JUSTICE A V RAMAKRISHNA PILLAI
(Former Judge, High Court of Kerala)
CHAIRMAN

State Level Monitoring Committe, Kerala
(An authority constituted by the
National Green Tribunal)
'AMPAZHAVELIL'
Rajeev Nagar, Elamakkara
Kochi - 682026
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13.11.2024

Sir,

Kindly see the appended report regarding the mass fish kill noticed on 27.10.20024 in Ashtamudi Lake, Kollam District, Kerala State.

The same may kindly be placed in O.A.No.147/2022 before the Hon'ble Tribunal for consideration and orders.

Yours Sincerely,

JUSTICE A.V.RAMAKRISHNA PILLAI,
(Chairman, SLMC, KERALA)

To
The Registrar,
National Green Tribunal,
Principal Bench,
Faridkot House, Copernicus Marg,
New Delhi - 110 001.

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI.

O.A.No. 147 of 2022

REPORT

PRESENTED BY JUSTICE A.V.RAMAKRISHNA PILLAI
(FORMER JUDGE, HIGH COURT OF KERALA)
CHAIRMAN, STATE LEVEL MONITORING COMMITTEE, KERALA
(FOR AND ON BEHALF OF THE AFORESAID COMMITTEE)
REGARDING THE MASS FISH KILL NOTICED ON 27.10.2024 IN ASHTAMUDI LAKE, KOLLAM DISTRICT, KERALA STATE.

PRESENTED ON : 13.11.2024

INDEX

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REPORT

The Residents near the banks of Ashtamudi Lake in Kollam district, Kerala, renowned for its biodiversity, noticed dead fish in large quantities being washed ashore during the morning of Sunday, the 27th of last month. Reportedly, hundreds of dead fish were found floating in the lake, triggering panic among the local people. Though isolated incidents have been reported earlier too in some other parts of the lake, it is for the first time that such massive fish kill was found. This time it was not limited to one spot, but found in multiple locations. **Annexure 1 series** are photographs appeared in the media evidencing the incident.

As visuals of the fish kill went viral on media, both print and electronic, families living near the shore of the lake expressed concern over the issue. Local inhabitants entertain the belief that it must be the aftermath of excessive discharge of untreated septage waste into the water body. Allegedly lot of tankers unauthorisedly carrying septage waste including fecal sludge were being noticed near the lake who after picking up deserted locations with no households nearby, release the septage into the water body.

On receipt of the information, I have called a report from the Member Secretary of the Kerala State Pollution Control Board. Accordingly the inspection report received from the District environmental engineer, Kollam was forwarded to me. The report is marked as **Annexure 2**.

It is reported that during their inspection the water at Kuthirakadavu in the lake were the dead fish were found, was black in colour at the middle of the lake.

It also reported that according to the officials of the department of fisheries, the colour change is due to the presence of algae which in turn is due to the excessive presence of bio waste. This emphasizes the complaint of the local people regarding the discharge of the septage waste into the lake.

It is further reported that samples were collected from the site. For testing the presence of heavy metals, ammonia and sulphide the samples were sent to the central lab. Samples of were handed over to SNM College, Maliekkara for finding out the presence of algae. Samples of dead fish were sent to Kerala

University of Fisheries and Ocean Studies (KUFOS) for post mortem and the results are awaited.

The preliminary examination indicates the presence of excessive 'algae bloom' which is the direct result of discharge of bio waste including septage waste into the water body.

Therefore it is highly necessary to implement projects to prevent the entry of bio waste including fecal sludge.

At present an STP is being constructed at Kureepuzha by the Kerala Water authority, the progress of which is sluggish. If it completed on war footing a major portion of the problem relating to septage waste in Kollam district can be solved.

Instructions may be given to the water authority to complete the project in a time bound manner.

Strict instructions may also be given to the District administration, the Kollam municipal corporation, and also to Kerala Suchitwa mission to ensure that the tanker lorries engaged in the collection of septage waste are registered with the local bodies concerned/ Suchitwa mission and the septage waste materials collected by them are subjected to proper treatment at the STP.

