (63-119)	59 (34-102)	8.64 (6.99-10.99)	9.85 (4.64-17.80)	0.34 (0.14-0.59)
17.	Dhenkanal D/s	53 (7-202)	65 (40-124)	10.9 (3.9-18.7)	0.121 (0.056-0.390)	0.005 (0.001-0.010)	2.36 (0.56-7.28)	1710 (170-9200)	170 (137-285)	0.31 (0.19-0.40)	0.039 (0.004-0.081)	99 (79-156)	68 (52-128)	9.22 (6.99-12.99)	10.58 (5.00-23.90)	0.34 (0.23-0.62)
18.	Bhuban	59 (6-294)	51 (28-76)	10.0 (3.6-12.2)	0.107 (0.050-0.340)	0.006 (0.001-0.027)	1.87 (0.28-5.60)	2893 (130-16000)	141 (121-206)	0.33 (0.25-0.49)	0.031 (0.004-0.070)	82 (68-112)	52 (36-82)	8.81 (6.99-12.99)	9.78 (1.64-20.64)	0.32 (0.22-0.49)
19.	Kabatabandha	59 (5-286)	52 (20-72)	8.3 (3.6-13.2)	0.167 (0.050-0.840)	0.008 (0.002-0.042)	1.89 (0.56-5.60)	564 (130-2400)	144 (127-168)	0.31 (0.24-0.41)	0.056 (0.001-0.179)	83 (76-92)	52 (32-62)	8.06 (6.99-9.99)	9.46 (1.38-25.12)	0.34 (0.18-0.94)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
20.	Dharmasala U/s	51 (6-236)	75 (44-104)	8.0 (5.3-11.8)	0.126 (0.056-0.340)	0.006 (0.001-0.018)	1.26 (0.28-3.64)	1893 (20-9200)	185 (138-235)	0.41 (0.24-0.68)	0.060 (0.001-0.182)	110 (85-141)	68 (46-96)	12.38 (5.99-20.98)	10.37 (3.32-19.77)	0.30 (0.21-0.60)
21.	Dharmasala D/s	55 (6-262)	66 (28-112)	10.3 (5.4-16.5)	0.205 (0.056-0.840)	0.015 (0.001-0.105)	2.66 (1.12-7.28)	4253 (220-16000)	182 (124-254)	0.43 (0.29-0.72)	0.048 (0.002-0.193)	109 (76-158)	67 (38-98)	12.72 (6.99-19.99)	12.27 (3.42-27.73)	0.30 (0.19-0.60)
22.	Pottamundai	58 (4-264)	74 (42-98)	8.7 (3.6-11.7	0.121 (0.056-0.280)	0.004 (0.001-0.011)	1.84 (0.28-6.16)	3812 (450-16000)	200 (152-261)	0.43 (0.27-0.77)	0.054 (0.004-0.147)	113 (83-145)	74 (56-96)	13.21 (7.99-25.98)	9.44 (3.23-18.16	0.35 (0.22-0.44)
Nandira River																
23.	Nandira U/s	17 (6-26)	147 (70-226)	10.5 (5.4-18.7)	0.177 (0.056-0.560)	0.013 (0.002-0.043)	2.36 (0.28-6.70)	826 (<1.8-3500)	493 (309-548)	0.87 (0.57-1.23)	0.233 (0.065-0.439)	272 (178-322)	163 (84-210)	39.83 (27.98-63.97)	44.22 (17.91-64.18)	1.75 (0.45-4.70)
24.	Nandira D/s	16 (3-30)	133 (68-202)	15.7 (7.1-29.9)	0.190 (0.056-0.670)	0.015 (0.001-0.084)	2.03 (0.28-6.20)	4210 (170-24000)	467 (311-510)	00.76 (0.54-1.10)	0.269 (0.071-0.551)	273 (184-306)	170 (100-194)	35.59 (24.98-49.97)	55.05 (21.52-78.23)	2.32 (0.74-3.70)
Kisinda Jhor																
25.	Kisindajhor	20 (2-70)	117 (60-226)	12.3 (5.4-22.4)	0.204 (0.050-0.780)	0.019 (0.001-0.121)	2.44 (0.56-5.04)	732 (<1.8-2400)	486 (316-833)	1.11 (0.50-3.16)	0.153 (0.068-0.386)	276 (184-532)	154 (98-222)	51.55 (17.99-169.90)	49.68 (32.46-70.60)	2.02 (0.69-4.11)
Kharasrota River																
26.	Khanditara	49 (5-266)	52 (24-70)	8.0 (3.9-14.0)	0.111 (0.050-0.560)	0.005 (0.001-0.020)	1.38 (0.56-2.24)	498 (40-2400)	153 (128-203)	0.32 (0.24-0.39)	0.053 (0.001-0.137)	86 (69-98)	56 (46-68)	8.64 (5.99-10.99)	12.25 (3.47-30.22)	0.30 (0.22-0.49)
27.	Binjharpur	58 (7-172)	55 (28-84)	8.7 (3.6-13.4)	0.168 (0.056-0.840)	0.009 (BDL-0.055)	2.03 (0.28-6.72)	1914 (110-13000)	148 (124-187)	0.33 (0.23-0.53)	0.051 (0.003-0.165)	86 (67-108)	56 (32-84)	8.48 (5,99-11.99)	10.04 (1.50-15.29)	0.27 (0.18-0.38)
28.	Aul	109 (4-324)	54 (24-88)	10.5 (3.6-17.5)	0.135 (0.056-0.390)	0.004 (0.001-0.012)	2.22 (0.28-6.16)	4060 (340-13000)	155 (118-215)	0.41 (0.22-0.78)	0.069 (0.004-0.341)	94 (72-131)	59 (44-78)	11.72 (5.99-22.98)	10.79 (2.05-22.50)	0.33 (0.22-0.52)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Guradih nallah																
29.	Guradih nallah	74 (27-140)	52 (16-128)	40.8 (24.5-60.3)	4.844 (0.056-21.504)	0.016 (BDL-0.108)	9.40 (0.56-28.56)	122667 (22000-160000)	370 (268-527)	0.82 (0.60-1.15)	0.078 (0.001-0.130)	204 (147-298)	109 (74-164)	31.67 (23.98-38.98)	61.80 (18.90-93.50)	1.56 (0.26-2.80)
Badjhor nallah																
30.	Badjhor nallah***	40 (9-49)	93 (44-122)	10.4 (6.4-14.3)	0.144 (0.056-0.336)	0.012 (0.003-0.042)	1.99 (0.56-5.60)	17878 (780-54000)	260 (175-328)	0.69 (0.40-1.53)	0.101 (0.019-0.250)	149 (104-194)	90 (54-122)	22.29 (11.99-41.97)	11.17 (3.52-26.11)	0.31 (0.24-0.40)
Damsala River																
31.	Dayanabil*	64 (4-184)	55 (32-78)	7.6 (3.7-10.1)	0.173 (0.056-0.560)	0.011 (0.002-0.055)	2.15 (0.84-5.04)	576 (20-1700)	145 (97-184)	0.34 (0.19-0.43)	0.041 (0.003-0.193)	87 (58-111)	58 (44-78)	9.66 (4.99-14.99)	10.16 (1.16-27.86)	0.31 (0.14-0.81)
Ganda nallah																
32.	Marthapur*	68 (4-224)	90 (54-124)	11.0 (3.6-15.3)	0.130 (0.056-0.330)	0.006 (0.002-0.018)	2.80 (0.84-10.64)	1511 (330-4900)	355 (136-788)	0.96 (0.29-2.57)	0.094 (0.003-0.228)	200 (79-448)	101 (48-164)	39.97 (6.99-139.95)	26.97 (4.85-64.40)	0.35 (0.20-0.53)
Lingira River																
33.	Angul U/s*	12 (2-20)	118 (70-186)	11.0 (7.8-16.8)	0.148 (0.056-0.280)	0.015 (0.004-0.028)	2.30 (0.56-6.72)	503 (45-1300)	331 (183-647)	0.63 (0.33-2.22)	0.058 (0.004-0.144)	181 (118-361)	116 (80-146)	25.76 (13.99-103.95)	12.90 (2.19-17.80)	0.56 (0.43-0.70)
34.	Angul D/s*	15 (2-46)	130 (96-198)	15.1 (11.0-18.4)	0.173 (0.055-0.840)	0.019 (0.002-0.082)	2.11 (0.28-6.70)	236 (<1.8-5400)	357 (251-516)	0.64 (0.42-0.88)	0.053 (0.004-0.112)	191 (142-278)	129 (104-182)	25.20 (14.99-45.97)	14.16 (3.31-21.52)	0.60 (0.18-1.20)
Ramiala River																
35.	Kamakhyanagar*	78 (1-352)	56 (28-102)	8.7 (3.6-18.3)	0.205 (0.056-0.900)	0.014 (BDL-0.088)	2.92 (1.12-10.08)	553 (401-400)	139 (111-210)	0.29 (0.20-0.39)	0.049 (0.018-0.190)	82 (63-121)	56 (30-98)	7.54 (5.90-9.99)	8.48 (4.39-17.66)	0.32 (0.21-0.83)
Banguru nallah																
36.	Banguru nallah*	48 (8-180)	113 952-180)	13.2 (3.6-30.2)	0.166 (0.056-0.560)	0.008 (0.002-0.026)	2.77 (0.28-7.28)	1928 (78-9200)	567 (167-1619)	0.97 (0.38-1.91)	0.122 (0.065-0.179)	304 (98-675)	169 (48-350)	44.63 (13.99-107.90)	86.06 (16.29-224.20)	0.43 (0.28-0.61)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Singada jhor																
37.	Singada jhor*	40 (1-130)	108 (62-196)	10.1 (3.6-15.5)	0.086 (0.050-0.283)	0.005 (0.001-0.010)	2.02 (0.56-7.28)	2145 (110-9200)	280 (158-440)	0.42 (0.23-0.70)	0.071 (0.030-0.158)	159 (89-241)	106 (60-170)	14.77 (5.99-24.98)	19.94 (8.45-45.50)	0.50 (0.20-2.00)
Tikira River																
38.	Kaniha U/s*	153 (4-492)	71 (40-106)	10.1 (3.6-18.3)	0.211 (0.056-0.730)	0.010 (0.002-0.038)	2.74 (0.56-6.16)	627 (130-1400)	305 (147-624)	0.57 (0.34-1.12)	0.190 (0.018-0.621)	174 (86-352)	102 (46-196)	23.21 (10.99-67.97)	44.97 (1.89-146.80)	1.06 (0.27-4.20)
39.	Kaniha D/s*	136 (26-642)	78 (40-118)	12.3 (3.6-24.4)	0.129 (0.050-0.280)	0.007 (0.002-0.021)	3.36 (1.12-7.80)	1798 (<1.8-9200)	271 (168-468)	0.47 (0.30-0.88)	0.211 (0.047-0.688)	154 (96-268)	94 (54-140)	16.43 (8.99-31.98)	34.10 (8.99-31.98)	0.48 (0.22-1.20)
Bangurusingada jhor																
40.	Bangurusingada jhor*	26 (3-58)	113 (46-170)	12.6 (7.1-17.9)	0.123 (0.056-0.560)	0.009 (0.002-0.028)	1.46 (0.56-3.36)	2382 (110-9200)	290 (185-512)	0.47 (0.26-0.76)	0.082 (0.009-0.239)	161 (106-229)	111 (60-184)	16.65 (7.99-30.98)	16.58 (6.71-31.21)	0.43 (0.26-0.64)
Karo River																
41.	Barbil**	138 (4-782)	58 (30-84)	9.2 (3.9-12.5)	0.251 (0.056-0.780)	0.008 (0.002-0.031)	3.36 (0.56-9.92)	2267 (<1.8-14000)	137 (82-170)	0.28 (0.23-0.37)	0.037 (0.011-0.088)	82 (49-99)	57 (34-82)	7.49 (4.99-9.99)	6.77 (0.64-16.29)	0.21 (0.10-0.46)
❖ **Class 'C'**		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ **Class 'E'**		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

* Monitoring started from April, 2017, ** Monitoring started from May, 2017, *** Monitoring started from March, 2017

(B) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Sankha River												
1.	Sankha U/s	2.483 (1.482-3.856)	0.121 (0.002-0.959)	0.008	0.019	0.120	0.004	0.005	0.014	0.0014	<0.00006	0.008
Koel River												
2.	Koel U/s	2.463 (0.494-4.789)	0.174 (0.002-1.562)	0.005	0.024	0.660	0.008	0.007	0.011	0.0019	0.00019	0.008
Brahmani river												
3.	Panposh U/s	4.315 (0.768-16.857)	0.172 (0.002-1.193)	0.008	0.015	0.48	0.008	0.003	0.005	0.0009	<0.00006	0.006
4.	Panposh D/s	20.243 (3.353-45.129)	0.128 (0.002-0.605)	0.012	0.027	1.34	0.014	0.008	0.024	0.0011	0.00025	0.007
5.	Rourkela D/s	13.381 (2.118-26.142)	0.188 (0.002-1.107)	0.015	0.03	0.91	0.013	0.007	0.015	0.0016	0.00019	0.006
6.	Attaghat	7.543 (0.590-20.258)	0.223 (0.002-1.894)	0.005	0.015	0.27	0.013	0.003	0.007	0.0014	0.00013	0.006
7.	Biritola	8.654 (1.791-17.704)	0.075 (0.002-0.577)	0.007	0.015	0.150	0.009	0.004	0.006	0.0011	0.00013	0.007
8.	Bonai	7.754 (1.669-19.090)	0.112 (0.002-0.670)	0.008	0.020	0.380	0.009	0.002	0.012	0.0011	<0.00006	0.006
9.	Rengali	4.595 (1.784-15.504)	0.316 (0.002-1.728)	0.008	0.024	0.710	0.007	0.003	0.009	0.0017	<0.00006	0.008

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
10.	Samal	4.347 (1.458-25.014)	0.203 (0.002-0.984)	0.012	0.030	0.270	0.007	0.002	0.004	0.0017	<0.00006	0.009
11.	Talcher FU/s	3.165 (0.524-7.442)	0.088 (0.002-0.317)	0.007	0.019	0.540	0.003	0.002	0.006	0.0024	<0.00006	0.004
12.	Talcher U/s	3.076 (0.542-6.639)	0.140 (0.002-0.934)	0.003	0.015	0.590	0.003	0.004	0.012	0.0024	<0.00006	0.003
13.	Mandapal*	3.382 (1.587-8.943)	0.099 (0.002-0.440)	0.005	0.024	0.100	0.003	0.007	0.007	0.0016	<0.00006	0.004
14.	Talcher D/s	6.100 (1.324-17.456)	0.194 (0.004-1.463)	0.002	0.008	1.070	0.005	0.007	0.014	0.0032	0.00019	0.004
15.	Talcher FD/s	5.486 (1.207-16.818)	0.140 (0.002-0.880)	0.005	0.015	1.320	0.003	0.006	0.007	0.0018	<0.0006	0.005
16.	Dhenkanal U/s	2.577 (0.593-8.817)	0.171 (0.002-0.633)	0.005	0.019	0.150	0.003	0.004	0.009	0.0016	<0.00006	0.005
17.	Dhenkanal D/s	3.224 (1.225-10.569)	0.259 (0.002-1.383)	0.007	0.022	0.220	0.003	0.003	0.011	0.0017	<0.00006	0.004
18.	Bhuban	4.517 (0.857-16.656)	0.281 (0.002-2.127)	0.013	0.03	0.360	0.004	0.008	0.017	0.0019	<0.00006	0.008
19.	Kabatabandha	3.541 (0.199-10.823)	0.077 (0.002-0.249)	0.018	0.037	0.060	0.004	0.007	0.018	0.0018	<0.00006	0.008
20.	Dharmasala U/s	2.575 (0.978-10.226)	0.150 (0.003-0.637)	0.007	0.019	0.110	0.003	0.005	0.006	0.0011	<0.00006	0.004

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
21.	Dharmasala D/s	1.003 (1.227-10.880)	0.327 (0.002-1.918)	0.017	0.039	0.180	0.005	0.003	0.009	0.0012	<0.00006	0.006
22.	Pottamundai	2.486 (0.280-7.702)	0.126 (0.002-1.186)	0.007	0.019	0.520	0.003	0.003	0.007	0.0016	<0.00006	0.006
Nandira River												
23.	Nandira U/s	6.675 (1.329-25.116)	0.121 (0.002-0.683)	0.007	0.024	0.080	0.007	0.006	0.008	0.0022	<0.00006	0.011
24.	Nandira D/s	10.350 (0.900-30.672)	0.133 (0.002-0.504)	0.005	0.03	0.150	0.008	0.005	0.018	0.0026	0.00025	0.013
Kisindajhor												
25.	Kisindajhor	7.339 (0.936-20.151)	0.156 (0.002-0.314)	0.005	0.024	0.020	0.003	0.009	0.004	0.0018	0.00019	0.005
Kharasrota River												
26.	Khanditara	4.932 (1.137-23.989)	0.064 (0.002-0.184)	0.007	0.024	0.100	0.004	0.004	0.006	0.0014	<0.00006	0.002
27.	Binjharpur	2.763 (0.658-9.503)	0.218 (0.051-0.622)	0.010	0.027	0.080	0.004	0.008	0.008	0.0018	<0.00006	0.005
28.	Aul	6.022 (1.114-23.657)	0.173 (0.002-1.537)	0.015	0.032	0.330	0.006	0.015	0.016	0.0016	0.00013	0.009
Guradih nallah												
29.	Guradih nallah	17.703 (1.267-45.777)	0.336 (0.002-1.426)	0.007	0.027	4.710	0.019	0.016	0.079	0.0032	0.00078	0.009

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Badjhor nallah												
30.	Badjhor nallah***	5.612 (1.004-28.884)	0.181 (0.002-1.088)	0.003	0.013	0.110	0.005	0.004	0.014	0.0018	0.00013	0.007
Damsala River												
31.	Dayanabil*	6.887 (1.449-22.449)	0.115 (0.002-0.425)	0.003	0.011	0.45	0.004	0.002	0.011	0.0014	<0.00006	0.007
Ganda nallah												
32.	Marthapur*	11.750 (3.064-31.332)	0.055 (0.002-0.196)	0.015	0.032	0.42	0.005	0.009	0.016	0.0014	0.00019	0.008
Lingra River												
33.	Angul U/s*	4.704 (0.275-23.349)	0.045 (0.002-0.167)	0.008	0.020	0.330	0.004	0.003	0.016	0.0016	<0.00006	0.004
34.	Angul D/s*	2.434 (0.918-5.900)	0.203 (0.002-1.457)	0.023	0.047	0.420	0.006	0.005	0.021	0.0021	<0.00006	0.005
Ramiala River												
35.	Kamakhyanagar*	2.397 (0.618-5.266)	0.359 (0.002-2.490)	0.025	0.054	0.160	0.005	0.007	0.017	0.0024	<0.00006	0.007
Banguru nallah												
36.	Banguru nallah*	4.192 (2.204-10.531)	0.131 (0.002-0.359)	0.027	0.042	0.360	0.005	0.004	0.006	0.0012	<0.00006	0.007
Singada jhor												
37.	Singada jhor*	2.802 (1.196-5.298)	0.325 (0.002-1.955)	0.025	0.044	0.480	0.004	0.002	0.018	0.0014	<0.00006	0.008

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Tikira River												
38.	Kaniha U/s*	2.395 (1.000-4.015)	0.297 (0.002-1.45)	0.028	0.054	0.410	0.007	0.003	0.012	0.0016	<0.00006	0.009
39.	Kaniha D/s*	2.719 (1.487-4.418)	0.287 (0.002-1.033)	0.017	0.035	0.460	0.008	0.008	0.016	0.0017	0.00032	0.007
Bangurusingada jhor												
40.	Bangurusingada jhor*	3.880 (0.238-11.218)	0.153 (0.002-0.913)	0.025	0.047	0.150	0.007	0.002	0.025	0.0014	<0.00006	0.006
Karo River												
41.	Barbil**	2.898 (0.904-6.813)	0.156 (0.002-0.585)	0.009	0.023	0.12	0.006	0.004	0.008	0.0014	0.00019	0.009
❖ **Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ **Class 'E'**		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

Data for the period Aprl, 2017 and May, 2017 according to the commencement of monitoring of stations.

* Monitoring started from April, 2017, ** Monitoring started from May, 2017, *** Monitoring started from March, 2017

(C) Baitarani river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Kundra Nallah																
1.	Joda **	115 (17-536)	52 (32-72)	9.1 (3.9-12.8)	0.118 (0.050-0.280)	0.003 (0.001-0.011)	3.15 (0.56-7.30)	13140 (170-90000)	196 (102-654)	0.55 (0.21-2.18)	0.028 (0.011-0.084)	90 (64-176)	51 (40-66)	14.61 (5.99-61.97)	7.43 (0.68-13.43)	0.16 (0.11-0.22)
Kusei River																
2.	Deogaon	51 (8-256)	111 (60-154)	8.8 (4.4-21.4)	0.111 (0.056-0.280)	0.010 (0.002-0.028)	2.71 (0.56-9.50)	3250 (78-16000)	258 (173-339)	0.94 (0.31-1.60)	0.049 (0.007-0.098)	143 (94-174)	105 (64-136)	13.72 (7.99-17.99)	8.19 (0.96-15.04)	0.22 (0.12-0.39)
Baitarani River																
3.	Naigarh**	134 (24-384)	30 (16-44)	10.9 (6.1-17.5)	0.336 (0.056-1.010)	0.013 (0.001-0.051)	3.36 (0.56-7.28)	3855 (20-22000)	92 (77-104)	0.26 (0.17-0.37)	0.034 (0.001-0.158)	60 (46-95)	38 (30-60)	5.74 (3.99-7.99)	8.97 (0.22-28.98)	0.30 (0.16-0.65)
4.	Unchabali**	242 (20-938)	32 (22-44)	9.1 (5.4-14.7)	0.209 (0.050-0.560)	0.008 (0.001-0.028)	3.40 (1.12-6.16+)	375 (<1.8-1800)	153 (77-568)	0.50 (0.20-2.20)	0.027 (0.004-0.095)	75 (48-214)	38 (30-64)	12.99 (4.99-63.96)	11.20 (0.24-41.79)	0.18 (0.12-0.29)
5.	Champua**	88 (2-318)	44 (20-78)	11.0 (5.4-29.1)	0.181 (0.056-0.560)	0.004 (0.001-0.008)	1.89 (0.28-5.04)	394 (<1.8-1300)	117 (93-1564)	0.25 (0.16-0.35)	0.025 (0.002-0.070)	11 (54-97)	47 (28-76)	6.23 (3.99-7.99)	9.74 (0.86-16.79)	0.15 (0.08-0.19)
6.	Tribindha**	71 (4-214)	54 (20-80)	13.0 (3.6-29.1)	0.226 (0.056-0.560)	0.008 (0.002-0.036)	3.82 (0.56-8.96)	1666 (<1.8-9200)	134 (102-161)	0.32 (0.27-0.40)	0.033 (0.004-0.077)	80 (62-106)	51 (30-68)	8.12 (5.99-9.99)	7.77 (0.36-12.81)	0.16 (0.09-0.19)
7.	Joda (Basudevpur)	76 (5-218)	48 (20-84)	8.3 (3.3-16.1)	0.116 (0.056-0.560)	0.003 (0.002-0.008)	2.93 (0.28-10.00)	454 (<1.8-1300)	132 (103-172)	0.33 (0.23-0.62)	0.045 (0.007-0.154)	77 (58-101)	48 (36-66)	7.98 (5.99-13.99)	9.11 (0.60-20.89)	0.28 (0.08-1.12)
8.	Anandpur	51 (6-192)	64 (28-92)	10.0 (4.3-24.4)	0.180 (0.056-0.900)	0.007 (0.001-0.022)	2.80 (0.56-8.40)	2234 (45-9200)	159 (118-193)	0.35 (0.27-0.41)	0.041 (0.007-0.091)	93 (67-118)	62 (44-82)	9.73 (7.82-11.99)	7.78 (0.30-13.80)	0.19 (0.09-0.42)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
9.	Jajpur	58 (6-160)	67 (32-94)	9.5 (6.5-14.1)	0.186 (0.056-0.730)	0.010 (0.002-0.058)	2.05 (0.56-6.16)	26927 (68-160000)	181 (104-240)	0.38 (0.24-0.53)	0.062 (0.004-0.193)	103 (63-135)	67 (36-88)	11.05 (53.99-17.99)	9.90 (0.32-22.38)	0.24 (0.15-0.33)
10.	Chandbali U/s	246 (50-534)	91 (36-174)	15.2 (6.7-35.7)	0.177 (0.050-0.560)	0.010 (0.001-0.036)	2.94 (0.56-11.20)	5141 (490-17000)	5165 (176-17040)	14.57 (0.28-50.37)	0.555 (0.007-1.791)	3894 (95-12240)	707 (44-2800)	2092.01 (6.99-6896.60)	279.95 (5.85-935.30)	0.29 (0.17-0.60)
11.	Chandbali D/s	344 (64-956)	94 (28-184)	25.7 (6.7-59.3)	0.210 (0.011-0.560)	0.010 (BDL-0.045)	3.10 (0.56-15.68)	13973 (490-92000)	6315 (166-22120)	22.45 (0.38-118.37)	0.546 (0.014-1.594)	5291 (106-21790)	755 (44-3200)	2964.64 (8.99-7596.20)	307.38 (9.70-1206.00)	0.33 (0.15-0.61)
Salandi River																
12.	Bhadrak U/s	18 (5-54)	74 (24-132)	10.8 (5.8-17.8)	0.083 (0.017-0.280)	0.004 (BDL-0.009)	1.45 (0.56-3.36)	11784 (170-92000)	175 (106-285)	0.38 (0.28-0.48)	0.08 (0.004-0.207)	103 (65-156)	67 (40-110)	11.14 (7.99-15.99)	5.49 (1.00-13.93)	0.23 (0.13-0.29)
13.	Bhadrak D/s	31 (10-133)	75 (36-136)	14.0 (7.8-19.4)	0.163 (0.056-0.450)	0.006 (BDL-0.014)	2.36 (0.56-10.64)	41416 (790-160000)	186 (121-290)	0.42 (0.26-0.58)	0.047 (0.014-0.224)	109 (72-168)	71 (44-112)	12.87 (7.99-21.99)	7.36 (1.61-16.54)	0.20 (0.13-0.26)
Dhamra River																
14.	Dhamra	335 (138-664)	99 (54-156)	31.6 (10.3-66.0)	0.186 (0.050-0.780)	0.007 (0.001-0.039)	3.45 (0.56-14.00)	3800 (130-16000)	20600 (113-43350)	55.63 (4.02-128.71)	2.103 (0.095-4.459)	18471 (64-37640)	2081 (114-4080)	10233.2 (194.9-20990.0)	1000.12 (67.91-2363.00)	0.53 (0.18-0.79)
❖ **Class 'C'**		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ **Class 'E'**		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

** Monitoring started from May, 2017

(C) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Kundra nallah												
1.	Joda **	4.29 1 (2.257-8.064)	0.047 (0.002-0.121)	0.003	0.011	0.050	0.008	0.005	0.011	0.0018	0.00006	0.009
Kusei River												
2.	Deogaon	1.739 (0.457-7.412)	0.102 (0.002-0.455)	0.003	0.013	0.180	0.003	0.002	0.002	0.0008	<0.00006	0.0075
Baitarani river												
3.	Naigarh**	8.793 (0.672-40.325)	0.082 (0.002-0.316)	0.005	0.015	0.760	0.003	0.003	0.014	0.0012	<0.00006	0.008
4.	Unchabali**	5.074 (0.554-21.015)	0.280 (0.002-1.875)	0.007	0.018	0.330	0.004	0.005	0.017	0.0014	<0.00006	0.008
5.	Champua**	2.610 (0.584-7.156)	0.059 (0.004-0.234)	0.005	0.017	0.080	0.006	0.004	0.011	0.0016	<0.00006	0.009
6.	Tribindha**	1.958 (0.854-4.604)	0.109 (0.002-0.501)	0.003	0.011	0.050	0.004	0.005	0.009	0.0011	<0.00006	0.006
7.	Joda (Basudevpur)	2.668 (1.092-7.647)	0.102 (0.002-0.455)	0.003	0.011	0.460	0.003	0.002	0.015	0.0009	<0.00006	0.007
8.	Anandpur	2.159 (0.717-5.100)	0.074 (0.002-0.280)	0.002	0.008	0.150	0.004	0.005	0.005	0.0011	<0.00006	0.007
9.	Jajpur	9.044 (0.612-43.776)	0.155 (0.002-0.646)	0.017	0.020	0.040	0.003	0.002	0.076	0.0016	0.00032	0.007

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
10.	Chandbali U/s	4.425 (0.354-22.199)	0.089 (0.002-0.399)	0.012	0.024	5.980	0.011	0.008	0.025	0.0014	0.00019	0.006
11.	Chandbali D/s	5.690 (0.084-24.246)	0.080 (0.002-0.477)	0.015	0.032	5.370	0.014	0.008	0.028	0.0016	0.00019	0.006
Salandi river												
12.	Bhadrak U/s	3.194 (0.596-12.562)	0.191 (0.002-0.648)	0.007	0.015	0.210	0.003	0.006	0.002	0.0014	<0.00006	0.007
13.	Bhadrak D/s	4.379 (1.120-16.425)	0.272 (0.002-0.625)	0.008	0.024	0.250	0.003	0.006	0.006	0.0016	0.00019	0.007
Dhamra River												
14.	Dhamra	4.734 (1.157-18.403)	0.106 (0.002-0.344)	0.017	0.035	0.240	0.014	0.009	0.034	0.0018	0.00019	0.007
❖ **Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ **Class 'E'**		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality

** Monitoring started from May, 2017

Data for the period April, 2017 for stations 2, 7-14 and for the period May, 2017 for the stations 1,3,4,5 and 6

(D) Rushikulya river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/ 100ml)	(µS/cm)		(mg/l)					
Russelkunda Reservoir																
1.	Russelkunda**	91 (8-570)	64 (56-72)	10.9 (4.8-15.1)	0.280 (0.056-1.400)	0.022 (0.002-0.137)	3.54 (1.12-7.84)	4121 (<1.8-9200)	156 (131-195)	0.35 (0.11-0.72)	0.049 (0.005-0.081)	89 (75-119)	57 (44-62)	9.74 (5.99-19.99)	3.53 (0.50-7.58)	0.24 (0.18-0.30)
Bada Nadi																
2	Aska**	73 (26-168)	106 (56-144)	12.2 (3.2-21.4)	0.152 (0.050-0.560)	0.010 (0.002-0.034)	2.49 (0.56-5.04)	1150 (<1.8-5400)	259 (136-322)	0.52 (0.25-1.11)	0.144 (0.017-0.751)	145 (75-178)	95 (56-122)	17.11 (5.99-33.98)	6.65 (1.87-14.67)	0.27 (0.20-0.44)
Rushikulya river																
3.	Aska**	148 (20-404)	106 (84-148)	12.5 (7.7-23.5)	0.161 (0.056-0.560)	0.014 (BDL-0.070)	2.45 (0.56-5.04)	1616 (2.0-5400)	249 (177-231)	0.37 (0.27-0.68)	0.043 (0.010-0.116)	138 (104-169)	98 (66-124)	12.61 (7.99-23.98)	5.45 (1.00-10.45)	0.24 (0.19-0.29)
4.	Nalabanta**	150 (16-448)	120 (86-176)	14.0 (7.7-23.5)	0.231 (0.056-0.620)	0.018 (0.002-0.070)	2.56 (0.28-5.04)	2888 (45-9200)	277 (201-338)	0.41 (0.29-0.66)	0.078 (0.028-0.140)	149 (116-192)	106 (82-150)	14.29 (9.99-21.98)	5.30 (1.40-9.45)	0.30 (0.21-0.59)
5.	Madhopur	67 (18-142)	121 (84-152)	12.1 (5.4-20.0)	0.326 (0.050-1.450)	0.027 (0.002-0.175)	2.85 (0.56-9.80)	2312 (49-5400)	1083 (241-6706)	6.91 (0.40-62.02)	0.146 (0.042-0.470)	754 (138-5130)	140 (88-388)	361.31 (13.99-2998.50)	31.30 (2.86-140.54)	0.40 (0.19-0.95)
6.	Potagarh	141 (65-386)	122 (102-164)	27.9 (10.1-50.0)	0.194 (0.056-0.700)	0.008 (0.001-0.056)	2.18 (0.56-7.56)	1518 (<1.8-9200)	21030 (404-52860)	37.42 (1.42-76.71)	1.996 (0.067-3.746)	19722 (257-50120)	2860 (104-6300)	10586.0 (69.9-24737.6)	1345.41 (14.67-4116.90)	0.55 (0.20-1.10)
❖ **Class 'C'**		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ **Class 'E'**		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality
** Monitoring started from May, 2017

(D) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Russelkunda Reservoir												
1.	Russelkunda**	3.480 (0.589-9.293)	0.049 (0.002-0.172)	0.003	0.011	0.24	0.004	0.004	0.016	0.0016	<0.00006	0.008
Bada Nadi												
2.	Aska**	2.745 (1.202-3.888)	0.060 (0.002-0.174)	0.003	0.013	1.64	0.006	0.004	0.024	0.0014	0.00019	0.008
Rushikulya river												
3.	Aska**	3.832 (1.120-9.862)	0.177 (0.002-0.990)	0.006	0.011	0.8	0.006	0.005	0.019	0.0014	0.00019	0.006
4.	Nalabanta**	3.153 (0.262-5.026)	0.113 (0.002-0.474)	0.003	0.009	0.26	0.004	0.004	0.011	0.0011	0.00013	0.007
5.	Madhopur	2.954 (1.212-5.648)	0.188 (0.002-0.870)	0.005	0.015	0.020	0.004	0.003	0.023	0.0011	0.00019	0.008
6.	Potagarh	3.281 (0.632-6.064)	0.134 (0.002-0.696)	0.005	0.015	0.060	0.006	0.014	0.026	0.0016	<0.00006	0.009
❖ **Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ **Class 'E'**		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality

** Monitoring started from May, 2017

Data for the period April, 2017 for Sl. No. 5 and 6, and Data for the period May, 2017 for Sl. No. 1, 2, 3 and 4.

