

BEFORE THE HONOURABLE NATIONAL GREEN TRIBUNAL
SOUTH ZONE CHENNAI BENCH

Original Application no. 439 of 2013(SZ)
(THC) (W.P. (C) No. 3637/2012)

&

Original Application No. 456 of 2013 (SZ)
(THC) (W.P. (C) No. 1367/2011)

Chandran Pillai, Kollam and Anr. ... Applicant(s)
Versus
Union of India and Ors. ... Respondent(s)

&

Manushyavakasha Parishthithi * Applicant(s)
Samarakshana Samithy ... Versus
Union of India and Ors. ... Respondents

REPORT FILED BY THE ENVIRONMENTAL ENGINEER, KERALA
STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, KOLLAM,
THE 3RD RESPONDENT IN APPLICATION NO. 439 of 2013(SZ)

1

**BEFORE THE HONOURABLE NATIONAL GREEN TRIBUNAL
SOUTH ZONE CHENNAI BENCH**

Application no. 439 of 2013(SZ) & 456 of 2013 (SZ)

Chandran Pillai, Kollam and Anr. ... Versus Union of India and Ors. ...	&	Applicant(s) Respondent(s)
Manushyavakasha Parishthi Samarakshana Samithy ... Union of India and Ors. ...	Versus	Applicant(s) Respondents

**REPORT FILED BY THE ENVIRONMENTAL ENGINEER, KERALA
STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, KOLLAM,
THE 3RD RESPONDENT IN APPLICATION NO. 439/2013(SZ)**

1. Simi P., aged 39 years, D/o. T.V. Baby residing at Anizham, Maithanam, Varkala P.O., Thiruvananthapuram- 695141, Environmental Engineer, Kerala State Pollution Control Board, District Office, Kollam, do solemnly affirm and state as follows:

Background

1. Kollam Municipal Corporation has an abandoned solid waste dump yard at Kureepuzha. The said dump yard is situated amidst residential buildings and two temples and a part of the dump yard is located on the banks of Ashtannudi lake. The waste dumping was discontinued around 2012 due to public protest. The legacy waste even prior to 2005 is lying in the dumping ground. The petitioners were aggrieved by the unscientific construction, management and operation of the waste management facility of Kollam Corporation at Kureepuzha. The case was originally filed before the Hon'ble High Court of Kerala in the year 2012 by Chandran Pillai N. & Ors and thereafter it was transferred to the tribunal and renumbered in 2013 as O.A. 439 of 2013(SZ).
2. The Hon'ble NGT in the hearing dated 24.09.2018 had directed that the Corporation should deal with the legacy waste scientifically in accordance with the procedure prescribed in the Solid Waste Management Rules, 2016




**SIMI P.
ENVIRONMENTAL ENGINEER**

with specific reference to Clause-J of Schedule-I. A time bound action plan was called for from the Corporation in this regard. The Hon'ble NGT had also directed the Corporation to quantify the waste generated in the municipal corporation area and the capacity of the de-centralized treatment plants.

3. When the matter was considered on 29.10.2018, the State of Kerala and Corporation submitted before the Hon'ble NGT that an area measuring about 2.85 acres had been identified for establishment of an integrated solid waste treatment plant at Kureepuzha. The applicant submitted that the site proposed for establishing the said integrated solid waste treatment plant was a part of the entire 16 acres of land in which the dumping yard in question is also situated. It was further stated by the applicant that the site is in the midst of thickly inhabited area and therefore, would not be suitable for establishment of the integrated solid waste treatment plant. The Hon'ble NGT found substance in the submission of the applicants and directed the State of Kerala and the Corporation to identify within a period of 30 days a site suitable for establishment of the integrated solid waste treatment plant in accordance with the siting criteria. The Hon'ble NGT also directed that the Corporation shall ensure that the action plan with specific timeline to deal with the legacy waste is filed within the same period. The Hon'ble NGT further directed that the State of Kerala and the Corporation shall deposit a Performance Guarantee of Rs. 2 Crores with the Kerala State Pollution Control Board within a period of 10 days from hence. Failure to comply with this direction would entail penalty of Rs. 50 Lakhs each upon the State of Kerala and the Corporation apart from forfeiture of the Performance Guarantee. It was also ordered that penalty of Rs. 1 Lakh shall be imposed for each day of delay beyond the 30 days until the site is identified and the action plan with the timeline submitted before the Hon'ble NGT.