Instructions may also be issued for the installation of CCTV cameras along the shore of the water body, for proper survilliance.

Dated this the 13th day of November, 2024.

Justice A.V.Ramakrishna Pillai
(Former Judge, High Court of Kerala)
Chairman, SLMC, Kerala.

Annexure-I Series.

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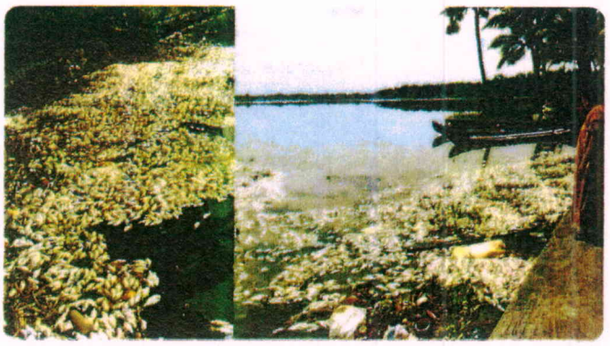

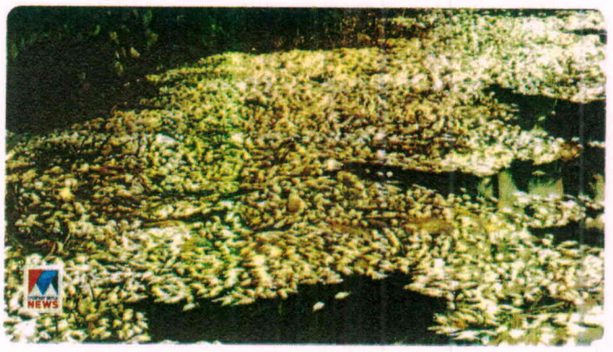

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Annexure-2

REPORT ON MASSIVE FISH KILL IN ASHTAMUDI LAKE ON 27.10.2024

Introduction

Ashtamudi Lake is the second largest wetland in Kerala. It comes under Ramsar Site. As part of National Water Quality Monitoring Programme (NWMP), water samples are collected every month from 5 different points in Ashtamudi Lake and 32 physical and chemical parameters are being tested.

A massive fish kill was reported at Kuthirakkadavu near Kadavoor and Kandachira in the Ashtamudi Lake on 27.10.2024. The Board collected preliminary samples of water and dead fish samples on the same day itself. On the next day also samples collected from the upstream and downstream of the affected area. Samples are analysed for physiochemical and biological parameters at district office lab. Samples for heavy metal analysis, ammonia and sulphide, etc. were transferred for Central Lab and fish samples were handed over to SNM College, Maliekkara for finding algal presence and to KUFOS for post-mortem report. Some of the results are still awaiting.

Observation

During the inspection conducted on 27.10.2024 at Kuthirakkadavu in Ashtamudi, massive fish kill was observed. The water turned to black in colour at the middle portion of the lake but towards the shoreline area it decreases. Water samples from the Kuthirakkadavu (Location: 8.9173707, 76.5924894; Entry), shoreline area (Location: 8.9169848, 76.5918068; SL1), a middle portion where water is clear (Location 8.9062520, 76.5961446; sample L1) from the middle area where a visible blackish water stream was observed (Location: 8.9070357, 76.5943857; sample L2), and from the upstream area, near Kadavoor bridge (Location: 8.9037257, 76.5798981; sample L3) were taken for analysis. All the samples hold sufficient DO. This may be because of the tidal effect at the top layer of water body. BOD in the black water stream

(sample L2) was obtained as 8 mg/L. Officials from the Fisheries Department observe the colour change in water due to the presence of algae. In order to identify the algae, sample was collected and handed over to SNM College, Maliekkara. Dead fish sample was also collected and handed over to KUFOS for post-mortem report. Results have not been received yet.

