Annual Average and Range values of Four Criteria Parameters (January-December, 2019)

(A) Mahanadi River System (2019)

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	7.2 (6.7-8.0)	7.1 (5.8-8.1)	0.8 (0.2-1.7)	1012 (2-3500)	0	0	C	C		
2.	Jharsuguda	12	7.3 (6.5-8.2)	7.9 (7.4-8.8)	1.3 (0.3-2.0)	2103 (640-4900)	0	0	C	C		
3.	Brajarajnagar U/s	12	7.5 (6.7-8.2)	7.9 (7.6-8.6)	1.0 (0.4-1.6)	1759 (330-4700)	0	0	C	C		
4.	Brajarajnagar D/s	12	7.5 (6.9-8.2)	7.5 (7.2-8.0)	1.5 (0.5-2.6)	2341 (490-4900)	0	0	C	C		
Bheden river												
5.	Jharsuguda	12	7.6 (7.0-8.4)	7.8 (7.4-8.6)	1.1 (0.2-2.0)	1560 (20-4900)	0	0	C	C		
Hirakud reservoir												
6.	Hirakud reservoir	12	7.7 (7.3-8.4)	8.0 (7.0-8.6)	0.7 (0.2-1.3)	508 (2-220)	0	0	C	C		
Power Channel												
7.	Power Channel U/s	12	7.7 (7.2-8.2)	7.3 (6.2-8.2)	0.7 (0.4-1.2)	285 (2-1100)	0	0	C	C		
8.	Power Channel D/s	12	7.5 (6.6-7.9)	7.2 (6.0-8.2)	0.8 (0.4-1.3)	424 (2-1300)	0	0	C	C		
Mahanadi river												
9	Sambalpur U/s	12	7.4 (6.7-7.8)	7.3 (6.2-8.2)	0.8 (0.5-1.1)	1549 (45-4900)	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				
10	Sambalpur D/s	12	7.5 (6.7-8.3)	7.2 (6.6-7.8)	1.4 (0.7-1.9)	4716 (130-35000)	0	2 (17)	C	Doesn't conform to Class C	TC	Wastewater of Sambalpur city
11.	Sambalpur FD/s at Shankarmath	12	7.4 (7.0-7.7)	7.1 (6.4-7.8)	1.0 (0.3-1.6)	2452 (110-22000)	0	1 (8)	C	Doesn't conform to Class C	TC	
12.	Sambalpur FFD/s at Huma	12	7.5 (7.0-8.2)	7.4 (6.8-8.2)	0.9 (0.3-1.9)	817 (20-3500)	0	0	C	C		
13.	Sonepur U/s	12	7.6 (7.0-8.3)	7.4 (6.6-8.2)	0.6 (0.3-1.0)	585 (2-3500)	0	0	C	C		
14.	Sonepur D/s	12	7.6 (7.0-8.2)	6.9 (6.2-7.8)	0.9 (0.4-2.3)	1082 (20-3500)	0	0	C	C		
15.	Tikarapada	12	7.4 (6.7-8.3)	7.5 (6.2-8.6)	0.6 (0.3-0.9)	403 (2-1300)	0	0	C	C		
16.	Narasinghpur	12	7.3 (6.6-8.3)	8.0 (6.2-9.2)	0.8 (0.3-1.7)	2139 (20-7900)	0	1 (8)	C	C		
17.	Mundali	12	7.3 (6.6-8.3)	7.7 (6.4-8.9)	0.7 (0.3-1.3)	1181 (120-3500)	0	0	C	C		
18.	Cuttack U/s	12	7.4 (6.7-8.3)	7.9 (6.4-9.1)	0.7 (0.4-1.0)	1292 (20-3300)	0	0	C	C		
19.	Cuttack D/s	12	7.4 (6.9-8.0)	7.4 (4.8-8.7)	1.2 (0.5-1.8)	4090 (78-17000)	0	2 (17)	C	C		
20.	Cuttack FD/s	12	7.4 (6.9-8.0)	8.0 (7.3-9.3)	0.9 (0.4-1.4)	3111 (45-13000)	0	1 (8)	C	C		
21.	Paradeep U/s	12	7.5 (6.8-8.2)	7.6 (6.0-9.0)	1.0 (0.2-1.9)	720 (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				
22.	Paradeep D/s	12	7.6 (7.1-8.2)	7.3 (5.8-9.0)	0.9 (0.5-1.5)	327 (2-1100)	0	0	C	C		
Ong River												
23.	Dharuakhaman	12	7.6 (7.1-8.2)	7.1 (6.2-7.8)	0.9 (0.2-1.2)	275 (2-2200)	0	0	C	C		
Tel River												
24.	Monmunda	12	7.6 (6.9-8.1)	7.21 (6.6-7.8)	0.7 (0.4-1.2)	379 (2-2200)	0	0	C	C		
Kathajodi river												
25.	Cuttack U/s	12	7.6 (7.0-8.4)	7.6 (6.0-8.8)	0.7 (0.4-1.1)	1256 (20-3500)	0	0	C	C		
26.	Cuttack D/s	12	7.5 (7.0-8.0)	7.0 (4.9-8.4)	2.1 (0.8-3.9)	35350 (2200-160000)	2 (17)	8 (67)	C	Doesn't conform to Class C	BOD, TC	Waste water of Cuttack city
27.	Mattagajpur (Cuttack FD/s)	12	7.4 (6.6-8.4)	6.5 (5.0-8.6)	2.0 (0.5-3.5)	19229 (140-160000)	2 (17)	4 (33)	C	Doesn't conform to Class C	BOD, TC	
28.	Kamasasan (Cuttack FFD/s)	12	7.4 (6.6-8.1)	7.3 (5.7-8.8)	1.0 (0.5-1.6)	1641 (20-3500)	0	0	C	C		
Serua River												
29.	Sankhatrasa (Cuttack FD/s)	12	7.3 (6.8-7.9)	7.5 (6.4-8.6)	1.5 (0.7-3.1)	7925 (1300-54000)	1 (8)	3 (25)	C	Doesn't conform to Class C	BOD, TC	Waste water of Cuttackcity

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				
Kuakhai river												
30	Bhubaneswar FU/s	12	7.4 (6.6-8.3)	7.4 (5.5-8.7)	1.1 (0.8-2.2)	1479 (330-3500)	0	0	C	C		
31.	Bhubaneswar U/s	12	7.4 (6.8-8.0)	7.4 (6.1-9.6)	1.5 (1.0-2.8)	2778 (330-4900)	0	0	C	C		
Daya river												
32.	Gelapur	12	7.4 (6.7-8.2)	7.9 (5.5-9.1)	0.9 (0.4-2.3)	1888 (260-3500)	0	0	C	C		
33.	Bhubaneswar D/s	12	7.3 (6.8-7.5)	6.1 (4.1-7.7)	3.8 (1.8-7.3)	38000 (3500-160000)	7 (58)	10 (83)	C	Doesn't conform to Class C	BOD, TC	Waste water of Bhubaneswar city
34.	Bhubaneswar FD/s	12	7.3 (6.7-7.9)	6.3 (4.9-7.5)	3.0 (1.3-7.1)	26500 (2400-160000)	5 (42)	9 (75)	C	Doesn't conform to Class C	BOD, TC	
35.	Kanas	12	7.4 (6.9-8.1)	6.5 (4.4-8.1)	2.0 (0.9-5.1)	7117 (1300-17000)	1 (8)	6 (50)	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				
Gangua River												
36.	Near Rajdhani Engg. College	12	7.0 (6.5-7.5)	2.2 (0.9-5.5)	9.7 (0.7-20.6)	138250 (24000-160000)	11 (92)	12 (100)	C	Doesn't conform to Class C	DO#, BOD, TC	Waste water of Bhubaneswar city
37.	Palasuni	12	7.0 (6.6-7.8)	2.4 (1.0-4.6)	11.7 (1.2-25.5)	148667 (24000-160000)	11 (92)	12 (100)	C	Doesn't conform to Class C	DO##, BOD, TC	
38.	Samantraypur	12	7.1 (6.5-8.0)	1.7 (0.6-4.3)	14.7 (1.7-39.2)	160000 (160000-160000)	11 (92)	12 (100)	C	Doesn't conform to Class C	DO#, BOD, TC	
39.	Vadimula	11	7.0 (6.7-7.4)	3.7 (0.9-5.6)	5.4 (2.0-12.6)	121455 (16000-160000)	9 (82)	12 (100)	C	Doesn't conform to Class C	DO###, BOD, TC	
Birupa River												
40.	Choudwar D/s	12	7.5 (6.8-8.5)	7.5 (6.0-8.7)	0.8 (0.2-2.4)	1629 (260-3500)	0	0	C	C		
Kushabhadra River												
41.	Bhingarpur	12	7.6 (6.7-8.4)	8.1 (6.5-10.6)	1.2 (0.2-2.3)	2203 (230-4300)	0	0	C	C		
42.	Nimapara	12	7.5 (6.8-8.2)	7.4 (5.8-9.3)	1.5 (0.6-2.6)	2740 (490-5400)	0	1 (8)	C	C		
43.	Gop	12	7.5 (6.9-8.3)	7.2 (5.9-9.1)	1.2 (0.3-2.5)	2349 (790-4000)	0	0	C	C		

Frequency of violation for DO is 11 times (92% of total observation)
Frequency of violation for DO is 10 times (83% of total observation)
Frequency of violation for DO is 6 times (54% 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	12	7.5 (6.5-8.4)	7.0 (5.5-8.2)	1.0 (0.3-1.6)	3391 (790-9200)	0	1 (8)	C	C		
Mangala River												
45.	Malatipatpur	12	7.4 (6.5-8.5)	6.4 (5.4-7.8)	1.0 (0.5-1.7)	2155 (170-3500)	0	0	C	C		
46.	Golasahi	12	7.5 (6.7-8.4)	6.9 (5.4-8.9)	2.9 (0.8-7.4)	4080 (20-11000)	3 (25)	3 (25)	C	Doesn't conform to Class C	BOD, TC	Human activities
Devi River												
47.	Machhagaon	12	7.6 (6.7-8.2)	7.6 (5.8-9.8)	1.1 (0.4-1.8)	459 (2-3500)	0	0	C	C		
GobariRiver												
48.	Kendrapara U/s	12	7.7 (7.0-8.3)	7.2 (6.0-8.8)	1.0 (0.5-1.8)	2189 (79-4300)	0	0	C	C		
49.	Kendrapara D/s	12	7.5 (6.7-8.1)	6.1 (4.2-8.4)	1.4 (0.7-2.3)	3690 (490-16000)	0	2 (17)	C	C		
NunaRiver												
50.	Bijipur	12	7.5 (6.8-8.3)	6.3 (4.7-7.7)	1.6 (0.6-2.5)	2825 (1100-4700)	0	0	C	C		
Kusumi River												
51.	Tangi	12	7.4 (6.6-8.2)	7.3 (6.1-9.1)	1.4 (0.5-2.6)	3267 (1300-5400)	0	1 (8)	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				
KansariRiver												
52.	Banapur	12	7.3 (6.6-8.2)	6.7 (5.8-7.9)	1.3 (0.5-2.5)	3326 (490-4900)	0	0	C	C		
Badasankha River												
53.	Langaleswar	12	7.2 (6.6-8.2)	6.5 (4.5-8.5)	1.4 (0.6-2.3)	2752 (330-4900)	0	0	C	C		
Sabulia River												
54.	Rambha	12	7.4 (6.8-8.4)	6.8 (5.8-7.8)	1.2 (0.4-2.2)	2801 (270-5400)	0	2 (17)	C	C		
Ratnachira River												
55.	Kumardihi	12	7.4 (6.6-8.1)	6.9 (5.5-7.8)	1.0 (0.4-2.7)	2463 (170-3500)	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)

(b) Brahmani river System (2019)