4. The Corporation had filed W.P.(C)36792/2018 before the Hon'ble High Court of Kerala against the said Order and the Hon'ble High Court as per Order dated 13.11.2018 directed the Corporation to submit a Bank Guarantee of Rs. 1 Crore to the Board. Accordingly the Corporation submitted Bank Guarantee to the Board and the same is currently valid. In




SIMI P.
ENVIRONMENTAL ENGINEER

the next hearing on 25.02.2019 the Hon'ble NGT observed that the impediment in dealing with the disposal of solid waste generated in the corporation area was the difficulty in identifying a suitable area for setting up integrated solid waste treatment plant. Accordingly a decentralized solid waste treatment plant was considered. The Corporation had submitted that land for setting up of a waste to energy plant was handed over to Kerala State Industrial Development Corporation (KSIDC), the nodal agency for integrated solid waste treatment plant. The Board had also reported that the 7 acres of land identified within the total area of 17 acres at Kureepuzha was suitable for setting up of the WTE plant. The Corporation also submitted that an action plan to quantify and dispose the legacy waste was obtained from M/s Suraj Bhumi Bio Gas Limited and as per the action plan submitted by the company, the waste could be quantified and disposed of in six months approximately by adopting emission free pyrolysis technology of waste to energy provided by M/s Global Green International Investment Pvt. Ltd., Singapore. In view of the above factual position, the Hon'ble NGT directed the Corporation to ensure that the work for disposal of the legacy waste was completed within the scheduled period of six months and the decentralized solid waste treatment plant was also to be completed within that period and made operational.

5. In the subsequent hearing of the Hon'ble NGT dated 11.12.2019, the Corporation submitted that the contractor had not carried out the work of bio-mining and hence, Kollam Municipal Corporation Council took decision dated 07.09.2019 to terminate the agreement and the work was rendered. The waste to energy plant was also in the tendering stage and as per the instruction of the Chief Secretary of Kerala, the Corporation had initiated steps to widen the road to the waste to energy plant site so that the vehicular traffic would be eased. For this purpose Kollam Corporation had taken estimate for the widening. Considering the above, the Hon'ble NGT directed that the Kollam Corporation shall implement the Indore Model of disposal of legacy waste within 6 months, failing which the Corporation would be liable to pay a compensation of Rs. 1 Crore after the expiry of six months mentioned above and this amount would have to be realized from



SIMMI P.
ENVIRONMENTAL ENGINEER

the officers who were responsible for implementing the scheme and Corporation had to fix the liability.

6. When the matter came up for hearing on 13.07.2020, the Corporation submitted that re-survey of the dumping site was required due to wide variation in the quantity of legacy waste determined by Corporation and the new contractor M/s. Zonta Infatech Private Limited. Further it was reported that the terms of contract proposed by the contractor were not in tune with the Kerala Public Works Department (PWD) manual and prevailing Government Orders and hence a concurrence from the State Government was required for awarding the contract accepting such changes. The Corporation also reported that the bio-mining could be started only after obtaining the sanction from the Council of Kollam Municipal Corporation. Hon'ble NGT observed that the interim report of the Corporation was not satisfactory and that they did not mention as to when the Corporation would be convening its Council meeting for deciding the said matter. Hence, the Hon'ble NGT directed the Board as follows:

"Kerala State Pollution Control Board is also directed to inspect the area in question and submit a status report showing the real state of affairs including the violation if any of non-implementation of provisions of the Solid Waste Management Rules, 2016 in Kollam Corporation and any damage has been caused on account of the negligence act of miss-management of legacy waste, assess environmental compensation and take steps to realize the same from the defaulter and submit a detailed report to this Tribunal."

A copy of the said Order is produced herewith and marked as **Annexure R3(a)**.

Field Visit and Observations

7. In compliance of the said Order of the Hon'ble NGT, the site was inspected on 08.09.2020 by a team of Board Officers led by the Chief Environmental Engineer, Regional Office, Thiruvananthapuram. This respondent, was also part of the team. The Environmental Engineer Kollam Corporation was also present. Sri. Manalil K. Santhosh, Secretary, Mannushyavakasha Parishthithi Samrakshana Sannihy and some of the local residents were also met with. They had informed that the solid waste dumping by Corporation in the site



[Signature]
SIMIP,
ENVIRONMENTAL ENGINEER

was discontinued in 2012 and since then no waste is being brought to the site.