On the next day sample was again collected from 3 distinct points at the downstream of the area where fish kill observed (Location: 8.9172816, 76.603144; sample 101) and the upstream near Kadavoor bridge (Location: 8.903895, 76.580344; sample 102). One more sample was collected near the link road, where Manichithod joins the lake and the drudging wastes were seen heaped in the lake. BOD of this water sample (Location: 8.892542, 76.585466; sample 103) shows a very high value compared to the monthly results at that area. Analysis report of samples collected under NWMP from January to September is enclosed for ready reference. Copy of the available result of the parameters of the samples taken on 27th and 28th of October in connection with the fish kill is also enclosed.

Conclusion

Any particular incident was not reported for the hike in BOD. Heavy rain was observed in the previous two days. Surface runoff and oozing of leachate from the heaped drudging waste may cause the rise in BOD in surface water which helps to thrive the marine algae which may enter from the sea due to high tide effect.

Suggestions

1) The drudged waste which is heaped at the end point of the lake shall be used for land reclamation, coastal protection, etc.
2) Projects shall be implemented to ensure prevention of waste water through storm water drains and Manichithod. The colony at Pullikkada

which is near the Manichithod shall be facilitated with dedicated STP having co-treatment for faecal sludge.

3) STP constructed at Kureepuzha shall be commissioned immediately.
4) All tanker lorries engaged for septage collection within the corporation area shall be registered with local body/Suchitwa Mission and directed to dispose the waste collected through FSTP for co-treatment.
5) Surveillance cameras shall be installed around the lake at specific areas.

ENVIRONMENTAL ENGINEER

Analysis Report of Ashtamudi Fish Kill As On 04/11/2024

Determinants	27-10-2024					28-10-2024			
	L1	L2	L3	Entry	Shore line(SL1)	101	102	103	101 A
Color	Clear	Blackish	Clear	Brown	Clear	Light Brownish	Light Brownish	Light Brownish	Light Brownish
Odour	None	Fishy	None	Fishy	None	None	None	None	None
Temperature,°C	30	29	30	29	29	27	29	28	29
Dissolved Oxygen, mg/l	6.8	4.3	7.4	-	-	6.2	7.6	5.9	-
pH	9	9	9.5	7	7.5	9	9	9	9
Conductivity, µmhos/cm	16390	14710	17940	15820	16230	17360	16140	13820	15150
BOD, mg/l	4.2	8	3.6	-	-	4.1	3.8	6.4	-
Nitrate-N, mg/l	0.29	0.26	0.37	0.26	0.51	0.22	0.21	0.24	0.26
Turbidity, NTU	0.7	82.3	BDL	0.6	BDL	BDL	BDL	BDL	BDL
Total Alkalinity, mg/l	73	68	73	73	82	77	74	80	77
COD, mg/l	40	270	80	-	-	39	32	47	35
Hardness as CaCO3, mg/l	2200	1800	1900	2000	2100	2200	1800	2300	1700
Sulphate, mg/l	153	80	175	92	185	182	172	169	178
Sodium, mg/l	2248	1805	2593	2120	3849	2553	2512	1882	1879
Phosphate, mg/l	0.097	0.699	0.049	0.052	0.037	0.039	0.01	0.054	0.03
Potassium, mg/l	112	96	131	105	127	125	125	102	100
Total Coliform, CFU/100 ml	82	TNTC	12	-	-	63	38	86	71
Fecal Coliform, CFU/100 ml	66	TNTC	4	-	-	40	21	42	41
Fecal Streptococcus, CFU/100 ml	NIL	5	NIL	-	-	10	4	11	6

Latitude	Longitude
8.906252	76.5961446
8.9070357	76.5943857
8.9037257	76.5798981
8.9173707	76.5924894
8.9169848	76.5918068
8.9172816	76.603144
8.903895	76.580344
8.892542	76.585466
General sample	