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				
Sankhriver												
1.	Sankh U/s	12	7.2 (6.6-7.6)	7.3 (5.6-9.1)	0.8 (0.2-1.5)	1601 (45-4900)	0	0	C	C		
Koel River												
2.	Koel U/s	12	7.2 (6.8-7.5)	7.2 (5.8-9.0)	0.9 (0.2-2.0)	2059 (210-3500)	0	0	C	C		
Brahmani river												
3.	Panposh U/s	12	7.3 (6.8-7.9)	7.6 (6.2-8.9)	1.1 (0.4-2.3)	1800 (490-3500)	0	0	C	C		
4.	Panposh D/s	12	7.2 (6.4-7.7)	5.8 (4.2-7.6)	4.1 (2.2-5.3)	19642 (3500-54000)	10 (81)	11 (89)	C	Doesn't conform to Class C	BOD, TC	Waste water of Rourkela town and Steel Plant
5.	Rourkela D/s	12	7.1 (6.5-7.7)	5.9 (4.5-8.1)	3.1 (0.5-4.6)	10075 (2100-22000)	7 (57)	7 (57)	C	Doesn't conform to Class C	BOD, TC	-do-
6.	Rourkela FD/s (Attaghat)	12	7.2 (6.5-7.6)	6.9 (5.2-8.2)	2.0 (0.5-4.6)	2497 (340-11000)	1 (8)	1 (8)	C	Doesn't conform to Class C	BOD, TC	-do-
7.	Rourkela FD/s (Biritola)	12	7.3 (6.6-7.9)	7.1 (5.0-8.4)	1.0 (0.4-1.8)	1020 (1.8-3500)	0	0	C	C		
8.	Bonaigarh	12	7.4 (6.7-7.8)	7.4 (6.1-9.4)	0.8 (0.2-1.2)	1863 (20-11000)	0	1 (8)	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				
9.	Rengali	12	7.5 (6.9-8.4)	7.4 (6.0-9.6)	0.8 (0.4-1.3)	318 (130-1100)	0	0	C	C		
10.	Samal	12	7.5 (6.9-8.2)	7.6 (6.0-9.4)	0.9 (0.3-1.8)	851 (130-3500)	0	0	C	C		
10.	Talcher FU/s	12	7.5 (7.0-8.2)	7.6 (6.8-9.2)	0.8 (0.2-1.3)	499 (45-1400)	0	0	C	C		
10.	Talcher U/s	12	7.4 (6.6-8.2)	7.8 (7.0-8.8)	0.8 (0.2-1.9)	904 (45-2400)	0	0	C	C		
13.	Mandapal	12	7.5 (6.7-7.9)	7.2 (6.6-8.0)	1.0 (0.4-2.0)	2358 (230-4000)	0	0	C	C		
14.	Talcher D/s	12	7.5 (6.8-8.1)	7.8 (7.0-9.0)	1.2 (0.4-2.1)	1363 (130-3500)	0	0	C	C		
15.	Talcher FD/s	12	7.6 (7.2-8.2)	8.1 (6.6-9.4)	0.8 (0.2-2.2)	508 (20-1300)	0	0	C	C		
16.	Dhenkanal U/s	12	7.5 (7.1-7.9)	8.0 (7.2-8.6)	0.7 (0.3-1.2)	488 (45-1100)	0	0	C	C		
17.	Dhenkanal D/s	12	7.7 (7.0-8.4)	8.1 (7.2-8.8)	1.0 (0.3-1.8)	1250 (130-4900)	0	0	C	C		
18.	Bhuban	12	7.5 (6.7-8.1)	7.9 (7.2-8.8)	0.9 (0.2-1.6)	1314 (20-3500)	0	0	C	C		
19.	Kabatabandha	12	7.6 (6.9-8.4)	7.8 (7.2-9.2)	0.7 (0.1-1.2)	593 (78-1700)	0	0	C	C		
20.	Dharmasala U/s	12	7.6 (7.0-8.4)	7.6 (7.2-8.1)	0.9 (0.4-1.7)	1798 (330-5400)	0	1 (8)	C	C		
21.	DharmasalaD/s	12	7.6 (7.1-8.3)	7.5 (6.8-8.4)	1.1 (0.6-2.1)	2250 (330-5400)	0	1 (8)	C	C		
22.	Pottamundai	12	7.8 (7.0-8.4)	7.6 (5.8-9.6)	0.6 (0.3-1.1)	2420 (130-5400)	0	1 (8)	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				
Nandira river												
23.	Nandira U/s	12	7.6 (7.0-7.9)	7.8 (6.0-9.4)	0.8 (0.4-1.4)	1079 (45-2400)	0	0	C	C		
24.	Nandira D/s	12	7.8 (7.1-8.2)	7.4 (6.4-9.2)	1.3 (0.6-1.9)	1714 (170-3500)	0	0	C	C		
Kisindajhor												
25.	Kisindajhor	12	7.7 (7.2-7.9)	6.7 (5.0-8.7)	1.1 (0.2-1.9)	1569 (130-3500)	0	0	C	C		
KharasuanRiver												
26.	Khanditara	12	7.7 (7.1-8.3)	7.6 (6.8-8.2)	0.6 (0.2-1.1)	1175 (110-4300)	0	0	C	C		
27.	Binjharpur	12	7.5 (6.8-8.2)	7.6 (6.5-8.4)	0.8 (0.1-1.8)	2828 (330-4600)	0	0	C	C		
28.	Aul	12	7.8 (7.0-8.4)	7.5 (6.4-9.2)	0.9 (0.4-1.8)	1821 (200-3500)	0	0	C	C		
Guradih nallah												
29.	Guradih nallah	12	7.3 (6.4-8.4)	4.7 (2.8-8.0)	5.4 (2.9-8.5)	64117 (3500-160000)			Drain			
Badjhor nallah												
30.	Badjhor nallah	12	7.8 (7.3-8.0)	7.5 (5.6-9.4)	1.2 (0.4-1.8)	1893 (230-3500)	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				
Damsala River												
31.	Dayanabil	12	7.5 (6.6-8.4)	7.1 (6.4-8.4)	0.7 (0.1-1.5)	1519 (78-3500)	0	0	C	C		
Gandanallah												
32.	Marthapur	12	7.5 (6.9-8.1)	7.0 (6.2-8.1)	1.2 (0.9-1.6)	1374 (92-4600)	0	0	C	C		
Lingira River												
33.	Angul U/s	12	8.1 (7.5-8.5)	7.5 (4.6-10.2)	0.8 (0.2-1.3)	1206 (170-3500)	0	0	C	C		
34.	Angul D/s	12	8.1 (7.7-8.4)	7.3 (4.0-9.8)	1.0 (0.2-1.6)	2158 (700-5400)	0	1 (8)	C	C		
Ramiala River												
35.	Kamakhyanagar	12	7.6 (7.0-8.1)	8.0 (6.6-9.4)	0.8 (0.2-1.7)	1369 (110-3500)	0	0	C	C		
Banguru nallah												
36.	Banguru nallah	12	7.4 (6.8-7.9)	7.6 (6.2-9.2)	0.9 (0.4-1.9)	779 (45-3500)	0	0	C	C		
Singadajhor												
37.	Singadajhor	12	7.8 (6.6-8.3)	7.4 (4.8-9.8)	1.0 (0.2-2.0)	1386 (230-3500)	0	0	C	C		
Tikira River												
38.	KanihaU/s	12	7.9 (7.1-8.3)	7.8 (5.2-9.2)	0.8 (0.2-1.7)	1140 (20-3500)	0	0	C	C		
39.	KanihaD/s	12	7.8 (7.0-8.4)	7.5 (6.0-8.6)	1.0 (0.3-1.7)	1945 (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				
Bangurusingadajhor												
40.	Bangurusingadajhor	12	7.6 (6.8-8.1)	7.2 (5.4-9.6)	1.0 (0.2-2.2)	1614 (68-4900)	0	0	C	C		
Karo River												
41.	Barbil	12	7.5 (7.0-8.0)	6.9 (5.9-8.3)	0.6 (0.3-1.2)	480 (110-1700)	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)

(C) Baitarani riverSystem (2019)

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	12	7.3 (6.5-7.7)	6.7 (5.8-8.6)	1.0 (0.5-1.8)	1754 (170-4900)	0	0	C	C		
Kusei River												
2.	Deogaon	12	7.5 (6.8-8.3)	7.5 (5.7-10.8)	1.1 (0.3-2.2)	3158 (1100-9400)	0	0	C	C		
Baitarani River												
3.	Naigarh	12	7.4 (6.5-8.0)	7.0 (5.8-8.2)	0.8 (0.3-1.7)	951 (170-4700)	0	0	C	C		
4.	Unchabali	12	7.3 (6.5-7.8)	6.8 (6.0-7.9)	0.7 (0.3-1.4)	978 (68-3500)	0	0	C	C		
5.	Champua	12	7.4 (6.5-7.8)	6.9 (6.2-8.3)	0.9 (0.4-1.8)	794 (92-1700)	0	0	C	C		
6.	Tribindha	12	7.5 (6.6-8.0)	7.1 (6.3-9.1)	0.6 (0.3-1.3)	965 (130-2200)	0	0	C	C		
7.	Joda	12	7.4 (6.6-7.8)	6.6 (5.5-8.0)	0.9 (0.3-1.8)	1827 (260-4900)	0	0	C	C		
8.	Anandpur	12	7.5 (6.7-8.1)	7.4 (6.2-8.6)	0.9 (0.3-1.6)	2499 (490-4700)	0	0	C	C		
9.	Jajpur	12	7.6 (7.1-8.2)	7.3 (6.4-7.9)	1.1 (0.3-2.4)	2248 (490-4300)	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				
10.	Chandbali U/s	12	7.7 (7.0-8.5)	7.3 (6.0-8.4)	0.6 (0.2-1.6)	2481 (430-5400)	0	1 (8)	C	C		
11.	Chandbali D/s	12	7.6 (7.0-8.4)	7.4 (6.4-8.4)	1.0 (0.2-2.3)	3080 (920-5400)	0	1 (8)	C	C		
Salandi River												
12.	Bhadrak U/s	12	7.7 (6.8-8.2)	7.3 (6.0-8.8)	0.7 (0.2-1.2)	1463 (110-4300)	0	0	C	C		
13.	Bhadrak D/s	12	7.6 (6.9-8.1)	7.0 (5.8-8.8)	1.2 (0.4-2.3)	3058 (700-5400)	0	1 (8)	C	C		
Dhamra River												
14.	Dhamra	12	7.6 (7.0-8.0)	7.5 (6.4-8.4)	1.1 (0.4-1.8)	953 (1.8-3500)	0	0	C	C		
Class 'C' water quality Criteria (IS-2296-1982)			**6.5-8.5**	12	**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)

(D)Rushikulya River System (2019)

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	12	7.6 (6.9-8.4)	8.6 (6.8-11.0)	1.1 (0.2-1.9)	1868 (1.8-3500)	0	0	C	C		
BadaNadi												
2	Aska	12	7.8 (7.1-8.3)	7.4 (5.6-9.2)	1.4 (0.4-2.3)	3113 (460-9200)	0	1 (8)	C	C		
Rushikulya River												
3.	Aska	12	7.8 (7.0-8.3)	7.1 (5.3-8.2)	1.1 (0.6-2.3)	3517 (1100-5400)	0	2 (17)	C	C		
4.	Nalabanta	12	7.9 (7.2-8.4)	7.0 (4.5-9.3)	1.3 (0.2-2.4)	4143 (130-16000)	0	2 (17)	C	C		
5.	Madhopur	12	7.9 (7.1-8.4)	7.1 (5.0-8.5)	1.2 (0.5-2.0)	3263 (230-16000)	0	1 (8)	C	C		
6.	Potagarh	12	7.9 (7.4-8.4)	7.8 (4.7-10.0)	1.4 (0.2-2.6)	1188 (1.8-3500)	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)

(E) Nagavali River System(2019)

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	7.5 (6.6-8.4)	7.5 (7.2-7.8)	0.8 (0.3-1.3)	1350 (170-3500)	0	0	C	C		
2.	J.K. Pur D/S	12	7.5 (6.7-8.4)	6.6 (6.2-7.1)	1.3 (0.4-2.2)	2528 (230-5400)	0	1 (8)	C	C		
3.	Rayagada D/S	12	7.5 (6.9-8.3)	7.1 (6.2-7.5)	1.0 (0.2-1.9)	1580 (110-3500)	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)

(F) Subarnarekhariversystem (2019)

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	7.8 (7.0-8.5)	7.5 (6.4-8.4)	1.2 (0.4-1.9)	1364 (260-3500)	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)

(G) Budhabalanga river system(2019)

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	7.6 (6.9-8.0)	7.4 (6.0-8.8)	1.1 (0.3-1.8)	3633 (2200-5400)	0	1 (8)	C	C		
2.	Balasore U/s	12	7.6 (7.1-7.9)	7.3 (6.4-8.4)	1.2 (0.4-1.9)	2950 (1700-4900)	0	0	C	C		
3.	Balasore D/s	12	7.5 (6.9-7.9)	6.9 (5.6-8.0)	1.7 (1.0-2.5)	6008 (2400-17000)	0	2 (17)	C	C		
Sone River												
4.	Hatigond	12	7.5 (7.0-7.9)	7.2 (5.6-8.8)	1.3 (0.2-2.7)	2052 (330-3500)	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)

(H) Kolab river system (2019)

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				
KerandiRiver												
1.	Sunabeda	12	7.5 (6.9-8.4)	7.2 (6.3-7.9)	0.8 (0.2-1.4)	657 (20-1700)	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)

(I) Vansadhara river system (2019)

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	7.6 (7.0-8.3)	7.4 (6.9-7.8)	0.9 (0.2-1.9)	1090 (78-4900)	0	0	C	C		
2.	Gunupur	12	7.6 (6.6-8.4)	7.8 (7.1-8.9)	0.9 (0.2-1.6)	1399 (78-4900)	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)

(J) Indravati river system (2019)

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.	Nawarangpur	12	7.5 (6.6-8.2)	7.4 (6.4-8.2)	0.8 (0.2-2.0)	860 (170-3500)	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)

(K) Bahuda river system (2019)

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	12	7.9 (6.9-8.4)	7.6 (5.8-9.0)	1.3 (0.2-2.4)	1459 (45-4300)	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)

Water quality with respect to Other Parameters during 2019 (January-December)

(A) Mahanadi River System (2019)