(E) Nagavali river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Nagavali river																
1.	Penta	101 (7-362)	89 (64-108)	9.8 (4.0-14.3)	0.158 (0.055-0.560)	0.012 (0.001-0.044)	2.08 (0.56-7.84)	864 (45-2400)	198 (156-225)	0.30 (0.19-0.44)	0.004 (0.002-0.112)	114 (87-132)	81 (64-98)	9.8 (6.0-15.0)	6.1 (3.0-13.8)	0.21 (0.13-0.38)
2.	Jaykaypur D/s	121 (31-364)	99 (72-136)	19.4 (13.1-29.8)	0.282 (0.055-0.780)	0.024 (0.001-0.076)	2.89 (0.56-7.00)	3941 (170-16000)	270 (171-447)	0.49 (0.19-0.86)	0.055 (0.011-0.147)	157 (99-242)	100 (68-146)	18.5 (7.0-40.0)	17.4 (6.3-37.1)	0.25 (0.12-0.56)
3.	Rayagada D/s	147 (19-546)	101 (56-152)	16.1 (8.0-23.5)	0.186 (0.055-0.560)	0.010 (BDL-0.018)	3.15 (0.84-8.40)	2532 (170-14000)	298 (160-653)	0.61 (0.24-1.60)	0.056 (0.004-0.168)	171 (88-376)	100 (68-146)	23.9 (8.0-79.0)	18.6 (4.4-61.3)	0.28 (0.12-0.99)
	❖ **Class 'C'**	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	❖ **Class 'E'**	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality

(E) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Nagavali river												
1.	Penta	2.531 (0.694-4.088)	0.155 (0.002-0.509)	0.01	0.027	0.110	0.004	0.006	0.004	0.0012	0.00013	0.003
2.	Jaykaypur D/s	8.572 (0.724-43.151)	0.194 (0.002-0.551)	0.024	0.04	0.240	0.006	0.011	0.009	0.0014	0.00025	0.005
3.	Rayagada D/s	5.375 (1.858-11.513)	0.321 (0.009-2.533)	0.007	0.024	0.160	0.005	0.006	0.015	0.0011	0.00019	0.006
❖ **Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ **Class 'E'**		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality
Data for the period April, 2017

(F) Subarnarekha river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Subarnarekha river																
1.	Rajghat	58 (9-122)	78 (36-100)	9.5 (4.0-18.4)	0.112 (0.050-0.350)	0.011 (0.001-0.034)	1.38 (0.28-3.92)	3768 (130-16000)	253 (154-369)	0.65 (0.25-1.08)	0.072 (0.004-0.239)	145 (94-208)	83 (52-116)	21.62 (7.99-34.98)	19.13 (5.10-34.45)	0.47 (0.19-0.96)
❖ Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

(F) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Subarnarekha river												
1.	Rajghat	4.826 (0.739-32.416)	0.167 (0.002-0.567)	0.012	0.032	0.43	0.008	0.012	0.007	0.0014	<0.00006	0.006
❖ Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ Class 'E'		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality
Data for the period April, 2017

(G) Budhabalanga river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Budhabalanga river																
1.	Baripada D/s	29 (8-52)	94 (52-144)	10.1 (5.6-14.3)	0.083 (BDL-0.056)	0.006 (BDL-0.014)	1.28 (0.56-2.52)	2563 (78-13000)	247 (139-415)	0.57 (0.28-1.37)	0.071 (0.004-0.239)	141 (82-216)	86 (46-132)	19.44 (6.99-44.97)	10.06 (3.48-15.30)	0.30 (0.13-0.71)
2.	Balasore U/s	46 (10-91)	77 (44-104)	10.5 (5.6-18.0)	0.093 (0.050-0.280)	0.008 (0.001-0.028)	1.56 (0.28-3.92)	14865 (130-92000)	205 (123-279)	0.47 (0.20-0.72)	0.053 (0.004-0.235)	120 (74-173)	77 (44-108)	15.44 (4.99-27.39)	10.08 (1.74-17.20)	0.24 (0.14-0.41)
3.	Balasore D/s	147 (22-780)	102 (56-202)	17.4 (9.2-28.0)	0.181 (BDL-0.560)	0.017 (BDL-0.055)	1.70 (0.56-3.36)	32344 (330-160000)	1111 (133-7006)	3.50 (0.34-13.84)	0.148 (0.011-0.611)	503 (86-2110)	131 (48-320)	200.64 (7.99-924.00)	45.99 (1.62-278.00)	0.39 (0.16-1.46)
Sone River																
4.	Hatigond*	71 (12-174)	68 (36-88)	12.2 (10.1-15.7)	0.192 (BDL-0.780)	0.011 (BDL-0.062)	1.49 (0.28-7.28)	2293 (20-9200)	169 (123-214)	0.38 (0.09-0.52)	0.022 (0.004-0.060)	99 (74-121)	63 (48-76)	10.99 (6.99-14.99)	8.43 (11.86-15.17)	0.18 (0.12-0.29)
	❖ **Class 'C'**	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
	❖ **Class 'E'**	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection
Class 'E' : Irrigation water quality

* Monitoring started from April, 2017

(G) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Budhabalanga river												
1.	Baripada D/s	3.472 (0.825-7.320)	0.136 (0.002-0.343)	0.012	0.027	2.14	0.004	0.005	0.004	0.0018	0.00019	0.007
2.	Balasore U/s	3.344 (0.560-16.144)	0.244 (0.002-0.959)	0.013	0.030	0.75	0.003	0.006	0.011	0.0016	0.00013	0.005
3.	Balasore D/s	6.989 (0.101-30.024)	0.184 0.002-0.490)	0.013	0.032	1.81	0.006	0.008	0.017	0.0021	0.00025	0.009
Sone River												
4.	Hatigond*	1.839 (0.314-3.8834)	0.160 (0.002-0.892)	0.017	0.029	0.16	0.005	0.004	0.014	0.0014	0.00006	0.006
❖ **Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ **Class 'E'**		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

* Monitoring started from April, 2017

Data for the period April, 2017

(H) Kolab river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Kerandi river																
1.	Sunabeda	102 (9-558)	30 (20-52)	9.7 (4.0-18.4)	0.25 (0.05-1.12)	0.009 (0.001-0.045)	2.20 (0.56-5.60)	2193 (45-16000)	98 (77-133)	0.36 (0.22-0.57)	0.030 (0.002-0.074)	59 (46-78)	34 (24-48)	8.3 ()6.0-12.0)	5.5 (1.6-10.6)	0.21 (0.11-0.65)
❖ Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

(H) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Kerandi river												
1.	Sunabeda	3.572 (1.210-9.822)	0.140 (0.003-0.787)	0.008	0.020	0.130	0.004	0.002	0.004	0.0018	<0.00006	0.012
❖ Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ Class 'E'		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

Data for the period April, 2017

(I) Vansadhara river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Vansadhara river																
1.	Muniguda	62 (9-204)	86 (64-134)	9.5 (4.0-26.8)	0.097 (0.055-0.280)	0.008 (0.003-0.027)	1.87 (0.25-5.04)	458 (20-1700)	204 (164-269)	0.33 (0.24-0.47)	0.041 0.007-0.095)	113 (96-156)	79 (60-118)	10.39 (7.99-13.99)	5.48 (1.50-9.60)	0.24 (0.11-0.56)
2.	Gunupur	89 (14-324)	89 (48-122)	10.6 (4.0-21.8)	0.079 (0.050-0.280)	0.008 (0.001-0.043)	1.66 (0.84-3.36)	2364 (45-16000)	224 (133-353)	0.41 (0.26-1.27)	0.046 (0.004-0.119)	124 (78-198)	86 (34-96)	13.97 (6.99-46.97)	5.59 (1.99-10.40)	0.226 (0.094-0.420)
❖ **Class 'C'**		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ **Class 'E'**		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

(I) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Vansadhara river												
1.	Muniguda	3.846 (1.055-9.225)	0.146 (0.002-0.790)	0.002	0.0084	0.330	0.004	0.005	0.018	0.0012	<0.00006	0.003
2.	Gunupur	4.679 (0.429-18.507)	0.153 (0.002-0.897)	0.002	0.0108	0.420	0.006	0.007	0.026	0.0018	<0.00006	0.009
❖ **Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ **Class 'E'**		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

Data for the period April, 2017

(J) Indravati river system (2017)

Sl. No	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Indravati river																
1.	Nawarangpur**	129 (8-622)	48 (32-64)	11.4 (5.36-18.4)	0.167 (0.055-0.560)	0.007 (BDL-0.022)	2.48 (0.28-8.90)	460 (<1.8-2200)	116 (86-194)	0.41 (0.27-1.14)	0.031 (0.004-0.070)	74 (46-118)	44 (28-54)	10.11 (5.99-29.98)	5.37 (2.48-10.57)	0.18 (0.09-0.26)
❖	**Class 'C'**	-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖	**Class 'E'**	-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

(J) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Indravati river												
1.	Nawarangpur**	6.224 (1.205-27.861)	0.144 (0.003-0.756)	0.005	0.017	0.760	0.004	0.003	0.022	0.0014	<0.00006	0.008
❖	**Class 'C'**	50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖	**Class 'E'**	-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

** Monitoring started from May, 2017

Data for the period May, 2017

(K) Bahuda river system (2017)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual Average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	FC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100ml)	(µs/cm)		(mg/l)					
Bahuda river																
1.	Damodarpally*	101 (24-374)	114 (60-140)	12.7 (5.3-19.9)	0.369 (0.056-1.400)	0.029 (0.002-0.112)	0.124 (0.002-0.569)	3756 (<1.8-16000)	286 (174-413)	0.64 (0.28-1.05)	0.20 (0.02-0.72)	162 (98-199)	103 (58-130)	22.60 (9.99-38.98)	8.23 (3.10-16.54)	0.33 (0.19-0.44)
❖ Class 'C'		-	-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5
❖ Class 'E'		-	-	-	-	-	-	-	2250	26	2.0	2100	-	600	1000	-

(K) Contd..

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual Average values (Range of values)										
		Nitrate as NO_3	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Bahuda river												
1.	Damodarpally**	3.661 (0.271-7.129)	0.124 (0.002-0.569)	0.007	0.019	0.420	0.005	0.002	0.019	0.0012	0.00019	0.007
❖ Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
❖ Class 'E'		-	-	-	-	-	-	-	-	-	-	-

❖ **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Class 'E' : Irrigation water quality

** Monitoring started from May, 2017

Data for the period May, 2017

(B) Canal Water Quality Monitoring

Board regularly monitors the water quality of **Taladanda canal** at six stations and of **Puri canal** at three stations.

- Taladanda canal originates from Mahanadi river at Jobra of Cuttack, passes through the city and finally culminates at Paradeep after covering a distance of 82 Km. The canal was constructed for the purpose of navigation and/ or irrigation of a part of Mahanadi delta of Cuttack and Jagatsinghpur districts. Besides this, the canal is also a source of fresh water for industries and the port at Paradeep. The canal water is also used for bathing and other domestic activities all along its stretch.
- Board monitors the water quality of Taldanda canal within Cuttack city at five locations viz. Jobra, Ranihat, Chhatrabazar, Nuabazar, Biribati and one station at Atharabanki of Paradeep. The water quality data at these five stations with respect to critical parameters such as pH, DO, BOD, TC, FC, EC, SAR and B during 2017 are given in Table-5.20 and compared with the tolerance limits for Bathing water quality prescribed under E (P) Rule, 1986 and Class B (Outdoor bathing) and Class E (Irrigation) Inland surface water quality prescribed by Bureau of Indian Standards (IS: 2296-1982). The water quality of Taladanda canal at these locations remained well within the tolerance limit prescribed for Class-E inland surface water bodies. However, so far the bathing water quality is concerned, total coliform organisms and fecal coliform organisms remain above the prescribed limit for Class- B at all the monitoring stations during the period of study in 2017, whereas BOD values do not remain within the tolerance limit at Ranihat and Chhatrabazar, Nuabazar and Atharabanki. DO values do not meet the prescribed limit at Nuabazar, Biribati and Atharabanki.
- Puri canal originates from Mahanadi river near Munduli barrage of Cuttack. The 42 Km long canal was constructed for the purpose of irrigation of Puri district and a part of Khordha district. The canal water is also used for bathing and other domestic activities all along its stretch. Board monitors the water quality of Puri canal at three locations viz. Hansapal, Jagannathpur and Chandanpur . The water quality of Puri canal at these locations remained well within the tolerance limit prescribed for Class-E inland surface water bodies. However, so far the bathing water quality is concerned, total coliform organisms and fecal coliform organisms remain above the prescribed limit for Class- B at all the monitoring stations during the period of study in 2017, whereas BOD values do not remain within the tolerance limit at Hansapal and DO values do not meet the prescribed limit at Jagannathpur and Chandanpur

Water quality for other parameters given in Table-5.21 remain well within the tolerance limit for Class - C water quality.

Table-5.20 Water Quality of Canals with respect to Criteria parameters during 2017

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/100 ml)	DO	BOD	TC	FC			
Taladanda canal														
1.	Jobra*	8	8.0 (7.5-8.4)	7.6 (6.6-9.0)	0.8 (0.3-1.6)	9388 (2400-16000)	6588 (1300-16000)	0	0	6$(75) 8$$ (100)	4 (50)	Does not conform to Class B,C	TC,FC	Human activities
2.	Ranihat*	8	8.1 (7.5-8.4)	7.0 (6.1-8.1)	1.9 (1.0-3.9)	144375 (35000-160000)	142125 (17000-160000)		1 (13)	8$ (100) 8$$ (100)	8 (100)	Does not conform to Class B & C	BOD, TC,FC	Human activities and waste water of Cuttack town
3.	Chatrabazar*	8	8.0 (7.4-8.4)	6.7 (5.3-8.2)	2.2 (1.4-3.9)	119875 (13000-160000)	90363 (7900-160000)	0	1 (13)	8$ (100) 8$$ (100)	8 (100)		BOD, TC,FC	
4.	Nuabazar*	8	8.0 (7.2-8.4)	6.3 (4.0-7.6)	1.9 (1.1-2.8)	73613 (4900-160000)	52025 (3300-160000)	1$$ (13)	0	7$ (88) 8$$ (100)	8 (100)	Does not conform to Class B & C	DO, BOD, TC,FC	
5.	Biribati*	8	8.1 (7.4-8.5)	6.6 (4.9-8.4)	1.3 (0.9-1.7)	41013 (4900-160000)	28275 (4900-92000)	1$$ (13)	0	7$ (88) 8$$ (100)	8 (100)		DO, TC,FC	
6.	Atharabanki**	12	7.9 (7.3-8.5)	5.7 (3.6-8.0)	2.7 (0.5-5.8)	65275 (2200-160000)	45683 (790-160000)	2$ (17) 4$$ (33)	6 (50)	8$ (67) 12$$ (100)	9 (75)	Does not conform to Class B & C	DO, BOD, TC,FC	Human activities
***Class 'C'			6.5-8.5	4 and above	3 or less	5000 or less		Drinking water source with conventional treatment followed by disinfection						
***Class 'B'			6.5-8.5	5 and above	3 or less	500 or less		Outdoor bathing						
Water quality criteria for bathing water			6.5-8.5	5 and above	3 or less		2500 (Maximum Permissible)	Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)						

* Data for the period February-May, July, Sep-Nov, 2017 ** Data for the period January-December, 2017

*** Tolerance limits for Inland Surface water bodies (IS-2296-1982) $ for Class C and $$ for Class B

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: (Ref : IS 2296-1982 foot note)

For Class B : TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.

For Class C : TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml

Contd..

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)	DO	BOD	TC	FC			
(b) Puri canal														
1.	Hansapal*	9	8.1 (7.6-8.3)	8.0 (5.1-15.2)	1.2 (0.3-3.7)	28533 (1100-160000)	22706 (45-160000)	0	1 (11)	7$ (78) 9$$ (100)	5 (56)	Does not conform to Class B,C	BOD, TC,FC	Human activities
2.	Jagannathpur*	9	7.8 (7.3-8.3)	6.6 (4.4-7.6)	1.1 (0.5-2.0)	15007 (560-54000)	5212 (1.8-17000)	1$$ (11)	0	6$ (75) 9$$ (100)	5 (56)	Does not conform to Class B & C	DO, TC,FC	Human activities and waste water of Cuttack town
3.	Chandanpur**	7	8.2 (8.0-8.4)	6.5 (4.8-8.6)	1.2 (0.9-1.5)	5453 (170-16000)	2478 (78-9200)	1$$ (17)	0	2$ (29) 6$$ (86)	2 (29)		DO, TC,FC	
***Class 'C'			6.5-8.5	4 and above	3 or less	5000 or less		Drinking water source with conventional treatment followed by disinfection						
***Class 'B'			6.5-8.5	5 and above	3 or less	500 or less		Outdoor bathing						
Water quality criteria for bathing water			6.5-8.5	5 and above	3 or less		2500 (Maximum Permissible)	Water use for organised outdoor bathing (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)						

* Data for the period April-December, 2017 ** Data for the period May, July-December, 2017

*** Tolerance limits for Inland Surface water bodies (IS-2296-1982)

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis: (Ref : IS 2296-1982 foot note)

For Class B : TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.

For Class C : TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.

Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values) Parameters				Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	EC (micro Siemens /cm)	SAR	B (mg/l)	EC	SAR	B			
(a) Taladanda canal												
1.	Jobra*	8	8.0 (7.5-8.4)	188 (117-220)	0.36 (0.17-0.46)	0.093 (0.004-0.249)	0	0	0	Conform to Class E		
2.	Ranihat*	8	8.1 (7.5-8.4)	201 (158-239)	0.36 (0.25-0.51)	0.104 (0.007-0.221)	0	0	0			
3.	Chatrabazar*	8	8.0 (7.4-8.4)	201 (165-239)	0.36 (0.21-0.58)	0.097 (0.004-0.189)	0	0	0			
4.	Nuabazar*	8	8.0 (7.2-8.4)	203 (161-253)	0.35 (0.28-0.52)	0.132 (0.004-0.316)	0	0	0			
5.	Biribati*	8	8.1 (7.4-8.5)	208 (163-239)	0.38 (0.22-0.65)	0.106 (0.007-0.256)	0	0	0			
6.	Atharabanki**	12	7.9 (7.3-8.5)	1836 (169-18370)	3.99 (0.25-33.11)	0.118 (0.004-0.864)	1 (8)	1 (8)	0			
(b) Puri canal												
1.	Hansapal#	9	8.1 (7.6-8.3)	184 (152-225)	0.37 (0.21-0.67)	0.022 (0.007-0.049)	0	0	0	Conform to Class E		
2.	Jagannathpur#	9	7.8 (7.3-8.3)	186 (124-246)	0.33 (0.29-0.46)	0.031 (0.004-0.067)	0	0	0			
3.	Chandanpur##	7	8.2 (8.0-8.4)	196 (161-235)	0.33 (0.22-0.47)	0.050 (0.014-0.112)	0	0	0			
***** Class 'E'**			**6.5-8.5**	**2250 or less**	**26 or less**	**2 or less**				**Irrigation, Industrial Cooling or controlled waste disposal**		

*** Data for the period February-May, July, Sep-Nov, 2017 ** Data for the period January-December, 2017**
 # Data for the period April-December, 2017 ## Data for the period May, July-December, 2017
***** Tolerance limits for Inland Surface water bodies (IS-2296-1982)**

Table-5.21 Water Quality of Taladanda Canal with respect to other parameters during 2017

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents				
		Annual average values (Range of values)										
		TSS	Total alkalinity	COD	NH_4-N	Free NH_3-N	TKN	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(mg/l)				
(a) Taladanda Canal												
1.	Jobra*	16 (2-54)	78 (46-96)	8.0 (5.43-11.0)	0.185 (0.056-0.460)	0.011 (0.002-0.035)	2.80 (0.56-10.36)	114 (78-138)	75 (44-90)	10.87 (5.99-15.99)	11.6 (7.0-20.4)	0.32 (0.23-0.43)
2.	Ranihat*	27 (7-62)	87 (70-92)	13.9 (7.3-22.2)	0.271 (0.056-0.770)	0.017 (0.003-0.050)	2.63 (1.12-6.16)	119 (99-137)	79 (66-88)	11.24 (6.99-16.99)	9.6 (6.8-13.3)	0.32 (0.21-0.42)
3.	Chhatrabazar*	22 (4-60)	82 (66-92)	15.7 (7.3-22.2)	0.322 (0.056-1.400)	0.019 (0.004-0.091)	3.40 (0.56-7.28)	117 (98-135)	77 (64-90)	10.62 (5.99-15.99)	10.7 (5.6-17.7)	0.32 (0.23-0.50)
4.	Nuabazar*	24 (2-70)	83 (64-96)	15.1 (7.3-27.8)	0.414 (0.056-1.400)	0.024 (0.002-0.091)	3.54 (0.56-7.84)	122 (104-146)	79 (66-96)	11.37 (6.99-17.99)	12.7 (7.2-20.8)	0.32 (0.22-0.47)
5.	Biribati*	29 (2-78)	86 (68-100)	9.8 (7.3-11.8)	0.280 (0.056-0.670)	0.024 (0.003-0.104)	2.59 (0.56-6.72)	123 (92-146)	80 (66-96)	12.36 (5.99-21.96)	11.3 (6.8-15.0)	0.32 (0.23-0.45)
6.	Atharabanki**	44 (10-206)	93 (56-128)	23.0 (5.0-60.2)	0.308 (0.055-1.456)	0.023 (0.001-0.182)	2.54 (0.56-8.96)	1275 (99-13100)	264 (56-2200)	568.3 (7.99-6262.4)	192.1 (2.54-2139.0)	0.54 (0.30-0.91)
***Class 'C'		-	-	-	-	-	-	1500	-	600	400	1.5
***Class 'E'		-	-	-	-	-	-	2100	-	600	1000	-

* Data for the period February-May, July, Sep-Nov, 2017
** Data for the period January-December, 2017
*** Tolerance limits for Inland Surface water bodies (IS-2296-1982)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents				
		Annual average values (Range of values)										
		TSS	Total alkalinity	COD	NH_4-N	Free NH_3-N	TKN	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(mg/l)				
(b) Puri Canal												
1.	Hansapal*	54 (8-144)	74 (48-100)	10.7 (6.7-17.5)	0.210 (0.056-0.450)	0.014 (0-0.044)	2.24 (0.28-6.16)	108 (88-132)	72 (54-88)	11.21 (5.99-17.99)	9.7 (5.5-13.6)	0.32 (0.22-0.58)
2.	Jagannathpur*	47 (6-114)	80 (48-114)	12.0 (5.5-19.3)	0.666 (0.056-3.360)	0.023 (0.001-0.134)	3.52 (0.56-10.08)	110 (72-146)	73 (52-94)	9.88 (7.99-14.99)	8.8 (4.4-13.9)	0.31 (0.21-0.46)
3.	Chandanpur**	50 (12-100)	75 (60-86)	10.2 (7.1-15.5)	0.271 (0.056-1.120)	0.019 (0.005-0.056)	2.28 (0.28-7.84)	114 (98-139)	77 (64-100)	10.99 (5.99-17.99)	11.5 (6.99-17.41)	0.27 (0.22-0.32)
***Class 'C'		-	-	-	-	-	-	1500	-	600	400	1.5
***Class 'E'		-	-	-	-	-	-	2100	-	600	1000	-

* Data for the period April-December, 2017
** Data for the period May, July-December, 2017
*** Tolerance limits for Inland Surface water bodies (IS-2296-1982)

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
(a) Taladanda Canal												
1.	Jobra*	1.639 (0.551-4.352)	0.072 (0.002-0.380)	0.005	0.013	0.670	0.002	0.003	0.009	0.0011	<0.00006	0.005
2.	Ranihat*	2.670 (0.559-4.860)	0.230 (0.002-1.211)	0.005	0.015	0.810	0.009	0.007	0.018	0.0019	0.00019	0.008
3.	Chhatrabazar*	2.602 (0.645-4.539)	0.162 (0.002-0.575)	0.005	0.013	0.380	0.003	0.003	0.047	0.0016	0.00013	0.011
4.	Nuabazar*	3.582 (0.928-5.187)	0.185 (0.022-0.773)	0.007	0.018	0.170	0.003	0.004	0.019	0.0019	<0.00006	0.005
5.	Biribati*	3.404 (0.962-9.060)	0.204 (0.002-0.886)	0.005	0.02	1.230	0.003	0.006	0.004	0.0019	<0.00006	0.006
6.	Atharabanki**	4.846 (0.152-15.038)	0.296 (0.002-0.774)	0.005	0.024	0.950	0.005	0.009	0.011	0.0018	0.00013	0.019
***Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
***Class 'E'		-	-	-	-	-	-	-	-	-	-	-

*** Data for the period February-May, July, Sep-Nov, 2017**
**** Data for the period January-December, 2017**
***** Tolerance limits for Inland Surface water bodies (IS-2296-1982)**
Data for the period April, 2017

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
(b) Puri canal												
1.	Hansapal*	2.629 (0.413-10.499)	0.059 (0.002-0.137)	0.022	0.04	0.170	0.006	0.004	0.014	0.0016	0.00013	0.005
2.	Jagannathpur*	2.923 (0.517-8.584)	0.118 (0.002-0.477)	0.008	0.024	0.200	0.004	0.003	0.018	0.0019	0.00013	0.005
3.	Chandanpur**	3.931 (0.943-10.091)	0.229 (0.003-0.630)	0.005	0.019	0.140	0.008	0.005	0.038	0.0016	0.00032	0.009
***Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10
***Class 'E'		-	-	-	-	-	-	-	-	-	-	-

* Data for the period April-December, 2017
** Data for the period May, July-December, 2017
*** Tolerance limits for Inland Surface water bodies (IS-2296-1982)
Data for the period April, 2017

(C) Ponds Water Quality Monitoring

Board is regularly monitoring the water quality of eight ponds such as Bindusagar pond in Bhubaneswar, five religious ponds (Narendra, Markanda, Indradyumna, Swetaganga and Parvati Sagar) in Puri town, Jagannathsagar pond in Jeypore town, and Raniguda pond in Angul town.

The annual average and range values of the criteria parameters such as pH, DO, BOD, TC and FC during 2017 in these eight ponds are given in Table-5.22. As these ponds are mostly used for bathing purposes, water quality data are compared with the bathing water quality . Comparison of the data with the tolerance limits for Class-B (Bathing water quality), specified by CPCB and water quality criteria for bathing water (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000) reveals non-compliance at these monitoring stations with respect to DO, BOD, TC and FC. Frequent deviation in pH values in Narendra and Markanda ponds have also been observed. Water quality with respect to other parameters are given in Table-5.23 which remained within the tolerance limits for Class 'C'.

(D) Lakes Water Quality Monitoring

The Board is regularly monitoring the water quality of Chilka lake at two stations (Rambha and Satpada), four stations on Anshupa lake (Kadalibari, Bishnupur Subarnapur and Sarandagarh) and one station on Tampara lake (Tampara). Annual average and range values of the water quality parameters of these lakes during the year 2017 are given in Table-5.24 and Table-5.25. Assessment of the water quality status of the lakes have been done based on the best use of water body made by the society as well as the type of water body.

As Chilka is a brackish water lake and the predominant activities at the monitoring stations such as Rambha and Satapada are contact water sports and commercial fishing, the water quality criteria parameters are compared with Class SW-II. Comparison of the water quality data of Chilka lake with the water quality criteria for SW-II waters (for bathing, contact water sports and commercial fishing) (Table-9(a)) reveals non-compliance with respect to fecal coliform values at both Rambha and Satapada. The probable cause of downgrading the water quality of lake may be due to human activities in the lake.

Anshupa and Tamprara lakes are sweet water lakes and the predominant activity in these lake are fish propagation. Comparison of the water quality data of Anshupa lake and Tampara lake (Table 5.24 (b))with the water quality criteria for Class-D surface water bodies (Fish culture and wild life propagation) reveals compliance with respect to all the criteria parameters excepting dissolved oxygen (DO) on one occasion in Tampara lake. However, significant deviation in Biochemical Oxygen Demand (BOD) and Total coliform (TC) values from the tolerance limits (3.0 mg/l and 5000 MPN/100 ml respectively) laid down for Class-C (drinking water source with conventional treatment followed by disinfection) are observed at all the monitored locations of Anshupa and Tampara lake. The probable cause of downgrading the water quality of lake may be due to eutrophic condition of the lakes, human activities etc in the lake.

(E) Coastal Water Quality Monitoring

Coastal water quality near Puri town at three locations (Swargadwara, Baliapanda and Bankimuhan), Gopalpur at one location and Paradeep at one location are being regularly monitored by the Board. Annual average and range values of the water quality parameters of the sea at these five locations during the year 2017 are given in Tables -5.26 and Table 5.27. Assessment of the coastal water quality status have been done based on the best use and type of activities in the coastal segment.

Comparison of the coastal water quality data at Puri with the water quality criteria for SW-II waters (for bathing, contact water sports and commercial fishing) reveals non-compliance with respect to fecal coliform values at all the three locations with a single deviation in BOD value at Bankimuhan. This may be attributed to the human activities and discharge of domestic wastewater into the sea.

Comparison of the coastal water quality at Gopalpur and Paradeep with the water quality criteria for SW-II waters (for bathing, contact water sports and commercial fishing) and SW-IV (for Harbour water) reveals compliance with the desired class.