8. It is humbly submitted that the Kollam Corporation is having about 16 acres of land in this place. The whole area is protected with fencing. There are several houses and two temples very near to this area. About half portion of this area is filled with the legacy waste. It is protected by high walls and fencing. The legacy waste could be seen in a large heap covered with creepers and small plants extending to the Ashtannudi lake, a Ramsar site. One of the temples is within 50 m. A portion of the said waste heap is on the bank of the Ashtannudi lake. A large shed constructed for the purpose of solid waste treatment with some machinery, was seen in the other half portion of the area. The shed was left unused. A sanitary land fill, partly constructed, was also seen adjacent to the shed. It is understood that a considerable portion of the sanitary land fill site is in CRZ area and hence the work was not completed. Photographs of the site are produced herewith and marked as Annexure R3(b).

9. Public water supply through pipe line is available in the area. However, it was reported by the local people that in some houses the well water is also used for domestic purposes.

10. In continuation of the inspection dated 08.09.2020, water sampling was conducted in the area near to the legacy waste site by Board officers on 22.09.2020. Water samples were collected from 12 nearby water bodies including wells, temple pond and Ashtannudi lake. The samples were tested in the Central Laboratory of the Board and the results are produced herewith and marked as Annexures R3(c).

11. Based on the recent site inspection and water quality analysis as well as the various studies conducted by the Board and reports of the past years, the environmental impact of the unscientific dumping of unsegregated waste in huge quantities in the area can be summarized as follows:

I. Impact on ground water quality:

Generally the leachate from municipal solid waste dumping sites is found to contain organic matter, ammonia nitrogen, nitrate,



SIMIL P.
ENVIRONMENTAL ENGINEER

heavy metals, phenolic compounds and chlorinated organic and inorganic salts and this leachate is the reason for pollution of ground water. Once polluted, the ground water can be unusable for decades. Study of ground water quality of the area was conducted in 2011 and 2012. The study conducted in 2011 had revealed contamination of ground water of the area due to seepage from the unscientific waste dumping. The BOD of the water sources were found to be in the range of 0.1 mg/l to 5.6 mg/l. The copy of the analysis report of the sample collected on 01.08.2011 is produced herewith and marked as Annexure R3(d). Water quality study of the area was conducted in 2012 also. The copy of the analysis report of the sample collected on 23.07.2012 is produced herewith and marked as Annexure R3(e). The recent water sampling was conducted in the area near to the legacy waste site by Board officers on 22.09.2020. The results as per Annexure R3 (c) show presence of BOD in the range of 0.2 mg/l to 1.1 mg/l in the well and pond samples. The BOD of sample collected from Astamudi lake near to the dump site was found to be 2.2 mg/l. Heavy metals except iron and zinc were found to be below detectable limit. Iron and zinc were found in some samples. Though the concentration of zinc was within permissible limits in all samples, iron was found to be exceeding the permissible limit in one well water sample. From the reports it is found that the water quality is improving though the well water at present also cannot be used for drinking purpose without conventional treatment and disinfection. The comparative statement of the water quality of various water bodies as per the latest monitoring is produced herewith and marked as Annexure R3(f).

II. Impact on air quality:

The air quality near dumping sites is adversely affected by the release of methane gas and carbon dioxide by decomposing garbage. Methane is a by-product of the anaerobic respiration of bacteria, and these bacteria thrive in landfills with high amounts of moisture. Methane concentrations can reach up to 50% of the composition of landfill gas at maximum anaerobic decomposition. Carbon dioxide is readily absorbed for use in photosynthesis but methane is less easily broken down and is considered 20 times more potent as a



SIMI P.
ENVIRONMENTAL ENGINEER

greenhouse gas. For every metric ton of unsorted municipal solid waste (containing 0.3 MT carbon), 0.2 MT are converted to landfill gases. Of this gas, carbon dioxide and methane each comprise 0.09 MT. As per the studies of researchers it is found that landfill gases contribute 50% of anthropogenic methane emissions and 2-4% of all worldwide greenhouse gases. The methane release can also lead to air pollution due to the garbage catching fire. It was reported by the local people that incidents of waste in the dump yard catching fire had occurred in the past, but not in the recent years as waste dumping had been stopped in the area since 2012. No smell due to decomposition of solid waste could be experienced during the inspection. The local people expressed apprehension of foul smell arising at the time of bio-mining.

III. Violation of CRZ rules

The dump yard of Kollam Corporation at Kureepuzha is sharing its boundary with the Ashtamudy lake for some portion. Hence a part of the legacy waste as well as the secured land fill of the dump yard falls in CRZ area. The construction of the secured land fill was discontinued by the Corporation due to the same.