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	53 (2-368)	64 (32-98)	7.2 (3.8-9.7)	0.826 (0.056-2.240)	0.010 (0-0.070)	2.92 (0.56-6.16)	419 (2-1700)	154 (95-285)	0.41 (0.12-0.60)	0.010 (0.003-0.024)	95 (60-158)	60 (32-92)	9.7 (3.8-16.3)	10.13 (2.11-17.50)	0.293 (0.160-0.430)
2.	Jharsuguda	19 (3-88)	69 (48-102)	9.1 (4.0-15.6)	0.705 (0.056-1.960)	0.010 (0-0.045)	2.64 (0.56-5.60)	1038 (220-3300)	177 (134-263)	0.44 (0.17-0.80)	0.118 (0.010-0.560)	107 (84-152)	68 (44-108)	9.9 (3.8-16.3)	12.98 (6.55-17.78)	0.320 (0.227-0.478)
3.	Brajrajnagar U/s	20 (1-77)	67 (44-110)	8.0 (5.2-9.5)	0.616 (0.056-1.400)	0.012 (0-0.045)	2.68 (0.56-5.88)	628 (45-2200)	160 (110-210)	0.46 (0.27-0.70)	0.047 (0.003-0.140)	96 (72-132)	58 (40-102)	9.8 (4.8-14.4)	10.01 (6.55-17.28)	0.362 (0.233-0.495)
4.	Brajrajnagar D/s	19 (3-122)	66 (44-118)	10.9 (5.2-17.2)	0.943 (0.112-2.800)	0.023 (0-0.084)	2.66 (0.84-5.32)	998 (78-2700)	167 (136-264)	0.45 (0.21-0.66)	0.046 (0.007-0.099)	101 (84-148)	62 (44-108)	10.2 (5.8-13.5)	12.85 (7.02-18.40)	0.334 (0.234-0.493)
Bheden river																
5.	Jharsuguda	21 (1-89)	72 (48-116)	9.0 (5.5-15.3)	0.635 (0.056-1.400)	0.025 (0-0.175)	2.38 (0.56-5.32)	686 (1.8-2400)	255 (141-486)	0.84 (0.22-2.99)	0.035 (0.003-0.069)	152 (92-296)	77 (52-140)	23.0 (5.8-76.9)	27.49 (7.71-74.87)	0.863 (0.224-1.410)
Hirakud Reservoir																
6.	Hirakud reservoir	20 (6-97)	69 (56-88)	7.5 (4.0-11.6)	0.779 (0.112-1.680)	0.032 (0.002-0.105)	2.18 (0.84-3.80)	206 (1.8-940)	175 (152-213)	0.36 (0.28-0.51)	0.046 (0.003-0.204)	105 (88-120)	71 (60-88)	9.7 (7.6-12.4)	12.88 (7.46-20.15)	0.357 (0.183-0.596)
Power Channel																
7.	Power Channel U/s	15 (1-61)	71 (56-88)	7.2 (3.6-11.6)	0.770 (0.280-1.680)	0.025 (0.003-0.090)	2.57 (1.12-4.76)	137 (1.8-700)	178 (141-224)	0.36 (0.19-0.68)	0.014 (0.003-0.031)	109 (88-124)	72 (60-84)	9.9 (3.8-14.4)	13.78 (11.19-19.77)	0.317 (0.180-0.443)
8.	Power Channel D/s	20 (1-90)	74 (52-98)	8.1 (3.6-11.6)	1.148 (0.056-3.920)	0.026 (0-0.078)	2.57 (1.12-4.76)	185 (1.8-700)	177 (139-215)	0.34 (0.19-0.57)	0.024 (0.010-0.035)	108 (84-128)	75 (60-92)	9.8 (3.8-16.3)	14.28 (11.19-21.52)	0.300 (0.168-0.393)

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	19 (1-62)	80 (56-104)	9.4 (7.0-13.9)	1.120 (0.280-3.640)	0.018 (0-0.063)	2.80 (0.84-6.72)	399 (1.8-1100)	201 (145-246)	0.47 (0.19-0.92)	0.017 (0.005-0.045)	121 (92-148)	75 (60-92)	12.1 (4.8-19.2)	15.09 (10.32-19.40)	0.356 (0.187-0.459)
10.	Sambalpur D/s	17 (2-52)	76 (48-96)	11.5 6.9-16.2)	1.311 (0.056-3.360)	0.031 (0-0.070)	3.87 (0.28-8.68)	1022 (1.8-4900)	206 (150-264)	0.45 (0.24-0.64)	0.019 (0.003-0.066)	124 (88-152)	80 (64-98)	12.8 (5.7-19.2)	17.88 (10.24-32.58)	0.378 (0.172-0.573)
11.	Sambalpur FD/s at Shankarmath	24 (1-121)	81 (56-100)	10.8 (5.7-14.8)	1.055 (0.056-3.360)	0.018 (0-0.050)	3,92 (1.12-12.32)	542 (1.8-4900)	211 (153-269)	0.49 (0.35-0.68)	0.014 (0.003-0.031)	129 (96-156)	80 (64-100)	13.1 (7.7-21.2)	18.01 (7.14-31.22)	0.432 (0.188-0.558)
12.	Sambalpur FFD/s at Huma	17 (1-63)	76 (58-88)	8.8 (4.0-15.6)	1.031 (0.056-3.360)	0.019 (0-0.042)	3.64 (0.84-14.56)	216 (1.8-1700)	194 (152-249)	0.43 (0.29-0.74)	0.012 (0.005-0.035)	118 (96-148)	76 (60-94)	11.2 (7.7-19.2)	16.77 (10.59 - 28.48)	0.358 (0.209-0.452)
13.	Sonepur U/s	28 (1-201)	78 (62-92)	6.8 (3.5-11.6)	1.023 (0.056-2.520)	0.028 (0-0.109)	2.73 (0.28-5.32)	68 (1.8-460)	196 (156-285)	0.45 (0.33-0.64)	0.043 (0.003-0.353)	119 (92-168)	76 (64-96)	11.1 (5.8-21.1)	16.52 (11.90-29.85)	0.339 (0.180-0.487)
14.	Sonepur D/s	23 (2-127)	84 (64-108)	8.5 (4.0-17.1)	1.517 (0.280-5.040)	0.035 (0-0.113)	3.50 (1.40-6.44)	282 (1.8-1700)	209 (159-271)	0.50 (0.15-0.70)	0.023 (0.003-0.131)	129 (88-184)	81 (64-108)	12.8 (3.8-19.2)	15.35 (5.22-35.57)	0.326 (0.183-0.467)
15.	Tikarapada	25 (1-78)	80 (62-96)	7.5 (3.1-9.7)	0.630 (0.280-2.240)	0.018 (0-0.112)	3.57 (0.84-19.60)	126 (1.8-490)	190 (157-233)	0.45 (0.33-0.57)	0.059 (0.003-0.239)	118 (96-144)	77 (64-110)	11.8 (7.7-18.3)	12.62 (7.59-24.17)	0.304 (0.207-0.672)
16.	Narasinghpur	64 (1-435)	82 (66-88)	9.0 (5.6-17.1)	0.985 (0.056-2.520)	0.029 (0-0.137)	2.71 (0.28-6.16)	901 (1.8-3300)	189 (155-241)	0.42 (0.17-0.78)	0.075 (0.003-0.367)	119 (104-146)	80 (64-108)	12.7 (4.8-19.2)	10.08 (4.64-16.79)	0.383 (0.159-0.962)
17.	Munduli	48 (2-230)	81 (68-92)	7.8 (5.2-11.6)	1.031 (0.056-.080)	0.024 (0-0.154)	2.82 (0.56-7.28)	401 (1.8-1300)	188 (154-244)	0.35 (0.19-0.51)	0.089 (0.003-0.388)	114 (96-134)	77 (66-88)	10.3 (4.8-17.3)	10.90 (3.81-17.29)	0.344 (0.180-0.589)

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	45 (1-148)	78 (56-88)	7.6 (5.6-10.5)	0.681 (0.056-1.400)	0.016 (0-0.109)	2.85 (1.12-7.84)	498 (20-3300)	185 (152-216)	0.38 (0.15-0.54)	0.085 (0.006-0.343)	110 (92-138)	76 (64-92)	10.0 (3.8-15.3)	11.36 (3.45-20.02)	0.345 (0.177-0.587)
19.	Cuttack D/s	36 (1-154)	85 (64-96)	10.3 (6.9-13.0)	0.868 (0.056-1.680)	0.016 (0-0.056)	2.59 (0.84-8.68)	1900 (45-7900)	203 (147-264)	0.45 (0.10-0.75)	0.054 (0.010-0.154)	124 (92-158)	81 (64-100)	12.0 (2.8-21.1)	13.48 (5.12-21.76)	0.34 (0.171-0.636)
20.	Cuttack FD/s	36 (1-154)	85 (64-96)	10.3 (6.9-13.0)	0.933 (0.280-1.960)	0.021 (0-0.069)	2.59 (0.84-8.68)	1900 (45-7900)	203 (147-264)	0.45 (0.10-0.75)	0.054 (0.010-0.154)	124 (92-158)	81 (64-100)	12.0 (2.8-21.1)	13.48 (5.12-21.76)	0.34 (0.171-0.636)
21.	Paradeep U/s	31 (4-97)	84 (60-124)	13.3 (5.4-31.0)	0.775 (0.056-2.240)	0.017 (0-0.073)	2.96 (0.84-8.96)	238 (20-790)	4683 (158-13540)	11.12 (0.09-31.11)	0.481 (0.011-1.277)	3040 (104-8700)	605 (60-1800)	1614.3 (2.9-5096.0)	160.8 (7.6-661.7)	0.446 (0.186-0.772)
22.	Paradeep D/s	86 (6-479)	102 (52-192)	23.9 (9.7-60.3)	0.826 (0.056-3.360)	0.019 (0.001-0.067)	2.75 (0.56-10.64)	132 (1.8-490)	19123 (238-44023)	41.48 (0.52-105.28)	0.516 (0.011-1.277)	14736 (144-37740)	1866 (84-3760)	7888.0 (13.5-18740.0)	907.11 (20.36-1815.88)	0.800 (0.261-1.140)
Ong River																
23.	Dharuakhaman	31 (2-177)	104 (60-156)	8.8 (4.0-13.6)	1.143 (0.280-3.360)	0.043 (0.001-0.146)	3.36 (1.12-7.84)	42 (1.8-170)	250 (140-336)	0.49 (0.14-0.71)	0.045 (0.005-0.357)	150 (88-192)	96 (60-128)	15.0 (3.8-24.9)	16.64 (5.12-42.91)	0.491 (0.190-0.670)
Tel River																
24.	Monmunda	77 (2-316)	78 (52-96)	7.9 (5.2-11.2)	0.723 (0.280-1.400)	0.020 (0-0.056)	2.49 (0.80-5.32)	117 (1.8-790)	180 (118-249)	0.35 (0.09-0.54)	0.051 (0.006-0.402)	110 (72-138)	72 (48-92)	9.8 (1.9-19.2)	10.29 (1.31-30.09)	0.293 (0.218-0.424)
Kathajodi River																
25.	Cuttack U/s	48 (2-169)	76 (52-98)	8.6 (5.2-12.2)	0.541 (0.056-1.120)	0.017 (0-0.070)	2.24 (0.56-6.44)	573 (20-1700)	189 (140-283)	0.38 (0.18-0.63)	0.048 (0.005-0.098)	112 (84-164)	74 (60-96)	11.3 (3.8-17.5)	11.72 (4.29-21.90)	0.321 (0.180-0.562)
26.	Cuttack D/s	50 (1-242)	92 (64-136)	16.8 (7.2-21.2)	0.77 (0.28-1.96)	0.015 (0-0.056)	4.27 (1.12-17.36)	31520 (940-160000)	239 (157-366)	0.53 (0.22-1.04)	0.067 (0.017-0.108)	141 (92-208)	87 (64-116)	16.0 (5.8-34.0)	15.20 (8.33-23.38)	0.292 (0.177-0.458)

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)	33 (2-97)	90 (56-132)	14.0 (5.6-24.1)	1.12 (0.28-2.24)	0.024 (0-0.105)	4.61 (0.28-14.0)	6864 (45-54000)	278 (164-380)	0.79 (0.27-1.09)	0.071 (<0.003 -0.136)	162 (96-216)	88 (52-122)	25.4 (7.7-40.4)	20.19 (8.05-38.80)	0.258 (0.172-0.416)
28.	Kamasasan (Cuttack FFD/s)	55 (4-250)	88 (66-114)	9.1 (4.0-11.6)	0.98 (0.28-2.52)	0.014 (0-0.042)	2.94 (0.56-7.28)	484 (1.8-1300)	225 (160-325)	0.53 (0.29-1.01)	0.072 (0.003-0.207)	133 (92-188)	82 (60-104)	15.8 (5.8-30.8)	11.74 (4.88-20.64)	0.294 (0.167-0.469)
Serua River																
29.	Sankhatrasa	35 (3-96)	88 (56-126)	12.9 (5.9-19.0)	0.821 (0.056-2.520	0.010 (0-0.034)	2.85 (0.56-7.00)	4045 (400-35000)	227 (161-369)	0.54 (0.21-1.10)	0.063 (<0.003 -0.126)	134 (92-210)	81 (56-106)	16.2 (5.8-36.2)	12.28 (4.88-20.89)	0.328 (0.183-0.462)
Kuakhai River																
30.	Bhubaneswar FU/s	33 (2-126)	74 (66-92)	11.1 (7.3-17.3)	0.588 (0.056-1.400)	0.011 (0-0.055)	2.37 (0.84-3.80)	610 (78-1700)	192 (158-253)	0.45 (0.22-0.75)	0.047 (<0.003 -0.177)	113 (92-144)	68 (56-80)	11.9 (7.7-21.1)	11.57 (6.07-19.03)	0.248 (0.105-0.459)
31.	Bhubaneswar U/s	54 (2-358)	77 (66-102)	12.9 (7.3-17.4)	0.756 (0.112-1.400)	0.011 (0-0.028)	2.36 (1.12-3.92)	1203 (230-1700)	188 (150-234)	0.47 (0.12-0.74)	0.044 (0.003	114 (88-140)	71 (60-86)	12.2 (3.8-21.2)	11.93 (5.47-20.77)	0.265 (0.166-0.708)
Daya River																
32.	Gelapur	37 (3-217)	79 (60-106)	8.6 (5.5-13.2)	0.621 (0.056-1.960)	0.011 (0-0.059)	2.92 (1.12-5.60)	792 (78-2400)	199 (150-269)	0.41 (0.17-0.62)	0.036 (<0.003 -0.076)	118 (88-156)	73 (60-102)	11.8 (5.8-21.2)	11.85 (6.43-19.65)	0.292 (0.152-0.575)
33.	Bhubaneswar D/s	28 (2-60)	82 (48-120)	21.8 (15.2-28.4)	1.199 (0.112-6.160)	0.013 (0-0.092)	4.76 (0.56-25.76)	23617 (1700-160000)	286 (169-446)	1.12 (0.57-2.57)	0.051 (<0.003 -0.152)	172 (112-272)	80 (64-104)	33.2 (15.4-85.6)	20.73 (5.35-30.09)	0.324 (0.136-0.724)
34.	Bhubaneswar FD/s	20 (2-49)	82 (60-120)	18.8 (11.3-28.0)	1.027 (0.280-2.240)	0.012 (0-0.034)	4.18 (0.56-20.16)	20033 (1300-160000)	262 (168-388)	0.86 (0.57-1.56)	0.041 (<0.003 -0.076)	149 (108-208)	77 (60-114)	26.6 (15.4-46.8)	13.74 (5.71-24.87)	0.334 (0.129-0.596)
35.	Kanas	29 (2-100)	89 (52-126)	14.0 (7.8-20.0)	0.826 (0.112-3.360)	0.012 (0-0.034)	3.22 (1.12-8.68)	4040 (490-9200)	298 (179-527)	0.094 (0.36-1.43)	0.053 (0.010-0.179)	178 (112-312)	86 (56-144)	32.5 (9.6-78.7)	22.43 (4.28-47.26)	0.327 (0.229-0.518)