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NATIONAL WATER QUALITY MONITORING PROGRAMME (NWMP) 2024

e	ASHTAMUDI
Water body	LAKE-ASHTAMUDI

o	Determinants	Jan-24 Values	Feb-24 Values	Mar-24 Values	Apr-24 Values	May-24 Values	Jun-24 Values	Jul-24 Values	Aug-24 Values	Sep-24 Values
1	Temperature, 0C	27.6	29.5	29.5	29	29	29	28	28	28
2	Dissolved Oxygen, mg/l	**5.8**	**4.6**	**4.56**	**4.33**	**5.26**	**4.93**	**4.87**	**2.13**	**6.73**
3	pH	7.4	8.5	7.6	7.6	8	7.8	8.2	8	8
4	Conductivity, µmhos/cm	25700	12248	8860	8990	25500	30500	49300	37900	30600
5	BOD, mg/l	**3.3**	**3.8**	**3.9**	**3.46**	**1.73**	**1.46**	**0.74**	**0.67**	**2.93**
6	Nitrate-N, mg/l	47	4.9	5.2	5.3	5.2	3.2	3.3	1.1	0.37
7	Turbidity, NTU	1.8	BDL	3.1	3.2	BDL	BDL	1	BDL	BDL
8	Phenolphthalein Alkalinity, mg/l	–	–	–	–	–	–	–	–	–
9	Total Alkalinity, mg/l	34	30	26	28	102	77	108	94	80
10	Chloride, mg/l	7410	3152	2050	2115	7700	17100	17000	13000	13500
11	COD, mg/l	9.3	11.8	12.3	11.1	6.1	4.5	3.1	4.3	8.7
12	TKN, mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Ammoniacal-N, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	Hardness as CaCO3, mg/l	3700	2522	1812	1912	4300	3300	4900	3600	4300
15	Calcium as CaCO3, mg/l	1500	1200	1041	1011	1400	600	700	2400	2300
16	Magnesium as CaCO3, mg/l	2194	1322	771	901	2900	2700	4200	1200	2000
17	Sulphate, mg/l	184.58	480	485.5	495.5	441.6	248.74	249.7	217.73	237.85
18	Calcium (Ca2+), mg/l	601.2	480.96	417.23	405.2	561.12	240.48	280.56	961.92	921.84
19	Magnesium (Mg2+), mg/l	534.6	321.25	187.35	218.94	704.7	656.1	1020.6	291.6	486
20	Sodium, mg/l	3849	1680	1091	1125	4019	8825	8827	6890	6990
21	Total Dissolved Solids, mg/l	14280	6835	4935	4935	14300	27600	27900	22643	23300
22	Total Fixed Solids, mg/l	11424	3068	3948	3948	11440	22080	22320	18114.4	18640
23	Total Suspended Solids, mg/l	10200	545	560	550	10280	9432	9031	9515	9845
24	Phosphate, mg/l	0.275	0.4114	0.3315	0.3115	0.5304	BDL	BDL	0.0816	0.1018
25	Boron, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Potassium, mg/l	95	115	68	67	327	412	413	1220	1100
27	Fluoride, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Total Coliform, MPN/100 ml	1120	1130	1140	1130	1110	1120	1010	1080	1050
29	Fecal Coliform, MPN/100 ml	400	410	420	410	390	380	320	380	370
30	Fecal Streptococcus, MPN/100 ml	70	80	90	80	60	70	60	60	50
31	% SODIUM	68.7	57.3	55.5	55.10	64.90	83.40	78	74.4	72.7
32	SAR	27.5	14.1	11.1	11.20	26.70	66.80	54.9	50.5	46.4