Table -5.22 (a) Water Quality of Bindusagar Pond with respect to Criteria parameters during 2017 (January- December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value					Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)	pH	DO	BOD	TC	FC			
Bindusagar Pond (Bhubaneswar)															
1.	Lingaraj Temple side	12	8.2 (7.1-8.8)	5.9 (1.5-10.1)	2.9 (1.0-4.8)	47658 (2800-160000)	26550 (1700-160000)	0	2 (17)	7 (58)	12 (100)	10 (83)	Does not conform to Class B	DO,BOD, TC,FC	Human activities
2.	Ananta Vasudev	12	8.2 (7.1-9.2)	7.8 (4.2-11.7)	2.7 (1.2-4.1)	63925 (7900-160000)	30311 (130-160000)	1 (8)	2 (17)	6 (50)	12 (100)	10 (83)		pH, DO,BOD, TC,FC	
3.	Near Kedarnath Research Centre	12	8.0 (6.9-8.5)	6.9 (3.9-10.1)	2.9 (0.7-4.9)	67158 (7900->160000)	25367 (3300-160000)	0	3 (25)	7 (58)	12 (100)	12 (100)		DO,BOD, TC,FC	
4.	Gyananagar	12	8.2 (7.3-8.5)	5.0 (2.6-9.5)	3.0 (0.4-4.6)	122250 (17000-160000)	78950 (2400-160000)	0	7 (58)	7 (58)	12 (100)	11 (92)		DO,BOD, TC,FC	
***Class 'B'**			**6.5-8.5**	**5 and above**	**3 or less**	**500 or less**		**Outdoor bathing**							
Water quality criteria for bathing water (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			**6.5-8.5**	**5 and above**	**3 or less**		**2500 (Maximum Permissible)**	**Water use for organised outdoor bathing**							

* **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Note : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 20,000 MPN/100 ml and more than 20% of the samples show more than 5000 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)

Table -5.22 (b) Water Quality of Religious Ponds in Puri with respect to Criteria parameters during 2017 (January- December)

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value					Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)	pH	DO	BOD	TC	FC			
Ponds (Puri)															
1.	Narendra	12	8.3 (7.8-8.6)	10.1 (5.5-13.5)	6.4 (3.2-15.2)	2819 (240-35000)	5199 (45-16000)	2 (17)	0	12 (100)	11 (92)	6 (50)	Does not conform to Class B	pH, BOD, TC,FC	Human activities
2.	Markanda	12	8.2 (7.4-9.3)	12.1 (8.7-16.9)	7.3 (3.2-14.2)	6208 (170-24000)	3075 (45-16000)	3 (25)	0	12 (100)	10 (83)	5 (42)		pH, BOD, TC,FC	
3.	Indradyumna	12	8.1 (7.7-8.5)	10.1 (5.9-16.2)	6.2 (3.3-13.5)	9269 (110-54000)	4929 (20-24000)	0	0	12 (100)	9 (75)	5 (42)		BOD, TC,FC	
4.	Swetaganga	12	8.1 (7.2-8.6)	9.0 (1.7-17.9)	6.8 (2.7-11.0)	8689 (23-35000)	3348 (8-11000)	1 (8)	3 (25)	11 (92)	10 (83)	4 (33)		pH, DO, BOD, TC,FC	
5.	Parvati sagar	12	7.9 (7.2-8.5)	9.9 (5.8-15.8)	6.7 (3.2-13.4)	5460 (130-17000)	2568 (45-9400)	0	0	12 (100)	10 (83)	4 (33)		BOD, TC,FC	
***Class 'B'**			**6.5-8.5**	**5 and above**	**3 or less**	**500 or less**	-	**Outdoor bathing**							
Water quality criteria for bathing water (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			**6.5-8.5**	**5 and above**	**3 or less**		**2500 (Maximum Permissible)**	**Water use for organised outdoor bathing**							

*** Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)

Table -5.22 (c) Water Quality of Ponds in Jeypore town and Angul town with respect to Criteria parameters during 2017

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value					Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	TC (MPN/ 100 ml)	FC (MPN/ 100 ml)	pH	DO	BOD	TC	FC			
Jeypore town (May-December, 2017)															
1.	Jagannathsagar Pond	8	7.8 (6.7-8.5)	6.7 (5.7-7.3)	2.7 (1.3-6.8)	9139 (230-35000)	3999 (1.8-13000)	0	0	1 (13)	5 (63)	3 (38)	Does not conform to Class B	BOD, TC,FC	Human activities
Angul Town (April -December, 2017)															
2.	Raniguda Pond	9	8.0 (7.3-8.5)	8.6 (2.7-18.0)	10.5 (2.9-35.8)	3009 (20-16000)	3009 (<1.8-16000)	0	4 (44)	8 (89)	4 (44)	3 (33)	Does not conform to Class B	DO, BOD, TC,FC	Human activities
***Class 'B'**			**6.5-8.5**	**5 and above**	**3 or less**	**500 or less**	-	**Outdoor bathing**							
Water quality criteria for bathing water (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			**6.5-8.5**	**5 and above**	**3 or less**		**2500 (Maximum Permissible)**	**Water use for organised outdoor bathing**							

*** Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

NB : The criteria of non-compliance with respect to TC has been calculated on the following basis:
TC values with more than 5% of samples show more than 2000 MPN/100 ml and more than 20% of the samples show more than 500 MPN/ 100 ml.
(Ref : IS 2296-1982 foot note)

Table- 5.23 (a) Water quality of Bindusagar pond with respect to other parameters during 2017 (January- December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents							
		Annual average values (Range of values)													
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(µs/cm)		(mg/l)					
Bindusagar Pond (Bhubaneswar)															
1.	Lingaraj Temple side	22 (5-48)	115 (82-142)	21.5 (13.7-38.5)	0.195 (0.056-0.600)	0.013 (0.001-0.032)	3.22 (0.84-17.90)	439 (395-499)	1.90 (1.42-2.60)	0.063 (0.007 - 0.109)	251 (222-289)	93 (72-108)	69.3 (50.0-85.0)	10.1 (3.4-17.8)	0.409 (0.220-0.720)
2.	Ananta Vasudev	19 (4-46)	116 (84-148)	19.5 (14.0-23.7)	0.236 (0.056-0.670)	0.017 (0.002-0.061)	4.34 (0.56-17.40)	444 (386-603)	2.05 (1.37-3.08)	0.062 (0.014 - 0.133)	259 (210-362)	91 (72-118)	72.6 (50.0-114.9)	10.5 (2.9-24.8)	0.399 (0.200-0.700)
3.	Near Kedarnath research Centre	31 (6-60)	115 (92-148)	23.2 (15.5-61.4)	0.192 (0.056-0.730)	0.014 (0.002-0.037)	2.89 (0.56-12.30)	433 (390-494)	1.93 (1.39-2.56)	0.070 (0.007 - 0.112)	245 (219-285)	89 (64-114)	65.3 (54.9-80.0)	9.6 (2.9-15.7)	0.397 (0.180-0.700)
4.	Gyananagar	23 (7-60)	118 (92-146)	21.2 (15.5-33.5)	0.256 (0.056-1.120)	0.014 (0.004-0.025)	3.48 (0.56-11.20)	440 (393-490)	1.90 (1.08-2.59)	0.063 (0.024 - 0.102)	250 (209-285)	93 (74-116)	66.6 (50.0-80.0)	9.9 (2.2-15.2)	0.410 (0.210-0.760)
***Class 'C'**		-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

* **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Bindusagar Pond (Bhubaneswar)												
1.	Lingaraj Temple side	6.076 (1.207-28.041)	0.089 (0.002-0.275)	0.003	0.008	1.160	0.006	0.003	0.019	0.0022	0.00019	0.006
2.	Ananta Vasudev	5.477 (1.500-27.292)	0.092 (0.002-0.284)	0.002	0.008	1.230	0.006	0.003	0.021	0.0021	0.00013	0.004
3.	Near Kedarnath Research Centre	5.878 (.188-18.613)	0.103 (0.002-0.323)	0.003	0.013	0.950	0.006	0.004	0.021	0.0021	0.00013	0.006
4.	Gyananagar	5.073 (0675-19.926)	0.087 (0.003-0.216)	0.005	0.013	1.040	0.007	0.004	0.017	0.0021	0.00019	0.004
*Class 'C'		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10

* **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

\## **Data for the period April, 2017**

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table- 5.23 (b) Water quality of ponds in Puri with respect to other parameters during 2017 (January- December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Mineral constituents							
		Annual average values (Range of values)													
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	EC (µs/cm)	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)						(mg/l)					
Ponds (Puri)															
1.	Narendra	21 (6-43)	180 (124-248)	33.6 (23.2-61.4)	0.354 (0.056-0.840)	0.038 (0.004-0.130)	2.54 (0.56-5.60)	1057 (940-1211)	4.95 (3.14-7.26)	0.218 (0.075 - 0.393)	605 (515-680)	158 (96-224)	219.4 (159.9-259.8)	39.4 (19.9-50.0)	0.168 (0.120-0.230)
2.	Markanda	31 (8-80)	172 (118-218)	45.1 (22.0-85.4)	0.406 (0.056-1.680)	0.043 (0.002-0.210)	3.01 (0.56-7.84)	710 (482-1075)	2.11 (1.34-4.82)	0.167 (0.068 - 0.320)	398 (296-588)	168 (110-216)	100.6 (79.9-194.9)	37.1 (13.3-51.2)	0.183 (0.009-0.809)
3.	Indradyumna	18 (9-42)	119 (52-160)	37.6 (27.6-52.6)	0.312 (0.056-1.120)	0.028 (0.002-0.087)	2.66 (1.12-6.72)	634 (514-745)	3.69 (2.55-4.63)	0.103 (0.056 - 0.197)	358 (278-446)	89 (40-130)	119.3 (90-149.9)	20.2 (14.3-40.7)	0.181 (0.074-0.300)
4.	Swetaganga	25 (4-52)	223 (92-316)	42.5 (14.7-61.4)	0.354 (0.056-0.840)	0.023 (0.002-0.082)	3.29 (0.28-6.16)	1014 (412-1301)	3.36 (1.71-6.07)	0.208 (0.039 - 0.604)	581 (256-745)	207 (92-268)	187.1 (70.0-249.8)	35.0 (11.4-53.0)	0.154 (0.080-0.280)
5.	Parvati sagar	41 (19-90)	132 (80-198)	52.7 (20.1-86.3)	0.303 (0.056-0.672)	0.012 (0.003-0.033)	2.36 (0.28-7.84)	486 (369-640)	1.62 (1.12-2.13)	0.103 (0.024 - 0.298)	284 (198-365)	127 (76-172)	715 (45.0-90.0)	24.2 (14.4-36.9)	0.163 (0.064-0.260)
***Class 'C'**		-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

*** Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Ponds (Puri)												
1.	Narendra	8.342 (1.326-21.310)	0.321 (0.002-1.144)	0.007	0.019	0.200	0.007	0.008	0.025	0.0018	<0.00006	0.008
2.	Markanda	16.134 (2.920-37.098)	0.770 (0.003-2.902)	0.013	0.035	0.200	0.009	0.004	0.026	0.0032	<0.00006	0.011
3.	Indradyumna	9.996 (2.714-24.103)	0.249 (0.006-1.063)	0.005	0.015	0.170	0.007	0.004	0.007	0.0021	0.00013	0.006
4.	Swetaganga	17.033 (6.129-30.031)	0.657 (0.002-2.656)	0.015	0.03	0.220	0.011	0.007	0.016	0.0014	0.00013	0.012
5.	Parvati sagar	7.929 (0.717-20.953)	0.267 (0.002-0.959)	0.005	0.015	0.100	0.007	0.009	0.014	0.0018	0.00025	0.009
***Class 'C'**				0.05	-	50	-	1.5	15.0	0.01	-	0.10

*** Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

Data for the period April, 2017

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table 5.23 (c) Water quality of ponds in Jeypore town and Angul town with respect to other parameters during 2017

Sl. No.	Sampling Locatio	Physical parameters		Organic pollution Indicators				Mineral constituents							
		Annual average values (Range of values)													
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	EC (µs/cm)	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)						(mg/l)					
Jeypore town (May-December, 2017)															
1.	Jagannathsagar	44 (12-104)	142 (20-190)	20.6 (12.5-31.1)	0.280 (0.056-0.560)	0.010 (ND-0.028)	3.75 (0.56-15.12)	423 (104-547)	1.13 (0.33-1.50)	0.068 (0.007-0.147)	238 (65-315)	124 (32-176)	50.96 (6.99-69.96)	7.3 (2.4-16.2)	0.197 (0.113-0.435)
Angul town (April-December, 2017)															
2.	Raniguda	55 (11-136)	183 (48-284)	50.8 (17.9-91.6)	1.358 (0.056-5.544)	0.094 (0.002-0.693)	5.79 (0.56-29.70)	777 (391-1144)	3.14 (0.38-7.98)	0.104 (0.049-0.267)	432 (218-625)	162 (44-250)	130.25 (19.99-219.80)	24.36 (4.07-36.31)	0.645 (0.310-1.100)
***Class 'C'**		-	-	-	-	-	-	-	-	-	1500	-	600	400	1.5

* **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**
Class 'C' : Drinking water source with conventional treatment followed by disinfection

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Jeypore town (May-December, 2017)												
1.	Jagannathsagar	7.718 (1.758-28.074)	0.111 (0.002-0.295)	0.005	0.017	0.38	0.004	0.002	0.034	0.0018	0.00032	0.008
Angul town (April-December, 2017)												
2.	Raniguda	10.239 (3.775-23.825)	0.338 (0.019-0.730)	0.028	0.057	0.33	0.005	0.006	0.011	0.0012	<0.00006	0.009
***Class 'C'**				0.05	-	50	-	1.5	15.0	0.01	-	0.10

* **Tolerance limit for Inland Surface water bodies (IS-2296-1982)**

For Jeypore town, data for the period May, 2017 and for Angul town, data for the period April, 2017

Class 'C' : Drinking water source with conventional treatment followed by disinfection

Table-5.24 Water Quality of Lakes with respect to Criteria parameters during 2017

(a) Brackish Water Lake

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	Turbidity, NTU	FC (MPN/100 ml)	pH	DO	BOD	FC			
Chilka lake (January-December, 2017)														
1.	Rambha	12	8.1 (7.6-8.4)	7.7 (6.0-11.7)	1.4 (0.3-2.5)	7.0 (0.5-18.0)	787 (<1.8-5400)	0	0	0	4 (33)	Does not conform to Class-SW-II	FC	Human activities
2.	Satpada	12	7.9 (7.2-8.5)	6.6 (5.3-8.3)	1.8 (0.9-2.6)	29.7 (3.3-110)	721 (<1.8-5400)	0	0	0	7 (58)		FC	
Water quality criteria for Class SW-II Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-8.5	4.0 or more	3.0 or less	30 or less	100 or less	For Bathing, Contact Water Sports and Commercial Fishing						

(b) Fresh Water Lake

Sl. No	Sampling Location	No. of Obs.	Annual average values (Range of values) Parameters				Frequency of violation from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	Free ammonia (mg/l)	EC (micro Siemens /cm)	pH	DO	Free ammonia	EC			
(a) Anshupa Lake (January-December, 2017)													
1.	Kadalibari	12	7.9 (7.3-8.4)	7.9 (5.8-12.9)	0.008 (0.002-0.028)	184 (112-364)	0	0	0	0	D	-	-
2.	Bishnupur	12	7.8 (7.2-8.4)	7.3 (5.1-10.5)	0.007 (0.001-0.020)	163 (113-206)	0	0	0	0	D	-	-
3.	Subarnapur	12	7.8 (7.2-8.5)	7.3 (4.8-9.1)	0.014 (0.001-0.112)	178 (94-323)	0	0	0	0	D	-	-
4.	Sarandagarh	12	7.9 (7.2-8.5)	7.1 (5.1-8.4)	0.018 (0.001-0.087)	181 (125-250)	0	0	0	0	D	-	-
(b) Tampara Lake (May-December, 2017)													
5.	Tampara	8	8.0 (7.5-8.5)	6.7 (3.0-9.0)	0.041 (0.001-0.195)	566 (479-730)	0	1 (8)	0	0	D	-	-
*Class 'D'			6.5-8.5	4 and above	1.2 or less	1000 or less	Fish Culture and Wild life propagation						

* Tolerance limit for Inland Surface water bodies (IS-2296-1982)

Table-5.25 Water Quality of Lakes with respect to other parameters during 2017

(a) Brackish Water Lake

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological Parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal-inity	COD	NH_4-N	Free NH_3-N	TKN	TC	EC	SAR	TDS	B	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/ 100 ml)	(µs/cm)		(mg/l)					
Chilka lake (January-December, 2017)																
1.	Rambha	123 (10-286)	137 (104-188)	34.3 (10.9-64.5)	0.153 (0.055-0.560)	0.011 (0.001-0.045)	2.26 (0.28-8.68)	1180 (<1.8-5400)	26160 (12770-38030)	58.04 (33.97-87.74)	19572 (9540-30600)	1.434 (0.039-3.521)	2365 (1290-3880)	10823 (4998-17991)	1089 (507-1549)	0.56 (0.30-1.10)
2.	Satapada	238)65-784)	119 (76-208)	39.5 (27.5-58.8)	0.177 (0.056-0.560)	0.013 (0.002-0.087)	1.80 (0.28-3.92)	1415 (<1.8-9200)	31962 (7086-59110)	57.74 (26.41-87.48)	25705 (4320-51000)	1.824 (0.186-4.167)	3259 (516-6700)	14147 (2499-28486)	1686 (28-3706)	0.56 (0.28-0.90)

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Chilka lake (January-December, 2017)												
1.	Rambha	3.196 (0.511-6.939)	0.088 (0.002-0.751)	0.010	0.025	0.140	0.006	0.006	0.018	0.0009	0.00025	0.006
2.	Satapada	4.216 (0.578-8.646)	0.122 (0.003-0.334)	0.010	0.032	0.160	0.004	0.008	0.014	0.0011	<0.00006	0.004

Data for the period April, 2017

(b) Fresh Water Lake

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameters		Mineral constituents						
		Annual average values (Range of values)														
		TSS	Total alkal -inity	BOD	COD	NH_4-N	TKN	TC	FC	TDS	B	SAR	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/ 100 ml)		(mg/l)			(mg/l)			
(a) Anshupa Lake (January-December, 2017)																
1.	Kadlibari	55 (8-133)	70 (36-92)	2.4 (0.6-3.9)	20.8 (8.9-3.7)	0.182 (0.056-0.560)	1.80 (0.28-6.16)	9783 (1100-35000)	5512 (490-24000)	106 (67-203)	0.056 (0.003-0.126)	0.58 (0.25-2.88)	65 (36-86)	15.6 (5.0-66.0)	4.38 (1.12-12.68)	0.30 (0.17-0.52)
2.	Bishnupur	32 (6-112)	67 (36-98)	2.5 (0.8-5.2)	17.4 (8.3-33.7)	0.172 (0.056-0.560)	1.63 (0.28-3.92)	5592 (1300-13000)	2549 (390-5400)	96 (72-126)	0.064 (0.003-0.176)	0.41 (0.27-0.55)	63 (38-56)	11.5 (8.8-16.0)	4.27 (0.498-13.05)	0.30 (0.18-0.50)
3.	Subarnapur	39 (12-84)	74 (28-144)	2.5 (1.0-3.7)	19.8 (10.7-29.1)	0.200 (0.056-0.896)	1.63 (0.56-2.8)	4692 (1100-17000)	1880 (78-11000)	104 (52-174)	0.058 (0.007-0.116)	0.40 (0.15-0.67)	67 (36-136)	11.4 (4.0-22.0)	5.26 (1.1-13.3)	0.29 (0.16-0.51)
4.	Sarandagarh	32 (20-62)	73 (52-96)	2.4 (1.1-3.6)	20.3 (10.7-33.1)	0.200 (0.055-0.560)	2.01 (0.28-5.88)	9125 (2400-22000)	4907 (490-14000)	106 (78-146)	0.051 (0.005-0.147)	0.49 (0.32-0.85)	68 (50-90)	14.7 (8.8-22.0)	4.23 (0.62-13.18)	0.29 (0.18-0.47)
(b) Tampara Lake (May-December, 2017)																
5.	Tampada	56 (20-80)	160 (120-216)	8.0 (4.3-10.2)	67.2 (43.9-93.1)	0.523 (0.050-1.560)	4.41 (0.84-12.32)	6546 (78-16000)	2884 (<1.8-9200)	2.12 (1.42-3.31)	328 (258-472)	0.209 (0.095-0.309)	139 (112-250)	87.8 (52.0-147.9)	16.1 (2.6-42.2)	0.468 (0.280-0.647)
	* Class 'C'	-	-	3.0	-	-	-	5000		1500	-	-	-	600	400	1.5

* Tolerance limit for Inland Surface water bodies (IS-2296-1982)
Class 'C' : Drinking water source with conventional treatment followed by disinfection

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
(a) Anshupa Lake (January-December, 2017)												
1.	Kadlibari	6.024 (0.314-17.854)	0.149 (0.002-0.799)	0.005	0.015	1.150	0.006	0.004	0.047	0.0018	0.00013	0.007
2.	Bishnupur	5.072 (1.342-12.361)	0.106 (0.002-0.291)	0.007	0.013	1.360	0.005	0.002	0.018	0.0018	<0.00006	0.007
3.	Subarnapur	6.131 (0.646-18.867	0.157 (0.002-0.665)	0.003	0.008	1.350	0.004	0.002	0.036	0.0030	0.00013	0.006
4.	Sarandagarh	4.425 (0.792-10.495)	0.185 (0.002-0.501)	0.002	0.008	2.830	0.004	0.003	0.014	0.0020	<0.00006	0.008
(b) Tampara Lake (May-December, 2017)												
5.	Tampada	6.229 (3.023-17.372)	0.072 (0.002-0.241)	0.011	0.032	0.003	0.007	0.005	0.034	0.0018	0.00032	0.008
*** Class 'C'**		50	-	0.05	-	50	-	1.5	15.0	0.01	-	0.10

* Class 'C' : Drinking water source with conventional treatment followed by disinfection
Data for the period April, 2017 for Anshupa lake and May, 2017 for Tampara lake

Table-5.26 Coastal Water Quality with respect to Criteria parameters during 2017 (January-December)

Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value		Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	Turbidity, NTU	FC (MPN/100 ml)	BOD	FC			
1.	Puri											
(a)	Swargadwara	12	7.9 (7.4-8.2)	6.4 (5.4-7.3)	1.4 (0.6-3.0)	9.6 (0.8-27.0)	492 (<1.8-5400)	0	3 (25)	Does not confirm to Class-SW-II	FC	Human activities
(b)	Bankimuhan	12	7.8 (7.3-8.2)	6.2 (5.6-7.5)	1.8 (0.9-3.1)	10 (2-40)	4400 (<1.8-16000)	1 (8)	7 (58)	Does not confirm to Class-SW-II	BOD, FC	Human activities
(c)	Baliapanda	12	8.0 (7.6-8.3)	6.2 (5.6-7.4)	1.3 (0.6-2.7)	8 (1-28)	651 (<1.8-5400)	0	5 (42)	Does not confirm to Class-SW-II	FC	Human activities
2.	Gopalpur	12	8.0 (7.8-8.4)	6.4 (5.2-7.7)	1.0 (0.3-1.8)	10.1 (0.7-40.0)	30 (<1.8-130)	0	1 (8)	SW-II		
3.	Paradeep	12	7.9 (7.4-8.2)	6.6 (5.8-8.5)	0.8 (0.3-1.4)	12.4 (1.9-40.9)	7 (<1.8-45)	0	0	SW-II		
Water quality criteria for Class SW-II Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			**6.5-8.5**	**4.0 or more**	**3.0 or less**	**30 or less**	**100 or less***			**For Bathing, Contact Water Sports and Commercial Fishing**		

* The value not exceeding 200/100 ml in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.

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Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values) Parameters					Frequency of violation (Percent of violation) from designated criteria value			Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			pH	DO (mg/l)	BOD (mg/l)	O&G, mg/l	FC (MPN/100 ml)	BOD	O&G	FC			
1.	Gopalpur	12	8.0 (7.8-8.4)	6.4 (5.2-7.7)	1.0 (0.3-1.8)	0.6 (0.2-0.9)	30 (<1.8-130)	0	0	0	SW-IV		
2.	Paradeep	12	7.9 (7.4-8.2)	6.6 (5.8-8.5)	0.8 (0.3-1.4)	1.2 (0.8-1.7)	7 (<1.8-45)	0	0	0	SW-IV		
Water quality criteria for Class SW-IV Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			**6.5-9.0**	**3.0 or more**	**5.0 mg/l or less**	**10 or less**	**500 or less**				**For Harbour Waters**		

Table-5.27 Coastal Water Quality with respect to other parameters during 2017 (January- December)

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriolo - gical parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkal -inity	COD	NH_4-N	Free NH_3-N	TKN	TC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/ 100 ml)	(µs/cm)		(mg/l)					
1.	Puri															
(a)	Swargadwara	204 (24-544)	125 (92-192)	43.6 (35.1-49.6)	0.096 (0.050-0.280)	0.004 (0-0.014)	1.24 (0.56-3.08)	879 (<1.8-9200)	47956 (31670-59240)	78.58 (54.39-90.84)	3.356 (2.095-4.150)	40645 (25800-51700)	5032 (3500-6300)	22529 (14993-29485)	2650 (589-3980)	0.720 (0.440-1.100)
(b)	Bankimuhan	257 (21-486)	129 (84-192)	45.5 (33.1-60.0)	1.239 (0.050-1.064)	0.007 (0.002-0.023)	2.38 (0.56-7.28)	5179 (<1.8-16000)	45712 (34190-59140)	72.17 (50.80-85.27)	3.205 (2.011-3.953)	38659 (27500-49830)	4843 (3500-6400)	21451 (15991-27986)	2573 (541-3632)	0.707 (0.360-1.100)
(c)	Baliapanda	216 (56-472)	124 (96-192)	41.9 (35.1-49.6)	0.091 (0.050-0.280)	0.006 (0.001-0.029)	1.38 (0.56-4.48)	1173 (<1.8-9200)	47203 (33740-59310)	77.60 (47.07-106.48)	3.315 (2.077-4.325)	39619 (27600-48900)	5088 (3750-6000)	21866 (15992-26987)	2588 (584-3894)	0.733 (0.410-1.300)
2.	Gopalpur	263 (49-606)	120 (100-146)	39.1 (33.5-49.0)	0.125 (0.050-0.450)	0.007 (0-0.023)	1.98 (0.56-6.72)	62 (<1.8-230)	46736 (34408-58050)	75.70 (57.02-98.15)	3.328 (2.125-4.455)	38988 (28200-49300)	5269 (3500-6400)	21821 (15492-28486)	2507 (568-3228)	0.700 (0.420-1.100)
3.	Paradeep	258 (94-516)	122 (76-196)	42.4 (35.7-53.6)	0.144 (0.050-0.730)	0.004 (0-0.014)	2.29 (0.56-14.00)	21 (<1.8-78)	46644 (32190-62520)	75.93 (59.82-90.85)	2.979 (0.046-4.912)	38348 (26100-53040)	4778 (2650-6500)	21203 (14493-28486)	2372 (543-3152)	0.754 (0.480-1.100)

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Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
1.	Puri											
(a)	Swargadwara	4.512 (0.994-11.427)	0.071 (0.001-0.291)	0.003	0.015	0.19	0.006	0.003	0.018	0.0009	0.00021	0.006
(b)	Bankimuhan	5.061 (0.644-13.246)	0.122 (0.002-0.265)	0.005	0.017	0.110	0.006	0.004	0.019	0.0008	0.00032	0.005
(c)	Baliapanda	5.360 (0.365-17.129)	0.062 (0.002-0.218)	0.007	0.015	0.160	0.008	0.004	0.018	0.0009	0.00013	0.005
2.	Gopalpur	3.805 (1.004-11.111)	0.028 (0.002-0.165)	0.012	0.027	0.22	0.004	0.005	0.016	0.0007	<0.00006	0.004
3.	Paradeep	4.090 (0.191-16.338)	0.136 (0.002-0.630)	0.007	0.018	0.18	0.004	0.008	0.014	0.0011	<0.00006	0.004

Data for the period April, 2017

(F) Creek Water Quality Monitoring

Board monitors the water quality of Atharabanki creek on regular basis. The creek flows along the boundary wall of Paradip Phosphate Ltd (PPL) and joins river Mahanadi near its confluence with Bay of Bengal. Atharabanki river also act as a receiving water body for treated effluents from M/s Paradeep Phosphates Limited and M/s Indian Farmers Fertilizer Cooperative operating at Paradeep.

Annual average and range values of the water quality parameters of the creek during the year 2017 is given in Table-5.28. Assessment of the creek water quality status have been done based on the best use and type of activities in the water segment.

Comparison of the Atharabanki creek water quality data with the water quality criteria for SW-II waters (for bathing, contact water sports and commercial fishing) reveals non-compliance with respect to pH, DO, BOD and FC. This may be attributed to the discharge of domestic wastewater into the creek and other human activities. Fluoride concentration in the creek water varied with the range 1.210-13.200 mg/l with an annual average value of 4.864 mg/l.

Table-5.28 Creek Water Quality during 2017 (May-December)

Sl. No	Sampling Location	No. of Obs.	Annual average value (Range of values)					Frequency of violation (Percent of violation) from designated criteria value				Existing Class	Parameters responsible for downgrading the water quality	Possible Reason
			Parameters											
			pH	DO (mg/l)	BOD (mg/l)	Turbidity, NTU	FC (MPN/100 ml)	pH	DO	BOD	FC			
1.	Atharabanki Creek	8	6.7 (5.6-7.3)	5.1 (2.6-7.4)	5.2 (2.3-9.3)	29 (10.1-80)	6741 (<1.8-22000)	2 (25)	4 (50)	6 (75)	7 (88)	Does not confirm to Class-SW-II	pH, DO, BOD, FC	Human activities
Water quality criteria for Class SW-II Waters (MOEF Notification G.S.R. No. 742(E) Dt. 25.09.2000)			6.5-8.5	4.0 or more	3.0 or less	30 or less	100 or less					For Bathing, Contact Water Sports and Commercial Fishing		

Sl. No.	Sampling Location	Physical parameters		Organic pollution Indicators				Bacteriological parameter	Mineral constituents							
		Annual average values (Range of values)														
		TSS	Total alkalinity	COD	NH_4-N	Free NH_3-N	TKN	TC	EC	SAR	B	TDS	TH	Cl	SO_4	F
		(mg/l)		(mg/l)				(MPN/100 ml)	(µS/cm)		(mg/l)					
1.	Atharabanki Creek	189 (90-358)	88 (20-172)	53.0 (44.1-64.3)	0.321 (0.050-1.400)	0.001 (ND-0.005)	2.31 (0.56-9.52)	14554 (330-54000)	12146 (1296-31090)	26.94 (6.68-50.27)	1.092 (0.133-3.069)	8897 (890-22180)	1462 (140-3700)	4917 (400-12743)	520 (92.7-1517.4)	4.864 (1.210-13.200)

Sl. No.	Sampling Location	Nutrients		Heavy metals								
		Annual average values (Range of values)										
		NO_2^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
1.	Atharabanki Creek	6.752 (2.368-17.248)	2.065 (0.293-9.640)	0.009	0.032	3.600	0.004	0.005	0.037	0.0011	0.00023	0.007

ND + Not Detected ## Data for the period May, 2017

(G) Biomonitoring of Water Bodies

Biomonitoring of water quality is useful for assessing the over-all biological health of the water bodies. This indicates any disruption in ecological balance of the water bodies caused by the changes in its physical and chemical environment. Thus, measurement of the level of the ecological degradation would indicate the extent of pollution. Benthos are regarded as the best indicator of pollution as they are sedentary, sessile, long-lived and easily collectable.

To assess the actual health of water bodies, Central Pollution Control Board (CPCB) has derived a Biological Water Quality Criteria (BWQC) for water quality evaluation. This system is based on the range of saprobic values and diversity of the benthic macroinvertebrate families with respect to water quality. The entire taxonomic groups, with their range of saprobic score from 1 to 10, in combination with the range of diversity score from 0 to 1 has been classified into five groups as stated in Table-5.29

Table- 5.29 Biological Water Quality Class

Sl. No.	Taxonomic Group	Range of Saprobic score	Range of Diversity score	Water Quality Characteristic	Water Quality Class
1	Ephemeroptera, Plecoptera, Trichoptera, Hemiptera, Diptera	7 and more	0.2-1.0	Clean	A
2	Ephemeroptera, Plecoptera, Trichoptera, Hemiptera, Odonata, Diptera	6-7	0.5-1.0	Slight Pollution	B
3	Ephemeroptera, Plecoptera, Trichoptera, Hemiptera, Odonata, Diptera, Crustacea, Mollusca, Polychaeta, Coleoptera, Hirudinea, Oligochaeta	3-6	0.3-0.9	Moderate Pollution	C
4	Mollusca, Hemiptera, Coleoptera, Diptera, Oligochaeta	2-5	0.4 & less	Heavy Pollution	D
5	Diptera, Oligochaeta No animals	0-2	0-0.2	Severe Pollution	E

Biomonitoring studies were carried out at 28 selected stations during 2017. Biological data generated from these stations were analysed for computing the saprobity indices (SI) and diversity indices (DI), which are presented in Table-5.30. From the Table it is evident that the biological water quality class at eleven stations conform to the Class 'B-C' (slight to moderate pollution), at six stations conform to Class B (slight pollution) and at eleven stations conform to Class C (moderate pollution) water quality.

Table-5.30 Biomonitoring of River Bodies (2017)

Station		Annual Average value (Range of values)		Existing Biological Water Quality Class
		Saprobity Index	Diversity Index	
(A) Mahanadi				
1.	Brajarajnagar U/s	5.93 (5.36-6.50)	0.52 (0.50-0.53)	B-C
2.	Brajarajnagar D/s	5.95 (5.75-6.30)	0.62 (0.50-0.70)	B-C
3.	Sambalpur U/s	5.43 (5.25-5.60)	0.57 (0.44-0.70)	C
4.	Sambalpur D/s	5.07 (4.42-5.80)	0.53 (0.41-0.60)	C
5.	Cuttack U/s	5.68 (5.60-5.75)	0.59 (0.35-0.82)	C
6.	Cuttack D/s	5.93 (5.60-6.33)	0.53 (0.50-0.57)	B-C
7.	Cuttack U/s (Kathajodi)	6.15 (5.88-6.42)	0.55 (0.54-0.55)	B-C
8.	Cuttack D/s (Kathajodi)	5.04 (4.42-5.60)	0.54 (0.41-0.75)	C
9.	Bhubaneswar U/s (Kuakhai)	5.34 (5.00-5.70)	0.68 (0.56-0.80)	C
10.	Bhubaneswar D/s (Daya)	5.16 (4.50-5.58)	0.72 (0.53-0.89)	C
11.	Choudwar D/s (Birupa)	6.04 (5.85-6.28)	0.45 (0.35-0.60)	B-C
(B) Brahmani				
12.	Panposh U/s	6.02 (5.50-6.75)	0.69 (0.63-0.73)	B-C
13.	Panposh D/s	5.71 (5.50-5.83)	0.55 (0.45-0.64)	C
14.	Rourkela D/s	5.75 (5.75-5.75)	0.55 (0.47-0.63)	C
15.	Talcher U/s	8.72 (5.50-6.00)	0.54 (0.38-0.78)	C
16.	Talcher D/s	5.71 (5.50-6.00)	0.54 (0.38-0.75)	C
(C) Rushikulya				
17.	Potagarh	6.30 (6.30-6.30)	0.86 (0.86-0.86)	B
(D) Nagavali				
18.	Penta U/s	6.19 (5.25-6.83)	0.60 (0.55-0.65)	B-C
19.	J. K. Pur D/s	6.40 (6.20-6.50)	0.60 (0.52-0.75)	B
20.	Rayagada D/s	6.28 (5.60-6.80)	0.69 (0.45-0.87)	B-C
(E) Subarnarekha				
21.	Rajghat	5.63 (5.45-5.85)	0.76 (060-0.89)	C
(F) Budhabalnga				
22.	Baripada D/s	5.95 (4.66-6.88)	0.80 (0.70-0.86)	B-C
23.	Balasore U/s	6.16 (6.10-6.25)	0.79 (0.70-0.87)	B
24.	Balasore D/s	6.25 (6.09-6.38)	0.82 (0.70-0.92)	B
(G) Kerandi				
25.	Sunabeda	6.35 (6.00-6.75)	0.48 (0.40-0.53)	B-C
(H) Vansadhara				
26.	Muniguda	6.34 (6.30-6.40)	0.60 (0.52-0.75)	B
27.	Gunupur	6.20 (5.60-6.57)	0.62 (0.48-0.72)	B-C
(I) Indravati				
28.	Nawarangpur	6.16	0.7	B

(H) Ground Water Quality Status

The Board monitors ground water quality at 48 locations in eleven major towns of the state, such as, Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Jajpur (Sukinda), Jhasruguda, Puri, Sambalpur and Talcher. Ground water quality status during the year 2017 at these locations alongwith the acceptable and Permissible limit for drinking water under IS : 10500-2012 are given in Table-5.31.

pH of ground water at Laxmisagar area in Bhubaneswar during April and October, Naigopalpur and Chakulia of Balaosre during April is found to be beyond the permissible range of 6.5-8.5. pH at all other places remained well within the permissible range.

Fluoride in Kuanrpur and Chakulia of Balaosre exceeds the Permissible limit for drinking water i.e. 1.5 mg/l.

Frequent occurrence of total coliform and fecal coliform bacteria above the permissible limit (should be absent in 100 ml sample) are observed in the ground water at some of the monitored locations.