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	23 (2-51)	79 (52-124)	41.2 (15.1-81.8)	1.680 (0.280-3.080)	0.011 (0-0.045)	7.63 (1.96-16.80)	138250 (24000-160000)	273 (164-460)	1.03 (0.46-1.81)	0.037 (<0.003-0.084)	158 (96-240)	75 (52-120)	32.6 (15.4-56.4)	15.58 (3.45-42.91)	0.201 (0.099-0.439)
37.	Palasuni	42 (3-109)	79 (40-120)	45.3 (18.9-90.5)	1.858 (0.280-3.920)	0.016 (0-0.137)	7.82 (0.84-22.96)	148667 (24000-160000)	335 (218-528)	1.53 (0.87-2.96)	0.050 (<0.003-0.171)	190 (124-304)	77 (56-98)	45.9 (28.8-85.6)	20.76 (11.19-42.91)	0.347 (0.113-0.985)
38.	Samantrapur	45 (3-151)	85 (58-122)	51.0 (15.1-100.1)	1.759 (0.112-3.640)	0.025 (0-0.182)	7.19 (0.56-22.96)	151167 (54000-160000)	353 (211-541)	1.31 (0.55-2.39)	0.050 (<0.003-0.099)	203 (132-312)	89 (64-112)	45.5 (21.2-85.6)	23.36 (11.78-47.60)	0.441 (0.144-1.110)
39.	Vadimula	57 (4-325)	82 (52-154)	28.1 (18.5-48.4)	1.156 (0.112-3.080)	0.003 (0-0.014)	4.65 (1.40-9.80)	103673 (5400-160000)	297 (167-544)	1.07 (0.26-2.14)	0.047 (<0.003-0.111)	173 (104-292)	82 (52-128)	35.7 (12.8-85.6)	18.52 (5.95-34.80)	0.367 (0.144-0.782)
Birupa River																
40.	Choudwar D/s	25 (1-131)	77 (64-90)	9.2 (5.2-17.3)	0.793 (0.280-1.400)	0.019 (0-0.087)	1.77 (0.84-3.64)	672 (110-2400)	191 (129-246)	0.45 (0.20-0.99)	0.068 (0.003-0.164)	116 (84-140)	74 (56-84)	12.4 (3.8-28.8)	11.90 (7.96-18.78)	0.324 (0.180-0.419)
Kushabhadra River																
41.	Bhingarpur	17 (2-85)	94 (64-146)	10.6 (5.2-15.8)	0.887 (0.280-3.360)	0.066 (0-0.420)	3.09 (1.12-6.72)	1277 (45-3500)	240 (132-363)	0.55 (0.19-0.90)	0.033 (0.003-0.100)	148 (84-232)	89 (56-130)	18.7 (5.8-31.9)	15.85 (7.96-23.88)	0.267 (0.188-0.328)
42.	Nimapara	31 (5-146)	81 (48-112)	11.9 (8.0-17.6)	0.793 (0.280-2.240)	0.025 (0-0.090)	2.94 (0.84-6.44)	1172 (130-2500)	223 (147-281)	0.61 (0.40-1.00)	0.025 (0.003-0.094)	131 (92-156)	75 (50-90)	17.4 (9.6-26.0)	14.52 (7.46-21.14)	0.254 (0.174-0.332)
43.	Gop	58 (3-445)	83 (34-108)	10.6 (6.8-14.1)	0.933 (0.280-2.520)	0.032 (0-0.246)	2.78 (0.84-5.32)	1283 (330-2400)	221 (142-291)	0.59 (0.18-0.95)	0.025 (0.003-0.090)	135 (88-184)	74 (40-96)	16.9 (5.8-31.9)	15.45 (7.50-22.63)	0.243 (0.158-0.309)
Bhargavi River																
44.	Chandanpur	45 (1-180)	83 (64-124)	9.6 (5.6-19.3)	0.910 (0.280-2.240)	0.031 (0-0.210)	3.06 (1.12-5.60)	1109 (170-2200)	252 (156-580)	0.65 (0.12-1.59)	0.042 (0.003-0.076)	145 (92-310)	81 (64-110)	18.6 (4.8-46.1)	20.61 (8.57-57.10)	0.290 (0.137-0.501)

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	48 (6-173)	85 (52-144)	9.5 (5.2-14.1)	0.793 (0.280-3.080)	0.020 (0-0.087)	3.22 (0.84-11.20)	1031 (45-2400)	234 (125-412)	0.65 (0.13-2.58)	0.092 (0.021-0.274)	141 (76-232)	81 (48-132)	19.2 (3.8-57.6)	13.07 (4.52-21.76)	0.288 (0.148-0.543)
46.	Golasahi	79 (4-184)	121 (64-276)	25.9 (7.5-64.8)	0.817 (0.280-1.400)	0.028 (0-0.140)	2.50 (1.12-4.20)	1628 (1.8-5400)	5030 (180-25530)	11.17 (0.62-53.89)	0.698 (0.038-2.495)	3593 (104-19220)	635 (56-2680)	1921.9 (17.3-10528.6)	108.11 (15.47-394.20)	0.348 (0.140-0.575)
Devi River																
47.	Machhagaon	48 (6-98)	90 (56-112)	28.6 (5.4-60.9)	1.055 (0.056-3.360)	0.031 (0-0.210)	3.97 (0.28-18.48)	91 (1.8-490)	12445 (147-37240)	22.85 (0.43-64.39)	1.033 (0.027-2.751)	8873 (88-27240)	1478 (56-4680)	4843. (7.7-13826.2)	398.36 (8.33-1691.60)	0.472 (0.212-0.707)
Gobari River																
48.	Kendrapara U/s	25 (2-80)	96 (56-128)	11.1 (5.7-21.2)	0.747 (0.280-1.960)	0.026 (0-0.055)	2.05 (0.84-4.20)	953 (45-2400)	560 (146-1128)	2.41 (0.48-6.34)	0.093 (0.006-0.207)	354 (92-752)	118 (52-220)	118.4 (13.5-317.3)	33.11 (3.69-81.12)	0.253 (0.171-0.424)
49.	Kendrapara D/s	30 (5-72)	105 (56-136)	12.8 (7.6-19.3)	1.030 (0.280-2.560)	0.022 (0-0.073)	3.78 (1.40-8.12)	1981 (130-9200)	711 (150-1368)	3.23 (0.47-7.01)	0.071 (0.014-0.168)	458 (100-920)	132 (56-212)	170.3 (9.6-346.0)	40.20 (4.40-107.60)	0.236 (0.140-0.382)
Nuna River																
50.	Bijipur	57 (2-165)	93 (52-178)	14.6 (10.3-21.7)	1.027 (0.280-3.360)	0.041 (0-0.328)	4.29 (1.68-6.72)	1225 (330-2200)	248 (128-529)	0.61 (0.25-1.07)	0.033 (0.007-0.073)	148 (88-296)	82 (56-136)	18.5 (7.7-28.8)	16.03 (3.33-31.46)	0.329 (0.207-0.413)
Kusumi River																
51.	Tangi	31 (3-76)	90 (52-182)	12.5 (3.4-35.3)	0.826 (0.112-1.960)	0.021 (0-0.090)	3.08 (0.56-15.40)	1868 (330-3500)	456 (116-452)	0.93 (0.34-2.28)	0.052 (<0.003 -0.179)	152 (76-268)	80 (48-148)	28.7 (7.7-91.5)	12.00 (1.74-24.13)	0.268 (0.093-0.522)
Kansari River																
52.	Banapur	47 (5-229)	94 (64-144)	11.4 (7.5-17.5)	0.865 (0.280-2.240)	0.016 (0-0.090)	4.45 (1.12-18.20)	1591 (78-3300)	241 (168-341)	0.62 (0.15-1.28)	0.095 (0.010-0.270)	144 (92-216)	83 (56-134)	18.9 (5.7-55.3)	10.07 (1.62-26.86)	0.159 (0.085-0.305)

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	32 (4-130)	147 (92-260)	13.6 (3.9-27.8)	0.747 (0.280-1.680)	0.009 (0-0.045)	3.69 (1.12-8.96)	1160 (45-2200)	931 (195-5070)	2.49 (0.39-12.02)	0.134 (0.020-0.787)	564 (124-2988)	186 (76-700)	170.9 (10.6-1249.9)	79.64 (5.83-589.00)	0.339 (0.144-0.505)
Sabulia River																
54.	Rambha	27 (5-96)	184 (56-264)	13.7 (7.7-22.2)	0.687 (0.280-1.400)	0.015 (0-0.070)	2.39 (1.12-4.76)	1179 (78-3500)	522 (141-792)	1.07 (0.12-2.53)	0.190 (0.007-1.150)	308 (88-536)	162 (52-228)	53.8 (7.7-110.5)	23.16 (4.17-78.61)	0.382 (0.127-0.689)
Ratnachira River																
55.	Kumardihi	24 (3-89)	78 (48-122)	10.0 (7.2-13.6)	1.050 (0.280-3.080)	0.023 (0-0.091)	2.80 (0.84-5.60)	1184 (45-3500)	252 (146-534)	0.89 (0.51-1.77)	0.053 (<0.003-0.134)	149 (88-298)	76 (48-118)	28.6 (14.4-69.2)	13.85 (5.24-22.26)	0.335 (0.089-1.070)
❖ **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

(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	1.77 (0.65-5.62)	0.067 (0.003-0.321)	<0.002	0.010	0.152	0.001	0.002	0.011	0.0028	--	0.003
2.	Jharsuguda	1.86 (0.46-12.54)	0.058 (0.010-0.216)	<0.002	0.018	0.363	0.004	0.004	0.017	0.0023	--	0.007
3.	Brajrajnagar U/s	1.11 (0.48-2.35)	0.060 (0.007-0.199)	<0.002	0.015	0.273	0.004	0.007	0.008	0.0018	--	0.007
4.	Brajrajnagar D/s	0.90 (0.44-1.85)	0.077 (0.005-0.293)	<0.002	0.020	0.145	0.009	0.005	0.014	0.0029	--	0.012
Bheden river												
5.	Jharsuguda	0.89 (0.36-2.04)	0.067 (0.007-0.239)	<0.002	0.013	0.202	0.004	0.003	0.012	0.0029	--	0.008
Hirakud reservoir												
6.	Hirakud reservoir	1.22 (0.50-4.62)	0.097 (0.002-0.541)	<0.002	0.024	0.151	0.006	0.009	0.012	0.0018	--	0.004
7.	Power channel U/s	1.96 (0.42-9.39)	0.073 (0.002-0.494)	<0.002	0.020	0.167	0.007	0.005	0.007	0.0024	--	0.008
8.	Power Channel D/s	1.04 (0.46-2.96)	0.097 (0.003-0.557)	<0.002	0.024	0.323	0.004	0.004	0.007	0.0029	--	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)								
Mahanadi River												
9.	Sambalpur U/s	1.01 (0.43-1.67)	0.105 (0.004-0.589)	<0.002	0.027	0.031	0.003	0.002	0.011	0.0018	--	0.002
10.	Sambalpur D/s	0.99 (0.46-2.06)	0.167 (0.002-1.399)	<0.002	0.030	0.051	0.003	0.003	0.007	0.0017	--	0.003
11.	Sambalpur FD/s at Shankarmath	1.13 (0.5-2.97)	0.124 (0.002-0.787)	<0.002	0.027	0.128	0.004	0.007	0.017	0.0018	--	0.016
12.	Sambalpur FD/s at Huma	1.36 (0.57-4.93)	0.096 (0.003-0.589)	<0.002	0.024	0.033	0.008	0.006	0.009	0.0022	--	0.014
13.	Sonepur U/s	1.17 (0.44-3.28)	0.164 (0.003-0.769)	<0.002	0.024	0.026	0.009	0.003	0.004	0.0024	--	0.009
14.	Sonepur D/s	2.35 (0.44-14.42)	0.108 (0.001-0.729)	<0.002	0.025	0.021	0.004	0.002	0.002	0.0017	--	0.002
15.	Tikarapada	1.76 (0.54-5.38)	0.068 (0.005-0.239)	<0.002	0.018	0.177	0.002	0.002	0.003	0.0024	--	0.003
16.	Narasinghpur	1.19 (0.38-4.27)	0.306 (0.005-1.947)	0.002	0.030	1.624	0.006	0.010	0.044	0.0029	--	0.010
17.	Munduli	0.93 (0.40-1.52)	0.132 (0.007-0.606)	<0.002	0.027	0.723	0.008	0.012	0.012	0.0024	--	0.008
18.	Cuttack U/s	0.94 (0.47-1.38)	0.109 (0.003-0.659)	<0.002	0.024	0.689	0.007	0.006	0.055	0.0023	--	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	1.08 (0.46-1.99)	0.069 (0.006-0.166)	<0.002	0.027	0.760	0.005	0.005	0.071	0.0016	--	0.004
20.	Cuttack FD/s	1.08 (0.46-1.99)	0.069 (0.006-0.166)	<0.002	0.027	0.760	0.005	0.005	0.071	0.0016	--	0.004
21.	Paradeep U/s	0.86 (0.45-1.60)	0.068 (0.007-0.188)	<0.002	0.035	0.160	0.007	0.009	0.016	0.0014	--	0.005
22.	Paradeep D/s	1.24 (0.61-2.75)	0.361 (0.010-1.423)	<0.002	0.027	0.128	0.004	0.007	0.017	0.0018	--	0.016
Ong River												
23.	Dharuakhaman	1.20 (0.50-3.19)	0.097 (0.002-0.764)	<0.002	0.024	0.213	0.006	0.005	0.011	0.0023	--	0.006
Tel River												
24.	Monmunda	1.56 (0.58-4.45)	0.178 (0.002-1.662)	<0.002	0.025	0.146	0.004	0.004	0.010	0.0018	--	0.004
Kathajodi River												
25.	Cuttack U/s	0.83 (0.50-1.33)	0.098 (0.003-0.660)	<0.002	0.024	0.652	0.005	0.011	0.053	0.0024	--	0.006
26.	Cuttack D/s	1.97 (0.58-9.38)	0.142 (0.013-0.590)	<0.002	0.030	0.766	0.008	0.007	0.063	0.0029	--	0.004
27.	Mattagajpur (Cuttack FD/s)	1.56 (0.71-2.96)	0.108 (0.015-0.245)	<0.002	0.025	0.844	0.005	0.004	0.051	0.0022	--	0.008
28.	Kamasasan (Cuttack FFD/s)	2.04 (0.63-6.05)	0.178 (0.007-0.688)	<0.002	0.018	1.168	0.005	0.011	0.055	0.0023	--	0.003