IV. Socio-economic impact:

One of the important economic impacts created by the proximity of solid waste dump yards is the impact on residential property values. The social impacts created by solid waste dumping include the disamenity effects like increased population of pests, flies, worms, mosquitoes, rodents, odour problem and visual impacts. In Kureepuzha also the local people had complained about loss of property value, odour problem and nuisance due to flies, pests and stray dogs.

Assessment of Environmental Compensation

12. The Hon'ble NGT in its Order dated 13.07.2020 in O.A. No. 439 of 2013(SZ) (Annexure R3(a)) had also directed the Board to include in the status report the violation, if any, of non-implementation of provisions of




SMT P.
ENVIRONMENTAL ENGINEER

the Solid Waste Management Rules, 2016 in Kollam Corporation and if any damage has been found caused on account of the negligence act of mismanagement of legacy waste, assess environmental compensation and take steps to realize the same from the defaulter. The Board had been monitoring the implementation of Solid Waste Management Rules 2016 by the Corporation. It was noticed in the frequent surveillance and periodic inspection of the Board officers and from the quarterly progress report submitted by the Corporation in connection with implementation of Environmental laws as per the Order of the Hon'ble NGT in O.A.606 of 2018 that the implementation of Solid Waste Management Rules 2016 is only partial in the Corporation area, the biomining of legacy waste is not yet started and the ground water near the area in question is still contaminated. Hence, the Board decided to assess the environmental compensation in compliance of the Hon'ble NGT Order.

13. It is humbly submitted that as per the quarterly progress report of 02.07.2020 regarding the Compliance by the Corporation with the directions of the Hon'ble National Green Tribunal, Principal Bench, New Delhi in O.A. 606/2018, there were 88332 houses and 9825 establishments in Kollam Municipal Corporation. The Corporation had engaged Harita Karma Sena having 124 members for door to door collection of dry waste. Households having segregation at source and door to door collection by Harita Karma Sena was 52,899 and establishments having segregation at source and door to door collection by Harita Karma Sena was 4,800. i.e. 59.9% of houses and 48.9% of establishments were covered under door to door collection of dry waste. There was no door to door collection of wet waste. The wet waste was disposed in the Corporation through community level and house hold level waste management facilities including bio composter, pipe compost, kitchen bin, biobin, pot bin, biogas plant etc and was only 14.5 TPD in total. The quantity of dry waste collected by Harita Karma Sena was only 10.5 TPD of plastic waste. The total quantity of waste generated in proportion to the population was found to be 104.60 TPD (considering population of 348657 as per 2011 census and quantity of waste generation as 0.3kg per capita per day). As such a gap of 79.60 TPD was observed in the solid waste management of Kollam Corporation. Accordingly the Environmental Compensation of Kollam Corporation was



SIMI P.
ENVIRONMENTAL ENGINEER

assessed by the Board as Rs.8,89,28,000/- (Rupees eight crores eighty nine lakhs twenty eight thousand only) as on 17.09.2020 based on the above waste management data. Notice was issued to the Secretary, Kollam Corporation as per communication dated 24.09.2020. The copy of the same is produced herewith and marked as Annexure R3(g).

14. Subsequently a hearing of the Corporation Secretary was conducted by the Board Chairman on 29.09.2020. In the said hearing the Corporation Secretary informed that the Corporation had taken steps to improve the waste management and requested that the updated status including current house hold level waste management details and waste collection by informal waste collectors recognized by Corporation may also be considered. Hence, it was decided by the Board Chairman in the said hearing that the Corporation may be permitted to submit the updated progress report on the management of solid waste and progress of biomining. The copy of the same is produced herewith and marked as Annexure R3(h). Accordingly the Secretary, Kollam Corporation submitted updated progress report on 06.10.2020. The copy of the same is produced herewith and marked as Annexure R3(i). According to the said report the Harita Karma Sena had 182 members for collection of non-biodegradable waste from the 55 divisions in the Corporation and the frequency of collection of non-biodegradable waste was once a month. Regarding the biomining the Secretary had reported that the Government had directed the Corporation not to deviate from the tender conditions and PWD manual in awarding the work of biomining and when the matter was communicated to the lowest bidder M/s. Zonta Infrotech, they were not ready to deviate from their draft agreement and had expressed unwillingness to proceed with the project. As per the report of the Secretary the Council of Kollam Corporation on 25.09.2020 had decided, to hand over project to KSIDC as the 7.05 Acres of land that has been leased to KSIDC to set up the integrated waste to energy plant also includes the legacy waste, considering that they had taken up similar projects in Kozhikode, Kochi and Kannur.