Table-5.31 Ground water Quality Status (Tube well) (2017)

Monitoring Station	Month of Monitoring	pH	Cond., µS/cm	BOD, mg/l	COD, mg/l	Turbidity, NTU	TDS, mg/l	TFS	Total Alkalinity, mg/l	Total Hardness $CaCO_3$, mg/l	Calcium as Ca, mg/l	Magnesium as Mg, mg/l	Chloride, mg/l	Sulphate, mg/l	Nitrate, mg/l	NH_4-N, mg/l
1. ANGUL (2 stations)																
1. Angul Township	April	7.5	1373	0.1	9.7	0.5	735	732	248	292	84.2	19.9	206.89	98.9	49.209	<0.056
	Oct	7.7	1369	0.8	5.0	4	728	702	234	232	57.7	21.4	210.8	84.32	85.190	0.110
2. NALCO township	April	8.2	363	0.2	3.9	0.4	206	189	124	124	33.7	9.7	28.98	19.4	4.596	<0.056
	Oct	7.9	483	0.5	1.7	0.5	261	246	200	176	43.3	16.5	28.98	20.15	1.471	0.056
2. BALASORE (3 stations)																
3. Naigopalpur	April	6.1	1125	0.4	18.2	14	680	622	56	46	12.8	3.4	359.82	4.9	39.729	<0.056
	Oct	8.0	105	0.2	6.7	1.5	62	51	32	36	10.4	2.4	5.99	8.83	0.857	0.340
4. Kuanrpur	April	7.0	1203	0.4	16.5	10	689	635	42	30	9.6	1.5	359.82	12.3	6.334	<0.056
	Oct	8.4	376	0.6	6.7	0.2	202	183	98	100	27.3	7.8	43.9	18.15	1.041	0.560
5. Chakulia	April	6.0	1045	0.1	16.5	8.9	702	642	96	124	32.1	10.7	339.83	21.3	44.436	<0.056
	Oct	7.9	510	0.6	1.7	0.9	279	246	100	148	36.9	13.6	63.9	46.01	13.916	<0.056
3. BERHAMPUR (4 stations)																
6. Near Railway station	May	7.6	1022	0.9	5.8	0.8	556	542	268	248	41.7	35.0	142.9	44.4	42.166	0.280
	Oct	7.7	1169	0.3	3.4	2.4	732	688	296	260	70.5	20.4	198.9	57.34	79.763	0.056
7. MKCG Medical College	May	8.1	548	0.8	3.9	1.3	342	334	108	110	31.3	7.8	113.9	33.7	1.597	0.056
	Oct	8.0	780	0.4	6.7	2.5	421	387	180	174	40.9	17.5	109.9	40.54	0.997	<0.056
8. Bus stand	May	8.1	1068	0.6	5.8	2.1	612	588	270	224	44.1	27.7	185.9	38.68	1.648	0.056
	Oct	7.9	1155	0.6	3.4	1.5	680	624	292	238	60.1	21.4	187.9	55.72	16.811	<0.056
9. Badabazar	May	7.6	982	0.7	5.8	6.6	578	547	232	224	44.9	27.2	177.9	36.07	47.314	0.056
	Oct	7.5	1467	0.1	1.7	1.2	703	682	304	310	84.2	24.3	169.9	90.67	13.876	<0.056
Drinking water specification (IS : 10500 (2012)																
Acceptable Limit		6.5-8.5	-	-	-	1	500	-	200	200	75	30	250	200	45	0.5
Permissible limit		No relax	-	-	-	5	2000	-	600	600	200	100	1000	400	No relax	No relax

Stn. Name	Month of Monitoring	pH	Cond., µS/cm	BOD, mg/l	COD, mg/l	Turbidity, NTU	TDS, mg/l	TFS	Total Alkalinity, mg/l	Total Hardness $CaCO_3$, mg/l	Calcium as Ca mg/l	Magnesium as Mg, mg/l	Chloride, mg/l	Sulphate, mg/l	Nitrate, mg/l	NH_4-N, mg/l
4. BHUBANESWAR (6 stations)																
10. Khandagiri Area	April	7.6	904	1.4	6.6	40	592	602	120	138	39.3	9.7	261.86	6.7	28.942	0.112
	Oct	7.0	236	1.6	6.7	24	138	102	38	42	12.8	2.4	39.98	16.79	0.590	0.670
11. Old town-Samantarapur Area	April	7.5	660	0.7	6.6	2.9	346	328	196	170	52.1	9.7	70.96	20.6	14.388	0.056
	Oct	7.4	550	1.1	6.7	5.5	328	297	172	178	41.7	18.0	59.98	17.28	9.236	0.220
12. Kalpana-Laxmisagar Area,	April	5.3	140	0.2	3.3	28	86	98	16	30	8.8	1.9	26.98	21.3	31.782	<0.056
	Oct	6.3	65	0.7	5.0	4.1	39	31	10	26	7.2	1.9	3.99	47.51	9.972	0.220
13. Chandra sekharpur	April	7.5	285	1.5	16.5	1.7	158	142	72	82	22.4	6.3	32.98	3.1	41.878	<0.056
	Oct	6.5	69	0.7	5.0	19	38	29	8	24	6.4	1.9	3.99	8.45	1.429	0.110
14. Capital Hospital Area	April	7.6	267	0.1	3.3	2.6	141	118	56	64	16.0	5.8	32.98	12.1	27.575	<0.056
	Oct	6.7	254	0.3	5.0	17.8	141	129	44	54	16.0	3.4	29.98	8.95	1.636	0.450
15. Secretariate-Govenor House-Old bus stand Area	April	7.7	207	0.7	5.0	0.8	114	89	32	38	12.8	1.5	31.98	13.2	22.681	0.056
	Oct	6.9	209	0.3	3.4	4.8	119	89	30	40	12.8	1.9	29.98	34.7	13.609	<0.056
5. CUTTACK (6 stations)																
16. Jagatpur	April	7.8	767	0.4	1.9	1	428	418	104	148	44.1	9.2	106.95	100.1	18.836	<0.056
	Oct	8.4	541	0.5	8.4	2.3	302	298	128	88	26.5	5.3	84.95	17.28	1.005	0.110
17. Mangalabag	April	8.3	362	0.1	3.7	1.8	202	186	144	152	44.9	9.7	25.98	8.5	19.197	0.056
	Oct	8.3	576	0.4	8.4	1.5	310	280	144	156	40.1	13.6	69.9	33.95	0.730	0.110
18. Madhupatna-Kalyan Nagar Area	April	7.1	405	0.1	1.9	2.2	252	228	156	146	41.7	10.2	49.97	13	4.220	<0.056
	Oct	7.9	393	0.6	5.0	0.5	219	189	116	110	25.7	11.2	44.97	15.29	28.858	0.056

Stn. Name	Month of Monitoring	pH	Cond., µS/cm	BOD, mg/l	COD, mg/l	Turbidity, NTU	TDS, mg/l	TFS	Total Alkalinity, mg/l	Total Hardness CaCO mg/l	alcium as Ca mg/l	Magnesium as Mg, mg/l	Chloride, mg/l	Sulphate, mg/l	Nitrate, mg/l	NH_4-N, mg/l
19. Badambadi Area	April	7.6	639	0.7	1.9	10	342	342	198	166	51.3	9.2	67.96	28.9	1.230	<0.056
	Oct	8.4	327	1.3	5.0	0.5	167	156	122	106	28.9	8.3	24.98	1.74	4.560	0.056
20. Bidanasi-Tulsipur Area	April	7.7	207	0.2	1.9	0.7	115	98	84	88	27.3	4.9	6.99	10.1	12.085	<0.056
	Oct	8.3	147	0.5	6.7	1.2	83	76	60	56	16.0	3.9	9.99	2.24	2.095	0.056
6. JAGATSINGHPUR (2 stations)																
21. Musadiha	April	8.3	3543	0.5	6.6	0.5	2380	2330	264	396	54.5	63.2	1299.35	9.1	9.106	<0.056
	Oct	8.3	2491	0.7	10.1	1.3	1440	1370	206	186	58.5	9.7	719.6	13.73	11.082	0.110
22. Badapadia	April	8.3	1824	1.7	8.3	0.7	1120	987	304	294	31.3	52.5	499.75	10	7.248	0.112
	Oct	8.2	1925	1.6	8.4	0.2	1120	1010	408	206	56.1	16.0	419.8	14.33	9.726	0.280
7. JAJPUR (4 stations)																
23. TISCO	April	8.1	245	0.1	5.0	0.5	142	113	116	106	16.8	15.6	13.99	5	11.198	0.056
	Oct	7.8	332	0.8	6.7	3.1	178	148	124	116	29.7	10.2	22.9	12.31	15.044	0.056
24. Saruabil	April	7.6	270	0.1	5.0	25	148	149	96	92	12.0	15.1	25.98	5.2	17.948	0.056
	Oct	7.4	317	0.4	3.4	2.2	188	158	112	100	27.3	7.8	31.98	14.05	19.277	<0.056
25. Kaliapani	April	7.5	166	0.1	5.0	7	98	88	78	78	12.0	11.7	7.99	6.1	1.435	0.056
	Oct	8.4	115	0.7	1.7	3.4	65	47	48	50	16.0	2.4	3.99	7.21	1.032	<0.056
26. Kamarda	April	8.5	381	0.1	6.8	0.2	242	222	244	224	32.1	35.0	10.99	3.7	10.015	0.056
	Oct	7.6	193	0.7	1.7	2.7	121	101	94	90	25.7	6.3	9.99	9.57	1.487	0.110
8. JHARSUGUDA (8 stations)																
	April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27. Thelkoi	Oct	7.8	138	0.3	1.5	0.5	84	66	42	38	11.2	2.4	12.76	10.23	9.991	0.056
28. Bhurkhamunda	April	7.7	180	1.0	7.8	1.2	102	88	56	48	12.8	3.9	19.99	2.5	19.783	0.056
	Oct	7.9	142	0.4	1.7	0.7	88	71	48	42	12.0	2.9	13.99	10.94	9.254	0.056
29. Badamani I.E	April	7.3	143	1.5	7.8	4.3	76	68	36	40	11.2	2.9	13.99	1.4	18.172	0.056
	Oct	7.7	133	0.5	6.7	1.3	74	59	40	34	9.6	2.4	9.99	13.18	1.758	<0.056
30. Budhipadar	April	7.3	114	0.5	1.9	3.9	68	49	40	36	12.0	1.5	8.99	3	13.603	0.056
	Oct	7.6	143	0.6	5.0	0.6	78	64	36	32	10.4	1.5	12.99	11.32	11.276	<0.056
31. Brajarajnagar Mining Belt	April	7.1	146	1.6	13.6	54	98	92	62	62	16.8	4.9	12.99	8.5	3.609	<0.056
	Oct	7.5	351	1.5	11.7	5.8	191	178	100	112	29.7	9.2	26.98	34.2	1.134	<0.056

Stn. Name	Month of Monitoring	pH	Cond., µS/cm	BOD, mg/l	COD, mg/l	Turbidity, NTU	TDS, mg/l	TFS	Total Alkalinity, mg/l	Total Hardness CaCO3 mg/l	Calcium as Ca mg/l	Magnesium as Mg, mg/l	Chloride, mg/l	Sulphate, mg/l	Nitrate, mg/l	NH_4-N, mg/l
32. Rampur (water tank)	April	7.8	307	0.1	7.8	11	185	176	116	98	27.3	7.3	37.98	4	2.402	<0.056
	Oct	8.2	330	1.2	3.4	1	172	147	96	94	25.7	7.3	27.98	17.78	10.849	<0.056
33. Ib thermal power station	April	7.9	315	0.1	11.7	33	171	179	148	128	41.7	5.8	11.99	3.6	1.791	<0.056
	Oct	7.1	269	0.8	8.4	7.8	152	121	66	68	19.2	4.9	37.98	10.32	16.869	<0.056
34. Belpahar Area	April	7.4	414	1.5	5.8	78	236	232	134	138	35.3	12.2	43.97	24.3	3.535	<0.056
	Oct	8.6	526	0.8	8.4	8.1	322	278	156	170	52.9	9.2	55.97	57.58	5.009	<0.056
9. PURI (4 stations)																
35. Hospital-Busstand-Mausima temple area	April	7.9	1205	1.5	9.0	11	669	686	248	204	40.1	25.3	224.88	40.8	18.080	0.056
	Oct	7.5	1020	1.9	15.1	3.8	680	642	254	264	56.1	30.1	184.9	95.64	28.408	<0.056
36. Near Jagannath Temple	April	7.9	1257	0.3	5.4	1.2	716	692	140	172	43.3	15.6	299.85	47.6	46.781	<0.056
	Oct	7.5	1138	1.2	6.7	3.6	726	688	252	226	56.1	20.9	204.9	87.56	17.388	<0.056
37. Near Sea Beach,	April	7.9	1247	0.2	5.4	0.6	759	752	244	300	76.2	26.7	239.9	97.0	2.691	<0.056
	Oct	7.1	19840	0.5	16.8	20	12920	12580	160	2400	288.6	408.3	6996.5	621.89	0.505	<0.056
38. Baliapanda	April	7.9	486	0.2	5.4	0.7	265	234	46	28	6.4	2.9	124.94	6.2	1.366	<0.056
	Oct	8.0	286	1.0	11.7	4.1	162	148	44	36	11.2	1.9	44.9	29.97	2.469	<0.056
10. SAMBALPUR (3 stations)																
39. Near Panthanivas	April	8.1	379	0.5	5.8	3.2	254	218	132	128	36.9	8.7	50.97	29.6	19.693	0.056
	Oct	7.7	687	0.5	6.7	2.5	378	348	180	224	52.9	22.4	63.9	75.24	7.031	<0.056
40. Near Rly station	April	7.7	1867	1.1	5.8	0.2	952	932	268	400	104.2	34.0	304.84	131.8	50.533	0.056
	Oct	7.8	359	0.4	3.4	3.4	220	198	90	118	39.3	4.9	48.9	28.85	16.745	0.110
41. Near VSS Medical College, Burla	April	7.8	507	0.9	5.8	0.2	279	278	108	120	25.7	13.6	71.96	40.7	3.108	<0.056
	Oct	7.7	657	0.2	6.7	2.4	389	375	188	222	51.3	22.8	60.9	79.35	3.993	<0.056
11. TALCHER (7 stations)																
42. Mahanadi Coal Field Area	April	7.8	642	1.0	7.8	49	376	93	74	144	30.5	16.5	99.95	87.9	33.219	<0.056
	Oct	7.6	648	1.6	8.4	31	385	54	168	202	48.9	19.4	77.9	72.76	7.744	<0.056
43. Kaniha	April	8.2	271	0.5	9.7	0.2	159	3	124	104	33.7	4.9	11.99	6	1.138	<0.056
	Oct	7.9	503	0.6	1.7	0.6	279	6	236	204	48.1	20.4	23.98	17.78	0.870	<0.056

Stn. Name	Month of Monitoring	pH	Cond., µS/cm	BOD, mg/l	COD, mg/l	Turbidity, NTU	TDS, mg/l	TFS	Total Alkalinity, mg/l	Total Hardness CaCO3 mg/l	Calcium as Ca mg/l	Magnesium as Mg, mg/l	Chloride, mg/l	Sulphate, mg/l	Nitrate, mg/l	NH_4-N, mg/l
44. Talcher town	April	7.7	690	0.1	5.8	7.6	426	22	154	172	52.9	9.7	85.95	82.8	44.997	0.056
	Oct	7.9	834	1.2	8.4	4.6	446	12	206	243	59.3	23.1	81.95	79.72	0.915	<0.056
45.Meram undali Area	April	7.9	699	0.1	5.8	0.1	414	4	202	192	48.9	17.0	71.96	71	15.698	<0.056
	Oct	8.7	776	0.6	1.7	1.9	392	24	168	222	66.5	13.6	71.96	69.4	7.971	0.340
46. Talcher Thermal Area	April	7.7	1246	0.1	5.8	3.5	748	6	152	278	78.6	19.9	238.87	146	0.889	<0.056
	Oct	7.7	1562	0.6	5.0	19	834	26	300	260	61.7	25.8	227.8	112.06	0.657	<0.056
47. Banarpal	April	7.5	713	0.1	6.8	0.8	406	16	156	192	64.9	7.3	89.95	65.4	25.746	<0.056
	Oct	8.3	803	0.7	3.4	1.9	429	24	160	232	52.9	24.3	101.9	80.72	15.073	0.490
48. Kulad	April	8.1	1141	0.1	3.9	1.9	678	44	68	120	29.7	11.2	289.85	81	33.619	<0.056
	Oct	8.7	647	0.2	1.7	0.8	372	26	72	216	51.3	21.4	85.9	101.36	21.403	0.490
Drinking water specification (IS : 10500 (2012)																
Acceptable Limit		6.5-8.5	-	-	-	1	500	-	200	200	75	30	250	200	45	0.5
Permissible limit		No relax	-	-	-	5	2000	-	600	600	200	100	1000	400	No relax	No relax

Contd..

Stn Name	Month of Monitoring	Total Kjeldahl N,	Flouride, mg/l	PO43-P, mg/l	Sodium, mg/l	Potassium, mg/l	Boron, mg/l	Cr (VI), mg/l	Chromium Total, mg/l	Mercury ,mg/l	Cadmium, mg/l	Copper, mg/l	Lead, mg/l	Nickel, mg/l	Zinc, mg/l	Iron Total, mg/l	TC, MPN/ 100 ml	FC, MPN/ 100 ml
1. ANGUL (2 stations)																		
Angul Township	April	0.28	0.230	0.002	135.7	20.5	0.228	0.017	0.029	<0.00006	0.0009	0.003	0.004	0.006	0.003	0.120	<1.8	<1.8
	Oct	1.68	0.27	0.057	151.0	30.50	0.098	-	-	-	-	-	-	-	-	-	4.5	4.5
NALCO township	April	0.56	0.240	0.007	20.6	6.0	0.281	0.028	0.049	<0.00006	0.0014	0.003	0.006	0.006	0.018	0.840	<1.8	<1.8
	Oct	1.68	0.27	0.287	20.72	4.44	0.025	-	-	-	-	-	-	-	-	-	<1.8	<1.8
2. BALASORE (3 stations)																		
Naigopal-pur	April	0.84	0.230	0.002	220.3	29.8	0.074	0.005	0.024	<0.00006	0.0021	0.006	0.006	0.004	0.017	4.690	<1.8	<1.8
	Oct	5.6	1.2	0.156	4.34	1.16	0.039	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Kuanrpur	April	0.56	5.800	0.063	232.0	32.0	0.077	0.007	0.027	<0.00006	0.0014	0.008	0.004	0.008	0.028	1.790	<1.8	<1.8
	Oct	6.72	1.5	0.306	31.53	8.25	0.471	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Chakulia	April	0.28	0.170	0.002	199.5	25.5	0.074	0.007	0.018	<0.00006	0.0011	0.005	0.007	0.007	0.019	1.630	<1.8	<1.8
	Oct	1.12	4.6	0.005	39.39	6.75	0.042	-	-	-	-	-	-	-	-	-	<1.8	<1.8
3. BERHAMPUR (4 stations)																		
Berhampur near Rly. station	May	3.08	0.309	0.002	95.35	95.35	0.218	<0.002	0.011	<0.00006	0.0011	0.002	0.005	0.004	0.022	0.030	<1.8	<1.8
	Oct	1.12	0.32	0.002	130.0	43.50	0.123	-	-	-	-	-	-	-	-	-	6.8	<1.8
MKCG medical College	May	5.88	0.548	0.391	72.75	72.75	0.151	<0.002	0.007	<0.00006	0.0014	0.002	0.005	0.004	0.018	0.130	33	<1.8
	Oct	1.12	2.0	0.002	76.75	14.50	0.155	-	-	-	-	-	-	-	-	-	1600	280
Bus stand	May	3.08	0.172	0.012	126.05	126.05	0.137	<0.002	0.009	<0.00006	0.0014	0.002	0.008	0.004	0.017	0.150	<1.8	<1.8
	Oct	1.68	0.67	0.002	137.50	26.75	0.095	-	-	-	-	-	-	-	-	-	350	17
Badabazar	May	0.84	0.212	0.041	114	114	0.158	<0.002	0.011	<0.00006	0.0017	0.002	0.007	0.004	0.011	7.840	79	11
	Oct	0.28	0.41	0.002	116.25	20.00	0.169	-	-	-	-	-	-	-	-	-	11	2
Drinking water specification (IS : 10500 (2012)																		
Acceptable Limit		-	1.0	-	-	-	0.5	-	0.05	0.001	0.003	0.05	0.01	0.02	5.0	1.0	Absent	
Permissible limit		-	1.5	-	-	-	1.0	-	No relax	No relax	No relax	1.5	No relax	No relax	15.0	No relax	No relax	

Stn Name	Month of Monitoring	Total Kieldahl N.	Flouride, mg/l	PO_4^{3-}-P, mg/l	Sodium, mg/l	Potassium, mg/l	Boron, mg/l	Cr (VI), mg/l	Chromium Total,	Mercury ,mg/l	Cadmium, mg/l	Copper, mg/l	Lead, mg/l	Nickel, mg/l	Zinc, mg/l	Iron Total, mg/l	TC, MPN/ 100 ml	FC, MPN/ 100 ml
4. BHUBANESWAR (6 stations)																		
Khandagiri Area	April	0.84	0.130	0.002	150.0	25.0	0.091	0.011	0.032	<0.00006	0.0012	0.003	0.006	0.011	0.049	6.730	<1.8	<1.8
	Oct	6.16	0.15	0.038	28.15	9.10	0.018	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Old town-Samantarapur Area	April	0.56	0.390	0.002	45.7	17.3	0.204	0.002	0.008	<0.00006	0.0014	0.002	0.004	0.007	0.014	0.230	3500	1400
	Oct	3.92	0.19	0.043	38.05	12.75	0.035	-	-	-	-	-	-	-	-	-	110	26
Kalpana-Laxmisagar Area	April	0.28	0.080	0.002	16.9	0.9	0.007	0.003	0.012	<0.00006	0.0011	0.006	0.001	0.009	0.044	7.040	<1.8	<1.8
	Oct	1.12	0.14	0.039	2.37	1.93	0.028	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Chandrasekhar pur	April	0.28	0.120	0.007	20.3	4.5	0.014	0.009	0.025	<0.00006	0.0014	0.005	0.005	0.008	0.049	2.050	79	23
	Oct	3.36	0.13	0.030	3.08	0.78	0.046	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Capital Hospital Area	April	0.28	0.100	0.002	20.5	5.2	0.007	0.005	0.013	<0.00006	0.0018	0.003	0.004	0.007	0.048	0.560	<1.8	<1.8
	Oct	2.24	0.23	0.041	20.73	5.92	0.004	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Secretariate-Govenor House-Old bus stand Area	April	0.56	0.320	0.002	22.4	4.0	0.003	0.005	0.015	<0.00006	0.0009	0.004	0.002	0.008	0.037	0.270	>1600	>1600
	Oct	5.04	0.19	0.040	20.35	8.95	0.004	-	-	-	-	-	-	-	-	-	<1.8	<1.8
5. CUTTACK (5 stations)																		
Jagatpur	April	0.28	0.150	0.036	78.9	16.0	0.081	0.008	0.018	0.00013	0.0012	0.007	0.008	0.009	0.041	0.160	<1.8	<1.8
	Oct	2.24	0.22	0.057	65.55	17.60	0.067	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Mangalabag	April	0.28	0.400	0.086	14.6	3.8	0.200	0.005	0.015	<0.00006	0.0014	0.005	0.009	0.008	0.014	0.090	4	4
	Oct	3.36	0.16	0.065	44.20	11.75	0.056	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Madhupatna-Kalyan Nagar Area	April	0.28	0.200	0.017	29.7	6.9	0.200	0.005	0.013	<0.00006	0.0011	0.003	0.008	0.006	0.008	0.250	<1.8	<1.8
	Oct	1.12	0.22	0.073	29.86	4.93	0.004	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Badambadi Area	April	0.28	0.190	0.051	47.0	10.3	0.123	0.003	0.012	<0.00006	0.0016	0.004	0.009	0.009	0.023	4.840	<1.8	<1.8
	Oct	1.68	0.34	0.760	17.17	2.36	0.004	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Bidanasi-Tulsipur Area	April	0.28	0.860	0.050	4.1	1.5	0.095	0.007	0.024	<0.00006	0.0011	0.004	0.006	0.004	0.025	0.370	<1.8	<1.8
	Oct	1.12	0.23	0.119	6.83	3.08	0.004	-	-	-	-	-	-	-	-	-	<1.8	<1.8

Stn Name	Month of Monitoring	Total Kieldahl N,	Flouride, mg/l	PO_4^{3-}-P, mg/l	Sodium, mg/l	Potassium, mg/l	Boron, mg/l	Cr (VI), mg/l	Chromium Total, mg/l	Mercury ,mg/l	Cadmium, mg/l	Copper, mg/l	Lead, mg/l	Nickel, mg/l	Zinc, mg/l	Iron Total, mg/l	TC, MPN/ 100 ml	FC, MPN/ 100 ml
6. JAGATSINGHPUR (2 stations)																		
Musadiha	April	0.56	0.510	0.075	744.0	44.0	0.994	0.002	0.008	<0.00006	0.0011	0.004	0.004	0.008	0.018	0.050	>1600	540
	Oct	3.92	0.51	0.009	455.7	30.25	0.888	-	-	-	-	-	-	-	-	-	70	<1.8
Badapadia	April	0.84	1.500	0.086	306.0	29.0	1.394	<0.002	0.008	<0.00006	0.0017	0.004	0.004	0.007	0.021	0.040	<1.8	<1.8
	Oct	1.12	1.1	0.034	327.5	29.00	1.229	-	-	-	-	-	-	-	-	-	4.5	<1.8
7. JAJPUR (4 stations)																		
TISCO	April	0.28	0.200	0.005	9.3	1.5	0.021	0.007	0.027	<0.00006	0.0016	0.002	0.009	0.006	0.018	0.120	<1.8	<1.8
	Oct	1.12	0.16	0.049	16.07	4.92	0.067	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Saruabil	April	0.28	0.170	0.002	16.7	3.1	0.028	0.005	0.024	<0.00006	0.0017	0.004	0.009	0.008	0.036	0.190	<1.8	<1.8
	Oct	1.12	0.17	0.047	24.48	6.04	0.046	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Kaliapani	April	0.56	0.160	0.002	5.4	1.6	0.042	0.007	0.020	<0.00006	0.0014	0.014	0.008	0.007	0.031	0.110	<1.8	<1.8
	Oct	0.56	0.18	0.095	2.29	0.75	0.039	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Kamarda	April	0.56	0.180	0.002	7.7	1.4	0.077	0.034	0.077	<0.00006	0.0016	0.008	0.006	0.005	0.031	0.150	<1.8	<1.8
	Oct	1.68	0.16	0.054	7.28	1.04	0.063	-	-	-	-	-	-	-	-	-	<1.8	<1.8
8. JHARSUGUDA (8 stations)																		
Thelkoi	April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oct	1.52	0.32	0.086	7.92	1.68	0.034	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Bhurkhamunda	April	0.56	0.350	0.029	13.2	2.6	0.200	0.012	0.027	<0.00006	0.0009	0.005	0.004	0.005	0.052	0.250	<1.8	<1.8
	Oct	1.68	0.39	0.105	8.63	1.75	0.042	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Badamani I.E	April	0.28	0.220	0.015	9.4	2.9	0.207	0.018	0.035	0.00013	0.0008	0.009	0.007	0.005	0.052	0.820	<1.8	<1.8
	Oct	0.28	0.17	0.120	7.05	2.04	0.035	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Budhipadar	April	0.28	0.280	0.046	6.4	2.4	0.228	0.017	0.017	<0.00006	0.0011	0.002	0.008	0.004	0.022	0.960	<1.8	<1.8
	Oct	0.56	0.22	0.100	8.33	2.95	0.035	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Brajarajnagar Mining Belt	April	0.28	0.360	0.050	8.8	3.6	0.270	0.013	0.029	0.00019	0.0016	0.002	0.007	0.009	0.075	0.510	<1.8	<1.8
	Oct	0.56	0.35	0.093	20.94	5.54	0.091	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Rampur (water tank)	April	0.28	0.380	0.056	20.9	6.5	0.600	0.013	0.032	0.00025	0.0014	0.003	0.010	0.008	0.062	0.220	<1.8	<1.8
	Oct	0.28	0.33	0.088	21.36	5.88	0.105	-	-	-	-	-	-	-	-	-	1300	330
Ib thernmal power station	April	0.28	0.390	0.052	7.6	2.2	1.685	0.015	0.027	0.00019	0.0012	0.003	0.008	0.008	0.082	1.350	<1.8	<1.8
	Oct	1.52	0.31	0.087	22.87	7.40	0.074	-	-	-	-	-	-	-	-	-	92000	54000
Belpahar Area	April	0.28	0.250	0.077	25.3	6.7	0.481	0.012	0.027	<0.00006	0.0012	0.002	0.008	0.005	0.011	5.610	<1.8	<1.8
	Oct	1.68	0.3	0.086	36.20	10.90	0.123	-	-	-	-	-	-	-	-	-	16000	9200

Stn Name	Month of Monitoring	Kjeldahl N, mg/l	Flouride, mg/l	PO_4^{3-}-P, mg/l	Sodium, mg/l	Potassium, mg/l	Boron, mg/l	Cr (VI), mg/l	Total, mg/l	Mercury ,mg/l	Cadmium, mg/l	Copper, mg/l	Lead, mg/l	Nickel, mg/l	Zinc, mg/l	Iron Total, mg/l	TC, MPN/ 100 ml	FC, MPN/ 100 ml
9. PURI (4 stations)																		
Hospital-Bus stand-Mausima temple area	April	0.56	0.120	0.153	153.0	24.3	0.355	0.002	0.012	<0.00006	0.0018	0.009	0.008	0.008	0.047	1.170	<1.8	<1.8
	Oct	0.28	0.17	0.487	124.25	26.50	0.133	-	-	-	-	-	-	-	-	-	330	130
Near Jagannath Temple	April	0.28	0.130	0.045	180.3	27.5	0.506	0.005	0.013	<0.00006	0.0021	0.006	0.006	0.009	0.049	0.060	<1.8	<1.8
	Oct	0.28	0.16	0.118	141.0	48.50	0.158	-	-	-	-	-	-	-	-	-	130	<1.8
Near Sea Beach	April	0.28	0.150	0.086	146.2	18.7	0.372	0.002	0.008	<0.00006	0.0016	0.007	0.004	0.014	0.037	0.320	23	<1.8
	Oct	0.84	0.12	0.212	4015.0	475.00	0.565	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Baliapanda	April	0.28	0.270	0.174	75.5	14.5	0.112	0.01	0.030	<0.00006	0.0011	0.007	0.006	0.007	0.042	0.110	<1.8	<1.8
	Oct	0.28	0.17	0.119	34.70	9.05	0.046	-	-	-	-	-	-	-	-	-	<1.8	<1.8
10. SAMBALPUR (3 stations)																		
Near Panthanivas	April	0.56	0.450	0.002	30.0	8.8	0.154	0.02	0.047	<0.00006	0.0014	0.005	0.004	0.004	0.045	0.560	350	49
	Oct	1.12	0.19	0.002	38.45	9.05	0.098	-	-	-	-	-	-	-	-	-	130	17
Near Railway station	April	0.56	0.240	0.020	167.8	25.5	0.239	0.018	0.044	<0.00006	0.0018	0.008	0.005	0.008	0.008	0.680	140	140
	Oct	1.12	0.18	0.003	26.91	3.66	0.004	-	-	-	-	-	-	-	-	-	2	<1.8
Near VSS Medical College	April	0.56	0.320	0.002	45.8	7.3	0.176	0.015	0.040	0.00013	0.0017	0.002	0.009	0.007	0.011	0.650	540	130
	Oct	1.68	0.19	0.067	42.80	10.40	0.095	-	-	-	-	-	-	-	-	-	49	<1.8
11. TALCHER (7 stations)																		
Mahanadi Coal Field Area	April	0.56	0.230	1.500	60.7	15.9	0.337	0.025	0.047	0.00019	0.0017	0.005	0.009	0.008	0.056	1.220	<1.8	<1.8
	Oct	1.12	0.23	0.445	47.05	10.15	0.056	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Kaniha	April	0.56	0.800	0.002	8.7	2.6	0.228	0.023	0.042	0.00013	0.0016	0.003	0.006	0.008	0.024	1.180	<1.8	<1.8
	Oct	1.12	0.23	0.057	16.51	4.69	0.053	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Talcher town	April	0.84	0.270	0.002	66.5	14.0	0.316	0.027	0.047	<0.00006	0.0014	0.008	0.008	0.009	0.131	0.140	<1.8	<1.8
	Oct	0.56	0.23	0.271	54.7	7.35	0.014	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Meramundali Area	April	0.28	0.480	0.002	58.9	11.5	0.263	0.027	0.049	<0.00006	0.0014	0.004	0.016	0.012	0.126	0.140	79	<1.8
	Oct	7.84	0.75	0.164	48.80	14.50	0.063	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Talcher Thermal Area	April	0.28	0.410	1.291	140.9	21.5	0.288	0.025	0.054	0.00013	0.0011	0.013	0.017	0.007	0.122	1.540	<1.8	<1.8
	Oct	0.56	0.55	0.271	164.5	49.75	0.151	-	-	-	-	-	-	-	-	-	<1.8	<1.8

Stn Name	Month of Monitoring	Total Kieldahl N.	Flouride, mg/l	PO_4^{3-}-P, mg/l	Sodium, mg/l	Potassium, mg/l	Boron, mg/l	Cr (VI), mg/l	Chromium Total,	Mercury ,mg/l	Cadmium, mg/l	Copper, mg/l	Lead, mg/l	Nickel, mg/l	Zinc, mg/l	Iron Total, mg/l	TC, MPN/ 100 ml	FC, MPN/ 100 ml
Banarpal	April	0.28	0.240	0.002	53.9	13.0	0.369	0.023	0.040	<0.00006	0.0011	0.003	0.019	0.011	0.023	0.430	<1.8	<1.8
	Oct	5.6	0.46	0.691	61.35	6.54	0.084	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Kulad	April	0.28	1.100	0.002	181.1	24.5	0.358	0.023	0.044	<0.00006	0.0011	0.004	0.008	0.004	0.054	0.411	<1.8	<1.8
	Oct	6.16	0.52	0.301	47.85	12.15	0.053	-	-	-	-	-	-	-	-	-	<1.8	<1.8
Drinking water specification (IS : 10500 (2012)																		
Acceptable Limit		-	1.0	-	-	-	0.5	-	0.05	0.001	0.003	0.05	0.01	0.02	5.0	1.0	Absent	
Permissible limit		-	1.5	-	-	-	1.0	-	No relax	No relax	No relax	1.5	No relax	No relax	15.0	No relax	No relax	

5.7.2 Air Quality Status

5.7.2.1 National Ambient Air Quality Monitoring Programme (NAMP) & State Air Quality Monitoring Programme (SAMP)

For assessing ambient air quality status of the State, the Board monitors ambient air quality at 38 stations in seventeen areas of the State, under the CPCB assisted National Ambient Air Quality Monitoring programme(NAMP) and State Ambient Air Quality Monitoring programme (SAMP) of the Board. Details of air quality monitoring stations, station type and parameters monitored are listed in Table-5.32. Four criteria parameters like Respirable suspended particulate matter (RSPM) or PM_{10} (particulate matter having an aerodynamic diameter less than or equal to 10 µm), $PM_{2.5}$ (particulate matter having an aerodynamic diameter less than or equal to 2.5 µm), Sulphur dioxide (SO_2) and Oxides of Nitrogen (NO_x) are being regularly monitored at all stations. Besides these parameters, Ammonia, Ozone & Lead are monitored at nine stations in Bhubaneswar, Puri and Konark. The monitoring is carried out for 24 hours (24-hourly sampling for $PM_{2.5,}$ 8-hourly sampling for PM_{10}, Pb & Ni and 4-hourly sampling for gaseous pollutants like SO_2 & NO_X) with a frequency of twice in a week not in a conjugative day, to have a minimum of 104 observations in a year.