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)	1.84 (0.566-5.60)	0.221 (0.029-0.828)	<0.002	0.020	0.989	0.004	0.014	0.045	0.0021	--	0.002
Kuakhai River												
30.	Bhubaneswar FU/s	1.99 (0.66-5.86)	0.144 (0.005-0.886)	<0.002	0.029	0.239	0.002	0.002	0.011	0.0028	--	0.006
31.	Bhubaneswar U/s	1.77 (0.50-4.65)	0.223 (0.016-1.673)	<0.002	0.027	0.125	0.003	0.006	0.010	0.0030	--	0.006
Daya River												
32.	Gelapur	4.09 (0.61-31.82)	0.218 (0.005-0.910)	<0.002	0.029	0.114	0.003	0.007	0.017	0.0036	--	0.005
33.	Bhubaneswar D/s	9.03 (0.14-9.18)	0.432 (0.005-1.937)	<0.002	0.032	0.083	0.007	0.005	0.047	0.0033	--	0.005
34.	Bhubaneswar FD/s	9.38 (0.72-59.19)	0.391 (0.028-1.515)	<0.002	0.029	0.450	0.007	0.007	0.020	0.0028	--	0.005
35.	Kanas	1.27 (0.57-4.16)	0.114 (0.024-0.335)	<0.002	0.024	0.074	0.004	0.004	0.007	0.0023	--	0.005
Gangua River												
36.	Near Rajdhani Engg. College	5.51 (0.67-28.94)	0.457 (0.048-1.218)	<0.002	0.040	0.864	0.011	0.009	0.032	0.0035	--	0.005
37.	Palasuni	4.32 (0.46-13.94)	0.369 (0.086-1.009)	<0.002	0.040	0.870	0.008	0.013	0.013	0.0036	--	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)								
38.	Samantraypur	17.44 (0.68-65.46)	0.509 (0.096-1.673)	<0.002	0.047	0.414	0.004	0.005	0.101	0.0041	--	0.012
39.	Vadimula	9.26 (0.46-26.45)	0.329 (0.010-1.199)	<0.002	0.027	0.228	0.003	0.002	0.029	0.0018	--	0.004
Birupa River												
40.	Choudwar D/s	0.87 (0.52-1.60)	0.073 (0.004-0.162)	<0.002	0.022	1.313	0.008	0.008	0.012	0.0018	--	0.002
Kushabhadra River												
41.	Bhingarpur	2.81 (0.48-15.78)	0.094 (0.009-0.280)	<0.002	0.020	0.099	0.003	0.003	0.006	0.0014	--	0.004
42.	Nimapara	1.19 (0.38-2.31)	0.103 (0.007-0.302)	<0.002	0.030	0.016	0.002	0.001	0.001	0.0016	--	0.002
43.	Gop	1.31 (0.59-2.70)	0.108 (0.007-0.339)	<0.002	0.029	0.363	0.003	0.005	0.007	0.0015	--	0.003
Bhargavi River												
44.	Chandanpur	1.32 (0.29-2.14)	0.081 (0.010-0.225)	<0.002	0.024	0.406	0.003	0.003	0.011	0.0023	--	0.004
Mangala River												
45.	Malatipatpur	1.25 (0.13-2.95)	0.121 (0.013-0.443)	<0.002	0.027	0.442	0.004	0.003	0.007	0.0024	--	0.004
46.	Golasahi	8.83 (0.77-46.65)	0.200 (0.012-1.114)	<0.002	0.030	0.272	0.008	0.007	0.010	0.0015	--	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)								
Devi River												
47.	Machhagaon	1.09 (0.52-2.06)	0.134 (0.008-0.397)	<0.002	0.030	0.144	0.012	0.007	0.010	0.0028	--	0.004
Gobari River												
48.	Kendrapara U/s	1.18 (0.64-3.04)	0.115 (0.014-0.448)	<0.002	0.024	0.327	0.005	0.008	0.009	0.0023	--	0.010
49.	Kendrapara D/s	2.38 (0.59-8.13)	0.181 (0.012-0.469)	<0.002	0.025	0.425	0.008	0.004	0.008	0.0020	--	0.006
Nuna River												
50.	Bijipur	1.58 (0.53-3.95)	0.195 (0.006-1.092)	<0.002	0.024	0.024	0.002	0.002	0.001	0.0016	--	0.002
Kusumi River												
51.	Tangi	1.66 (0.67-5.28)	0.060 (0.005-0.288)	<0.002	0.022	0.396	0.005	0.004	0.007	0.0181	--	0.002
Kansari River												
52.	Banapur	1.08 (0.46-2.78)	0.100 (0.012-0.490)	<0.002	0.013	0.226	0.006	0.006	0.003	0.0021	--	0.004
Badasankha River												
53.	Langaleswar	1.30 (0.46-5.74)	0.047 (0.012-0.099)	<0.002	0.024	0.853	0.005	0.002	0.101	0.0056	--	0.010
Sabulia River												
54.	Rambha	2.16 (0.56-6.71)	0.063 (0.014-0.207)	<0.002	0.018	0.218	0.009	0.005	0.007	0.0026	--	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)								
Ratnachira River												
55.	Kumardihi	1.38 (0.22-2.55)	0.099 (0.011-0.393)	<0.002	0.018	0.987	0.004	0.003	0.007	0.0021	--	0.004
***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 April, 2019

(B) Brahmani River System (2019)

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	40 (2-121)	64 (32-128)	8.7 (3.4-27.0)	0.546 (0.112-1.400)	0.006 (0-0.021)	2.89 (0.56-5.04)	631 (20-3300)	152 (108-246)	0.35 (0.21-0.50)	0.018 (0.003-0.052)	93 (68-148)	60 (32-114)	8.0 (3.8-11.7)	9.27 (3.48-15.42)	0.256 (0.171-0.331)
Koel river																
2.	Koel U/s	45 (4-164)	77 (48-106)	7.2 (5.2-15.4)	0.639 (0.112-2.800)	0.009 (0-0.056)	2.81 (0.56-6.16)	916 (170-2400)	177 (118-247)	0.33 (0.12-0.67)	0.030 (0.003-0.114)	105 (76-144)	72 (40-108)	10.1 (3.8-19.2)	9.41 (6.21-14.80)	0.248 (0.174-0.369)
Brahmani river																
3.	Panposh U/s	44 (3-196)	69 (48-128)	9.0 (3.8-14.0)	0.448 (0.056-1.120)	0.006 (0-0.022)	2.29 (0.28-6.16)	605 (78-1700)	161 (112-246)	0.37 (0.13-0.56)	0.018 (0.003-0.056)	97 (72-148)	64 (40-114)	8.8 (3.8-13.4)	9.24 (3.86-14.30)	0.260 (0.182-0.357)
4.	Panposh D/s	57 (2-156)	65 (44-102)	27.6 (16.9-36.7)	1.750 (0.280-7.560)	0.011 (0-0.076)	5.18 (1.12-13.16)	10708 (1400-35000)	325 (181-472)	0.71 (0.26-1.12)	0.034 (0.003-0.105)	193 (112-314)	102 (68-140)	23.9 (7.7-40.4)	48.50 (12.68-77.98)	1.279 (0.742-1.660)
5.	Rourkela D/s	68 (2-275)	68 (32-98)	21.4 (9.4-31.0)	1.353 (0/280-3.920)	0.010 (0-0.078)	4.22 (1.12-12.04)	4294 (640-14000)	237 (137-337)	0.55 (0.18-0.92)	0.030 (<0.003-0.080)	143 (88-212)	81 (44-124)	16.0 (5.8-24.9)	29.68 (9.45-59.10)	0.913 (0.296-1.330)
6.	Rourkela FD/s (Attaghat)	55 (4-259)	70 (36-88)	14.2 (5.6-23.3)	0.817 (0.280-2.520)	0.008 (0-0.050)	2.80 (0.84-10.64)	703 (78-2200)	212 (125-328)	0.46 (0.11-0.63)	0.037 (0.003-0.112)	126 (76-192)	77 (44-120)	13.2 (3.8-20.2)	21.03 (6.78-48.26)	0.590 (0.196-0.774)
7.	Rourkela FD/s (Biritola)	36 (4-142)	66 (36-86)	9.5 (5.2-15.5)	0.770 (0.280-1.680)	0.008 (0-0.022)	4.20 (1.12-19.32)	394 (1.8-2200)	184 (117-273)	0.46 (0.26-0.68)	0.036 (<0.003-0.087)	109 (76-152)	67 (44-98)	11.1 (6.7-17.0)	16.73 (6.78-32.58)	0.498 (0.196-0.655)
8.	Bonaigarh	33 (1-152)	69 (48-98)	7.2 (5.2-11.6)	1.036 (0.112-3.360)	0.011 (0-0.22)	3.94 (0.56-15.96)	636 (1.8-4900)	189 (127-258)	0.45 (0.13-0.77)	0.027 (<0.003-0.027)	112 (76-160)	68 (44-108)	11.4 (3.8-20.2)	15.31 (6.19-23.63)	0.516 (0.207-0.674)
9.	Rengali	21 (1-153)	57 (40-96)	8.0 (3.8-13.8)	0.565 (0.280-1.400)	0.020 (0-0.112)	2.38 (0.56-7.84)	80 (14-330)	143 (83-218)	0.37 (0.19-0.57)	0.053 (0.006-0.225)	87 (52-128)	56 (32-104)	8.4 (5.8-15.4)	9.93 (5.71-19.28)	0.222 (0.136-0.376)

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	17 (1-74)	60 (40-102)	8.2 (3.7-17.3)	0.518 (0.280-1.120)	0.013 (0-0.045)	2.77 (1.12-6.72)	200 (20-490)	152 (100-241)	0.40 (0.14-0.90)	0.051 (0.003-0.242)	92 (64-132)	59 (40-112)	9.1 (3.8-24.9)	11.09 (6.67-17.16)	0.262 l0.155-0.482)
11.	Talcher FU/s	16 (1-99)	58 (42-96)	7.3 (3.7-12.1)	0.663 (0.112-1.400)	0.012 (0-0.022)	2.27 (1.12-4.48)	100 (1.8-330)	151 (114-213)	0.35 (0.18-0.56)	0.109 (0.006-0.498)	93 (72-128)	59 (44-104)	8.0 (3.8-15.4)	13.91 (8.08-20.65)	0.254 (0.165-0.443)
12.	Talcher U/s	16 (1-100)	54 (40-66)	8.2 (5.6-12.1)	0.765 (0.224-2.240)	0.025 (0-0.179)	3.10 (1.40-5.04)	247 (1.8-790)	152 (114-210)	0.35 (0.18-0.56)	0.055 (0.010-0.154)	91 (72-120)	59 (42-90)	8.3 (4.8-16.3)	14.45 (6.22-35.82)	0.248 (0.159-0.429)
13.	Mandapal	23 (1-82)	58 (36-80)	11.2 (3.8-10.2)	0.719 (0.224-1.680)	0.016 (0-0.045)	3.43 (1.40-7.84)	838 (45-2400)	150 (119-196)	0.35 (0.23-0.49)	0.073 (0.003-0.310)	93 (76-112)	58 (40-84)	8.2 (3.8-11.7)	13.29 (6.71-21.52)	0.265 (0.159-0.451)
14.	Talcher D/s	14 (2-86)	70 (48-118)	11.7 (5.7-18.2)	0.817 (0.280-1.680)	0.015 (0-0.056)	4.93 (0.56-20.72)	396 (2-1700)	202 (135-293)	0.47 (0.31-0.69)	0.074 (0.010-0.380)	122 (84-168)	72 (40-114)	11.6 (5.8-18.1)	21.87 (12.26-41.74)	0.425 (0.242-0.843)
15.	Talcher FD/s	18 (1-102)	79 (64-100)	9.6 (3.1-18.2)	0.509 (0.224-1.120)	0.014 (0.003-0.028)	4.20 (0.56-23.52)	145 (2-490)	202 (176-243)	0.50 (0.25-0.73)	0.093 (0.007-0.560)	123 (108-152)	76 (44-92)	11.7 (8.6-16.3)	16.36(9.20-23.38)	0.367 (0.277-0.545)
16.	Dhenkanal U/s	17 (1-105)	67 (52-112)	7.5 (3.1-15.5)	0.798 (0.056-2.240)	0.016 (0.001-0.050)	3.73 (1.12-6.72)	123 (13-490)	173 (121-255)	0.43 (0.29-0.76)	0.070 (0.003-0.251)	104 (76-144)	64 (44-108)	10.4 (5.8-21.2)	13.80 (8.45-22.39)	0.289 (0.181-0.497)
17.	Dhenkanal D/s	18 (2-109)	73 (56-116)	9.4 (3.1-15.5)	0.733 (0.112-3.080)	0.024 (0-0.108)	3.27 (1.12-9.24)	298 (20-1300)	190 (138-259)	0.47 (0.31-0.70)	0.057 (0.012-0.254)	117 (88-148)	72 (44-114)	12.5 (8.6-21.8)	13.54 (7.33-23.01)	0.292 (0.171-0.482)
18.	Bhuban	20 (1-94)	63 (44-110)	8.1 (3.1-12.1)	0.957 (0.280-2.240)	0.025 (0-0.091)	3.99 (1.68-7.84)	362 (1.8-1700)	164 (121-248)	0.46 (0.21-1.03)	0.060 (0.009-0.323)	100 (72-144)	60 (40-110)	10.5 (5.8-23.1)	11.93 (7.46-17.78)	0.275 (0.156-0.441)
19.	Kabatabandha	40 (1-86)	63 (46-120)	6.5 (3.9-10.7)	0.607 (0.280-1.400)	0.023 (0-0.105)	2.96 (1.68-5.04)	205 (1.8-790)	171 (119-270)	0.52 (0.17-1.81)	0.071 (<0.003 -0.158)	104 (76-156)	62 (48-112)	12.4 (5.8-45.2)	13.75 (8.08-20.39)	0.261 (0.144-0.441)