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Assistant Scientist

NATIONAL WATER QUALITY MONITORING PROGRAMME
(NWMP) 2024

Water body	THOPPILKADAVU LAKE-ASHTAMUDI								
No	Determinants	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
		Values	Values	Values	Values	Values	Values	Values	Values	Values
1	Temperature, 0C	26.6	27.5	27.5	29	29	28	27	29	28
2	Dissolved Oxygen, mg/l	**4.2**	**4.1**	**4.1**	**4.1**	**4**	**4.33**	**4.13**	**2.27**	**2.98**
3	pH	7.6	7.7	7.6	7.7	7.6	7.6	7.5	8	8
4	Conductivity, µmhos/cm	25620	19592	17110	17934	30800	10890	5600	13930	11060
5	BOD, mg/l	**3.1**	**3.4**	**3.8**	**3.9**	**3.1**	**1.2**	**2.23**	**3.1**	**2.3**
6	Nitrate-N, mg/l	31	3.5	3.6	3.6	31	2.1	2.3	0.96	0.13
7	Turbidity, NTU	1.4	2	2.8	3.1	2.9	BDL	BDL	BDL	9.1
8	Phenolphthalein Alkalinity, mg/l	–	–	–	–	–	–	–	–	–
9	Total Alkalinity, mg/l	36	38	117	121	103	110	98	105	97
10	Chloride, mg/l	6900	5200	4700	4737	9100	4300	2900	7300	5900
11	COD, mg/l	9.2	11.6	12.1	13.8	9.3	3.7	6.1	8.9	7.8
12	TKN, mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Ammoniacal-N, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	Hardness as CaCO3, mg/l	3600	3154	1641	1741	4200	1300	500	1000	2200
15	Calcium as CaCO3, mg/l	1000	2320	184	867	1800	500	320	900	1100
16	Magnesium as CaCO3, mg/l	2600	834	787	874	2400	800	180	100	1100
17	Sulphate, mg/l	195.8	428	437.8	447.8	441.03	145.36	136.36	129.275	108.435
18	Calcium (Ca2+), mg/l	400.8	929.86	342.28	347.49	721.44	200.4	128.26	360.72	440.88
19	Magnesium (Mg2+), mg/l	631.8	202.66	191.24	212.38	583.2	194.4	43.74	24.3	267.3
20	Sodium, mg/l	3635	1845	2441	2571	4839	2303	1507	4503	3120
21	Total Dissolved Solids, mg/l	13990	10810	9810	9810	17074	7450	5050	12578	9990
22	Total Fixed Solids, mg/l	11192	8648	7648	7848	13659	5960	4040	10062.4	7992
23	Total Suspended Solids, mg/l	10684	9687	9587	9598	10546	7546	6941	6815	6310
24	Phosphate, mg/l	0.166	0.4233	0.3417	0.3441	0.5678	0.1462	0.1321	0.2584	0.3016
25	Boron, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Potassium, mg/l	142	128	66	64.3	367	135	136	193	138
27	Fluoride, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Total Coliform, MPN/100 ml	1670	1680	1690	1680	1660	1500	1300	1200	1100
29	Fecal Coliform, MPN/100 ml	570	580	590	580	560	490	390	380	360
30	Fecal Streptococcus, MPN/100 ml	20	30	40	30	30	30	30	30	20
31	% SODIUM	67.6	65.5	75.5	75.40	69.30	77.30	82.9	88.7	74.1
32	SAR	26.4	22.5	26.2	26.80	32.50	27.80	29.3	61.9	28.9

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Assistant Scientist

Copy to:

NATIONAL WATER QUALITY MONITORING PROGRAMME
(NWMP) 2024

me	
Water body	KSRTC Bus Depot Kollam
	LAKE-ASHTAMUDI

Sl.No	Determinants	Jan-24 Values	Feb-24 Values	Mar-24 Values	Apr-24 Values	May-24 Values	Jun-24 Values	Jul-24 Values	Aug-24 Values	Sep-24 Values
1	Temperature, 0C	26.1	28.1	28.5	29	28	28	27	28	28
2	Dissolved Oxygen, mg/l	**3.2**	**4.2**	**4.3**	**4.2**	**4.1**	**4.4**	**4.06**	**2.01**	**4.8**
3	pH	7.8	7.6	7.8	7.8	7.9	7.2	6.9	7.5	7.5
4	Conductivity, µmhos/cm	28070	24153	12410	13235	37400	9120	5450	10100	10870
5	BOD, mg/l	**4.8**	**3.6**	**3.6**	**3.6**	**2.7**	**1.1**	**2.8**	**3.8**	**4.1**
6	Nitrate-N, mg/l	16	1.9	2.3	2.4	2.5	2.3	2.1	1.14	0.15
7	Turbidity, NTU	4	BDL	2.6	2.9	2.1	BDL	5.9	BDL	5.7
8	Phenolphthalein Alkalinity, mg/l	–	–	–	–	–	–	–	–	–
9	Total Alkalinity, mg/l	20	18	114	112	89	109	115	117	98
10	Chloride, mg/l	7810	6042	3507	3748	15300	3890	2680	5200	5600
11	COD, mg/l	14.6	11.8	11.9	11.5	9.1	3.4	7.3	9.3	11.8
12	TKN, mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Ammoniacal-N, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	Hardness as CaCO3, mg/l	3800	3352	2100	2237	6000	1600	200	600	1800
15	Calcium as CaCO3, mg/l	1000	2140	1300	1200	2800	500	90	500	1000
16	Magnesium as CaCO3, mg/l	2800	1212	800	1037	3200	1100	110	100	800
17	Sulphate, mg/l	190.67	439	461.5	478.9	426.075	124.89	123.88	102.015	109.325
18	Calcium (Ca2+), mg/l	400.8	857.71	521.04	480.96	1122.24	200.4	36.07	200.4	400.8
19	Magnesium (Mg2+), mg/l	680.4	294.52	194.4	251.99	777.6	267.3	26.73	24.3	194.4
20	Sodium, mg/l	4115	1569	1972	1974	8600	2006	1810	3210	3290
21	Total Dissolved Solids, mg/l	15750	13256	7256	7256	30900	6780	4880	9001	9800
22	Total Fixed Solids, mg/l	12600	10605	5804.8	5804.8	24720	5424	3904	7200.8	7840
23	Total Suspended Solids, mg/l	11200	11100	10100	10116	11100	7100	5610	5810	6810
24	Phosphate, mg/l	0.1938	0.4437	0.3536	0.3541	0.6154	0.1326	0.1012	0.6069	0.6169
25	Boron, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Potassium, mg/l	154	100	57	54.7	182	117	118	189	193
27	Fluoride, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Total Coliform, MPN/100 ml	1720	1730	1740	1730	1710	1510	1310	1300	1290
29	Fecal Coliform, MPN/100 ml	520	530	540	530	510	480	370	390	380
30	Fecal Streptococcus, MPN/100 m	30	40	50	40	20	30	30	30	20
31	% SODIUM	69.1	68.6	66.4	65.10	73.50	71.40	91.8	89.2	77.8
32	SAR	29	26.3	18.7	18.2	48.3	21.8	55.7	57	33.7