Table-5.32 Ambient Air Quality Monitoring Stations

Sl. No.	Name of the areas	Monitoring stations	Parameters monitored
1.	**Angul**	(i) RO, SPCB office building, Angul	**PM_{10}, $PM_{2.5}$, SO_2 & NO_x**
		(ii) NALCO Nagar, Angul	
2.	**Balasore**	(iii) RO, SPCB office building, Sahadevkhunta	
		(iv) DIC office, Angaragadia	
		(v) Rasalpur Industrial Estate	
3.	**Berhampur**	(vi) RO, SPCB office building, Brahmanagar	
4.	**Bhubaneswar**	(vii) SPCB office Building, Unit-VIII	**PM_{10}, ,$PM_{2.5}$, SO_2, NO_x NH_3, O_3 &Pb**
		(viii) I.R.C. Village, Nayapalli	
		(ix) Capital Police Station, Unit-I	
		(x) Chandrasekharpur	
		(xi) Patrapada	
		(xii) Palasuni water works	
5	**Bonaigarh**	(xiii) Bonai Govt. Hospital	**PM_{10}, $PM_{2.5}$, SO_2 & NO_x**
6.	**Cuttack**	(xiv) Traffic Tower, Badambadi	
		(xv) RO, SPCB office building, Surya Vihar	
		(xvi) PHED Office, Barabati	
7.	**Jharsuguda**	(xvii)RO, SPCB office building, Babubagicha, (xviii) Inside TRL Colony Premises	
8	**Kalinga Nagar**	(xix) TATA Guest House	
		(xx) NINL Guest House	
		(xxi) RO, SPCB Office building, Kalinganagar	
9	**Keonjhar**	(xxii) RO, SPCB Office building, Baniapat	
10	**Konark**	(xxiii) Konark Police Station	**PM_{10}, $PM_{2.5}$ NO_x NH_3 O_3 &Pb**
11	**Paradeep**	(xxiv) PPL Guest House	**PM_{10}, $PM_{2.5}$, SO_2 & NO_x**
		(xxv) IFFCO STP	
		(xxvi) PPT Colony	

Sl. No.	Name of the areas	Monitoring stations	Parameters monitored
12	**Puri**	(xxvii) Sadar Police Station	**PM_{10},$PM_{2.5}$ SO_2, NO_x NH_3 O_3 & Pb**
		(xxviii) Town Police Station	
13	**Rayagada**	(xxix) RO, SPCB Office building, Indiranagar	**PM_{10}, $PM_{2.5}$, SO_2 & NO_x**
		(xxx) Jakaypur	
14	**Rajgangpur**	(xxxi) DISR, Rajgangpur	
15	**Rourkela**	(xxxii) RO, SPCB Office building, Sector-5	
		(xxxiii) IDL Outpost, Sonaparbat	
		(xxxiv) IDCO Water Tank, IDC Kalunga	
		(xxxv) Kuarmunda Out Post, Kuarmunda	
16	**Sambalpur**	(xxxvi)PHED Office, Modipara	
17	**Talcher**	(xxxvii) TTPS, Talcher	
		(xxxviii) M.C.L., Talcher	

Ambient air quality status with respect to the four criteria parameters at these 38 stations in addition to three parameters like ammonia (NH_3), Ozone (O_3) and lead (Pb) at Bhubaneswar, Puri & Konark during the year 2017 are given in Table-5.33 The air quality of different cities/ towns have been compared with the national ambient air quality standards to assess the existing air quality status.

The Annual average concentration of Respirable Suspended Particulate Matter (RSPM or PM_{10}) at all monitoring locations remained above the prescribed limit i.e., 60 ($\mu g/m^3$) except at Regional office, SPC Board, Raygada where it is below the prescribed limit. Annual average concentration of RSPM at Regional office, SPC Board, Berhampur is equal to the limit. Whereas, the Annual average value of $PM_{2.5}$ remained below the limit at 15 locations out of 38 monitoring locations.

The percentage of violation of 24-hourly average data were calculated by comparing the data with the prescribed standard. 24-hourly average data for SO_2 and NO_x were observed to remain within the prescribed standard. Whereas, for PM_{10} no violation occurs only at DIC office, Angaragadia, Balasore, RO SPC Board, Berhampur & LPS High School Jaykaypur, Rayagada.

The range of percentage of violation was varying from 0.92% to 85.3%. Similarly for $PM_{2.5}$ no violation occur at 08 places i.e., DIC office. Angaragadia, Balsore, RO SPC Board, Berhampur, Capital Police station, Unit-1 & Patrapada, Bhubaneswar, Govt. Hospital, Bonaigarh, Sadar & Town Police station, Puri and RO SPC Board, building, Rourkela . The range of percentage of violation was from 0.96% to 51.9%

Air Quality Index (AQI)

AQI of 17 areas during the year 2017 with prominent pollutant and categorization are shown in Table-5.34. The range of AQI values, categorization and health impact are presented in Table-5.35. From the Table-5.34, it was observed that out of 17 areas, four areas are falling under Moderate category & 13 areas are falling under Satisfactory category. The prominent pollutant was PM_{10} in 16 areas and $PM_{2.5}$ in one area. The highest AQI value i.e., 124($\mu g/m^3$) w.r.t PM_{10} was observed at Rajgangpur area and lowest at Rayagada i.e., 58($\mu g/m^3$)

Table-5.33 Ambient Air Quality Status of different cities & towns of Odisha during -2017

Sl. No.	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24hourly range) except O_3 1-hourly Average)							% of violation of data from 24 hourly standard		AQI of the monitoring Station	Overall AQI of the City	Category
			PM_{10}	$PM_{2.5}$	SO_2	NO_X	NH_3	O_3	Pb	PM_{10}	$PM_{2.5}$			
			(values expressed in Microgram per cubic meter)											
1	**Angul**													
	RO SPCB, Angul(I/E)	103	94 (54-161)	47 (25-81)	8.7 (BDL-17.6)	25.2 (13.6-31.7)	-	-	-	30.09%	17.47%	94 **(PM_{10})**	**97 (PM_{10})**	**Satisfactory**
	NALCO Nagar, Angul	102	99 (56-187)	45 (22-85)	9.7 (6.7-13.3)	25.8 (20.7-29.9)	-	-	-	38.23%	43.13%	99 **(PM_{10})**		
2	**Talcher**													**Satisfactory**
	TTPS , Talcher	102	93 (33-200)	44 (16-96)	9.8 (6.2-12.0)	30.2 (23.9-36.2)	-	-	-	41.17%	25.49%	93 **(PM_{10})**	**98 (PM_{10})**	
	MCL, Talcher	102	103 (50-184)	47 (21-86)	10.0 (7.0-15.1)	30.9 (23.1-37.3)	-	-	-	49.0%	26.47%	102 **(PM_{10})**		
3	**Balasore**													**Satisfactory**
	R.O, SPCB Sahadevkhunta	104	81 (61-101)	42 (26-64)	BDL (BDL-BDL)	11.0 (9.9-12.8)	-	-	-	0.96%	0.96%	81 **(PM_{10})**	**83 (PM_{10})**	
	DIC office, Angaragadia	104	78 (59-96)	41 (26-58)	BDL (BDL- BDL)	10.6 (9.6-12.8)	-	-	-	Nil	Nil	78 **(PM_{10})**		
	Rasalpur,I.E	104	90 (74-114)	50 (34-78)	7.8 (6.7-9.5)	12.8 (10.1-14.4)	-	-	-	11.53%	9.61%	90 **(PM_{10})**		
4	**Berhampur**													**Satisfactory**
	R.O, SPCB, Brahamanagar	104	60 (34-98)	34 (18-55)	BDL (BDL- BDL)	19.4 (13.1-24.5)	-	-	-	Nil	Nil	60 **(PM_{10})**	**60 (PM_{10})**	
5	**Bhubaneswar**													**Satisfactory**
	SPCB Office Building, Unit-8	97	98 (36-177)	39 (15-76)	BDL (BDL- BDL)	24.9 (11.4-36.1)	54.5 (43.7-68.4)	24.0 (20.3-24.1)	0.03 (BDL-0.2)	48.4%	7.2%	98 **(PM_{10})**	**94 (PM_{10})**	
	I.R.C. Village, Nayapalli	85	90 (32-147)	37 (13-68)	BDL (BDL- BDL)	24.4 (12.8-33.7)	54.9 (BDL-67.9)	24.0 (21.5-26.4)	0.03 (BDL-0.1)	31.7%	2.35%	90 **(PM_{10})**		
	Capital Police Station, Unit-I	84	103 (56-137)	30 (10.0-41.0)	BDL (BDL-BDL)	15.1 (12.1-20.2)	72.1 (33.0-92.2)	18.7 (BDL-27.1)	0.02 (BDL-0.1)	67.85%	Nil	103 **(PM_{10})**		
	Chandrasekharpur	100	100 (44-272)	28 (12-79)	BDL (BDL-BDL)	13.9 (BDL-12.8)	46.0 (32.0-58.7)	24.1 (BDL-32.7)	0.02 (BDL-0.1)	33.0%	3.0%	100 **(PM_{10})**		
	Patrapada	100	95 (48-149)	26 (15-36)	BDL (BDL- BDL)	14.3 (BDL-19.0)	50.7 (BDL-71.1)	26.3 (BDL-36.3)	0.04 (BDL-0.2)	36.0%	Nil	95 **(PM_{10})**		
	Palasuni water works	79	76 (30-158)	46 (19-85)	BDL (BDL-BDL)	15.2 (BDL-22.5)	46.4 (35.2-62.9)	27.7 (21.2-36.0)	0.01 (BDL-0.05)	8.86%	8.86%	77 **($PM_{2.5}$)**		

Sl. No	Area / Stations	No. of Obs (24 hrs)	Annual Average Value (24hourly range) except O_3 1-hourly Average)							% of violation of data from 24 hourly standard		AQI of the monitoring Station	Overall AQI of the City	Category
			PM_{10}	$PM_{2.5}$	SO_2	NO_X	NH_3	O_3	Pb	PM_{10}	$PM_{2.5}$			
			(values expressed in microgram per cubic meter)											
6	**Bonaigarh**													
	Roof of Bonai Govt. Hospital	104	65 (28-129)	18 (7-27)	7.1 (4.1-14.3)	9.8 (7.5-13.8)	-	-	-	13.46%	NIL	65 **(PM_{10})**	**65 (PM_{10})**	**Satisfactory**
7	**Cuttack**													
	Traffic Tower Badambadi,	104	94 (51-160)	47 (29-79)	BDL (BDL-5.5)	33.7 (30.3-42.5)	-	-	-	31.73%	15.38%	94 **(PM_{10})**	**86 (PM_{10})**	**Satisfactory**
	R.O.SPCB Building, Surya Vihar	103	79 (45-141)	42 (22-64)	BDL (BDL-BDL)	30.3 (25.3-39.6)	-	-	-	20.38%	2.91%	79 **(PM_{10})**		
	PHD office ,Barabati	101	84 (48-145)	41 (24-65)	BDL (BDL-BDL)	29.7 (26.3-40.1)	-	-	-	25.74%	7.92%	84 **(PM_{10})**		
8	**Jharsuguda**													
	RO Building,Cox Colony, Babubagicha,	105	91 (61-153)	49 (23-92)	11.1 (7.7-29.5)	20.4 (16.1-44.6)	-	-	-	34.61%	29.80%	91 **(PM_{10})**	**91 (PM_{10})**	**Satisfactory**
	Inside TRL Colony Premises	87	91 (47-136)	45 (17-95)	7.4 (4.9-33.1)	12.8 (10.1-32.2)	-	-	-	40.22%	21.83%	91 **(PM_{10})**		
9	**Kalinga Nagar**													
	Over the roof of Guest BRPL House(Near TATA Guest House)	95	129 (82-208)	63 (21-122)	BDL (BDL- BDL)	11.0 (9.2-13.5)	-	-	-	85.26%	37.89%	119 **(PM_{10})**	**116 (PM_{10})**	**Moderate**
	Over the roof of NINL Guest House	79	131 (90-200)	53 (22-86)	BDL (BDL- BDL)	9.9 (9.2-10.9)	-	-	-	82.27%	30.37%	121 **(PM_{10})**		
	Roof of RO SPCB, building	102	113 (79-257)	53 (34-73)	BDL (BDL- BDL)	BDL (BDL-10.3)	-	-	-	48.03%	29.41%	109 **(PM_{10})**		
10	**Keonjhar**													
	R.O.SPCB, Baniapat	74	78 (18-181)	48 (10-120)	BDL (BDL- BDL)	15.0 (9.7-23.1)	-	-	-	29.72%	29.72%	80 **($PM_{2.5}$)**	**80 ($PM_{2.5}$)**	**Satisfactory**
11	**Konark**													
	Konark Police station	101	95 (26-247)	36 (14-91)	BDL (BDL- BDL)	13.4 (BDL-22.2)	51.5 (25.4-89.3)	24.7 (21.3-28.7)	0.02 (BDL-0.1)	39.60%	16.83%	95 **(PM_{10})**	**95 (PM_{10})**	**Satisfactory**
12	**Paradeep**													
	PPL Guest House	99	104 (36-76)	40 (13-91)	18.8 (11.5-31.7)	14 (8.7-21.7)	-	-	-	37.37%	13.13%	103 **(PM_{10})**	**104 (PM_{10})**	**Moderate**
	On the roof of IFFCO STP	99	112 (40-238)	37 (17-84)	19.3 (12.1-31.1)	13.8 (10.3-19.8)	-	-	-	53.53%	13.13%	108 **(PM_{10})**		
	On the roof of Paradeep port trust	99	102 (32-279)	41 (23-95)	19.1 (12.1-33.2)	14.2 (10.8-24.7)	-	-	-	37.37%	12.12%	101 **(PM_{10})**		

Sl. No	Area / Stations	No. of Obs. (24 hrs)	Annual Average Value (24hourly range) except O_3 1-hourly Average)							% of violation of data from 24 hourly standard		AQI of the monitoring Station	Overall AQI of the City	Category
			PM_{10}	$PM_{2.5}$	SO_2	NO_X	NH_3	O_3	Pb	PM_{10}	$PM_{2.5}$			
			(values expressed in microgram per cubic meter)											
13	**Puri**													
	29. Sadar police Station	54	81 (45-141)	23 (11-41)	BDL (BDL- BDL)	14.2 (11.0-19.3)	43.9 (30.4-95.1)	25.3 (21.6-28.9)	0.02 (BDL-0.07)	16.66%	Nil	81 **(PM_{10})**	**81 (PM_{10})**	Satisfactory
	30. Town police Station	96	80 (41-152)	26 (12-41)	BDL (BDL-BDL)	14.9 (11.8-20.1)	44.7 (33.6-60.3)	26.1 (21.8-29.4)	0.01 (BDL-0.05)	17.7%	Nil	80 **(PM_{10})**		
14	**Rayagada**												**58 (PM_{10})**	Satisfactory
	31.R.O.SPCB Building, Indiranagar	103	55 (24-125)	33 (10-86)	BDL (BDL- 4.6)	18.8 (13.0-25.5)	-	-	-	0.97%	0.97%	55 (PM_{10} & $PM_{2.5}$)		
	32. LPS High School, Jaykaypur	102	61 (29-92)	36 (12-67)	BDL (BDL- BDL)	19.7 (13.9-23.8)	-	-	-	NIL	0.98%	61 **(PM_{10})**		
15	**Rajgangpur**												**124 (PM_{10})**	Moderate
	33. DISIR, Rajgangpur	104	136 (20-339)	42 (10-92)	12.8 (6.5-19.0)	16.8 (9.2-53.4)	-	-	-	64.42%	14.42%	124 **(PM_{10})**		
16	**Rourkela**												**111 (PM_{10})**	Moderate
	34. R.O.SPCB building, Sector-5	104	97 (64-124)	39 (27-49)	6.4 (BDL- 8.0)	13.7 (9.0-30.1)	-	-	-	37.50%	NIL	**97 (PM10)**		
	35. IDL Outpost	104	80 (67-113)	45 (36-62)	6.2 (5.0-12.2)	10.9 (9.9-15.8)	-	-	-	4.80%	0.96%	**80 (PM10)**		
	36. IDCO Water Tank, IDC Kalunga	104	210 (52-336)	63 (18-92)	16.2 (8.0-25.7)	20.5 (10.0-43.2)	-	-	-	96.15%	51.92%	**173 (PM10)**		
	37. Kuarmunda Out Post, Kuarmunda	104	79 (30-132)	43 (18-69)	7.1 (BDL- 14.2)	9.8 (BDL-17.1)	-	-	-	41.36%	15.38%	**79 (PM10)**		
17	**Sambalpur**													Satisfactory
	38. PHD Office, Modipara	108	81 (68-136)	46 (39-64)	BDL (BDL- 8.6)	20.0 (BDL-26.8)	-	-	-	0.92%	2.77%	81 **(PM_{10})**	**81 (PM_{10})**	
Prescribed Standard (24 hrly)			**100**	**60**	**80**	**80**	**400**	**180 (1Hourly)**	**0.5**	-				
Standard for Annual Avg. Value			**60**	**40**	**50**	**40**	**100**	**100 (8Hourly)**	**1.0**					

N.B: BDL- Below Detectable Limit, PM_{10} – Particulate Matter ≤ 10 µ size , $PM_{2.5}$ – Particulate Matter ≤ 2.5 µ size SO_2 – Sulphur Dioxide, NO_X – Oxides of Nitrogen, NH_3 - Ammonia, O_3 – Ozone & Pb-Lead

- BDL Value for SO_2 ≤4 µg/m^3,NO_x ≤ 9 µg/m^3, NH_3 ≤10 µg/m^3, O_3 ≤10 µg/m^3, Pb ≤0.0022 µg/m^3, PM_{10} ≤ 5 µg/m^3, $PM_{2.5}$ ≤ 2 µg/m^3
- No percentage of violation of data from 24-hourly average has been observed for the monitored pollutants like SO_2, NO_x, NH_3, O_3 and Pb

Table-5.34 Annual Air Quality Index of Different monitoredStations in Odisha during the year, 2017

Monitoring Locations	Sub index value w.r.t parameter							Overall AQI of the area w.r.t parameter	Overall Categorisation
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	NH_3	O_3	Pb		
1.Angul									
1.Industrial Estate	**97.0**	77.0	12.0	32.0	-	-		**97.0 (PM_{10})**	Satisfactory
2.NALCO Nagar									
2.Talcher									
3.TTPS , Talcher	**98.0**	77.0	12.0	38.0	-	-	-	**98.0 (PM_{10})**	Satisfactory
4.MCL, Talcher									
3.Balasore									
5.R.O, SPCB Sahadevkhunta	**83.0**	73.0	5.0	14.0	-	-		**83.0 (PM_{10})**	Satisfactory
6.DIC office, Angaragadia									
7.Rasalpur,I.E									
4.Berhampur									
8.R.O, SPCB Brahamanagar	**60.0**	57.0	3.0	24.0	-	-	-	**60.0 (PM_{10})**	Satisfactory
5.Bhubaneswar									
9.SPCB Office Building, Unit-VIII	**94.0**	57.0	3.0	23.0	14.0	24.0	2.5	**94.0 (PM_{10})**	Satisfactory
10.I.R.C. Village, Nayapalli									
11.Capital Police Station, Unit-I									
12.Chandrasek-harpur									
13.Patrapada									
14.Palasuni water works									
6.Bonaigarh	**65.0**	30.0	9.0	12.0	-	-	-	**65.0 (PM_{10})**	Satisfactory
15.Bonai Govt. Hospital									
7.Cuttack									
16.Traffic Tower Badambadi,	**86.0**	72.0	3.0	39.0	-	-	-	**86.0 (PM_{10})**	Satisfactory
17.R.O.Building, Surya Vihar									
18.PHD office ,Barabati									
8.Jharsuguda									
19.RO Building,Cox Colony, Babubagicha,	**91.0**	78.0	12.0	21.0	-	-	-	**91.0 (PM_{10})**	Satisfactory
20. Inside TRL Colony Premises									
9.Kalinganagar									
21.Over the roof of TATA Guest House	**116.0**	93.0	3.0	6.0	-	-	-	**116.0 (PM_{10})**	Moderate
22.Over the roof of NINL Guest House									
23.Roof of Regional Office Building,									

Monitoring Locations	Sub index value w.r.t parameter							Overall AQI of the area w.r.t parameter	Overall Categorisation
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	NH_3	O_3	Pb		
10.Keonjhar									
24.R.O, Baniapat	**78.0**	80.0	3.0	19.0	-	-	-	**80.0 ($PM_{2.5}$)**	Satisfactory
11.Konark									
25.Konark Police Station	**95.0**	60.0	3.0	17.0	13.0	25.0	2.0	**95.0 (PM_{10})**	Satisfactory
12.Paradeep									
26.PPL Guest House 27.On the roof of IFFCO STP 28.On the roof of Paradeep port trust	**104.0**	65.0	24.0	18.0	-	-	-	**104.0 (PM_{10})**	Moderate
13.Puri									
29. Sadar police Station 30. Town police Station	**81.0**	42.0	3.0	18.0	11.0	26.0	1.5	**81.0 (PM_{10})**	Satisfactory
14.Rayagada									
31. RO Building, Indiranagar 32. LPS High School, Jaykaypur	**58.0**	57.0	3.0	24.0	-	-	-	**58.0 (PM_{10})**	Satisfactory
15.Rajgangpur									
33. DISR Rajgangpur	**124.0**	70.0	16.0	21.0	-	-	-	**124.0 (PM_{10})**	Moderate
16.Rourkela									
34.Regional Office Building, Sector-5 35. IDL Outpost **36. IDCO Water Tank, IDC Kalunga** **37. Kuarmunda Out Post, Kuarmunda**	**111.0**	80.0	11.0	17.0	-	-	-	**111.0 (PM_{10})**	Moderate
17.Sambalpur									
38.PHD Office, Modipara	81.0	77.0	3.0	25.0	-	-	-	**81.0 (PM_{10})**	Satisfactory

Table-5.35 AQI range with categorization and Health impact

AQI VALUE	CATAGORY	IMPACT ON HUMAN HEALTH
0-50	GOOD	Minimal Impact
51-100	SATISFACTORY	Minor breathing discomfort to sensitive people
101-200	MODERATE	Breathing discomfort to the people with lung, heart disease, children and adults
201-300	POOR	Breathing discomfort to people on prolonged exposure
301-400	VERY POOR	Respiratory illness to the people on prolonged exposure
>401	SEVERE	Respiratory effects even on healthy people

5.8 INDUSTRIAL INSPECTIONS, MONITORING OF WATER, AIR AND SOLID WASTE SAMPLES

The Board has analysed following samples. The status of inspection and monitoring during the year 2017-18 is given in Table-5.36.

Table - 5.36 Inspection and Monitoring of Water, Air and Solid Waste

Nos. of Inspec-tions	Samples under NWMP, SWMP & NRCP	Nos. of Industrial samples	Nos. of other water samples	Nos. of Soil/solid waste/ Plant samples	Nos. of Stack emission samples	Ambient Air Quality studies			Ambient Noise
						Industrial premises	SAMP / NAMP	Others	
7255	2510	3467	3768	51	1129	1778	11,384	291	542

5.9 PUBLIC GRIEVANCES

The status of various public complaints received and redressed on following matters during 2017-18 is given in Table 5.37.

- 17 categories of highly polluting industries
- Disposal of hazardous chemicals and hazardous wastes
- Stone crusher
- Brick Kiln
- Other industries
- Mines
- Iron Crushers
- Public nuisance
- Other miscellaneous issues

Table - 5.37 Status of Public Complaints

No. of complaint received	Disposal	Under investigation
456	256	200

5.10 IMPLEMENTATION OF RIGHT TO INFORMATION ACT, 2005

The Right to Information Act, 2005 provides for setting out the practical regime of right to information for citizens to secure access to information under the control of Public Authorities (P.A), in order to promote transparency and accountability in the working of every public authority.

According to Section 6 of this Act, any person who desires to obtain any information under this Act can apply in Form A specifying the particulars of the information sought by him or her in writing or electronically in English or in local official language. The application should be accompanied with the requisite fee, prescribed under the Act.

As per the Act, the State Pollution Control Board, Odisha is providing available information as and when sought through proper application. Shri S.C.Soren, Addl.Administrative Officer of the Board has been declared as the Public Information Officer under the provisions of the Act. 958 no. of requests were received under RTI during 2017-18 (Table-5.38). The total amount collected for RTI requests during 2017-18 is ₹ 36,369/- .

Table - 5.38 Status of Applications under RTI Act

SL. No.	Details of the Application	Nos.
01.	No. of applications received during the year, 2017-18	901
02.	No. of applications Carried forward from 2016-17	57
03.	Total no. of applications received	958
02.	No. of applications on which Information provided	741
03	No. of applications on which information rejected	98
04.	No. of requests transferred to other public Authorities	85

CHAPTER - VI

LEGAL MATTERS

6.1 STATUS OF LEGAL CASES

The Board initiates legal action against those units which fail to adopt adequate pollution control measures entailing violation of norms and directives, in spite of repeated persuasion and after having received adequate opportunity.

The Board has filed/counter filed 234 cases and out of this 165 cases have been disposed off by the respective Courts during 2017-2018. The details of cases filed by the Board alongwith the status of public interest litigations and writ petitions filed in different Courts are presented in Table-6.1.

Table - 6.1 Details of Cases Filed by the Board

Sl. No	Name of the Court	No. of Cases	
		Filed/Counter filed	Disposal
A	**Lower Court (SDJM)**		
1.	The Water (PCP) Act	Nil	Nil
2.	The Air (PCP) Act	Nil	Nil
3.	The Environment (Protection) Act	Nil	Nil
B	**High Court**		
1.	PIL	23	09
2.	Writ	109	93
C	**Supreme Court**		
1.	PIL	05	02
2.	Writ	04	Nil
D	**Other Court**		
1.	Civil Suit	Nil	Nil
2.	Consumer Dispute Cases	Nil	Nil
3.	Lokpal Cases	Nil	Nil
E.	N.H.R.C. / O.H.R.C.	39 (NHRC-10+ OHRC-29)	19 (NHRC-09+ OHRC-10)
1.	Cases U/S-133 of CrPC	Nil	Nil
2.	Cases before the State Appellate Authority	21	10
3.	Cases before the National Green Tribunal	33	32
	Total	**234**	**165**

CHAPTER - VII

FINANCE AND ACCOUNTS

The estimated and the actual receipts during 2017-18 are given in Table-7.1.

Table-7.2 reflects the details of budget provision and actual expenditure incurred during the year 2017-18.

Table - 7.1 Receipt of the Financial Year 2017-18 (Rupees in lakhs)

Sl No.	Head of Receipt	Estimated Receipt	Revised Budget	Actual Receipt
(A)	**Boards Own Receipt**			
1	**Consent to operate fees**			
	a) CTO current year			257.99
	b) CTO in Advance			4065.48
	Total CTO fees	2200.00	2200.00	4323.47
2	Consent to Establish	400.00	780.00	886.57
3	Misc.Receipt	5.00	6.00	7.99
4	Analysis Charges	1.00	0.20	0.24
6	Recovery of Loan & Others	45.00	45.00	47.05
7	Public Hearing fees	10.00	16.00	19.25
8	Hazardous Waste Auth	15.00	9.00	13.74
9	Aut.Bio.Med.Fees, E-waste	12.00	22.00	28.66
10	Interest on Savings/Advances	1000.00	2000.00	1186.44
	Sub-Total	**3688.00**	**5078.20**	**6513.41**
11	Pollution Charges	20.00	8.18	55.86
12	Forfeiture of Bank Guarentee	100.00	20.00	20.00
13	Penalty/Env.Compensation/Hotels and Brick Klins		174.31	202.16
	Sub-Total	**120.00**	**202.49**	**278.02**
(B)	**Water Cess(Reimbursement)**	1300.00	672.80	408.52
(C)	**Receipt of Scheme**	130.00	189.53	190.82
	Sub-Total	**1430.00**	**862.33**	**599.34**
	Grand Total	**5238.00**	**6143.02**	**7390.77**

Table - 7.2 Expenditure during the Financial Year 2017-18 (Rupees in lakhs)

Sl No.	Source of Funding	Head of Account	Budget for 2017-18	Revised Budget for 2017-18	Actual Expenditure
1	**Boards Own Fund**	i)Salary	1518.00	3295.50	3254.06
		ii)Recurring Exp.	467.00	456.18	381.35
		iii)Non Recurring	427.00	384.70	356.39
		iv)Loan & Advances	45.00	35.85	32.84
		Transfer of fund to OEMFT		1059.22	1059.22
		Total	**2457.00**	**5231.45**	**5083.86**
2	**Water Cess Fund**	i)Salary of Scientific & Technical Personnel	140.00	140.00	140.00
		ii)Establishment Cost & Office Operation	129.00	104.64	82.01
		iii)E-goverance & IT Operations	75.00	15.18	9.29
		iv)Monitoring of Air,Water,Noise Quality etc	130.00	114.00	72.39
		v)Abatement of Pollution	760.00	303.97	296.49
		Total	**1234.00**	**677.79**	**600.18**
3	**Sponsored Scheme**		**350.00**	**189.53**	**95.31**
		Grand Total	**4041.00**	**6098.77**	**5779.35**
4	**Others**	Deposit of Income Tax			**600.89**

CHAPTER - VIII

OTHER IMPORTANT ACTIVITIES

8.1 INTEGRATED COASTAL ZONE MANAGEMENT PROJECT (ICZMP)

Office of the Pilot Executing Agency (PEA) for ICZMP has performed several activities for shoreline coastal monitoring of the coastal water over a stretch of about 80 km from Paradeep to Dhamara.

- DEDICATION OF SEA-WORTHY POLLUTION MONITORING VESSEL "SAGAR UTKAL":

For assessment of health of coastal stretch from Paradeep to Dhamra, which aims in understanding the coastal pollution through coastal monitoring (in-situ monitoring and on board measurement), coastal survey and near shore multi-disciplinary work, a monitoring vessel or work boat **'Sagar Utkal'** has been dedicated on 5th August 2017, which is 1st of its kind in the state. It would cater services for survey and monitoring in coastal stretch of Odisha upto 12 nautical miles. Presently sample collection from three transects viz. Paradeep, Bhitarkanika & Dhamra are being undertaken adopting in-situ sampling and on-board analysis on specific parameters as per monitoring protocol of SPCB, ICZMP. It would also be faciliated to other agencies like oceanographic researchers, universities, wildlife, fisheries etc. on contract price basis during lean period of required monitoring.

- OFFICIAL INAUGURATION OF CENTRE FOR MANAGEMENT OF COASTAL ECOSYSTEM" (CMCE) BUILDING AT PARADEEP:

The "Centre for Management of Coastal Ecosystem" (CMCE) building of Odisha State Pollution Control Board at Paradeep was inaugurated by Mr. R. Balakrishnan, IAS, Development Commissioner cum Additional Chief Secretary of Odisha & the Chairman, State Pollution Control Board on 28.4.2017. This is the first Govt. building in the State of Odisha to receive the coveted Platinum Rating LEED (Leadership in Energy & Environment Design) Certification from the prestigious U.S. Green Building Council (USGBC), duly certified by Green Building Certification Inc. (GBCI), Washington, DC

CMCE Building in Paradeep

Ingauration of CMCE Building

- ACTIVITY AT CMCE BUILDING

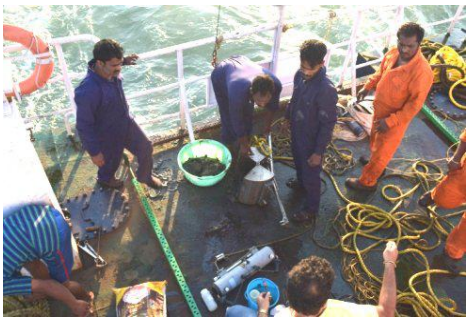
Activities to be taken up at CMCE are assessment of coastal stretch from Paradeep to Dhamra (80kms) in the Bay of Bengal, Biological Oceanography Activities by microscopic observation, Real time Assessment of ambient air quality (PM_{10}, $PM_{2.5}$, TSP, NO_x, SO_2, H_2S, Ozone, NH_3, CO); especially the VOC & BTEX real time monitoring - considered to be first in the State, Geo-scientific database using Geographic Information System (GIS) for critical habitats**,** Management (running, operation and maintenance) of the Vessel "Sagar Utkal" – a catamaran vessel for in-situ and on-board measurements , operation of the state-of-art Laboratory of CMCE which is established at the Central Laboratory of OSPCB at Bhubaneswar. This center would also act as a referral center and play a vital role in the sustainable management of coastal ecosystem.