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	29 (2-124)	70 (40-132)	7.9 95.2-11.6)	0.653 (0.280-1.400)	0.021 (0-0.070)	2.80 (0.56-8.96)	900 (20-3500)	182 (132-295)	0.46 (0.20-0.69)	0.299 (<0.003 -2.769)	109 (80-172)	68 (48-124)	12.1 (5.8-19.1)	12.49 (7.46-19.15)	0.227 (0.178-0.316)
21.	Dharmasala D/s	28 (1-99)	70 (40-124)	9.5 (5.4-16.4)	0.817 (0.280-2.800)	0.024 (0.003-0.084)	3.34 (1.40-5.60)	1170 (20-3500)	189 (123-286)	0.47 (0.17-0.67)	0.240 (0.006-2.349)	113 (84-168)	71 (48-120)	12.4 (5.8-20.2)	13.01 (7.03-20.77)	0.222 (0.169-0.347)
22.	Pottamundai	13 (1-49)	83 (56-146)	6.9 (3.4-9.6)	0.863 (0.280-2.240)	0.044 (0.003-0.146)	3.03 (0.84-6.72)	928 (1.8-2800)	218 (154-367)	0.53 (0.36-0.75)	0.066 (0.006-0.175)	130 (96-204)	80 (60-136)	16.1 (7.7-24.9)	12.38 (6.31-17.66)	0.315 (0.178-0.576)
Nandira River																
23.	Nandira U/s	6 (1-21)	164 (120-208)	9.0 (4.7-15.2)	1.050 (0.280-1.960)	0.027 (0-0.045)	4.13 (1.12-8.96)	335 (20-1300)	554 (468-688)	1.01 (0.20-1.62)	0.108 (0.014-0.485)	323 (272-394)	180 (146-200)	46.1 (7.7-70.2)	56.08 (15.67-89.80)	1.287 (0.837-2.480)
24.	Nandira D/s	11 (1-43)	170 (112-224)	12.9 (9.1-19.0)	0.863 (0.280-2.800)	0.033 (0.003-0.098)	5.25 (1.12-12.88)	662 (20-1700)	585 (486-667)	1.11 (0.56-1.74)	0.120 (0.019-0.354)	341 (284-418)	183 (152-208)	47.4 (26.9-71.2)	64.96 (28.36-105.90)	1.4593 (1.190-2.430)
Kisinda Jhor																
25.	Kisindajhor	11 (1-34)	152 (80-224)	11.1 (6.3-15.5)	0.910 (0.280-2.240)	0.034 (0.003-0.078)	3.78 (0.84-10.36)	764 (45-2200)	502 (183-810)	0.94 (0.39-1.79)	0.088 (0.010-0.301)	299 (116-444)	163 (72-218)	39.5 (10.6-69.2)	51.47 (15.71-86.32)	1.778 (0.314-5.050)
Kharasrota River																
26.	Khanditara	40 (1-137)	67 (52-134)	6.4 (3.4-9.7)	0.793 (0.280-2.240)	0.037 (0.001-0.146)	3.03 (0.84-7.00)	351 (40-1300)	172 (111-290)	0.37 (0.12-0.62)	0.074 (0.003-0.350)	103 (72-164)	65 (40-132)	9.8 (5.8-19.2)	13.52 (6.54-21.64)	0.291 (0.206-0.497)
27.	Binjharpur	21 (1-63)	67 (50-114)	7.0 (3.4-11.2)	0.607 (0.280-1.120)	0.015 (0 - 0.045)	2.87 (0.84-8.40)	1362 (110-2400)	166 (128-231)	0.35 (0.16-0.62)	0.046 (0.003-0.223)	99 (76-144)	66 (48-108)	8.7 (5.8-11.5)	11.81 (7.21-15.79)	0.245 (0.172-0.375)
28.	Aul	27 (2-69)	62 (52-92)	8.0 (5.4-10.7)	0.840 (0.280-2.240)	0.045 (0 - 0.179)	2.52 (0.84-6.72)	858 (110-2400)	212 (139-301)	0.57 (0.33-0.99)	0.127 (0.003-0.127)	126 (80-168)	71 (48-120)	17.3 (7.7-29.8)	21.38 (7.02-48.26)	0.327 (0.166-0.497)

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	27 (1-62)	71 (42-120)	32.4 (22.2-48.4)	1.960 (0.560-3.360)	0.059 (0-0.429)	6.62 (2.52-12.04)	42633 (1100-160000)	401 (186-531)	0.90 (0.19-1.27)	0.084 (0.003-0.350)	232 (108-320)	125 (84-156)	34.6 (5.8-46.2)	62.96 (19.90-84.05)	1.529 (0.271-1.990)
Badjhor nallah																
30.	Badjhor nallah	17 (1-35)	112 (70-144)	9.7 (5.2-17.4)	0.770 (0.280-2.800)	0.031 (0.004-0.140)	2.57 (0.84-5.04)	773 (110-1700)	301 (211-380)	0.79 (0.45-1.18)	0.067 (0.006-0.192)	179 (128-232)	100 (72-120)	25.3 (11.5-42.3)	18.44 (9.29-42.16)	0.360 (0.227-0.598)
Damsala River																
31.	Dayanabil	35 (3-107)	69 (48-94)	6.7 (5.2-9.8)	0.793 (0.280-1.680)	0.022 (0-0.070)	3.13 (0.56-6.16)	686 (20-2400)	163 (119-214)	0.27 (0.13-0.57)	0.052 (0.007-0.154)	99 (72-124)	70 (48-100)	7.8 (3.8-11.5)	9.71 (3.33-17.40)	0.151 (0.093-0.236)
Ganda nallah																
32.	Marthapur	34 (6-122)	90 (62-120)	12.5 (6.1-19.0)	0.583 (0.280-1.120)	0.014 (0-0.036)	3.17 (0.84-11.20)	382 (45-1300)	349 (153-598)	0.82 (0.17-1.42)	0.076 (0.003-0.175)	209 (96-348)	111 (42-122)	28.2 (6.6-58.5)	42.46 (6.54-106.50)	1.289 (0.443-5.790)
Lingira River																
33.	Angul U/s	6 (2-11)	169 (116-224)	8.4 (3.8-13.0)	0.415 (0.112-0.840)	0.019 (0-0.070)	2.10 (0.56-3.92)	434 (68-1400)	391 (305-512)	0.71 (0.35-1.09)	0.063 (0.010-0.242)	228 (168-296)	144 (88-196)	25.4 (16.3-44.2)	16.14 (10.69-23.51)	0.577 (0.349-1.360)
34.	Angul D/s	5 (1-10)	194 (132-238)	10.5 (3.8-19.3)	0.737 (0.168-2.240)	0.045 (0.007-0.146)	3,41 (0.56-12.32)	676 (130-1700)	464 (359-630)	0.90 (0.53-1.46)	0.074 (0.006-0.224)	277 (212-348)	162 (126-214)	35,4 (18.3-65.4)	20.58 (12.31-40.17)	0.615 (0.281-1.390)
Ramiala River																
35.	Kamakhyanagar	21 (3-70)	63 (40-90)	6.5 (4.7-11.6)	0.915 (0.280-3.360)	0.023 (0-0.067)	3.69 (0.84-10.36)	491 (20-1700)	154 (121-196)	0.40 (0.22-0.77)	0.044 (0.003-0.178)	91 (68-116)	58 (44-92)	9.1 (5.8-13.4)	7.97 (4.72-16.67)	0.217 (0.153-0.325)
Banguru nallah																
36.	Banguru nallah	10 (2-37)	117 (40-212)	8.0 (3.9-15.2)	1.073 (0.280-3.080)	0.017 (0-0.046)	3.52 (0.84-7.84)	329 (20-1300)	759 (479-1408)	0.080 (0.29-1.59)	0.058 (0.003-0.161)	459 (296-844)	257 (116-350)	36.8 (19.2-57.7)	177.35 (62.68-278.57)	0.622 (0.454-1.040)

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	24 (3-138)	136 (76-248)	8.3 (3.1-17.4)	0.857 (0.168-2.560)	0.044 (0-0.166)	3.10 (1.12-6.16)	473 (20-1300)	417 (228-635)	0.061 (0.33-1.03)	0.040 (0.005-0.119)	257 (148-428)	156 (80-288)	23.5 (12.5-32.6)	50.23 (20.83-114.68)	0.532 (0.389-0.782)
Tikira River																
38.	Kaniha U/s	67 (3-285)	86 (40-124)	7.1 (4.7-11.4)	0.845 (0.056-3.360)	0.052 (0.002-0.218)	4.57 (0.84-17.92)	396 (2-1300)	209 (162-314)	0.47 (0.34-0.60)	0.047 (0.013-0.221)	127 (92-184	78 (50-116)	12.2 (7.7-21.5)	13.97 (7.96-24.75)	0.420 (0.232-1.150)
39.	Kaniha D/s	62 (2-220)	89 (44-130)	9.1 (5.7-17.4)	1.008 (0.056-5.320)	0.059 (0-0.426)	4.28 (1.12-18.48)	688 (20-2400)	275 (169-418)	0.57 (0.33-0.81)	0.066 (0.013-0.347)	169 (112-236)	101 (64-130)	17.2 (10.6-27.9)	31.73 (12.56-52.98)	1.104 (0.266-1.460)
Bangurusingada jhor																
40.	Bangurusingada jhor	11 (1-61)	136 (88-208)	7.4 (3.4-11.6)	1.227 (0.168-5.320)	0.033 (0-0.120)	4.32 (1.68-10.64)	491 (20-1300)	357 (193-541)	0.74 (0.20-1.48)	0.046 (0.005-0.105)	219 128-320)	131 (88-202)	27.5 (5.8-58.5)	28.28 (7.38-42.90)	0.641 (0.353-1.190)
Karo River																
41.	Barbil	58 (1-529)	77 (44-132)	5.6 (3.4-8.9)	0.793 (0.280)	0.019 (0-0.070)	2.54 (1.12-5.32)	191 (14-1100)	178 (126-346)	0.28 (0.07-0.68)	0.052 (0.017-0.119)	111 (84-204)	77 (52-120)	7.6 (5.3-11.5)	11.81 (2.62-61.81)	0.205 (0.094-0.314)
❖ **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

(B) 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)								
Sankha River												
1.	Sankha U/s	1.80 (0.65-5.55)	0.054 (0.006-0.257)	<0.002	0.020	0.206	0.001	0.001	0.001	0.0014	--	0.001
Koel River												
2.	Koel U/s	1.61 (0.52-3.81)	0.057 (0.009-0.251)	<0.002	0.013	0.523	0.002	0.003	0.004	0.0018	--	0.003
Brahmani river												
3.	Panposh U/s	2.17 (0.71-5.07)	0.075 (0.003-0.409)	<0.002	0.013	0.295	0.003	0.004	0.005	0.0014	--	0.003
4.	Panposh D/s	34.73 (0.70-84.48)	0.056 (0.007-0.153)	<0.002	0.018	0.620	0.004	0.004	0.029	0.0023	--	0.008
5.	Rourkela D/s	9.64 (0.90-31.48)	0.065 (0.011-0.251)	<0.002	0.018	0.321	0.003	0.003	0.016	0.0018	--	0.007
6.	Rourkela FD/s (Attaghat)	5.22 (0.91-15.26)	0.043 (0.007-0.146)	<0.002	0.020	0.262	0.003	0.005	0.013	0.0016	--	0.007
7.	Rourkela FD/s (Biritola)	3.04 (0.75-10.48)	0.076 (0.005-0.442)	<0.002	0.018	0.158	0.003	0.004	0.006	0.0018	--	0.003
8.	Bonai	4.09 (1.03-15.26)	0.228 (0.007-1.836)	<0.002	0.013	0.334	0.002	0.004	0.020	0.0014	--	0.004
9.	Rengali	1.09 (0.58-2.46)	0.059 (0.010-0.182)	<0.002	0.013	0.104	0.003	0.004	0.001	0.0016	--	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)								
10.	Samal	1.63 (0.63-8.45)	0.079 (0.014-0.347)	<0.002	0.012	0.096	0.002	0.002	0.003	0.0015	--	0.003
11.	Talcher FU/s	1.50 (0.63-6.96)	0.054 (0.005-0.199)	<0.002	0.012	0.122	0.002	0.003	0.001	0.0020	--	0.006
12.	Talcher U/s	1.29 (0.42-4.83)	0.114 (0.010-0.567)	<0.002	0.013	0.027	0.011	0.004	0.003	0.0021	--	0.006
13.	Mandapal	2.05 (0.56-6.93)	0.082 (0.011-0.444)	<0.002	0.012	0.176	0.003	0.005	0.008	0.0024	--	0.007
14.	Talcher D/s	1.68 (0.55-5.47)	0.063 (0.005-0.298)	<0.002	0.024	0.160	0.002	0.005	0.005	0.0024	--	0.007
15.	Talcher FD/s	1.93 (0.48-7.93)	0.040 (0.007-0.166)	<0.002	0.020	0.080	0.003	0.004	0.004	0.0021	--	0.007
16.	Dhenkanal U/s	1.83 (0.72-6.17)	0.050 (0.009-0.282)	<0.002	0.018	0.032	0.001	0.003	0.023	0.0019	--	0.005
17.	Dhenkanal D/s	2.24 (0.73-6.50)	0.066 (0.015-0.336)	<0.002	0.020	0.155	0.002	0.004	0.015	0.0020	--	0.009
18.	Bhuban	2.91 (0.64-8.78)	0.130 (0.010-1.178)	<0.002	0.029	0.520	0.002	0.005	0.122	0.0015	--	0.008
19.	Kabatabandha	2.67 (0.54-17.79)	0.063 (0.014-0.202)	<0.002	0.027	0.521	0.003	0.002	0.012	0.0014	--	0.003
20.	Dharmasala U/s	1.29 (0.58-2.68)	0.045 (0.008-0.113)	<0.002	0.024	0.107	0.002	0.005	0.025	0.0016	--	0.005