SIMI P.
ENVIRONMENTAL ENGINEER

15. The details of dry waste including hazardous waste sold to M/s. Clean Kerala Company as reported by the Corporation is as below:

Quantity of Non- Biodegradable Waste sold to M/s. Clean Kerala Company in Tonnes	
Glass	7
Tube Light	5
Bailed Plastic	14
Shredded Plastic	15
Rejects and Leather Waste	27
Dumped Legacy Waste	263
TOTAL	331

16. The details of the existing capacity of solid waste treatment facilities as reported by the Corporation are furnished in the table below:

Biodegradable Waste Management		
Treatment Facilities	Nos	Treatment Capacity (TPD)
Biogas Plants (Households)	1591	7.955
Pipe Compost (Households)	750	1.5
Bio compost (Households)	27500	55
Vermicompost (Households)	35	0.07
Total installed capacity of household level facilities		64.52
Aerobic Composting Unit (Community Level)		27
Biogas Plants(Community Level)		13
Total capacity of community level facilities		7.4
Waste collected by informal waste collectors		25

17. As per the report of the Secretary Kollam Corporation, currently the total quantity of dry waste collected door to door by Harita Karma Sena and disposed through centralized resource recovery facility (RRF) is 10.5 TPD. The total installed capacity of wet waste disposal systems in households is 64.52 TPD. The total capacity of community level wet waste disposal



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SIMP P.
ENVIRONMENTAL ENGINEER

- systems is 7.4 TPD. Wet waste collection by informal waste collectors is 25 TPD.
18. The Corporation proposes to provide more community level and house hold level wet waste management facilities in the financial year 2020-2021 itself. The Secretary had reported that 100 % waste management can be achieved on commissioning of the integrated waste management project, i.e., Waste to Energy Plant at Kureepuzha.
19. It is most respectfully submitted that on evaluation of the report of the Secretary, Kollam Corporation it was found that only 29876 households are reported as having own wet waste management facility whereas the total number of households in the Corporation is 88332. Hence, there are 58456 households without own wet waste management facility as per the report. As per the population of Kollam Corporation the average strength of a household is 4 members. The total waste generation per capita per day as per CPCB guidelines for Class I city is 0.3kg. Taking per capita wet waste generation as 50% of the total per capita waste generation, the quantity of wet waste generated per day from a house hold is 0.6 kg (i.e. $4 \times 0.3 \times 50/100$). The community level biodegradable waste management facilities have a treatment capacity of 7.4 TPD. This is adequate only for an additional 12333 households (i.e. $7.4 * 1000/0.6$). Therefore there is still a gap of 46123 households with respect to wet waste management. The quantity of biodegradable waste collected by informal waste collectors alone is reported which includes the waste collected from establishments such as chicken stalls and hotels.
20. The report submitted by the Secretary Kollam Corporation is incomplete as the number of households that have provided bio-degradable waste management facilities at their own cost is not seen included. Also the dry waste collection by informal sectors is not seen quantified. The Board had conducted survey of the various local bodies of Kollam District for monitoring the progress of the implementation of Solid Waste Management Rules, 2016. In the survey of houses in the Kollam Corporation area it was noticed that the Corporation had provided household level bio-degradable




S.M.P.
ENVIRONMENTAL ENGINEER

waste management facilities mostly to BPL families. The APL families had provided facilities on their own. But the survey could not be conducted further due to containment zone restrictions and officers being in quarantine following the outbreak of COVID-19 pandemic. The Corporation needs to quantify the capacity of the existing solid waste management facilities.

21. Hence, it is most humbly submitted that as per the current status report on solid waste management by Kollam Corporation dry waste disposed as per Rules is 10.5 TPD and wet waste disposed as per Rules is 50.32 TPD. The present gap in waste management is 43.78 TPD whereas the same was 79.60 TPD in July 2020. The overall percentage of waste management had increased from 23.9% to 58.14%. The actual gap in solid waste management can be assessed only if the details of the existing facilities in the remaining households and collection of dry waste by the informal sector is properly quantified by the Corporation. However, the Board in compliance with the Order of the Hon'ble NGT had initiated the action to assess and realize Environmental Compensation based on the updated report submitted by the Secretary, Kollam Corporation.