- COASTAL WATER MONITORING AND ANALYSIS:

Total seventy three (73) sampling locations have been selected for the entire monitoring area, out of which 32 are along Mahanadi transect, 17 in Dhamara transect and 24 in Gahirmatha-Bhitarkanika transect.

Coastal water monitoring and analysis has been done by the PEA regularly since April 2014 on quarterly/seasonal basis. Till now only on-shore and few off-shore sampling points could have been covered with the help of trawlers and monitoring vessel MV **Sagar Utkal**. The details of monitoring conducted during 2017-18 by the PEA are given in Table 8.1 below.

Year/ Monitoring Quarter	Period	Duration of sampling	Name of Stretch/Zone	No. of Water samples collected
2017-18/Q1	March -June	March-17	Bhitarakanika-Gahirmatha (Z-2)	182
			Paradeep(Z-1)	246
2017-18/Q3	Nov-Feb	November-2017	Paradeep(Z-1)	369
			Dhamara(Z-3)	359
2017-18/Q3	Nov-Feb	January-2018	Paradeep(Z-1)	453
			Total no.of samples	1609



Parameters analysed for the water samples include pH, Conductivity, Total Suspended Solids, Total Dissolved solids, Turbidity, Fluoride, Dissolved Oxygen, Biochemical Oxygen Demand, Alkalinity, Salinity, Nitrite, Nitrate, Ammonia, Silicate, Ortho-phosphate, TOC, TIC , heavy metals(V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Mo, Pb, Cd, Hg),Total Coliform, Fecal Coliform, Chlorophyll-a, Chlorophyll-b, Chlorophyll-c, Total Chlorophyll, Phaeophytin pigment, Carotenoid, Phytoplankton, Zooplankton.

8.2 OTHER ACTIVITIES OF ICZMP, SPCB, ODISHA:

- **Visit of World Bank Mission on 25th May, 2017 to CMCE, Paradeep**:


- **Visit of SICOM (Socieity of Integrated Coastal Managament), MoEF & CC, New Delhi:** Dr. Shailendra Kumar Mamgain, Sociologist Consultant, SICOM, New Delhi visited CMCE, Paradeep on 29th June, 2017.


8.3 PUBLICATION BY ICZMP, SPCB, ODISHA:

- **Report card of Gahirmatha Coastal Stretch-2015** ,Odisha was published during World Environmental Day on 5th June, 2017 at Rabindra Mandap by Hon'ble Chief Minister Shri Naveen Patnaik.
- **Comprehensive Monitoring Protocol of Coastal Environment** (Paradeep-Gahirmatha-Dhamra Coastal Stretch of Odisha in Bay of Bengal, India) was published during 34th Foundation Day on 14th September, 2017 at Rabindra Mandap by Principal Secretary, Forest and Environment Department, Govt. of Odisha.
- The booklet with information of LEED criteria achieved by the project and two Report Cards on the assessment of Paradeep & Dhamra coast during 2015 were released.

Release of Booklet of LEED Criteira & Report Cards on assessment of Paradeep & Dhamra Coast

Release of Report Card of Gahirmatha Coastal Stretch -2015 and Comphrehensive Monitoring Protocol of Coastal Environment

8.4 TRAINING / WORKSHOP/ SEMINAR ATTENDED BY ICZMP, SPCB STAFFS:

Nodal Officer-cum-Project Coordinator, ICZMP, SPCB, Odisha attended the following Workshop/ meeting:

- **"International Oil Pollution Compensation and Liability Regime"** organized by DG Shipping, Mumbai at Hotel Taj Vivanta, Goa on 9th June, 2017,
- **22nd National Oil Spill Disaster Contigency Plan and Preparedness** meeting at India International Centre, 40, Max Mueller Marg, New Delhi on 10th August, 2017
- **"Long term monitoring plan for ecosystem based conservation and management for Bhitarakanika Conservation Area"** at Odisha Forestry Development Corporation, Bhubaneswar on 5th December, 2017.
- Dr. Sangeeta Mishra, AES and Mrs Sumitra Nayak, AES attended Dissemination Workshop on "Mangroves for the Future Bhitarakanika, Odisha" on 8th December 2017 at The New Marrion, Bhubaneswar.
- Dr. Mukunda K. Khadanga, attended seminar on "Pollution Response and Mock Drill" at Coast Guard Head Quarter Conference Hall, Paradip from 22-23 Dec-2017.

8.5 FLY ASH RESOURCE CENTRE (FARC)

Fly Ash Resource Centre (FARC) is working in the Board since June'2013 as per the decision of High Level Committee, Chaired by the Chief Secretary, Govt. of Odisha. During the financial year 2017-18 about 30.92 Million Tonne of fly ash has been generated, out of which the utilisation of fly ash is about 24.96 Million Tonne i.e 80.74%.

The mandate of the FARC is to facilitate & enhance the utilisation of fly ash in the state by facilitating and exploring various options such as construction of roads & building, cement making, agriculture, filling of morrum, stone and laterite quarries, manufacture of fly ash bricks etc. The Board has also taken up awareness from time to time among the stakeholders. FARC has prepared the following guidelines and uploaded in the Board's website.

a. Guidelines for Manufacturing of Quality Fly Ash Bricks
b. Guidelines for Low lying area filling with fly ash
c. Guidelines for Use of Fly ash Tiles in canal lining

d. Best Practices in Fly ash utilization
e. Fly ash in Road construction

8.6 UNIDO-GEF-FUNDED MOEF PROJECT ON BIOMEDICAL WASTE MANAGEMENT

Odisha has been identified, as one of the five States in the Country (Other States are Maharashtra, Gujarat, Punjab, Karnataka) for implementing UNIDO-GEF-Funded MoEF Project on Biomedical Waste Management. SPC Board has been designated by the Govt. as the Nodal Agency and the Board has signed the contract with UNIDO. The project is implemented in 28 Health Care Establishments (HCEs) and one district (Sambalpur) as model project including three Govt. Medical College and Hospitals. Govt. of Odisha is also co-financing the project.

The achievements of the project in implementing best BMW management in the State are as follows :

- Dedicated manpower (Project Officers) in 9 Govt. hospitals has been provided exclusively to deal with Bio-medical Waste Management.
- After deployment of Project Officers, regular training imparted to waste handlers and regular surveillance,the Bio-medical Waste Management practice in the aforesaid 9 HCEs has been improved considerably, particularly the practice of segregation of bio-medical wastes.
- Colour-coded bins (330 nos.) and. of waste collection trolleys (241 nos) have been provided to the identified 28 HCEs.
- Capacity building of Medical Officers, Nurses, Paramedical Staffs, Waste Handlers and related stockholders.
- Seven workshops have been conducted throughout the State and the participants were Doctors, Nodal Officers, Paramedical Staffs, Nurses and Waste Handlers.
- Standard Operating Procedure(SOP) and Training Manuals, prepared by MS Ramaiah Medical College, Bangalore has been distributed among the officials of the Board, Health and Family Welfare Department, CBWTF and all identified HCEs.

Workshop on Environmentally Sound Management of Bio-Medical Waste under UNIDO-GEF Funded MoEF & CC Project

Training on Bio-Medical Waste Management under UNIDO-GEF Funded MoEF & CC Project

8.7 EPIC- OSPCB PARTNERSHIP PROJECT

- Govt. of Odisha had signed a Statement of Intent (SoI) with University of Chicago on 3rd April 2017. As part of the partnership with Govt. of Odisha, Energy Policy Institute at the University of Chicago (EPIC-India) has set up a knowledge cell w.e.f. 1st May 2017 within the head office of Odisha State Pollution Control Board (OSPCB) and researchers are currently working with OSPCB in improving environmental regulation and also with the Energy Department on power sector distribution reforms related to loss reduction measures.

(Signing of Statement of Intent and Inauguration of EPIC Knowledge Cell, Odisha)

- The Energy Policy Institute at the University of Chicago (EPIC-India), in association with the National Institution for Transforming India (NITI Aayog) hosted a National Conference on “Air and Water Pollution: Innovations in Regulation, Abatement and Monitoring” in New Delhi on 7th July 2017. Around 20 officials from 14 Indian states including from many State Pollution Control Boards attended the conference. Dr. Akhila Kumar Swar, Chief Environmental Engineer represented Odisha State Pollution Control Board and made a presentation.

(National Conference on Air and Water Pollution, University of Chicago Centre-New Delhi on 7th July 2017)

- EPIC- India conducted a half day workshop on 11th July 2017 at Head Office of SPCB, Odisha. Ms. Cynthia Giles, Former Assistant Administrator for Office of Enforcement and Compliance Assurance, USEPA shared her experiences from different parts of the world during this workshop and delivered a presentation on "Environment Pollution Act and best practices followed by USEPA".


(Workshop on Environment Pollution Act and best practices from USEPA at SPCB, Odisha on 11th July 2017)

- As part of capacity building on online CEMS monitoring and data acquisition system, EPIC-India team visited all twelve regional offices of SPCB, Odisha and six major Industries in each category along with Board officials between August-September 2017 to impart training and develop preparedness for calibration and data validation.


- In addition, EPIC-India have developed a Standard Operating Process (SOP) that includes CEMS and CEQMS Checklist and Protocols for inspection and data validation. The SOP was shared with the Senior Officials of SPCB during their visit to Tata Steel Limited, Kalinganagar on 6th December 2017 for review in the field. Meanwhile, EPIC team have developed Dash-Board and Self declaration formats for recording the CEMS data generated from all the 17 categories of highly polluting industries.


(Capacity Building and Visit to Industries for Standardization of CEMS Protocol)

8.8 OBSERVATIONS DURING DIFERENT FESTIVALS

8.8.1. Impact of Festive Activities during Dashera and Deepawali on Noise level and Ambient Air Quality (AAQ) of selected towns and cities of Odisha.

A. AMBIENT NOISE LEVELS DURING DASHERA – 2017

The State Pollution Control Board, Odisha has conducted ambient noise level monitoring at 50 locations in thirteen cities/towns i.e.,Angul, Balasore, Berhampur, Bhubaneswar, Cuttack, Jharsuguda, Kalinganagar, Keonjhar, Paradeep, Puri, Rayagada, Rourkela and Sambalpur covering Industrial, Commercial, Residential and Silence zone during day and night time to assess the impact of noise during celebration of Dashera and comparison with the value obtained during 2016.

The normal day noise level varies from 44.7 to 75.2 Leq dB (A) in the year 2016, and from 45.1 to 80.7 Leq dB (A) in the year 2017.While same on the festival day varies between 50.0 to 85.7 Leq dB(A) in the year 2016 and between 38.5 to 89.0 Leq dB(A) in the year 2017. During Dashera the maximum noise level value of 85.7 Leq dB(A) was reported at Jhanda chowk, Jharsuguda in the year 2016 and 89.0 Leq dB(A) was reported at Rasulgarh, Industrial Estate, Bhubaneswar in the year 2017.Noise level for both the years during normal and festival day are compared and were indicated in Table-8.2.

Table-8.2 Noise level in Leq dB(A) at different locations Normal Day & Dashera day during the year 2016 & 2017 in Odisha

Sl. No	Cities/towns	Locations	2016 Normal Day	2017 Normal Day	2016 Dashera Day	2017 Dashera Day
1	Angul	Amalapada(R)	57.6	51.9↓	61.2	55.6↓
2		Bazar chhak(C)	58.4	63.5↑	64.6	75.9↑
3		District Head Quarter Hospital(S)	61.2	55.7↓	75.8	58.1↓
4		Hakimpada(I)	54.4	55.5↑	59.1	61.2↑
5	Balasore	Sahadevkhunta(R)	56.4	57.2↑	64.0	66.8↑
6		Motiganj Bazar(C)	63.5	64.0↑	76.7	73.5↓
7		District Head Quarter Hospital(S)	47.4	47.9↑	53.0	54.3↑
8		Balasore Industrial Estate(I)	57.4	60.0↑	62.0	55.1↓
9	Berhampur	Brahmanagar(R)	58.4	55.5↓	60.8	70.2↑
10		Girija market square(C)	75.1	80.7↑	80.6	80.7↑
11		MKCG Medical & Hospital(S)	60.6	63.3↑	64.1	66.3↑
12		Ankuli(I)	61.7	69.6↑	79.8	78.2↓
13	Bhubaneswar	Nayapalli(R)	53.3	60.3↑	72.8	73.6↑
14		Sahidnagar(C)	59.4	68.1↑	75.9	84.2↑
15		Capital Hospital(S)	51.2	57.4↑	57.1	68.6↑
16		Rasulgarh(I)	63.5	67.8↑	78.8	89.0↑
17	Cuttack	Suryavihar(R)	65.2	71.9↑	70.1	71.9↑
18		Badambadi(C)	75.2	77.5↑	82.0	87.6↑
19		SCB Medical College & Hospital(S)	-	63.7	-	70.0
20		Sishu Bhawan(S)	65.0	-	69.0	-
21		Khapuria(I)	70.1	71.7↑	65.4	72.8↑
22	Jharsuguda	PurunaBasti(R)	58.5	63.2↑	79.7	82.3↑
23		Jhanda Chowk(C)	66.1	68.8↑	85.7	88.2↑

24		District Head Quarter Hospital(S)	53.4	55.0↑	76.7	78.3↑
25		Bombay Chowk(I)	64.7	65.9↑	72.1	73.3↑
26	Kalinganagar	Sapagadia(R)	54.0	56.6↑	59.8	57.4↓
27		Gopabandhu Chowk(C)	68.8	66.8↓	74.6	71.0↓
28		CHC Hospital, Jajpur Road(S)	53.4	58.9↑	56.4	58.4↑
29		Kalinganagar Industrial Estate(I)	62.7	68.5↑	68.7	58.1↓
30	Keonjhar	Baniapat Chowk(R)	64.8	65.8↑	74.0	72.8↓
31		Punjabi Chowk(C)	70.7	74.1↑	73.9	78.6↑
32		Govt.Hospital(S)	58.3	65.3↑	61.1	68.7↑
33	Paradeep	PPT Colony(R)	58.9	60.2↑	65.0	62.7↓
34		LIC Building Jagatsinghpur(C)	68.8	70.5↑	82.9	81.1↓
35		District Head Quarter Hospital(S)	62.8	63.3↑	69.7	62.1↓
36	Puri	Kumutisahi, Old Sadar lane(R)	64.2	66.5↑	70.5	69.8↓
37		Sri Mandir(C)	67.9	70.1↑	77.5	73.4↓
38		District Head Quarter Hospital(S)	58.5	61.3↑	63.5	65.6↑
39	Rayagada	Indiranagar(R)	57.4	64.1↑	64.8	67.3↑
40		Main market(C)	61.6	64.0↑	69.4	70.4↑
41		District Head Quarter Hospital(S)	55.1	57.2↑	62.5	64.4↑
42		Tumbigida(I)	63.0	68.0↑	71.9	65.3↓
43	Rourkela	Sector-4(R)	46.9	57.7↑	52.0	71.7↑
44		Bisra Chowk(C)	73.6	64.5↓	74.4	78.0↑
45		IGH steel Township(S)	46.2	45.1↓	50.0	48.6↓
46		RSPL Sail(I)	63.0	52.0↓	65.3	61.5↓
47	Sambalpur	Ainthapali(R)	44.7	50.3↑	56.7	52.8↓
48		Golebazar(C)	53.3	55.1↑	62.0	60.8↓
49		District Head Quarter Hospital(S)	46.7	49.2↑	58.4	38.5↓
50		Bareipali(I)	-	55.1	-	60.8

Ambient Noise Standard (In Leq dB(A))

Category of area zone	Day Time	Night Time
Industrial area(I)	75	70
Commercial area	65	55
Residential area	55	45
Sience area	50	40
↑: the value is higher compared to the last year	**↓: the value is lower compared to the last year**	

B. AMBIENT AIR QUALITY AND NOISE LEVEL DURING DEEPAWALI – 2017

- The State Pollution Control Board, Odisha has conducted ambient air at (07 cities/towns at 12 locations) as well as ambient noise monitoring at (05 cities/towns at 18 locations) in the year, 2017 during the day of Deepawali to assess the impact of Deepawali on ambient air quality and noise level. Further the results obtained were compared with previous year results to assess the impact of measures taken for restriction on bursting of fire crackers. Due to continuous rain during the year 2017 the ambient air quality as well as ambient noise level could not be monitored at few locations in comparison to 2016.

Ambient Air Quality

- The ambient air quality was carried out with respect to SO_2, NO_2, & PM_{10}. In normal day, PM_{10}value varies between 65 to 203 µg/m^3 in the year 2016 and between 39 to 123 µg/m^3in the year 2017.The maximum PM_{10} value i.e.,203 µg/m^3 was reported at PPT, Paradeep in the year,2016 and maximum PM_{10} value,123µg/m^3 was reported at Tata steel officers mess, Kalinganagar in the year,2017.Whereas PM_{10} on the festival day ranged between 77 to 367 µg/m^3 in the year 2016 and from 47 to 153 µg/m^3 in the year 2017. The maximum PM_{10}value was 367 µg/m^3 at Sadar Police station, Puri in the year 2016 and 153 µg/m^3at Regional office building, Jharsuguda in the year 2017.Such low value during the year 2017 was due to continuous rain during the festive period.
- In normal day SO_2 values are well within the limit. Maximum value 23.8 µg/m^3 was reported at PPL guest house, Paradeep in the year 2016 and maximum SO_2 value 21.2 µg/m^3 was reported at IFFCO, Paradeep in the year, 2017.While in festival day maximum SO_2 value 43.0 µg/m^3 at PPT staff quarters, Paradeep in the year, 2016 and maximum SO_2 value 38.1 µg/$m^3$was reported at Regional office building, Jharsuguda in the year, 2017.
- In normal day maximum NO_2 value 34.2µg/$m^3$was reported at Industrial Estate, Ankuli, Berhampur in the year, 2016 and maximum NO_2 value 33.8µg/$m^3$was reported at Traffic Tower, Badambadi in the year, 2017.While in festival day maximum NO_2 value 47.2 µg/m^3at Girija market square, Berhampur in the year, 2016 and maximum NO_2 value 35.9 µg/$m^3$was reported at Regional Office building, Jharsuguda in the year, 2017. The increase & decrease PM_{10}value on the day of Deepawali for the year 2016 & 2017 are shown in arrow mark. The ambient air quality value of measured parameter for the year 2016 to 2017 is shown in table -8.3.

Table-8.3 : Ambient Air Quality in (µg/m3) on Normal Day during the year 2016 & 2017 in Odisha

Sl. No	Cities/towns	Locations	2016			2017		
			SO_2	NO_2	PM_{10}	SO_2	NO_2	PM_{10}
1	Angul	Industrial Estate Hakimpada	6.8	24.2	83.0	7.6↑	24.7↑	77.0↓
2		Nalco Township	-	-	-	13.3	25.5	66.0
3		Talcher Thermal	-	-	-	10.8	29.2	76.0
4		MCL,Talcher	-	-	-	10.6	30.8	58.0
5		Amalapada	7.2	25.0	75.0	-	-	-
6		Bazar chhak	10.1	24.7	76.0	-	-	-
7		District Head Quarter Hospital	9.6	22.7	98.0	-	-	-
8	Balasore	Sahadevkhunta	BDL	10.9	77.0	BDL	10.7↓	75.0↓
9		Motiganj Bazar	BDL	13.5	92.0	BDL	13.1↓	97.0↑
10		District Head Quarter Hospital	BDL	9.8	66.0	-	-	-
11		Balsore Industrial Estate	-	-	-	6.05	11.5	81.0
12	Berhampur	Brahmanagar	BDL	22.5	68.0	BDL	16.7↓	75.0↑
13		Girija market square	BDL	33.5	80.0	BDL	30.7↓	120.0↑
14		MKCG Medical & Hospital	BDL	25.3	71.0	BDL	14.0↓	64.0↓
15		Industrial Estate Ankuli	BDL	34.2	85.0	BDL	25.6↓	118.0↑
16	Bhubaneswar	Office Building, Unit-8	BDL	27.5	76.0	BDL	28.4↑	82.0↑
17		IRC Village	BDL	26.7	88.0	BDL	20.8↓	78.0↓
18		Capital Police Station,Unit-1	BDL	17.0	129.0	BDL	14.3↓	106.0↓
19		Patrapada	BDL	16.2	108.0	BDL	13.2↓	83.0↓
20		Chandrasekharpur	BDL	13.7	96.0	BDL	13.9↑	109.0↑
21		Palasuniwater works	BDL	10.5	135.0	BDL	16.4↑	46.0↓
22	Bonaigarh	Bonai Govt Hospital	-	-	-	6.1	11.2	62.0
23	Cuttack	PHD office near Barabati	BDL	29.3	74.0	BDL	29.1↓	56.0↓
24		Regional Office Building, Suryavihar	BDL	28.7	70.0	BDL	28.7	60.0↓
25		Traffic Tower Badambadi	BDL	33.5	79.0	4.1↑	33.8↑	67.0↓
26	Jharsuguda	Regional Office building	13.3	24.0	72.0	16.8↑	21.6↓	89.0↑
27	Kalinganagar	Tata steel officers' mess	BDL	11.6	92.0	BDL	12.5↑	123.0↑
28		Roof of NINL Guest House	BDL	9.2	97.0	BDL	9.8↑	117.0↑
29		Regional Office Building, Common Facility Centre,	BDL	9.4	91.0	BDL	BDL↓	91.0
30	Keonjhar	Regional Office Building	BDL	14.0	65.0	BDL	15.6↑	43.0↓
31		Punjabi Chowk	BDL	23.0	176.0	-	-	-
32	Paradeep	On the roof of STP Building, IFFCO,	21.7	12.0	184.0	21.2↓	11.0↓	83.0↓
33		PPLGuest House, PPL	23.8	12.6	123.0	20.6↓	11.1↓	76.0↓
34		PPTStaff Quarters	22.4	13.2	203.0	19.9↓	11.1↓	56.0↓
35	Puri	Sadar Police Station	BDL	17.1	199.0	BDL	12.9↓	39.0↓
36		Town Police Station	BDL	13.6	181.0	BDL	14.0↓	39.0↓
37	Rayagada	Regional office Building	BDL	18.3	85.0	BDL	16.9↓	49.0↓
38	Rajgangpur	DISIR Rajgangpur	15.3	16.0	111.0	6.8↓	10.6↓	56.0↓
39	Rourkela	Regional Office Building	6.2	12.8	90.0	5.8↓	10.4↓	72.0↓
40		IDL Outpost	6.8	12.2	95.0	6.5↓	9.8↓	102.0↑
41		Kuarmunda	-	-	-	4.9	9.5	43.0
42	Sambalpur	Ainthapali	4.3	17.8	75.0	5.5↑	20.6↑	87.0↑
43		Modipara	-	-	-	BDL	19.1	77.0
44		Golebazar	5.2	21.8	90.0	4.2↓	18.2↓	71.0↓
45		District Head Quarter Hospital	4.8	18.7	71.0	-	-	-
46		Bareipali	-	-	-	5.8	20.3	85.0

AAQM Standard (24hourly)		
Parameters		Standard(**µg/m3**)
SO_2		80
NO_2		80
PM_{10}		100
BDL:- $SO_2 \leq 4$		BDL- :$NO_2 \leq 9$
↑: the value is higher compared to the last year	**↓: the value is lower compared to the last year**	**(-):Data not available**

Table-8.4 : Ambient Air Quality in (µg/m^3) on Deepawali during the year 2016 & 2017 in Odisha

Sl.No	Cities/towns	Locations	2016			2017		
			SO_2	**NO_2**	**PM_{10}**	**SO_2**	**NO_2**	**PM_{10}**
1	Angul	Industrial Estate Hakimpada	8.1	29.3	140.0	**Not Monitored for continuous rain due to low pressure**		
2		Nalco Township	-	-	-			
3		Talcher Thermal	-	-	-			
4		MCL,Tlcher	-	-	-			
5		Amalapada	10.2	27.7	197.0			
6		Bazar chhak	11.4	26.9	150.0			
7		District Head Quarter Hospital	12.2	28.7	168.0			
8	Balasore	Sahadevkhunta	BDL	14.5	121.0			
9		Motiganj Bazar	5.3	17.4	146.0			
10		District Head Quarter Hospital	BDL	10.6	77.0			
11		Balasore Industrila Estate	-	-	-			
12	Berhampur	Brahmanagar	20.1	35.2	264.0			
13		Girija market square	36.5	47.2	320.0			
14		MKCG Medical & Hospital	12.5	22.5	205.0			
15		Industrial Estate Ankuli	22.5	32.6	335.0			
16	Bhubaneswar	Office Building, Unit-8	18.1	28.5	190.0			
17		IRC VillageNayapalli	27.3	26.9	324.0			
18		Capital Police Station,Unit-1	18.0	37.5	166.0			
19		Patrapada	20.6	19.2	240.0			
20		Chandrasekharpur	7.9	17.8	100.0			
21		Palasuni water works	8.4	13.0	221.0			
22	Bonaigarh	Boani Govt Hospital	-	-	-	6.9	12.4	65
23	Cuttack	PHD office near Barabati	6.0	36.8	152.0	**Not Monitored for continuous rain due to low pressure**		
24		Regional Office building, Suryavihar	5.4	33.3	177.0			
25		Traffic Tower Badambadi	6.5	37.6	256.0			
26	Jharsuguda	Regional Office building	26.2	34.0	107.0↑	38.1↑	35.9↑	153↑
27	Kalinganagar	Tata steel officers' mess	BDL	14.6	149.0			
28		NINL Guest House	BDL	12.9	137.0			
29		Regional Office Building	BDL	11.6	114.0			
30	Keonjhar	Regional Office Building	BDL	21.3	106.0	BDL	20.9↓	47.0↓
31		Punjabi Chowk	BDL	29.7	223.0	-	-	-
32	Paradeep	STP building, IFFCO	32.0	18.6	191.0	**Not Monitored for continuous rain due to low pressure**		
33		PPLGuest House	33.1	17.3	143.0			
34		On the roof PPT Staff Quarters	43.0	21.8	231.0			
35	Puri	Sadar Police Station	16.3	17.9	367.0			
36		Town Police Station	10.1	17.7	246.0			

37	Rayagada	Regional office building	13.6	27.0	166.0	16.2↑	25.5↓	125.0↓
38	Rajgangpur	DISIR Rajgangpur	29.6	34.6	143.0	11.8↓	16.2↓	112.0↓
39	Rourkela	Regional Office building	10.4	18.7	128.0	6.8↓	11.0↓	88.0↓
40		IDL Outpost	18.3	25.8	212.0	7.9↓	11.0↓	113.0↓
41		Kuarmunda	-	-	-	5.8	10.0	70.0
42	Sambalpur	Ainthapali	7.2	24.3	103.0	8.1↑	27.6↑	106.0↑
43		Modipara	-	-	-	7.8	27.5	92.0
44		Golebazar	8.3	29.5	109.0	8.0↓	28.6↓	94.0↓
45		District Head Quarter Hospital	6.8	26.2	93.0	-	-	-
46		Bareipali	-	-	-	6.3	24.0	99.0

AAQM Standard (24hourly)	
Parameters	Standard(**µg/m^3**)
SO_2	80
NO_2	80
PM_{10}	100
BDL-:SO_2≤4	BDL-:NO_2≤9

↑: the value is higher compared to the last year	**↓: the value is lower compared to the last year**	**(-):Data not available BDL: -Below Detection Limit**

Ambient Noise Level:

- Ambient Noise level in normal day varies between 44 to 85 Leq dB (A) in the year 2016, and between 46 to 82 Leq dB (A) in the year 2017.On the day of Deepawali the noise level varies from 46 to 91 Leq dB(A) in the year 2016.The maximum noise level value of 91 Leq dB(A) was reported at Girija market square, Berhampur in the year 2016.In the year 2017,the noise level varies between 58 to 85 Leq dB(A) . The maximum noise level observed 85 Leq dB(A) at Punjabi chowk, Keonjhar. The increase & decrease of noise level on the day of Deepawali for the year 2016 & 2017are indicated in the table 8.5.

Table-8.5 : Noise level in Leq dB(A) at different location in Normal Day & Deepawali day during the year 2016 & 2017 in Odisha

Sl. No	Cities	Locations	**2016** Normal Day	**2017** Normal Day	**2016** Deepawali Day	**2017** Deepawali Day
1	Angul	Amalapada(R)	65	66↑	78	**Not Monitored for continuous rain due to low pressure**
2		Bazar chhak(C)	70	76↑	75	
3		District Head Quarter Hospital(S)	62	64↑	69	
4		Hakimpada(I)	58	61↑	66	
5	Balasore	Sahadevkhunta(R)	56	55↓	77	
6		Motiganj Bazar(C)	62	61↓	85	
7		District Head Quarter Hospital(S)	51	50↓	63	
8		Balasore Industrial Estate(I)	63	61↓	73	
9	Berhampur	Brahmanagar(R)	71	63↓	78	
10		Girija market square(C)	85	82↓	91	
11		MKCG Medical & Hospital(S)	65	57↓	76	
12		Ankuli(I)	74	72↓	82	
13	Bhubaneswar	Nayapalli(R)	66	67↑	75	
14		Sahidnagar(C)	72	69↓	75	
15		Capital Hospital(S)	60	59↓	66	
16		Rasulgarh(I)	70	70	74	
17	Cuttack	Suryavihar(R)	71	70↓	76	
18		Badambadi(C)	76	78↑	78	
19		Sishubhawan(S)	69	65↓	75	

20	Jharsuguda	Khapuria(I)	70	67↓	83	
21		Puruna Basti(R)	63	62↓	85	82↓
22		JhandaChowk(C)	71	56↓	84	81↓
23		District Head Quarter Hospital(S)	51	51	61	61
24		Bombay Chowk(I)	74	74	78	78
25	Kalinganagar	Sapagadia(R)	55	56↑	84	**Not Monitored for continuous rain due to low pressure**
26		GopabandhuChowk(C)	71	62↓	83	
27		CHC Hospital(S)	59	55↓	79	
28		Tata gate No.3(I)	70	64↓	85	
29	Keonjhar	Baniapat Chowk(R)	68	72↑	76	78↑
30		Punjabi Chowk(C)	77	78↑	86	85↓
31		Govt.Hospital(S)	66	64↓	75	71↓
32	Paradeep	PPT Colony(R)	64	59↓	75	**Not Monitored for continuous rain due to low pressure**
33		Badapadia Market(C)	65	66↑	71	
34		Health Centre(S)	59	59	71	
35		IFFCO Ltd(I)	62	64↑	68	
36	Puri	Kumutisahi, Old Sadar lane(R)	63	72↑	86	
37		Sri Mandir(C)	73	75↑	80	
38		District Head Quarter Hospital(S)	59	61↑	73	
39	Rayagada	Indiranagar(R)	59	71↑	73	76↑
40		Main market(C)	74	69↓	84	74↓
41		District Head Quarter Hospital(S)	57	65↑	71	63↓
42		Tumbigida(I)	71	70↓	79	74↓
43	Rourkela	Sector-4(R)	52	49↓	63	63
44		BisraChowk(C)	70	75↑	74	80↑
45		IGH steel Township(S)	44	46↑	46	58↑
46		RSPL Sail(I)	51	57↑	52	62↑
47	Sambalpur	Ainthapali(R)	50	46↓	61	62↑
48		Golebazar(C)	57	55↓	71	61↓
49		District Head Quarter Hospital(S)	57	46↓	67	61↓

Ambient Noise Standard(In Leq dB(A))

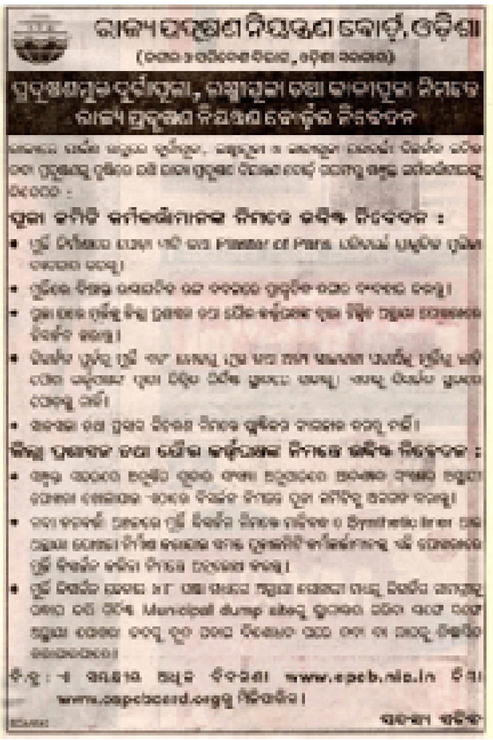
Category of area zone	Day Time	Night Time
Industrial area(I)	75	70
Commercial area	65	55
Residential area	55	45
Silence area	50	40

↑: the value is higher compared to the last year **↓: the value is lower compared to the last year**

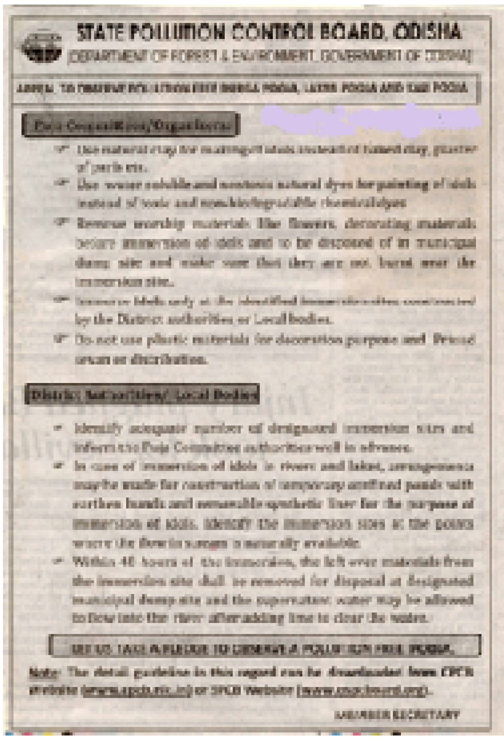
8.8.2 Pollution caused by Immersion of Idols in Water Bodies

Durga Puja is celebrated in massive scale in most of the cities of the State of Odisha. Generally the idols are immersed on a single day at the designated sites of the rivers flowing along the cities. To minimize the impact of idol immersion on the water quality, the State Pollution Control Board, Odisha has taken following steps as recommended in the Guideline for idol immersion.