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	1.82 (0.54-5.76)	0.055 (0.015-0.190)	<0.002	0.020	0.097	0.002	0.007	0.010	0.0018	--	0.008
22.	Pottamundai	0.91 (0.40-1.78)	0.147 (0.013-0.670)	<0.002	0.024	2.249	0.002	0.002	0.002	0.0020	--	0.007
Nandira River												
23.	Nandira U/s	3.37 (0.63-15.10)	0.126 (0.007-0.729)	<0.002	0.020	0.164	0.010	0.007	0.023	0.0023	--	0.013
24.	Nandira D/s	2.30 (0.48-7.84)	0.139 (0.006-0.764)	<0.002	0.027	0.203	0.007	0.005	0.018	0.0026	--	0.016
Kisindajhor												
25.	Kisindajhor	8.34 (0.58-25.90)	0.007-3.644)	<0.002	0.027	0.131	0.006	0.006	0.062	0.0026	--	0.014
Kharasrota River												
26.	Khanditara	1.74 (0.74-4.04)	0.045 (0.008-0.204)	<0.002	0.020	0.134	0.004	0.005	0.009	0.0015	--	0.009
27.	Binjharpur	2.13 (0.72-11.82)	0.070 (0.012-0.339)	0.007	0.020	0.477	0.005	0.007	0.009	0.0018	--	0.004
28.	Aul	1.19 (0.32-2.72)	0.154 (0.011-0.529)	<0.002	0.013	0.446	0.003	0.004	0.006	0.0016	--	0.002
Guradih nallah												
29.	Guradih nallah	28.07 (1.57-62.84)	0.096 (0.010-0.249)	<0.002	0.032	1.139	0.006	0.008	0.022	0.0023	--	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)								
Badjhor nallah												
30.	Badjhor nallah	1.76 (0.52-4.57)	0.118 (0.010-0.595)	<0.002	0.024	0.260	0.004	0.002	0.002	0.0019	--	0.003
Damsala River												
31.	Dayanabil	3.39 (0.855-24.98)	0.029 (0.007-0.066)	0.003	0.032	0.362	0.005	0.005	0.029	0.0018	--	0.006
Ganda nallah												
32.	Marthapur	7.97 (0.52-34.19)	0.088 (0.012-0.380)	<0.002	0.020	0.187	0.010	0.009	0.007	0.0015	--	0.006
Lingra River												
33.	Angul U/s	3.90 (0.52-33.65)	0.104 (0.009-0.647)	<0.002	0.013	0.096	0.006	0.006	0.007	0.0018	--	0.011
34.	Angul D/s	1.16 (0.57-2.22)	0.130 (0.010-0.764)	<0.002	0.015	0.055	0.002	0.002	0.002	0.0019	--	0.004
Ramiala River												
35.	Kamakhyanagar	1.08 (0.45-2.22)	0.073 (0.010-0.422)	<0.002	0.018	0.236	0.002	0.004	0.007	0.0023	--	0.005
Banguru nallah												
36.	Banguru nallah	1.70 (0.69-5.49)	0.053 (0.010-0.177)	<0.002	0.015	0.230	0.011	0.004	0.013	0.0026	--	0.014
Singada jhor												
37.	Singada jhor	0.96 (0.49-2.01)	0.053 (0.008-0.128)	<0.002	0.013	0.183	0.005	0.003	0.005	0.0023	--	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	1.88 (0.65-7.78)	0.063 (0.010-0.178)	<0.002	0.018	0.443	0.004	0.003	0.005	0.0022	--	0.003
39.	Kaniha D/s	1.49 (0.64-6.14)	0.086 (0.012-0.162)	<0.002	0.018	0.414	0.006	0.006	0.008	0.0024	--	0.007
Bangurusingada jhor												
40.	Bangurusingada jhor	1.31 (0.46-3.66)	0.088 (0.006-0.450)	<0.002	0.018	0.103	0.003	0.003	0.011	0.0023	--	0.003
Karo River												
41.	Barbil	2.39 (0.43-14.20)	0.055 (0.001-0.235)	<0.002	0.015	0.131	0.00	0.001	0.001	0.0013	--	0.002
❖ **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, 2019

(C) Baitarani river system (2019)

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	44 (1-177)	63 (32-116)	7.7 (3.6-10.5)	0.723 (0.280-1.960)	0.008 (0-0.025)	3.3 (0.6-9.5)	788 (68-2400)	144 (88-235)	0.26 (0.13-0.51)	0.081 (0.003-0.357)	87 (52-136)	61 (36-110)	8.4 (4.8-13.5)	5.89 (2.85-10.44)	0.14 (0.07-0.28)
Kusei River																
2.	Deogaon	129 (7-762)	84 (44-152)	8.7 (3.9-15.4)	0.840 (0.280-2.520)	0.020 (0-0.090)	3.7 (0.8-17.1)	1815 (220-7000)	195 (105-341)	0.38 (0.25-0.59)	0.044 (0.005-0.274)	117 (64-214)	75 (40-138)	10.4 (4.8-17.0)	8.52 (1.66-16.17)	0.19 (0.11-0.37)
Baitarani River																
3.	Naigarh	102 (1-592)	44 (20-92)	7.5 (3.6-15.6)	0.849 (0.112-2.240)	0.013 (0-0.050)	3.5 (1.1-14.6)	311 (20-2200)	109 (78-183)	0.27 (0.15-0.51)	0.034 (0.003-0.118)	67 (48-112)	45 (28-88)	6.3 (2.9-9.6)	8.08 (1.19-17.41)	0.14 (0.07-0.26)
4.	Unchabali	7 (4-13)	43 (16-88)	6.7 (3.6-12.9)	0.774 (0.112-1.960)	0.008 (0-0.038)	2.1 (0.8-3.4)	398 (20-2400)	110 (73-183)	0.26 (0.05-0.57)	0.032 (0.003-0.135)	67 (48-116)	45 (28-88)	6.4 (3.8-9.7)	7.82 (1.19-15.29)	0.12 (0.05-0.19)
5.	Champua	30 (1-84)	62 (48-104)	6.9 (4.8-12.2)	0.714 (0.168-1.400)	0.013 (0-0.034)	3.4 (0.6-7.8)	273 (20-1100)	142 (108-239)	0.29 (0.16-0.53)	0.028 (0.003-0.090)	89 (68-144)	60 (36-108)	7.8 (4.8-11.5)	8.63 (2.20-23.0)	0.15 (0.09-0.25)
6.	Tribindha	50 (1-324)	67 (48-102)	5.8 (3.5-7.8)	0.770 (0.280-2.520)	0.014 (0-0.070)	2.6 (0.6-10.1)	314 (20-1700)	150 (100-241)	0.27 (0.12-0.41)	0.020 (0.005-0.038)	89 (68-144)	60 (36-108)	7.8 (4.8-11.5)	8.63 (2.20-23.0)	0.15 (0.09-0.25)
7.	Joda	105 (1-519)	58 (40-98)	8.5 (3.5-16.6)	0.910 (0.280-2.520)	0.015 (0-0.050)	3.8 (1.1-9.5)	783 (110-2200)	146 (101-249)	0.28 (0.12-0.68)	0.034 (0.003-0.112)	87 (68-136)	59 (36-112)	8.3 (5.8-16.3)	8.31 (2.24-20.64)	0.14 (0.08-0.21)
8.	Anandpur	75 (5-228)	69 (38-150)	9.5 (3.6-18.5)	1.003 (0.280-2.800)	0.022 (0-0.057)	3.0 (1.7-4.8)	1282 (78-3300)	164 (96-330)	0.30 (0.13-0.49)	0.030 (0.003-0.086)	98 (56-184)	65 (36-126)	8.3 (3.8-14.4)	9.12 (1.78-12.26)	0.18 (0.11-0.27)

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	21 (2-57)	71 (44-96)	10.0 (5.2-17.4)	1.423 (0.280-6.160)	0.042 (0.001-0.216)	6.2 (0.6-23.8)	802 (68-17000)	183 (113-262)	0.56 (0.15-1.35)	0.069 (0.005-0.228)	111 (76-160)	63 (44-96)	14.2 (3.8-38.5)	11.73 (7.58-17.85)	0.23 (0.11-0.42)
10.	Chandbali U/s	149 (13-518)	79 (50-96)	12.5 (3.9-24.0)	0.621 (0.056-0.420)	0.027 (0-0.130)	2.3 (0.6-3.4)	1091 (170-3500)	6329 (130-19480)	15.37 (0.20-47.08)	0.726 (0.005-1.516)	4485 (76-13920)	764 (50-2480)	2359.7 (3.8-7595.9)	246.5 (10.2-777.4)	0.38 (0.14-0.78)
11.	Chandbali D/s	180 (18-646)	83 (52-112)	18.9 (8.1-38.5)	0.807 (0.168-1.960)	0.024 (0-0.109)	2.6 (1.1-6.2)	1383 (330-3500)	8318 (151-24419)	23.71 (0.38-111.72)	0.629 (0.005-1.389)	6007 (88-16880)	803 (50-2560)	3285.6 (11.5-9615.0)	260.8 (7.5-842.7)	0.36 (0.14-0.82)
Salandi River																
12.	Bhadrak U/s	21 (1-77)	67 (44-96)	8.8 (5.2-12.9)	0.546 (0.112-1.400)	0.024 (0-0.090)	1.9 (0.6-3.4)	724 (45-3500)	164 (89-260)	0.38 (0.14-0.70)	0.042 (0.011-0.070)	101 (56-152)	66 (36-116)	11.3 (2.9-25.9)	10.90 (5.49-24.37)	0.20 (0.12-0.31)
13.	Bhadrak D/s	25 (1-110)	72 (44-124)	12.1 (5.2-20.3)	0.630 (0.280-1.120)	0.017 (0-0.039)	2.1 (1.1-4.2)	1533 (78-3500)	189 (129-284)	0.47 (0.29-1.15)	0.033 (0.005-0.091)	114 (76-172)	72 (48-132)	14.0 (6.7-38.4)	13.21 (5.59-26.61)	0.19 (0.11-0.28)
Dhamra River																
14.	Dhamra	167 (2-492)	114 (76-180)	35.5 (9.7-60.3)	0.439 (0.112-1.120)	0.013 (0-0.056)	2.4 (0.8-5.3)	416 (1.8-1600)	24069 (259-44340)	48.87 (1.33-98.53)	1.510 (0.010-3.022)	17409 (168-30188)	2336 (68-5200)	9459 (37-13707)	724.5 (18.7-1806.6)	0.50 (0.12-0.67)
❖ **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

(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	1.407 (0.462-2.694))	0.125 (0.007-0.523)	<0.002	0.018	0.458	0.005	0.004	0.007	0.0017	--	0.003
Kusei River												
2.	Deogaon	1.186 (0.432-3.394)	0.068 (0.010-0.202)	<0.002	0.018	1.328	0.007	0.004	0.008	0.0021	--	0.006
Baitarani river												
3.	Naigarh	1.196 (0.395-2.388)	0.052 (0.007-0.139)	<0.002	0.024	2.810	0.008	0.008	0.012	0.0023	--	0.003
4.	Unchabali	1.032 (0.523-2.134)	0.052 (0.007-0.171)	<0.002	0.024	4.358	0.009	0.008	0.012	0.0017	--	0.005
5.	Champua	1.156 (0.450-2.825)	0.071 (0.001-0.159)	<0.002	0.020	1.531	0.005	0.003	0.006	0.0018	--	0.003
6.	Tribindha	1.043 (0.480-1.784)	0.074 (0.007-0.203)	<0.002	0.024	1.365	0.005	0.004	0.007	0.0023	--	0.003
7.	Joda	1.290 (0.334-2.501)	0.077 (0.007-0.296)	<0.002	0.013	1.126	0.003	0.003	0.006	0.0018	--	0.002
8.	Anandpur	1.720 (0.401-4.898)	0.084 (0.006-0.400)	<0.002	0.002	1.858	0.005	0.005	0.009	0.0018	--	0.005
9.	Jajpur	1.432 (0.565-4.102)	0.101 (0.010-0.589)	<0.002	0.022	0.194	0.002	0.005	0.007	0.0022	--	0.002