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Assistant Scientist

NATIONAL WATER QUALITY MONITORING PROGRAMME
(NWMP) 2024

Name of Water body: PERUMON LAKE-ASHTAMUDI

Sl.No	Determinants	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
		Values	Values	Values	Values	Values	Values	Values	Values	Values
1	Temperature, 0C	27.3	27.5	27.4	28.5	30	28	26	28	29
2	Dissolved Oxygen, mg/l	5.7	5.2	4.53	6.067	5	5.53	5.6	5.07	7.67
3	pH	7.7	7.7	7.6	7.4	7.9	7.5	7.1	8	8
4	Conductivity, µmhos/cm	31082	25210	13950	12110	32700	16240	12750	13780	15950
5	BOD, mg/l	3.4	3.3	3.3	1.067	2.33	0.4	2.8	1.06	2.59
6	Nitrate-N, mg/l	7	7.5	7.4	7.5	7.4	1.7	1.8	0.28	0.15
7	Turbidity, NTU	4	BDL	1.9	1.1	BDL	BDL	BDL	3.6	BDL
8	Phenolphthalein Alkalinity, mg/l									
9	Total Alkalinity, mg/l									
10	Chloride, mg/l	25	22	92	83	85	41	39	35	47
11	COD, mg/l	9000	7125	3645	3846	12800	5500	5540	6900	8300
12	TKN, mg/l	10	10.5	10.4	7.1	7.1	1.3	8.1	4.5	9.1
13	Ammoniacal-N, mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
14	Hardness as CaCO3, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15	Calcium as CaCO3, mg/l	44300	2200	2900	2641	5700	2000	1100	1000	1700
16	Magnesium as CaCO3, mg/l	70	700	1700	1730	3200	600	600	800	1100
17	Sulphate, mg/l	4230	1500	1200	911	2500	1400	500	200	600
18	Calcium (Ca2+), mg/l	222.98	455	529.75	521.8	373.75	156.28	154.28	156.41	168.235
19	Magnesium (Mg2+), mg/l	28.06	280.56	681.36	693.38	1282.6	240.48	240.48	320.64	440.88
20	Sodium, mg/l	1027.9	364.5	291.6	221.37	607.5	340.2	121.5	48.6	145.8
21	Total Dissolved Solids, mg/l	4800	1569	1954	1994	6961	3333	3421	4719	4800
22	Total Fixed Solids, mg/l	16960	14295	8295	8295	26500	10500	10500	12370	14100
23	Total Suspended Solids, mg/l	13568	11436	6636	6636	21200	8400	8400	9896	11280
24	Phosphate, mg/l	12170	10170	9015	9035	11170	9170	8900	9100	9880
25	Boron, mg/l	0.005	0.1377	0.2244	0.2141	0.2686	BDL	BDL	0.0136	0.0816
26	Potassium, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27	Fluoride, mg/l	213	110	55	54.3	478	116	119	203	210
28	Total Coliform, MPN/100 ml	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29	Fecal Coliform, MPN/100 ml	670	680	690	680	660	650	610	600	600
30	Fecal Streptococcus, MPN/100 ml	170	180	190	180	160	170	120	110	100
31	% SODIUM	30	40	50	40	20	30	30	20	20
32	SAR	69.5	77.4	58.9	61.50	70.60	71.10	85.6	89.1	84.1
		31.8	34.2	15.8	16.90	40.10	32.40	44.9	64.9	50.6

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NATIONAL WATER QUALITY MONITORING PROGRAMME (NWMP) 2024

Name	KUNDARA CERAMICS
of Water body	LAKE-ASHTAMUDI

Sl.No	Determinants	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
		Values	Values	Values	Values	Values	Values	Values	Values	Values
1	Temperature, 0C	26.3	28.5	28.1	28.5	29	29	28	29	29
2	Dissolved Oxygen, mg/l	3.4	4.6	4.33	5.87	4.67	5.67	7.2	3.73	5.87
3	pH	7.6	7.9	7.8	7.7	7.9	7.2	7.8	8	8
4	Conductivity, µmhos/cm	38010	41210	12510	11520	34300	17940	14160	13800	15460
5	BOD, mg/l	4.2	3.2	3.9	2.2	1.67	1.14	2.2	1.53	1.6
6	Nitrate-N, mg/l	4.8	5.2	5.7	5.8	5.6	2.1	2.3	0.3	0.19
7	Turbidity, NTU	3.6	3.6	2.4	1.8	BDL	BDL	BDL	14.6	BDL
8	Phenolphthalein Alkalinity, mg/l	–	–	–	–	–	–	–	–	–
9	Total Alkalinity, mg/l	37	34	19	14	94	45	39	44	47
10	Chloride, mg/l	11900	19025	3700	3940	15200	4900	4920	7400	8200
11	COD, mg/l	13.6	12.4	12.3	8.1	5.2	3.5	8.2	4.9	6.8
12	TKN, mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Ammoniacal-N, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	Hardness as CaCO3, mg/l	5300	5100	2600	2770	4700	1200	1500	1100	1700
15	Calcium as CaCO3, mg/l	70	500	1000	1110	2300	500	700	1000	1600
16	Magnesium as CaCO3, mg/l	5230	4600	1600	1660	2400	700	800	100	100
17	Sulphate, mg/l	233.1	448	394.25	394.9	398.48	162.26	162.46	163.31	158.225
18	Calcium (Ca2+), mg/l	28.06	200.4	400.8	444.89	921.84	200.4	280.56	400.8	641.28
19	Magnesium (Mg2+), mg/l	1270	1117.8	388.8	403.38	583.2	170.1	194.4	24.3	24.3
20	Sodium, mg/l	6140	28.36	1942	2145	7970	3273	3085	4197	4235
21	Total Dissolved Solids, mg/l	21190	31800	7800	7800	30199	9950	9950	12376	13400
22	Total Fixed Solids, mg/l	16952	25440	6240	6240	24159	7960	7960	9900	10720
23	Total Suspended Solids, mg/l	14300	14300	13200	13250	13300	9300	8300	8410	8920
24	Phosphate, mg/l	BDL	BDL	0.2176	0.2211	0.4318.	BDL	BDL	0.0017	0.0136
25	Boron, mg/l	BDL	0.1394	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26	Potassium, mg/l	209	3.26	54	56.1	523	215	219	163	175
27	Fluoride, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28	Total Coliform, MPN/100 ml	660	670	680	670	650	660	620	620	610
29	Fecal Coliform, MPN/100 ml	150	160	10	160	140	150	110	100	90
30	Fecal Streptococcus, MPN/100 ml	40	50	60	50	30	40	20	20	20
31	% SODIUM	70.6	80.8	61.3	62.10	76.40	82.80	79	87.5	82.7
32	SAR	36.7	60	16.6	17.70	50.60	41.10	34.7	55	44.7