- Informed all the District Collectors and authorities of urban local bodies of the State prior to Durga Puja to implement the Guidelines of Immersion (PROBES/136/2010) in their areas of jurisdiction.
- Rendered necessary assistance to the District Collectors to ensure strict compliances of the Guidelines for Idol Immersion during the Durga Puja in all the urban local bodies of the State.
- Created public awareness through Public Notice on safe Idol immersion practices in Local Newspapers and in Board's website



Dharitri Dt. 23.08.2017



STATE POLLUTION CONTROL BOARD, ODISHA

Indian Express Dt. 23.08.2017

Appeal to Public to observe pollution free Durga Puja, Laxmi Puja and Kali Puja through Public Notice on Local Newspapers

- Created public awareness through Public Notice in front of the District Collectorate Office, other important places of the cities and through public address system.
- Made several meetings with the local bodies/ authorities, Puja Committee Organizers to create awareness on ill impacts of Idol immersion in water bodies.
- Coordinated with the local bodies/ authorities for construction of temporary immersion ponds near rivers as prescribed in the Guideline and informed the Puja Committee Authorities and the Public regarding the location of Idol immersion sites
- Generally idols are immersed in flowing waters which makes the rivers as the ideal places for idol immersion. In such cases, as per the recommendation in the Guideline, either temporary ponds having earthen bunds along the river bank for use as idol immersion spots had been constructed or a part of the river bed had been cordoned to mark it as idol immersion site. The bottom of the pond in either cases had been lined with removable synthetic liner well in advance of the idol immersion. The said liner along with remains of the idols were removed within 48 hours of idol immersion by the local bodies and disposed in the municipal dumpsites. The water of the temporary ponds was then treated with lime and allowed to settle prior to ultimate discharge into rivers.
- In some urban local bodies, though temporary immersion ponds were not constructed specifically for idol immersion purposes, the left-overs of idol immersion were removed by the local peoples within 48 hours of idol immersion and disposed at the municipal dumpsites.
- Conducted water quality assessment of the rivers along the immersion sites in three stages i.e. Pre-immersion, During immersion and Post-immersion, in Class-I cities (having population more than one lakh) viz., Bhubaneswar, Cuttack and Puri cities where the pujas are celebrated in massive scale.
- Water quality status was assessed with respect to the physico-chemical parameters as recommended in the Guideline, such as, pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Conductivity (EC), Turbidity, Total Dissolved Solids (TDS), Total Solids (TS), and metals (cadmium, chromium, iron, lead, zinc and copper.
- Water quality status is evaluated by comparing with the tolerance limits for Class A (Drinking water source without conventional treatment but after disinfection) and

Class C (Drinking water source with conventional treatment followed by disinfection) Inland surface water quality. The variation in concentration of different parameters at the immersion sites are compared with the values at the upstream and downstream of immersion sites to assess the impact of idol immersion.

Obervation from the water quality data

- High values of Turbidity and Suspended solids in Kathajodi river along Cuttack city in Pre-monsoon period was due to heavy rainfall.
- During immersion period, parameters like turbidity and total solids increase at the immersion sites in comparison to the upstream and downstream stations which may be ascribed to the increase in suspended materials on the water body during immersion of idols.
- Dumping of puja materials and left-overs into the water body disrupts the oxygen level of water body and therefore lowering of dissolved oxygen (DO) at the immersion site was observed. Simultaneous increase in BOD and COD values at the immersion site on the day of idol immersion were also observed. By the time of post-immersion monitoring, the river water rejuvenates itself due to continuous flow of water, which is indicated by lowering of BOD values and other parameters in Kuakhai and Daya rivers along Bhubaneswar city. However, in Kathajodi river, BOD value at the immediate downstream and downstream station of immersion site in Post-immersion period is more than that in During-immersion period. This may be attributed to the discharge of water from the idol immersion pond where the left-overs of dumped materials have not been removed in the subsequent days of immersion.
- During immersion period increase in the conductivity and total dissolved solid at the immersion site in comparison to the upstream and downstream stations may be ascribed to the leaching of dissolved materials form the puja materials and idols immersed in the water body.
- Variation in concentrations of heavy metals such as cadmium, lead, copper and hexavalent chromium during the period of study was not significant.
- Concentration of heavy metals such as cadmium, chromium, iron, lead, zinc and copper in both during-immersion and post-immersion period remain much below the tolerance limit for most beneficial uses of water. This may be correlated to the

very slow leaching process of heavy metals from the synthetic paints and other materials used in the idols in natural conditions of water bodies.

- Further, because of the preventive measures taken by the district administration not to allow the water of idol immersion ponds to flow into the river, water quality of downstream stations during-immersion and Post-immersion periods mostly remained well within the tolerance limits of the designated use.
- BOD values in Musa river in Pre-immersion period was more than the tolerance limit of 3.0 mg/l. Immersion of idols in the Musa river has increased the BOD level significantly. However, the concentration of heavy metals such as cadmium, chromium, iron, lead, zinc and copper remained within the tolerance limit during the period of study.

From the study, it may be concluded that all the parameters specified for the study remained within the tolerance limit for designated class of the river i.e. Class-C (Drinking water source with conventional treatment followed by disinfection) even after immersion of idols) excepting few cases. Concentration of heavy metals such as cadmium, chromium, iron, lead, zinc and copper remain much below the tolerance limits and no significant impact is exerted on the heavy metal concentration of the water bodies due to immersion of idols. Such observation may be ascribed to the heavy flow in river during that period. Though some of the physical and chemical parameters like Turbidity, electrical conductivity, TDS and BOD shows higher values during-immersion period in comparison to the pre-and post-immersion period, but still remained much below the tolerance limit. Further, immersion of idols in the temporary immersion ponds has minimized the probability of contamination of the main course of river water.

8.8.3 Impact of mass bathing during Kartika Purnima on Water quality of Mahanadi and Kathajodi river (Cuttack Stretch)

To assess the impact of mass bathing during Kartika Purnima on water quality of river Mahanadi and Kathajodi along the Cuttack city, the Board had conducted a water quality monitoring study at the major bathing ghats on Pre- (27.10.2017), During- (04.11.2017) and Post- (23.11.2017) Kartika Purnima. Water quality was assessed with respect to the physico-chemical parameters like pH, Dissolved oxygen (DO), Biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS) and bacteriological parameters e.g. total coliform (TC) and fecal coliform (FC) and the data are presented in Table- 8.6

Comparison of the water quality data with the bathing water quality standard prescribed under IS: 2296 (1982) and organized bathing water quality standard laid down by MOEF & CC (* MoEF Notification G.S.R. No. 742(E) Dt. 25th September, 2000), it has been revealed that, pH remained within the permissible range 6.5-8.5 at all the monitored locations. Dissolved oxygen remained well above the permissible limit of 5.0 mg/l on all occasions. However, an increase in BOD level at the bathing ghats are observed during the Kartika Purnima period which has been lowered to the prescribed limit of 3.0 mg/l during the post- Kartika Purnima period. Further, significant impact on the bacteriological quality with respect to total coliform and fecal coliform are observed at the bathing ghats of Mahanadi river and Kathajodi rivers on the day of Kartika Purnima due to mass bathing and other human activities.

Table-8.6 Water quality with respect to BOD , TC and FC at the bathing ghats of Mahanadi river and Kathajodi rivers on Pre-, During- and Post-Kartika Purnima -2017

Sl. No.	Location	BOD (mg/l)			TC (MPN/100ML)			FC (MPN/100ML)		
		Pre (27.10.17)	During (04.11.17)	Post (23.11.17)	Pre (27.10.17)	During (04.11.17)	Post (23.11.17)	Pre (27.10.17)	During (04.11.17)	Post (23.11.17)
Mahanadi River										
1	Mundali	0.9	1.2	0.9	1300	7900	790	140	2200	130
2.	Naraj	0.9	1.2	0.9	3500	>160000	230	790	>160000	45
3.	Chahata Ghat	1.1	1.8	1.1	35000	54000	92000	11000	11000	13000
4.	Gadagadiaghat	1.1	3.6	1.1	4900	5400	5400	1100	5400	700
5.	Zobra	0.9	4.0	1.2	160000	16000	92000	17000	2400	22000
6.	Kanehipur	0.9	4.0	1.4	24000	9200	13000	13000	1300	3300
Kathajodi River										
7.	Puri Ghat	1.2	3.3	1.1	54000	>160000	43000	11000	>160000	9400
8.	Khan Nagar	1.4	4.4	1.4	2400	>160000	4900	1300	>160000	1700
9	Urali	1.6	4.7	1.1	790	>160000	7000	330	>160000	1700
Tolerance limit for Class B (IS-2296-1982) / E (P) Rule, 1986 *		3.0			500			500 (Desirable)* 2500 (Permissible)*		

* MoEF Notification G.S.R. No. 742(E) Dt. 25th September, 2000

8.9 OTHER ONGOING PROJECTS

8.9.1 Survey and Monitoring of Ground and Surface Water Quality with respect to Fluoride Content around Phosphatic Fertilizer Units, Paradeep

The Board has conducted a survey on ground water and surface water quality in and around phosphatic fertilizer plants of Paradeep e.g. M/s Indian Farmers Fertiliser Corporation (IFFCO) and M/s Paradeep Phosphates Ltd. (PPL). During 2017, surface water sample were collected from Atharabanki creek from different locations around these two fertilizer plants. Ground water samples were collected from the test wells of both the plants and from three locations outside the plant.

The fluoride concentration in Atharabanki creek at the upstream of the fertilizer plants varies within 0.32-7.93 mg/l. As the flow of Atharabanki creek depends upon the tidal condition of the sea, it is not unidirectional, and therefore, wide fluctuation in fluoride content is observed in Atharabanki creek water. The fluoride concentration in Atharabanki creek varies within 0.32- 17.84 mg/l. The fluoride concentration in creek water at Bhimbhoi colony varies within 0.65-15.5 mg/l, near entrance gate to

Paradeep Port Township varies within 1.57-16.35 mg/l, near conveyor belt of IFFCO varies within 4.10-14.68 mg/l. Whereas, the fluoride concentration in the creek water near fishing jetty varies within 0.43-1.62 mg/l. The test wells around M/s IFFCO exhibit fluoride concentration within 0.18-0.59 mg/l, whereas, those around M/s PPL exhibit fluoride concentration 0.38-2.35 mg/l. Fluoride content in ground water samples collected from outside of the plant area i.e. at Badapadia, varies within 1.42-1.63 mg/l, whereas in Musadiha, the fluoride concentration varies within 0.46-0.59 mg/l and inside the Shiv temple, it varies within 0.50-0.74 mg/l .

8.9.2 Studies related to Pollution Control and Planning

To study the cause of high ambient temperature and design remedial measures the Board has instituted Heat Island study for Angul-Talcher area through IIT, Delhi. Similar study for Ib Valley-Jharsuguda area has been instituted by DFID in association with SPCB. The study is being conducted by TERI, Delhi. Both these studies have been completed.

8.10 LIBRARY AND INFORMATION SERVICE

Board's library acts as a document repository and referral center for dissemination of information in the field of environmental science, engineering and associated areas. The library is used by research scholars of different universities and technical colleges, institutions in Odisha, various NGOs and social activists. It has a collection of books, reports, audio-visual materials, maps, photographs, toposheets, river basin atlas and soft copies of different aspects of environmental science and engineering.

During 2017-18, the library has received 12 no. of books (complimentary), 62 reports, 19 journals, 08 newspapers and 02 no. of magazines. 1234 news clippings on environmental issues from various sources of information have been compiled for reference users and outsides members. 03 no. of scholars have been enrolled as library members on payment basis during the period. Besides News clipping, 429 pages of reprographic service to different outside members have been provided. A sum of Rs. 18,128/- (Rupees eighteen thousand one hundred twenty eight) only have been spent towards Books and Journal during the year 2017-18.

8.11 TRAINING OF BOARD OFFICIALS

The Board has deputed its officials on various training programmes, seminars and workshops for the up-gradation of their knowledge and exposure to recent technological advancements in the field of pollution control and environment protection issues.

The list of officials of the Board along with name of training programmes / workshops / seminars(national / international) in various institutions attended during 2017-18 is given in Table - 8.7.

Table - 8.7 Training Programme attended by Officials of the Board

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
1.	Dr. D. K. Behera, Sr. Env. Scientist	6th – 7th April, 2107	National Seminar on CLEAN Tech and Odisha Renewable Energy Policy, 2016	OMS Power Training and Research Institute, Bhubaneswar	Hotel Swosti Premium, Bhubaneswar
2.	Dr. P. K. Prusty, Sr. Env. Scientist (L-I)	11th – 12th April, 2017	International Conference on "Integrated Solid Waste Management Practices in Developing Countries"	CSIR-NEERI, Nagpur, Maharashtra	CSIR-NEERI, Nagpur, Maharashtra
3.	Dr. D. K. Behera, Sr. Env. Scientist	24th May, 2017	E-waste Management for Informal Sectors	BMC & Utkal Chamber of Commerce	Hotel Swosti Premium, Bhubaneswar
4.	Er. Sitikantha Sahu, EE	24th May, 2017	E-waste Management for Informal Sectors	BMC & Utkal Chamber of Commerce	Hotel Swosti Premium, Bhubaneswar
5.	Debidutta Biswal, Member Secretary	30th May 2017	Preparatory Meeting on Organizing the Regional Conference on Waste Disposal and Management	National Green Tribunal, Eastern Zone, Kolkata	Ecopark Island Conference Hall, Kolkata
6.	B. P. Pattajoshi, Sr. Law Officer	30th May 2017	Preparatory Meeting on Organizing the Regional Conference on Waste Disposal and Management	National Green Tribunal, Eastern Zone, Kolkata	Ecopark Island Conference Hall, Kolkata
7.	Dr. D. K. Behera, Sr. Env. Scientist	1st June, 2017	National Training Programme on "Mining and other Extractive Industries" and make presentation on EIA for Mining	International Centre for Environment Audit and Sustainable Development (iCED), Jaipur	International Centre for Environment Audit and Sustainable Development (iCED), Jaipur
8.	Sawan Charan Soren, Addl. Admn. Officer	7th – 9th June, 2017	Training Programme on "Right to Information"	Madhusudan Das Regional Academy of Financial Management, Bhubaneswar	MDRAFM, Bhubaneswar
9.	Santosh Kumar Kuanr, Law Officer	7th – 9th June, 2017	Training Programme on "Right to Information"	Madhusudan Das Regional Academy of Financial Management, Bhubaneswar	MDRAFM, Bhubaneswar

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
10.	Anupam Behera Sr. Env. Scientist	9th June, 2017	Workshop on International Oil Pollution Compensation and Liability Regime	Ministry of Shipping, Directorate General of Shipping, IX Floor, Beta Building, I-Think Techno Campus, Kanjur Village Road, Kanjur Marg (East), Mumbai-400042	Goa
11.	Dr. D. K. Behera, Sr. Env. Scientist	24th June, 2017	National Waste Management Summit, Hyderabad-2017	Greater Hyderabad Municipal Corporation, Municipal Complex, Tank Bund Road, Hyderabad-500063	Greater Hyderabad Municipal Corporation, Municipal Complex, Tank Bund Road, Hyderabad-500063
12.	Er. R. K. Ekka, Dy. Env. Engineer	17th – 28th July, 2017	Compliance, Monitoring and Enforcement	Centre for Science and Environment, New Delhi	Centre for Science and Environment, New Delhi
13.	Dr. A. K. Swar Sr. Env. Engineer	7th July, 2017	National Conference on "Air and Water Pollution : Innovations in Regulation, Abatement and Monitoring"	University of Chicago Centre in Delhi	University of Chicago Centre in Delhi
14.	Dr. S. S. Pati, AES	17th – 19th July, 2017	Calibration, QA/QC, Inter-Laboratory Comparison and Proficiency Testing in Air	Central Pollution Control Board, New Delhi	Central Pollution Control Board, New Delhi
15.	Dr. (Mrs.) S. Mishra, AES	02nd – 04th August, 2017	Sampling and Analysis of Specific Pollutants (Metals, Ions, Pesticides, PAHs, BTEX / VOCs, PCBs & Dioxins / Furans	Central Pollution Control Board, New Delhi	Central Pollution Control Board, New Delhi
16.	Anupam Behera Sr. Env. Scientist	10th August, 2017	22nd National Oil Spill Disaster Contingency Plan (NOS-DCP) and Preparedness	Coast Guard Head Quarters, National Stadium Complex, New Delhi	Indian International Centre, New Delhi
17.	Dr. D. K.	19th August,	Conference on	CII,	Hotel Swosti

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
	Behera, SES	2017	Plastic Waste Management : An Environmental Concern & Entrepreneurship Development	Bhubaneswar & SPC Board, Bhubaneswar	Premium Ltd., Bhubaneswar
18.	Er. S. K. Sahu, Env. Engineer	19th August, 2017	Conference on Plastic Waste Management : An Environmental Concern & Entrepreneurship Development	CII, Bhubaneswar & SPC Board, Bhubaneswar	Hotel Swosti Premium Ltd., Bhubaneswar
19.	Er. S. K. Panda Env. Engineer	19th August, 2017	Conference on Plastic Waste Management : An Environmental Concern & Entrepreneurship Development	CII, Bhubaneswar & SPC Board, Bhubaneswar	Hotel Swosti Premium Ltd., Bhubaneswar
20.	Dr. D. K. Behera, SES	23rd August, 2017	Symposium on Bitumen & Green Technologies in Road Construction Industry	HPCL, Mumbai	Hotel May Fair, Bhubaneswar
21.	Dr. P. K. Prusty, SES	31st August, 2017	Stakeholders Conference for Development of NW-5	Indian Waterways Authority of India, Ministry of Shipping, Govt. of India, New Delhi	Hotel Mayfair Lagoon, Bhubaneswar
22.	D. Biswal, IFS Member Secretary	9th – 10th September, 2017	Regional Conference on "Waste Disposal and Management"	Hon'ble National Green Tribunal (NGT) Guwahati, Assam	Hon'ble National Green Tribunal (NGT) Guwahati, Assam
23.	Dr. P. K. Prusty, Sr. Env. Scientist	9th – 10th September, 2017	Regional Conference on "Waste Disposal and Management"	Hon'ble National Green Tribunal (NGT) Guwahati, Assam	Hon'ble National Green Tribunal (NGT) Guwahati, Assam
24.	Dr. D. K. Behera, Sr. Env. Scientist	9th – 10th September, 2017	Regional Conference on "Waste Disposal and Management"	Hon'ble National Green Tribunal (NGT) Guwahati, Assam	Hon'ble National Green Tribunal (NGT) Guwahati, Assam
25.	Dr. N. R. Sahoo, Sr. Env. Engineer	9th – 10th September, 2017	Regional Conference on "Waste Disposal and	Hon'ble National Green Tribunal (NGT)	Hon'ble National Green Tribunal

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
			Management"	Guwahati, Assam	(NGT) Guwahati, Assam
26.	Dr. A. K. Swar Sr. Env. Engineer	9th – 10th September, 2017	Regional Conference on "Waste Disposal and Management"	Hon'ble National Green Tribunal (NGT) Guwahati, Assam	Hon'ble National Green Tribunal (NGT) Guwahati, Assam
27.	B. P. Pattajoshi Sr. Law Officer	9th – 10th September, 2017	Regional Conference on "Waste Disposal and Management"	Hon'ble National Green Tribunal (NGT) Guwahati, Assam	Hon'ble National Green Tribunal (NGT) Guwahati, Assam
28.	H. B. Panigrahi, ES RO, Bhubaneswar	9th – 10th September, 2017	Regional Conference on "Waste Disposal and Management"	Hon'ble National Green Tribunal (NGT) Guwahati, Assam	Hon'ble National Green Tribunal (NGT) Guwahati, Assam
29.	Dr. P. K. Mohapatra, RO, Balasore	20th – 22nd September, 2017	Training Programme on Real Time Data Acquisition Transmission & Data Interpretation of Online Monitoring Systems (Ambient Emissions & Effluents)	Indian Institute of Public Administration, I. P. Estate, Ring Road, New Delhi-110002 sponsored by CPCB, New Delhi	Indian Institute of Public Administration, I. P. Estate, Ring Road, New Delhi-110002
30.	Er. Bijay Bhoi, AEE, RO, Angul	20th – 22nd September, 2017	Training Programme on Real Time Data Acquisition Transmission & Data Interpretation of Online Monitoring Systems (Ambient Emissions & Effluents)	Indian Institute of Public Administration, I. P. Estate, Ring Road, New Delhi-110002 sponsored by CPCB, New Delhi	Indian Institute of Public Administration, I. P. Estate, Ring Road, New Delhi-110002
31.	Dr. B. N. Bhol, Sr. Env. Scientist	20th September, 2017	Training Programme on National Environmental Health Profile	MoEF&CC, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi	Brahmaputra Conference Hall, 1st Floor, Vayu Wing, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi
32.	Dr. P. K. Prusty, Sr. Env. Scientist	21st – 22nd September, 2017	National Workshop on "Urban Climate : Science, Impacts	Indian Institute of Technology Bhubaneswar	Indian Institute of Technology Bhubaneswar

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
			and Adaptation"		
33.	Dr. S. P. Samantaray, Env. Scientist	09th – 13th October, 2017	Training Programme on "Integrated Waste Management – Municipal Waste, Plastic Waste, Bio-Medical Waste, Bio Composting, Landfill Gas Management & Control and Waste to Energy with Field Visit"	International Institute of Waste Management, Bangalore & sponsored by CPCB, New Delhi	International Institute of Waste Management, Bangalore
34.	Dr. C. P. Das, Env. Scientist	09th – 13th October, 2017	Training Programme on "Integrated Waste Management – Municipal Waste, Plastic Waste, Bio-Medical Waste, Bio Composting, Landfill Gas Management & Control and Waste to Energy with Field Visit"	International Institute of Waste Management, Bangalore & sponsored by CPCB, New Delhi	International Institute of Waste Management, Bangalore
35.	Dr. S.K. Mohanty, DES	12th - 14th October, 2017	Training programme on " Biological Monitoring, Analysis & testing (Microbiological, Bioassay & Biomonitoring), SOPs, Data interpretation & Quality Assurance"	Dept. of Environment Studies, Panjab University, Chandigarh – 160014 & sponsored by CPCB, New Delhi	Panjab University, Chandigarh
36.	D. Biswal, IFS Member Secretary	3rd – 4th November, 2017	World Conference on Environment	National Green Tribunal (NGT) in association with UNEP, the Asian Development Bank, the MoEF&CC and Global Institute for Environmental Justice	Mavlankar Auditorium & Manekshaw Centre, New Delhi
37.	Dr. N. R. Sahoo, Sr. Env. Engineer	3rd – 4th November, 2017	World Conference on Environment	National Green Tribunal (NGT) in association with UNEP, the Asian Development Bank, the MoEF&CC and Global Institute for Environmental	Mavlankar Auditorium & Manekshaw Centre, New Delhi

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
				Justice	
38.	C. R. Nayak, Sr. Env. Scientist	3rd – 4th November, 2017	World Conference on Environment	National Green Tribunal (NGT) in association with UNEP, the Asian Development Bank, the MoEF&CC and Global Institute for Environmental Justice	Mavlankar Auditorium & Manekshaw Centre, New Delhi
39.	B. P. Pattajoshi, Sr. Law Officer	3rd – 4th November, 2017	World Conference on Environment	National Green Tribunal (NGT) in association with UNEP, the Asian Development Bank, the MoEF&CC and Global Institute for Environmental Justice	Mavlankar Auditorium & Manekshaw Centre, New Delhi
40.	C. R. Nayak, Sr. Env. Scientist	21st November, 2017	Workshop on "Processing and Use of Construction & Demolition Waste" Theme : Deconstruction & in-situ processing for Ecology and Economics	Building Materials & Technology Promotion Council, Ministry of Housing & Urban Affairs, Govt. of India, Core 5A, 1st Floor, India Habitat Centre, Lodi Road, New Delhi-110003	Gulmohar, India Habitat Centre, Lodi Road, New Delhi.
41.	Er. R. K. Ekka, DEE Regional Office, Paradeep	21st - 25th November, 2017	Occupational Health & Safety Assessment System (OHSAS) 18001: 2007 and Risk Management	National Institute of Occupational Health, P.B. No. 2031, Meghani Nagar, Ahmedabad & sponsored by CPCB, New Delhi	National Institute of Occupational Health, P.B. No. 2031, Meghani Nagar, Ahmedabad
42.	Dr. D. K. Behera, Sr. Env. Scientist(L-I)	23rd & 24th November, 2017	Waste Management Summit 2017 & Conference on Alternate Fuel & Raw Material Utilisation	Confederation of Indian Industry, CII-Sohrabji Godrej Green Business Centre, Hyderabad	Hotel Le Meridien, Bengaluru
43.	Er. B. K. Behera,	27th & 29th	Clean Development	EPTRI,	EPTRI,

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
	Sr. Env. Engineer	November, 2017	Mechanism (CDM): CDM Project Implementation for Industrial Sector, Energy Sector, Mining Sector and Carbon Trading	Hyderabad & sponsored by CPCB, New Delhi	Hyderabad
44.	Dr. P. K. Prusty, Sr. Env. Scientist	28th & 29th November, 2017	National Workshop on "Environmental Priorities and Challenges with Special Focus on Eastern and North-Eastern Regions"	CSIR-National Environmental Engineering Research Institute, Kolkata Zonal Laboratory, i-8, Sector-C, EKDP, PO: EM By Pass, Kolkata-700107, West Bengal	The Stadel, Kolkata
45.	Er. N. R. Sahoo, Sr. Env. Engineer	29th November to 1st December, 2017	Training programme, "Air Quality Management – Plans using decision Support System UrbAir India"	TERI University, 10, Institutional Area, Vasant Kunj, New Delhi – 110 070 & sponsored by CPCB, New Delhi	TERI University, 10, Institutional Area, Vasant Kunj, New Delhi – 110 070
46.	Dr. M. Mahaling, ES Regional Officer, Paradeep	29th November to 1st December, 2017	Training programme, "Air Quality Management – Plans using decision Support System Urb Air India"	TERI University, 10, Institutional Area, Vasant Kunj, New Delhi – 110 070 & sponsored by CPCB, New Delhi	TERI University, 10, Institutional Area, Vasant Kunj, New Delhi – 110 070
47.	Dr. Sohan Glri, ES, Regional Officer, Cuttack	11th – 15th December, 2017	One week specialized course on "Cleaner Brick Production"	Centre for Science and Environment, 41, Tughlakabad Institutional Area, New Delhi-110062	Centre for Science and Environment, 41, Tughlakabad Institutional Area, New Delhi-110062
48.	Dr. P. K. Prusty, Sr. Env. Scientist (L-I)	18th & 22th December, 2017	Programme on Project Formulation-Climate Change Mitigation and Adaptation for NGOs and State Government Officials	Bankers Institute of Rural Development, Sector-H, LDA Colony, Kanpur Road, Lucknow-226012	Hotel Fortune Murali Park, Vijayawada, Murali Fortune, Andhra Pradesh
49.	Dr. D. K. Behera, Sr. Env. Scientist(L-I)	21st – 22nd December, 2017	Clean Air Asia's Workshop on "Capacity Building for Air Action Plans in Indian Cities"	Clean Air Asia India Office, Basement C-3, Green Part Extension, New Delhi-110016	Hotel Excellency, Bhubaneswar
50.	Dr. B. N. Bhol,	21st – 22nd	Clean Air Asia's	Clean Air Asia	Hotel

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
	Sr. Env. Scientist (L-I)	December, 2017	Workshop on "Capacity Building for Air Action Plans in Indian Cities"	India Office,Basement C-3, Green Part Extension, New Delhi-110016	Excellency, Bhubaneswar
51.	Dr. Mukesh Mahaling ES, Regional Offcier, Paradeep	22nd – 23rd December, 2017	Pollution Response Seminar / Training / Mock Drill - 2017	Indian Coast Guard, Paradeep	Indian Coast Guard, Paradeep
52.	Dr. D. K. Behera, Sr. Env. Scientist(L-I) (As Resource Person)	8th to 9th January, 2018	Training Programme on " Environmetnal and Forest Statistics"	Regional Institute of Planning, Applied Economics & Statics, Odisha	Swosti Grand, Bhubaneswar
53.	Dr. D. K. Behera, Sr. Env. Scientist(L-I)	9th January, 2018	By-Products Workshop, 2018	Tata Steel, Bhubaneswar	Mayfair Lagoon, Bhubaneswar
54.	Dr. D. K. Behera, Sr. Env. Scientist(L-I)	19th January, 2018	13th State Level Competition on Best Practices in Environment, Safety and Health (ESH)	CII, Bhubaneswar	Hotel Kaling Ashok, Bhubaneswar
55.	Dr. D. K. Behera Sr. Env. Scientist(L-I)	22nd – 23rd January, 2017	Workshop on Resource Efficiency and Circular Economy' under the Resource Efficiency Strategy	European Union – Resource Efficiency Initiative (EU-REI), New Delhi	Hotel Mayfair, Bhubaneswar
56.	Dr. D. K. Behera Sr. Env. Scientist(L-I) (As Resource Person)	6th February, 2018	Environmental Project Clearance, Functionining of Pollution Control Board & CRZ & Other related Environmental Laws	Revenue Officers' Training Institute, Gorhapatna, Bhubaneswar	Revenue Officers' Training Institute, Gorhapatna, Bhubaneswar
57.	Dr. D. K. Behera Sr. Env. Scientist(L-I) (As Resource Person)	15th February, 2018	E-waste Handling and Management	MeITY & NIC	NIC, Bhubaneswar
58.	Dr. D. K. Behera Sr. Env. Scientist(L-I) (As Resource Person)	28th February, 2018	Solid Waste Management & Rules Implementation	AIILSG, Bhubaneswar	Hotel Best Inn, Nayapalli, Bhubaneswar
59.	Dr. D. K. Behera Sr. Env. Scientist(L-I) (As Resource	7th March, 2018	Consultation Meet on Better Air Quality for Indian Cities – Role of Innovation	Clean Air Asia, New Delhi	Clean Air Asia, New Delhi

Sl. No.	Name (Sh/Shri) & Designation	Date	Title of the Training / Workshop / Seminar	Conducted by	Venue
	Person)		and Cutting-edge Technology		
60.	Dr. N. R. Sahoo, Sr. Env. Engineer (L-I)	12th to 13th March, 2018	Training Programme on "Project Formulation – Climate Change Mitigation and Adaptation for Climate Change"	National Bank for Agriculture and Rural Development, 'Ankur', 2/1, Nayapalli, Civic Centre, BBSR	National Bank for Agriculture and Rural Development, 'Ankur', 2/1, Nayapalli, Civic Centre, BBSR
61.	Dr. D. K. Behera Sr. Env. Scientist(L-I)	15th & 16th March, 2018	7th Edition Fly Ash Utilisation 2018 – Conference – Expo – Awards	Mission Energy Foundation, New Delhi	Mission Energy Foundation, New Delhi
62.	Dr. D. K. Behera Sr. Env. Scientist(L-I) (As Resource Person)	26th March, 2018	Mining and Industrial Solid Wastes : As Resource in Manufacture of Building Bricks	CSIR-IMMT, Bhubaneswar	CSIR-IMMT, Bhubaneswar
63.	Dr. D. K. Behera Sr. Env. Scientist(L-I) (As Resource Person)	31st March, 2018	Seminar on "Green Energy Initiatives-Creation of an Entrepreneurship	Trident Academy of Technology, Bhubaneswar	Trident Academy of Technology, Bhubaneswar

8.12 OTHER ACTIVITIES

8.12.1. Training on Pollution Control and Environmental Protection

- District level one day training programme on Bio-medical waste management was conducted by RO, Rourkela at District Head Quarter Hospital, Sundargarh on 06.10.2017
- Workshop-cum-seminar on Environmental Pollution and remedies was conducted by RO, Paradeep on 24.02.2018.
- A Seminar was coordinated by RO, Angul on Fly Ash Utilization at M/s. Nava Bharat Ventures Ltd., Dhenkanal on 12.03.2018.