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	1.313 (0.499-3.289)	0.085 (0.008-0.293)	<0.002	0.024	0.217	0.007	0.009	0.012	0.0017	--	0.003
11.	Chandbali D/s	1.304 (0.553-3.446)	0.062 (0.010-0.234)	<0.002	0.029	0.283	0.009	0.012	0.013	0.0020	--	0.004
Salandi river												
12.	Bhadrak U/s	1.077 (0.499-2.536)	0.052 (0.002-0.202)	<0.002	0.018	0.559	0.003	0.003	0.021	0.0018	--	0.002
13.	Bhadrak D/s	1,227 (0.656-2.694)	0.064 (0.003-0.211)	<0.002	0.018	0.474	0.004	0.005	0.016	0.0024	--	0.002
Dhamra River												
14.	Dhamra	0.972 (0.455-1.994)	0.052 (0.002-0.177)	<0.002	0.030	0.230	0.011	0.017	0.017	0.0023	--	0.003
❖ **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, 2019

(D) Rushikulya river system(2019)

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	23 (5-89)	96 (70-140)	11.4 (5.5-17.1)	0.933 (0.280-2.520)	0.035 (0-0.164)	3.52 (0.84-10.36)	586 (1.8-2200)	208 (144-288)	0.44 (0.23-0.78)	0.064 (0.003-0.154)	124 (88-168)	94 (64-112)	13.4 (7.7-22.1)	6.23 (2.14-12.81)	0.289 (0.112-0.626)
Bada Nadi																
2	Aska	79 (4-326)	118 (72-154)	9.7 (4.0-16.2)	0.700 (0.280-1.120)	0.027 (0.003-0.082)	3.31 (0.56-8.96)	1365 (45-3500)	268 (199-368)	0.45 (0.15-0.66)	0.069 (0.007-0.140)	153 (112-222)	102 (64-130)	15.0 (5.8-20.2)	8.32 (3.48-18.90)	0.288 (0.219-0.394)
Rushikulya river																
3.	Aska	143 (5-650)	123 (64-164)	11.4 (5.7-19.1)	0.863 (0.280-2.240)	0.037 (0-0.109)	3.22 (0.84-6.72)	1714 (490-3500)	267 (202-366)	0.51 (0.28-0.79)	0.062 (0.003-0.129)	161 (116-212)	104 (60-124)	18.3 (7.7-35.3)	8.17 (2.73-17.85)	0.269 (0.192-0.350)
4.	Nalabanta	45 (6-209)	125 (76-146)	12.2 (4.0-22.1)	0.602 (0.224-1.400)	0.033 (0.003-0.070)	5.65 (0.84-29.12)	2428 (1.8-16000)	298 (209-444)	0.60 (0.28-1.21)	0.078 (0.021-0-.165)	172 (120-238)	109 (64-136)	19.7 (11.5-49.9)	9.65 (1.62-16.79)	0.304 (0.201-0.422)
5.	Madhopur	85 (9-350)	120 (72-152)	9.0 (4.0-15.2)	0.943 (0.112-3.360)	0.067 (0.003-0.420)	3.34 (0.84-10.08)	1054 (45-3500)	679 (184-4878)	2.34 (0.31-20.66)	0.110 (0.010-0.306)	402 (108-2932)	118 (56-280)	139.8 (7.7-1442.3)	24.81 (4.52-171.20)	0.320 (0.203-0.428)
6.	Potagarh	115 (8-273)	121 (76-144)	27.1 (10.5-52.2)	0.803 (0.112-1.680)	0.038 (0.004-0.175)	3.10 (0.56-6.44)	633 (1.8-2800)	10521 (248-41410)	18.74 (0.64-71.09)	0.828 (0.041-2.405)	7442 (148-35140)	1448 (64-4800)	4096.5 (11.5-20191.5)	403.12 (7.14-1411.70)	0.374 (0.110-0.678)
❖ **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

(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	5.67 (0.64-47.62)	0.063 (0.003-0.223)	<0.002	0.015	0.623	0.004	0.004	0.009	0.0017	--	0.003
Bada Nadi												
2.	Aska	1.84 (0.59-7.90)	0.100 (0.002-0.433)	<0.002	0.013	0.955	0.005	0.004	0.007	0.0016	--	0.005
Rushikulya river												
3.	Aska	2.46 (0.53-8.14)	0.083 (0.009-0.277)	<0.002	0.015	1.065	0.005	0.005	0.009	0.0018	--	0.005
4.	Nalabanta	1.78 (0.67-7.35)	0.093 (0.010-0.375)	0.002	0.012	0.881	0.004	0.004	0.006	0.0014	--	0.003
5.	Madhopur	2.14 (0.60-6.62)	0.063 (0.002-0.154)	<0.002	0.018	2.059	0.006	0.005	0.012	0.0016	--	0.005
6.	Potagarh	2.46 (0.55-11.67)	0.062 (0.002-0.261)	<0.002	0.015	0.268	0.009	0.008	0.009	0.0018	--	0.004
❖ **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, 2019

(E) Nagavali river system (2019)

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	92 (2-286)	86 (601-24)	8.8 (3.4-13.3)	0.821 (0.056-2.240)	0.028 (0-0.105)	2.38 (0.56-7.56)	566 (20-1700)	232 (148-428)	0.59 (0.19-1.55)	0.086 (0.007-0.206)	131 (84-184)	79 (56-96)	16.9 (8.6-36.5)	10.18 (2.86-23.00)	0.274 (0.180-0.350)
2.	Jaykaypur D/s	99 (16-437)	90 (60-122)	12.6 (7.6-18.5)	1.129 (0.112-3.640)	0.037 (0-0.210)	3.90 (1.12-11.48)	1016 (45-2400)	220 (85-329)	0.53 (0.22-1.18)	0.054 (0.010-0.099)	144 (96-192)	88 (56-116)	16.0 (7.4-38.4)	19.20 (5.00-30.59)	0.229 (0.073-0.291)
3.	Rayagada D/s	10 (3-470)	90 (48-128)	12.0 (5.2-19.3)	1.027 (0.560-2.240)	0.032 (0-0.112)	3.31 (1.40-10.92)	520 (20-1300)	244 (174-315)	0.48 (0.21-0.70)	0.058 (0.003-0.155)	146 (108-196)	95 (68-116)	15.8 (7.7-26.9)	20.38 (7.84-29.47)	0.245 (0.176-0.289)
❖ **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_3^-	PO_4^{3-}-P	Cr(VI)##	T. Cr##	Fe##	Ni##	Cu##	Zn##	Cd##	Hg##	Pb##
		(mg/l)		(mg/l)								
Nagavali river												
1.	Penta	2.06 (0.70-6.44)	0.102 (0.006-0.277)	<0.002	0.015	0.198	0.003	0.006	0.007	0.0018	--	0.003
2.	Jaykaypur D/s	3.26 (0.57-17.18)	0.469 (0.022-3.527)	<0.002	0.020	0.214	0.009	0.006	0.019	0.0020	--	0.004
3.	Rayagada D/s	2.78 (0.91-5.59)	0.354 (0.013-2.099)	<0.002	0.018	3.102	0.006	0.009	0.064	0.0021	--	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, 2019

(F) Subarnarekha river system (2019)

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	25 (2-66)	84 (68-100)	9.5 (5.2-20.3)	0.705 (0.056-1.120)	0.037 (0-0.090)	3.56 (0.84-8.12)	375 (20-1700)	327 (142-539)	1.95 (0.33-2.75)	0.093 (0.014-0.182)	197 (96-328)	98 (68-136)	37.6 (7.7-105.8)	34.76 (7.09-80.10)	0.49 (0.23-0.85)
❖ **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	1.211 (0.450-2.003)	0.050 (0.010-0.197)	<0.002	0.018	1.259	0.006	0.007	0.017	0.0018	--	0.010
❖ **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, 2019

(G) Budhabalanga river system (2019)

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	64 (4-209)	87 (52-128)	10.3 (5.8-15.5)	0.873 (0.112-2.240)	0.023 (0-0.090)	2.52 (4.12-4.20)	1698 (490-3500)	226 (138-346)	0.517 (0.083-1.263)	0.054 (0.007-0.153)	137 (84-208)	84 (40-116)	19.4 (3.8-48.1)	12.74 (3.73-2.65)	0.279 (0.125-0.545)
2.	Balasore U/s	94 (5-626)	81 (48-152)	9.6 (5.2-14.8)	1.003 (0.280-3.640)	0.026 (0.003-0.109)	2.82 (0.84-8.68)	1189 (700-2400)	195 (119-321)	0.47 (0.18-0.68)	0.033 (0.003-0.126)	119 (76-188)	76 (48-152)	13,7 (3.8-22.4)	12.30 (3.98-22.88)	0.196 (0.116-0.321)
3.	Balasore D/s	52 (1-131)	93 (50-144)	11.9 (7.0-16.6)	1.097 (0.280-3.640)	0.024 (0-0.109)	3.73 (1.40-10.92)	2521 (450-7900)	315 (118-509)	1.11 (0.19-2.96)	0.051 (0.003-0.143)	191 (76-288)	86 (56-132)	34.6 (5.8-92.2)	21.56(7.97-33.95)	0.195 (0.113-0.342)
Sone River																
4.	Hatigond*	95 (9-366)	86 (58-126)	10.0 (5.7-19.3)	0.887 (0.280-1.680)	0.017 (0-0.034)	2.50 (1.40-7.00)	777 (68-2200)	245 (128-343)	0.78 (0.22-1.87)	0.047 (0.003-0.153)	145 (80-196)	76 (52-116)	21.1 (5.8-46.2)	16.23 (3.36-36.56)	0.209 (0.134-0.361)
	❖ **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

(G) 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)								
Budhabalanga river												
1.	Baripada D/s	1.470 (0.474-5.143)	0.050 (0.002-0.143)	<0.002	0.027	2.507	0.009	0.007	0.020	0.0023	--	0.011
2.	Balasore U/s	0.921 (0.420-1.889)	0.040 (0.003-0.167)	<0.002	0.024	0.117	0.005	0.003	0.008	0.0016	--	0.006
3.	Balasore D/s	2.009 (0.481-8.567)	0.099 (0.014-0.380)	<0.002	0.027	3.429	0.014	0.008	0.021	0.0018	--	0.017
Sone River												
4.	Hatigond*	2.291 (0.499-6.044)	0.068 (0.013-0.316)	<0.002	0.018	3.371	0.009	0.005	0.117	0.0018	--	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

Data for the period April, 2019

(H) Kolab river system (2019)

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	113 (4-711)	46 (20-86)	10.2 (5.4-14.8)	0.658 (0.056-2.520)	0.036 (0-0.315)	2.82 (0.84-7.84)	251 (1.8-1100)	132 (70-222)	0.46 (0.14-0.97)	0.063 (0.007-0.128)	81 (48-136)	47 (24-74)	10.4 (5.7-24.9)	9.06 (2.74-20.27)	0.163 (0.089-0.222)
❖ **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	2.296 (0.499-6.507)	0.142 (0.003-0.499)	<0.002	0.018	0.931	0.002	0.004	0.025	0.0018	--	0.002
❖ **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, 2019

(I) Vansadhara river system (2019)

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	25 (2-66)	84 (68-100)	9.5 (5.2-20.3)	0.705 (0.056-1.120)	0.014 (0-0.056)	3.56 (0.84-8.12)	375 (20-1700)	327 (142-539)	1.95 (0.33-2.75)	0.093 (0.014-0.182)	197 (96-328)	98 (68-136)	37.6 (7.7-105.8)	34.76 (7.09-80.10)	0.49 (0.23-0.85)
2.	Gunupur	25 (2-66)	84 (68-100)	9.5 (5.2-20.3)	0.705 (0.056-1.120)	0.019 (0-0.070)	3.56 (0.84-8.12)	375 (20-1700)	327 (142-539)	1.95 (0.33-2.75)	0.093 (0.014-0.182)	197 (96-328)	98 (68-136)	37.6 (7.7-105.8)	34.76 (7.09-80.10)	0.49 (0.23-0.85)
❖ **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	1.562 (0.456-3.534)	0.187 (0.007-0.756)	<0.002	0.013	0.415	0.003	0.003	0.022	0.0019	--	0.002
2.	Gunupur	1.998 (0.638-9.044)	0.147 (0.006-0.670)	0.002	0.015	0.816	0.003	0.004	0.008	0.0023	--	0.003
❖ **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, 2019

(J) Indravati river system (2019)

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	218 (4-2038)	49 (24-98)	9.2 (5.7-21.2)	0.527 (0.056-1.120)	0.014 (0-0.067)	1.98 (0.28-3.36)	347 (20-2200)	141 (86-227)	0.42 (0.19-0.76)	0.034 (<0.003 -0.073)	86 (52-140)	50 (32-68)	10.3 (4.8-24.9)	9.39 (2.36-20.89)	0.166 (0.108-0.194)
❖ **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	1.485 (0.542-3.402)	0.220 (0.014-0.756)	<0.002	0.013	1.315	0.005	0.006	0.012	0.0014	--	0.002
❖ **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, 2019

(K) Bahuda river system (2019)

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	66 (12-205)	140 (68-208)	13.9 (6.1-33.8)	1.095 (0.280-3.920)	0.054 (0-0.140)	3.71 (0.84-10.92)	694 (1.8-3500)	411 (219-607)	1.21 (0.43-3.56)	0.106 (0.038-0.168)	248 (132-396)	133 (80-238)	44.1 (14.4-163.5)	20.66 (2.50-57.96)	0.473 (0.252-0.673)
❖ **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	1.920 (0.577-5.558)	0.051 (0.002-0.135)	<0.002	0.015	0.453	0.004	0.004	0.007	0.0020	--	0.003
❖ **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, 2019