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Assistant Scientist

Analysis Report of Ashtamudi Fish Kill As On 04/11/2024

Sl.No	Determinants	27-10-2024					28-10-2024			
		L1	L2	L3	Entry	Shore line(SL1)	101	102	103	101 A
1	Color	Clear	Blackish	Clear	Brown	Clear	Light Brownish	Light Brownish	Light Brownish	Light Brownish
2	Odour	None	Fishy	None	Fishy	None	None	None	None	None
3	Temperature,°C	30	29	30	29	29	27	29	28	29
4	Dissolved Oxygen, mg/l	**6.8**	**4.3**	**7.4**	-	-	**6.2**	**7.6**	**5.9**	-
5	pH	9	9	9.5	7	7.5	9	9	9	9
6	Conductivity, µmhos/cm	16390	14710	17940	15820	16230	17360	16140	13820	15150
7	BOD, mg/l	**4.2**	**8**	**3.6**	-	-	**4.1**	**3.8**	**6.4**	-
8	Nitrate-N, mg/l	0.29	0.26	0.37	0.26	0.51	0.22	0.21	0.24	0.26
9	Turbidity, NTU	0.7	82.3	BDL	0.6	BDL	BDL	BDL	BDL	BDL
10	Total Alkalinity, mg/l	73	68	73	73	82	77	74	80	77
11	COD, mg/l	40	270	80	-	-	39	32	47	35
12	Hardness as CaCO3, mg/l	2200	1800	1900	2000	2100	2200	1800	2300	1700
13	Sulphate, mg/l	153	80	175	92	185	182	172	169	178
14	Sodium, mg/l	2248	1805	2593	2120	3849	2553	2512	1882	1879
15	Phosphate, mg/l	0.097	0.699	0.049	0.052	0.037	0.039	0.01	0.054	0.03
16	Potassium, mg/l	112	96	131	105	127	125	125	102	100
17	Total Coliform, CFU/100 ml	82	TNTC	12	-	-	63	38	86	71
18	Fecal Coliform, CFU/100 ml	66	TNTC	4	-	-	40	21	42	41
19	Fecal Streptococcus, CFU/100 ml	NIL	5	NIL	-	-	10	4	11	6

Location		
	Latitude	Longitude
L1	8.906252	76.5961446
L2	8.9070357	76.5943857
L3	8.9037257	76.5798981
Entry	8.9173707	76.5924894
Shore line(SL1)	8.9169848	76.5918068
101	8.9172816	76.603144
102	8.903895	76.580344
103	8.892542	76.585466
101 A	General sample	

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