8.12.2 Human Resource Development

- The Board has imparted Training on "Water/Air quality parameters monitoring & analysis and impact of pollutants on Human Health" to 176 M.Sc students of KIIMS and All India Institute of Medical Science, Bhubaneswar.
- 597 Traffic Police personnel from various districts of Odisha were imparted training on "Vehicular Pollution and its effect on Human Health" at Urban Police of Traffic Training Institute, Laxmisagar, Bhubaneswar.
- Environmental Science Students (11 nos.) of Utkal University were guided for their Dissertation work in Central Laboratory.

8.12.3 Observation of Important Days

❖ *Earth Day*

The earth day is being celeberated on 22nd April, 2017by Regional Offices in collaboration with District Level Environment Committee.

❖ *World Environment Day*

All Regional Offices of the Board celebrated the World Environment Day on 5th June,2017 by conducting street rallies, meetings, painting & debate competitions and plantations. The local people, responsible citizens, college/ school students and representatives from print & electronic media attended the programme.The photographs of some of the events and activities are illustrated below :

OBSERVATION OF WORLD ENVIRONMENT DAY BY REGIONAL OFFICES OF SPCB	
	
RAYAGADA	**BERHAMPUR**
	
ROURKELA	**KEONJHAR**
	
BHUBANESWAR	**KALINGANAGAR**
	
PARADEEP	**BALASORE**

	
ANGUL	**SAMBALPUR**
	
CUTTACK	**JHARSUGUDA**

❖ *34th Foundation Day*

➢ The 34th Foundation Day of the Board was observed on 14th September, 2017 at Jayadev Bhawan, Bhubaneswar. The function was presided by Sri R. Balakrishnan, IAS, Addl. Chief Secretary-cum-Development Commissioner, Govt. of Odisha & Chairman, State Pollution Control Board, Odisha and Sri S.C.Mohapatra, IAS, Principal Secretary to Govt. of Odisha was the Guest of Honor. Sri D. Biswal, IFS, Spl. Secretary to Govt. of Odisha & Member Secretary, State Pollution Control Board, Odisha delivered the key note address on the occasion. Dr. Sachidananda Satapathy, Former Director, Climate Change, MoEF, New Delhi delivered Prof. M. K. Rout Memorial Lecture on "Climate Change Smart Choice : Responding to Challenges of Climate Change" *on* the occasion.

	
Distinguished Guests On Dias	**Prof. M.K. Rout Memorial Lecture by Dr. Sachidananda Satapathy, Former Director, Climate Change, MOEF, New Delhi**

	
Release of Book on Monitoring Protocol of Coastal Environment(Paradeep-Gahirmatha-Dhamra Coastal Stretch)	**Release of News Letter 'Paribesh Samachar'(April-June2017)**

- The Board has instituted pollution control excellence/appreciation awards to encourage the industries/mines for adoption of adequate pollution control. The list of awardees for this year is as follows:

1. Industries : Pollution Control Excellence Award - M/s. Aditya Aluminium Ltd., Lapanga, Dist: Sambalpur.

   Pollution Control Appreciation Award – M/s. TATA Sponge Iron Limited, Joda, Keonjhar.

2. Mines: Pollution Control Excellence Award - M/s. Joda East Iron Mines of M/s. Tata Steel Limited, Joda, Keonjhar.

   Pollution Control Appreciation Award - M/s. KJST (Jaldih) Iron, Manganese & Bauxite Mine of S. N. Mohanty, Sundargarh.

Pollution Control Excellence Awards in Industries & Mines Categories	
	
M/S. Aditya Aluminium Ltd., Lapanga, Dist: Sambalpur.	M/S. Joda East Iron Mines of M/S. Tata Steel Limited, Joda, Keonjhar.

Pollution Control Appreciation Awards in Industries & Mines categories	
	
M/s. Tata Sponge Iron Limited, Joda,	M/s. KJST (Jaldih) Iron, Manganese & Bauxite

Keonjhar.	Mine of S. N. Mohanty, Sundargarh

❖ International Coastal Clean-Up Day

The International Coastal Clean-up Day was observed by the Board on the Sea Beach, Puri, Konark, Chandipur, Gopalpur & Paradeep on 16th September 2017 for creation of mass awareness on the protection and management of coastal environment involving District Administration, different NGOs and volunteers etc.

<table>
<tr><th colspan="2">Observation of International Coastal Clean-up Day by SPC Board</th></tr>
<tr><td> 
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<tr><td>Puri Sea Beach</td><td>Konark Sea Beach</td></tr>
<tr><td> 
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<tr><td>Gopalpur Sea Beach</td><td>Paradeep Sea Beach</td></tr>
<tr><td>  </td><td>  </td></tr>
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Chandipur Sea Beach

❖ NATIONAL POLLUTION PREVENTION DAY

The National Pollution Prevention Day was observed by the Board through Regional Offices on 2nd December 2017 by conducting mass rally, meeting, workshop etc. for creation of mass awareness on pollution prevention and protection of environment, involving different NGOs and volunteers.

National Pollution Prevention day Celebrated by Regional Office, Angul

National Pollution Prevention day Celebrated by Regional Office, Paradeep

8.13 AWARENESS ACTIVITES

The Board has released several advertisements related to awareness on Environment Protection, Pollution Control etc. in different print and electronic media.

- During Deepawali, mobile vehicles with staff were moving throughout the State by Regional offices for awareness on effect of crackers on noise pollution and monitoring of the noise level was made during the night time .
- During Holi festival, Board's representatives were moving throughout the State for awareness on celebration of safe Holi using natural colours.A squad constituting District Administration with Regional offices were making raid at color venders and retailers to ban artificial/ chemical colours.
- Regional Office, Angul and Sambalpur have made awareness campaign on prohibition of raw coal as fuel in road side Dhabba and Hotels.
- Awareness meetings on Plastic Waste Management and Bio-medical Waste Management were conducted by Regional Office, Paradeep on 16.02.2018 and 14.03.2018.

8.14 PUBLICATIONS

The Board has published the following Book & Reports during April, 2017 to March, 2018.

- Three volumes of Newsletters "Paribesh Samachar" i.e. (, April-June, 2017 & July-December, 2017 & January–March. 2018).
- Booklet with information of LEED criteria certification from the

prestigious U.S. Green Building Council (USGBC) achieved by the ICZMP.

- Book on Monitoring Protocol of Coastal Envirnment (Paradeep-Gahirmatha- Dhamra Coastal stretch) of Odisha in Bay of Bengal.

8.15 EMPANELLED ENVIRONMENTAL CONSULTANTS

In the year 2017, total 15 nos. of consultants were empanelled as environmental consultant with the Board out of which 11 consultants were empanelled under 'A' Category and 4 consultants were empanelled under 'B' category. The details are given in Table-8.8

Table-8.8 List of Environmental Consultants with State Pollultion Control Board, Odisha

Category-A

Sl. No	Name of the Consultant	Category	Validity Period
1	**M/s. Envomin Consultant (P) Ltd.,** Plot No.- 58, Kharavela Nagar, Bhubaneswar -751001 **Lab. Address** Plot No- 3054/9625, Pandra, BBSR – 10 Ph. No-0674-2394518 E-mail : envomin@yahoo.com	A	**25.01.2017 to 24.01.2020**
2	**M/s. Earth and Environment** Plot No- 652, Ekamra Villa, IRC Village, Nayapalli – 751015, Ph.: 0674-2720310 (O), 9437044031(M) E-mail: earth_environment2008@yahoo.com	A	**16.02.2017 to 15.02.2020**
3	**Vimta Labs ltd.** 142, IDA, Phase - 2, Cherlapally, Hyderabad-500 051 Ph. No-91-40-2726 4141, 2726 4444, E-mail : janardhan@vimta.com /vimtahq@vimta.com	A	**03.06.2017 to 02.06.2020**
4	**M/s Mitra S.K Pvt. Ltd,** Building No-P-48, Udayan Industrial Estate, 3,Pagladanga Road, Kolkata, West Bengal-700015 Ph. No – 033-40143000/22650006/22650007 E-mail – info@mitrask.com	A	**24.07.2017 to 23.07.2020**
5	**M/s SGS India Pvt ltd.** CS Plot No-512(P), Mouza-Hanspukuria, Diamond Harbour Road, PO:Joka Dist-South-24 Parganas , Kolkata- 700104 Ph. No – (033)65009334/65009335 E-mail – sgs.india@sgs.com	A	**04.08.2017 to 03.08.2020**
6	**M/s Cleenviron Pvt. Ltd.** D-124, Koelnagar, Rourkela Dist- Sundargarh- 769014 Ph. No:-0661-2475746 Email Id:-cleenviron@gmail.com	*A*	***12.09.2017 to 11.09.2020***

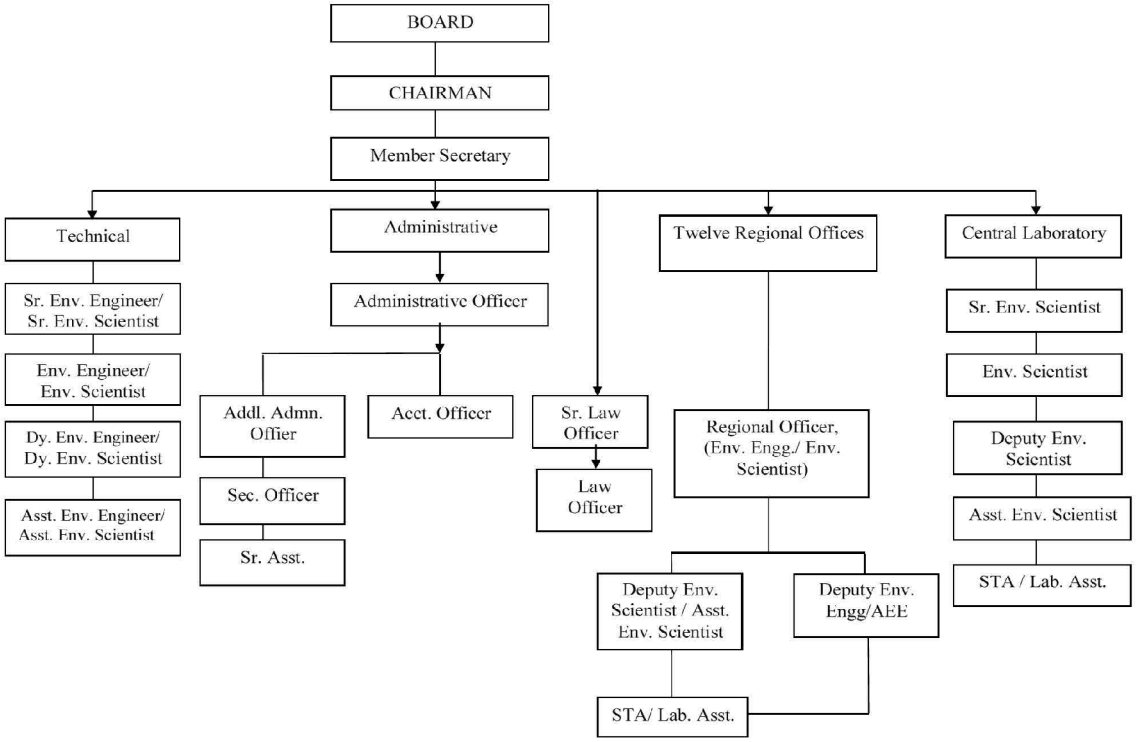
7	**M/s Maharashtra Enviro Power Ltd.,** Plot No-CHW-01, Butibori Industrial Estate Near Bharat Petroleum Refilling Plant Butibori, Nagpur-441122, Maharashtra Ph. No -08805947186/9923037416 E-mail –dyaneshwar.battalwar@smsl.co.in Email Id:-battalward@smsl.co.in	A	**16.09.2017 to 15.09.2020**
8	**M/s Center for Envotech and Management Consultancy (P) Ltd.** Ph. No- 800/1274, Johal, Pahal Bhubaneswar , Odisha Phone No:- – 0674- 2360344 E-mail –cemc. consultancy@ yahoo.com	A	**27.10.2017 to 26.10.2020**
9	**M/s Global Tech Enviro Experts Pvt. Ltd,** Near Tarini Temple, Serenda, Bhardra Sahi, Barbil-758035 Ph. No:-9937910105 Email Id:-globalexperts@rediffmail.com	A	***27.10.2017 to 26.10.2020***
10	**M/. Edward Food Research & Analysis Centre Ltd., (EFRAC),** Sagar Estate 4th Floor,2 Clive Ghat Street Kolkata-700001 Ph. No:-033-71122849 Email-efracho@efrac.org	A	***29-11-2017 to 28-11-2020***
11	**M/S Visiontek Consultancy Services Pvt. Ltd.** Plot No. - 108, District Centre, Chandrasekharpur, Bhubaneswar – 751016 *Ph. No:-* – 0674- 6600800-39 Email : visiontekin@gmail.com visiontekin@yahoo.co.in	A	***18.12.2017 to 17.12.2020***

Category-B

Sl. No	Name of the Consultant	Category	Validity Period
1	**M/s Netel (India) Limited** W-303, Pipeline Road, Rabale MIDC, TTC Industrial Area, Navi Mumbai - 400701 Ph : 022-32018854/32560291 E-mail : ems@netel-india.com	B	**03.04.2017 to 02.04.2020**
2	**M/s Qualissure Laboratory Services** Prantick Pally, 45/361 Bose Pukur Road, Kolkata – 700107 Ph. No – 09831287086 E-mail – qualissure@gmail.com	B	**29.07.2017 to 28.07.2020**
3	**M/s. S.M. Consultant,** S.M. Tower, Plot No- 130, Mancheswar Ind. Estate, Rasulgarh, Mancheswar - 751010 E-mail:-support@smcindia.com Ph. No-0674-2580687	B	**30.08.2017 - 29.08.2020**
4	**M/s. Jindal Steel & Power Ltd.** P.B No – 86, Barbil-Joda High Way Barbil – 758035 **Ph. No:-916767249817** Website:-www.jindalsteelpower.com	B	***27.10.2017 to 26.10.2020***

ANNEXURE-I

ORGANIZATIONAL CHART



ANNEXURE-II

RATE CHART FOR SAMPLING AND ANALYSIS OF ENVIRONMENTAL SAMPLES
(Office Order No. 24287 dated 07.11.2008)

A. SAMPLING CHARGES

(I) Sampling charges for Ambient Air/ Fugitive emission samples

Sl. No.	Type of sampling	Charges in Rs.
1.	Sampling (upto each 8 hrs) for suspended particulate matter and gaseous pollutants	2000.00
2.	Sampling (24 hrs) for suspended particulate matter and gaseous pollutants	6000.00
3	Sampling of volatile organic compounds (VOCs) / Benzene Toluene Xylene (BTX)	2000.00
4	Sampling of Poly Aromatic Hydrocarbons (PAHs)	2500.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(II) Source Emission Monitoring / Sampling Charges

Sl. No.	Type of Sampling	Charges in Rs.
(a)	Sampling/ measurement of velocity, flow rate, temperature and molecular weight of Flue Gas (each specific location/ each sample in duplicate for the mentioned parameter)	5500.00
(b)	Sampling of SO_2 / NO_2	2000.00
(c)	Sampling of PAHs	3000.00
(d)	Sampling of VOCs / BTX	3500.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(III) Noise Monitoring

Type of Monitoring	Charges in Rs.
First Monitoring	4000.00
Each Subsequent Monitoring within same premises	2000.00
For 08 hours Continuous Monitoring or more in a day	10,000.00

Note: (i) Transportation charges will be separate as per actual basis.

(IV) SAMPLING CHARGES FOR WATER & WASTEWATER SAMPLES

Sl. No.	Type of sampling	Charges in Rs.
1.	GRAB SAMPLING:	
	1) Grab sampling/ samples/ place	550.00
	2) For every additional Grab sampling / same place (at same point)	250.00
2.	COMPOSITE SAMPLING:	
	1) Composite sampling/source/place upto 8 hrs.	1000.00
	-do- upto16 hrs.	2000.00
	-do- upto 24 hrs.	3000.00
	2) For every additional composite sampling/same place but different source upto 8 hrs.	550.00
	-do- upto 16 hrs	1100.00
	-do- upto 24 hrs	1650.00
3.	Flow rate measurement/ source	
	-do- - Once	400.00
	- Every additional	150.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(V) Sampling charges for Soil samples

Type of Sampling	Charges in Rs.
Grab sampling/ sample/ place	600.00
For additional Grab sampling / same place	300.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

(VI) Hazardous Waste Sample collection charges at the premises of Industry/ Import site/ Disposal site

Type	Charges in Rs.
Integrated sample collection charges	1000.00

Note: (i) Transportation charges will be separate as per actual basis.
(ii) Sample analysis charges of respective parameters are separate as per list.

B. ANALYSIS CHARGES

1. Analysis charges of Ambient Air/ Fugitive Emission Samples

Sl. No	Parameters (Air)	Analysis charges per sample in Rs.
1.	Ammonia	600.00
2.	Analysis using dragger (per tube)	400.00
3.	Benzene, Toluene, Xylene (BTX)	1000.00
4.	Carbon Monoxide	600.00
5.	Chlorine	600.00
6.	Fluoride (gaseous)	600.00
7.	Fluoride (particulate)	600.00
8.	Hydrogen Chloride	600.00
9.	Hydrogen Sulphide	600.00
10.	Lead & Other Metals (per metal)	As mentioned in respective group at clause 5.0
11.	NO_2	600.00
12.	Ozone	1000.00
13.	Poly Aromatic Hydrocarbons (PAHs)	As mentioned in respective group at clause 5.0
14.	Suspended Particulate Matter (SPM)	600.00
15.	Particulate Matter ($PM_{2.5}$)	1000.00
16.	Respirable Suspended Particulate Matter (PM_{10})	600.00
17.	Sulphur Dioxide	600.00
18.	Volatile Organic Carbon	2000.00
19.	Trace metals on air, filter paper using ED-XRF Aluminium, Antimony, Arsenic, Barium, Bromine, Cadmium, Calcium, Cesium, Chlorine, Chromium, Cobalt, Copper, Gallium, Germanium, Gold, Iodine, Iron, Lanthanum, Lead, Magnesium, Manganese, Molybdenum, Nickel, Palladium, Phosphorous, Potassium, Rubidium, Rutherfordium, Selenium, Silicon, Silver, Sodium, Strontium, Sulphur, Tellurium, Tin, Titanium, Tungsten, Vanadium, Ytterbium and Zinc	3000.00 Per filter paper
20.	Water extractable ions in air particulate matter using Ion Chromatograph (IC) i) Processing / pretreatment charge per sample (filter paper) ii) Cations (Na^+, NH_4^+, K^+, Ca^{++}, & Mg^{++}) and Anions (F^-, Br^-, Cl^-, NO_3^-, NO_2^-, SO_4^{--} & PO_4^{---})	300.00 1200.00 (for 12 ions)
21.	Organic and Elemental Carbon (OC/EC) on quartz filter paper	2000.00

2. Analysis charges for Source Emission Parameters

Sl. No.	Parameters	Analysis charges per test in Rs.
1	Acid mist	600.00
2	Ammonia	600.00
3	Carbon Monoxide	600.00
4	Chlorine	600.00
5	Fluoride (Gaseous)	600.00
6	Fluorides (Particulate)	600.00
7	Hydrogen Chloride	600.00
8	Hydrogen Sulphide	600.00
9	Oxides of Nitrogen	600.00
10	Oxygen	500.00
11	Polycyclic Aromatic Hydrocarbons (Particulate)	As mentioned in respective group at clause 5.0
12	Suspended particulate matter	600.00
13	Sulphur Dioxide	600.00
14	Benzene Toluene Xylene (BTX)	1500.00
15	Volatile Organic Compounds (VOC)	3000.00

3. Ambient Air Quality Monitoring using on-line monitoring instruments by Mobile Van

Parameters	Charges in Rs.
PM_{10}, $PM_{2.5}$, SO_2, NO_x, SPM, CO along with Meteorological data viz. temperature, Humidity, wind speed, wind direction	Rs.3,500/hour (minimum charges Rs.15,000/-) + Rs.50.00/km run of the van for 24 hours monitoring.

4. Auto Exhaust Monitoring – One time checking of Vehicular Exhaust

Sl. No.	Type of vehicles	Charges in Rs. (including cost of the computerized photo)
1	2 & 3 wheelers	40.00
2	Light motor vehicles	60.00
3	Medium and heavy motor vehicles	100.00

5. Analysis Charges of Water and Wastewater Samples

Sl. No	Parameters	Analysis charges per test in Rs.
	PHYSICAL PARAMETERS	
1.	Conductivity	60.00
2.	Odour	60.00
3.	Sludge Volume index (S.V.I)	200.00
4.	Solids (dissolved)	100.00
5.	Solids (fixed)	150.00
6.	Solid (Volatile)	150.00
7.	Suspended Solids	100.00
8.	Temperature	60.00
9.	Total Solids	100.00
10.	Turbidity	60.00
11.	Velocity of Flow (Current Meter)	200.00
12.	Velocity of Flow (other)	550.00
	CHEMICAL PARAMETERS	
1.	Acidity	100.00
2.	Alkalinity	100.00
3.	Ammonical Nitrogen	200.00
4.	Bicarbonate	100.00
5.	Biochemical Oxygen Demand (BOD)	600.00
6.	Bromide	100.00
7.	Calcium (Titrimetric)	100.00
8.	Carbon dioxide	100.00
9.	Carbonate	100.00
10.	Chloride	100.00
11.	Chlorine Demand	200.00
12.	Chlorine Residual	100.00
13.	Chemical Oxygen Demand (COD)	350.00
14.	Colour	40.00
15.	Cyanide	350.00
16.	Detergents	200.00
17.	Dissolved Oxygen (DO)	100.00
18.	Fluoride	200.00
19.	Free ammonia	260.00
20.	H. Acid	350.00
21.	Hardness (Calcium)	100.00
22.	Hardness (Total)	100.00
23.	Iodide	100.00
24.	Nitrite – Nitrogen	200.00
25.	Nitrate – Nitrogen	200.00
26.	Percent Sodium	600.00
27.	Permanganate Value	200.00

Sl. No	Parameters	Analysis charges per test in Rs.
28.	pH	60.00
29.	Phosphate (Ortho)	200.00
30.	Phosphate (Total)	350.00
32.	Salinity	100.00
33.	Sodium Absorption Ratio (SAR)	600.00
35.	Settleable Solids	100.00
36.	Silica	200.00
37.	Sulphate	150.00
38.	Sulphide	200.00
39.	Sulphite	250.00
40.	Total Kjeldahl Nitrogen (TKN)	350.00
41.	Urea Nitrogen	350.00
42.	Cations (Na^+, NH_4^+, K^+, Ca^{++}, & Mg^{++}) and Anions (F^-, Br^-, Cl^-, NO_3^-, NO_2^-, SO_4^{--}& PO_4^{---}) in surface and ground water samples using Ion Chromatograph	1200.00 (for 12 ions)
Metals		
	Processing / pre treatment charge per sample	500.00
1.	Aluminium	300.00
2.	Antimony	300.00
3.	Arsenic	300.00
4.	Barium	300.00
5.	Beryllium	300.00
6.	Boron	300.00
7.	Cadmium	300.00
8.	Chromium Hexavalent	200.00
9.	Chromium Total	300.00
10.	Cobalt	300.00
11.	Copper	300.00
12.	Iron	300.00
13.	Lead	300.00
14.	Magnesium	200.00
15.	Manganese	300.00
16.	Mercury (Processing and Analysis)	800.00
17.	Molybdenum	300.00
18.	Nickel	300.00
19.	Potassium	200.00
20.	Selenium	300.00
21.	Silver	300.00
22.	Sodium	200.00
23.	Strontium	300.00
24.	Tin	300.00
25.	Vanadium	300.00
26.	Zinc	300.00

Sl. No	Parameters	Analysis charges per test in Rs.
Organo Chlorine Pesticides (OCPs)		
	Processing / pre treatment charge per sample	1000.00
1.	Aldrine	400.00
2.	Dicofol	400.00
3	Dleldrin	400.00
4	Endosulfan-1	400.00
5	Endosulfan-2	400.00
6	Endosulfan-Sulfate	400.00
7	Heptachlor	400.00
8	Hexachlorobenzene (HCB)	400.00
9	Methoxychlor	400.00
10	o,p DDT	400.00
11	p,p'- DDD	400.00
12	p,p'- DDT	400.00
13	p'p DDE	400.00
14	α-HCH	400.00
15	β-HCH	400.00
16	γ-HCH	400.00
17	δ-HCH	400.00
Organo Phosphorous Pesticides (OPPs)		
	Processing / pre treatment charge per sample	1000.00
18	Chlorpyriphos	400.00
19	Dimethoate	400.00
20	Ethion	400.00
21	Malathion	400.00
22	Monocrotophos	400.00
23	Parathion-methyl	400.00
24	Phorate	400.00
25	Phosphamidon	400.00
26	Profenophos	400.00
27	Quinalphos	400.00
Synthetic Pyrethroids (SPs)		
	Processing / pre treatment charge per sample	1000.00
28	Deltamethrin	400.00
29	Fenpropethrin	400.00
30	Fenvalerate	400.00
31	α-Cypermethrin	400.00
32	β-Cyfluthrin	400.00
33	γ-Cyhalothrin	400.00

Sl. No	Parameters	Analysis charges per test in Rs.
Herbicides		
	Processing / pre treatment charge per sample	1000.00
34	Alachlor	400.00
35	Butachlor	400.00
36	Fluchloralin	400.00
37	Pendimethalin	400.00
Polycyclic Aromatic Hydrocarbons (PAHs)		
	Processing / pre treatment charge per sample	1000.00
38	Polycyclic Aromatic Hydrocarbon	750.00
39	Acenaphthene	400.00
40	Acenaphthylene	400.00
41	Anthracene	400.00
42	Benzo(a)anthracene	400.00
43	Benzo(a)Pyrene	400.00
44	Benzo(b)fluoranthene	400.00
45	Benzo(e)Pyrene	400.00
46	Benzo(g,h,i) Perylene	400.00
47	Benzo(k)fluoranthene	400.00
48	Chrysene	400.00
49	Dibenzo(a,h)anthracene	400.00
50	Fluoranthene	400.00
51	Fluorane	400.00
52	Indeno (1,2,3-cd)pyrene	400.00
53	Naphthalene	400.00
54	Perylene	400.00
55	Phenanthrene	400.00
56	Pyrene	400.00
Polychlorinated Biphenyls (PCBs)		
	Processing / pre treatment charge per sample	1000.00
57	Aroclor 1232	400.00
58	Aroclor 1242	400.00
59	Aroclor 1248	400.00
60	Aroclor 1254	400.00
61	Aroclor 1260	400.00
62	Aroclor 1262	400.00

Sl. No	Parameters	Analysis charges per test in Rs.
Trihalomethane (THM)		
	Processing / pre treatment charge per sample	800.00
63	Bromodichloromethane	400.00
64	Bromoform	400.00
65	Chloroform	400.00
66	Dibromochloromethane	400.00
Other Organic Parameters		
67	Adsorbable Organic halogens (AOX)	2000.00
68	Tanin/ Lignin	350.00
69	Oil and Grease	200.00
70	Phenol	200.00
71	Total Organic carbon (TOC)	500.00
72	Volatile organic acids	350.00
BIOLOGICAL TEST		
1.	Bacteriological Sample Collection	200.00
2.	Benthic Organism Identification and Count (each sample)	600.00
3.	Benthic Organism Sample collection	1000.00
4.	Chlorophyll Estimation	600.00
5.	E. Coli (MFT technique)	400.00
6.	E. Coli (MPN technique)	350.00
7.	Fecal Coliform (MFT technique)	400.00
8.	Fecal Coliform (MPN technique)	350.00
9.	Fecal Streptococci (MFT technique)	450.00
10.	Fecal Streptococci (MPN technique)	400.00
11.	Plankton (sample collection)	250.00
12.	Plankton (Phytoplankton) count	600.00
13.	Plankton (Zooplankton) count	600.00
14.	Standard Plate Count	200.00
15.	Total Coliform (MFT technique)	400.00
16.	Total Coliform (MPN technique)	350.00
17.	Total Plate Count	350.00
18.	Toxicological Bio-assay (LC_{50})	2800.00
19.	Toxicological –Dimensionless toxicity test	1600.00

Note:

1. Sampling charges for water and waste water samples are separate as specified in Clause A(IV), but subject to minimum of Rs.700/- irrespective of number of samples.
2. Transportation charges are separate on actual basis.

6.Analysis charges of Soil/ Sludge/ Sediment/ Solid waste/ Solid samples

Sl. No.	Parameters	Analysis charges per test in Rs.
1	Ammonia	300.00
2	Bicarbonate	200.00
3	Boron	400.00
4	Bulk Density	100.00
5	Calcium	150.00
6	Calcium Carbonate	350.00
7	Cation Exchange Capacity (CEC)	400.00
8	Chloride	150.00
9	Colour	100.00
10	Electrical Conductivity (EC)	100.00
11	Exchangeable Sodium Percentage (ESP)	550.00
12	Fluoride	200.00
13	Gypsum requirement	350.00
14	H. Acid	400.00
15.	Heavy metal	As mention in respective group at clause 5.0
16.	Trace metals using ED-XRF Aluminium, Antimony, Arsenic, Barium, Bromine, Cadmium, Calcium, Cesium, Chlorine, Chromium, Cobalt, Copper, Gallium, Germanium, Gold, Iodine, Iron, Lanthanum, Lead, Magnesium, Manganese, Molybdenum, Nickel, Palladium, Phosphorous, Potassium, Rubidium, Rutherfordium, Selenium, Silicon, Silver, Sodium, Strontium, Sulphur, Tellurium, Tin, Titanium, Tungsten, Vanadium, Ytterbium and Zinc per sample	4000.00
17.	Magnesium	300.00
18.	Mechanical Soil analysis(soil texture)	150.00
19.	Nitrate	300.00
20.	Nitrite	300.00
21.	Nitrogen available	350.00
22.	Organic Carbon/ Matter (chemical method)	350.00
23.	Oil and Grease	200.00
24.	Polycyclic Aromatic Hydrocarbons (PAH)	As mention in respective group at clause 5.0
25.	Polychlorinated Biphenyls (PCBs)	As mention in respective group at clause 5.0
26.	Pesticides	As mention in respective group at clause 5.0
27.	pH	100.00
28.	Phosphorous (available)	400.00
29.	Phosphate(ortho)	300.00

Sl. No.	Parameters	Analysis charges per test in Rs.
30.	Phosphate(total)	400.00
31.	Potash(Available)	200.00
32.	Potassium	300.00
33.	SAR in Soil extract	650.00
34.	Sodium	300.00
35.	Soil Moisture	100.00
36.	Soil Porosity	100.00
37.	Sulphate	200.00
38.	Sulphur	350.00
39.	Total Kjehldhal Nitrogen (TKN)	400.00
40.	TOC	550.00
41.	Total Water Soluble Salts	200.00
42.	Water Holding Capacity	100.00

Note:

(i)Sampling charges for soil samples are as specified in Clause A (V).

(ii) Transportation charges are separate on actual basis

7.Analysis charges for Hazardous Waste samples

Sl. No.	Parameters	Analysis Charges per test in Rs.
1.	Preparation of Leachate (TCLP extract / Water Extract)	1000.00
2.	Determination of various parameters in Leachate	As mention in respective group at clause 5.0
3.	Determination of various parameters in Waste (Total)	Soil Sample Analysis Charges
3.	Flash point/ Ignitibility	550.00
4.	Reactivity	550.00
5.	Corrosivity	550.00
6.	Measurement of Toxicity	
	- LC_{50}	2800.00
	- Dimensionless Toxicity	1600.00
7.	Total Organic Carbon	500.00
8.	Adsorbable organic Halogen (AOx)	2000.00

8. AQC Participation Fees :

To be charged by the Board from respective recognized laboratories for Analytical Quality Control Exercise (AQC) samples.

1	Laboratories of Govt./Semi-Govt. / Public sector undertaken/Autonomous bodies	18000.00
2	Private Sector laboratories	18000.00

ANNEXURE-III

Staff Strength

Sl. No.	Name of the Post	Total No. of Post Sanctioned	Staff in Position
Technical Staff			
1.	Senior Env. Scientist (L-I)	03	03
2.	Senior Env. Engineer (L-I)	03	02
3.	Senior Env. Scientist (L-II)	03	03
4.	Senior Env. Engineer (L-II)	03	03
5.	Environmental Scientist	48	19
6.	Deputy Env. Scientist		03
7.	Assistant Env. Scientist		08
8.	Environmental Enginer	46	07
9.	Duputy Env. Engineer		08
10.	Assistant Env. Engineer		22
11.	Assistant Scientific Officer	07	05
12.	Senior Scientific Assistant	15	13
Administrative Staff			
13.	Administrative Officer	01	01
14.	Addl. Administrative Officer	01	01
15.	Accounts Officer	02	02
16.	Section Officer	08	07
17.	Accountant	05	00
18.	Senior Assistant	13	13
19.	Junior Assistant	18	06
20	Senior Law Officer (L-II)	01	01
21.	Law Officer	01	01
22.	Assistant Law Officer	01	00
23.	Private Secretary (Gr.A)	01	01
24.	Private Secretary (Gr.B)	02	02
25.	Personal Assistant	08	03
26.	Senior Stenographer	09	05
27.	Junior Stenographer	07	00
28.	Sr. Typist	02	02
29.	Jr. Typist	08	05
Other Staff			
30.	Store Keeper	01	01
31	Assistant Librarian	01	01
32.	Xerox Assistant	01	01
33.	Diarist	01	01
34.	Head Driver	01	01
35.	Driver	12	10
36.	Record Supplier	01	01
37.	Laboratory Attendant	10	09
38.	Library Attendant	01	01
39.	Peon	21	20
40.	Watchman-cum-Sweeper	05	05
41.	Watchman	02	02
42.	Daftary	01	01
43.	Zamadar	01	01
44.	Treasury Sarkar	01	01
45.	Lift Operator	01	01
	Total	**277**	**203**