All that stated above are true to the best of my knowledge information and belief.

Dated this the 10th day of October 2020



ENVIRONMENTAL ENGINEER
3rd Respondent



SIMIP.
ENVIRONMENTAL ENGINEER

Solemnly affirmed and signed by the deponent who is known to me on this the 10th day of October 2020.

**BEFORE THE HONOURABLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE CHENNAI BENCH**

Original Application no. 439 of 2013(SZ)
(THC) (W.P. (C) No. 3637/2012)
&
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Chandran Pillai, Kollam and Anr. ... Versus Union of India and Ors. ...	&	Applicant(s) Respondent(s)
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INDEX

Sl.No.	Contents	Pages
1.	Report filed by the 3 rd respondent	1 -12
2.	Annexure R3 (a) - True copy of the Order dated 13.07.2020 of the Hon'ble NGT in O.A.no. 439 of 2013 (SZ)	
3.	Annexure R3 (b) - Photographs of the dumpsite	
4.	Annexure R3 (c) - True copy of the analysis report of water samples collected on 22.09.2020	
5.	Annexure R3 (d) - True copy of the analysis report of water samples collected on 01.08.2011	
6.	Annexure R3 (e) - True copy of the analysis report of water samples collected on 23.07.2012	
7.	Annexure R3 (f) – Comparative statement of the water quality of water bodies near to dumping yard as per latest monitoring	
8.	Annexure R3 (g) - Notice dated 24.09.2020 of the Board Chairman.	
9.	Annexure R3 (h) - Minutes of the hearing dated 29.09.2020	
10.	Annexure R3 (i) - Report of the Secretary, Kollam Corporation received on 06.10.2020	

Dated this 10th day of October 2020.

APPENDIX

RESPONDENT'S ANNEXURES:

1. Annexure R3 (a) - True copy of the Order dated 13.07.2020 of the Hon'ble NGT in O.A.no. 439 of 2013 (SZ)
2. Annexure R3 (b) - Photographs of the dumpsite
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8. Annexure R3 (h) - Minutes of the hearing dated 29.09.2020
9. Annexure R3 (i) - Report of the Secretary, Kollam Corporation received on 06.10.2020

Anexure R3(a)

Item No. 3 & 4:

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI
(Through Video Conference)

Original Application No. 439 of 2013 (SZ)

(THC) (W.P. (C) No. 3637/2012)

With

Original Application No. 456 of 2013 (SZ)

(THC) (W.P. (C) No. 1367/2011)

IN THE MATTER OF:

Chandran Pilla,
Kollam and Anr.

... Applicant(s)

Versus

Union of India and Ors.

... Respondent(s)

WITH

Manushyavakasha Parishithi
Samarakshana Samithy

... Applicant(s)

Versus

Union of India and Ors.

... Respondents

Date of hearing: 13.07.2020.

1


S.M.P.
ENVIRONMENTAL ENGINEER

CORAM:

HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE MR. SAIBAL DASGUPTA, EXPERT MEMBER

Original Application No. 439 of 2013 (SZ)

For Applicant(s):

None.

For Respondent(s):

M/s. Me. Saraswathy for R1.
M/s. E.K. Kumaresan for R2, R5.
M/s. Rema Smrithi for R3.
M/s. Niveditha S Menon represented
M/s. D. Kamatchi for R4.

Original Application No. 456 of 2013 (SZ)

For Applicant(s):

None.

For Respondent(s):

M/s. Sumathy for R1.
M/s. E.K. Kumaresan for R2, R5.
M/s. Rema Smrithi for R3.
M/s. Niveditha S Menon represented
M/s. D. Kamatchi for R4.

ORDER

1. As per order dated 19.03.2020, after considering the status report filed by the Kollam Corporation, this Tribunal adjourned the case to today for consideration of the further progress report. On the basis of the tender said to have been granted to

M/s. Zonta Infratech Private Limited., as per the interim report filed, the agreement for doing bio mining for disposal of the legacy waste was executed on 16.03.2020 and they assured that the agreement will be signed by them on 20.03.2020 and the work order would be issued thereafter and they had to complete the same within seven months from the date of entrusting the work.

2. They further stated that bio-mining process would be completed within four months and the rest would be completed within three months.

3. We have directed the Kollam Corporation to file an interim report regarding the progress and also an interim measure taken by them to abate the pollution.

4. When the matter came up for hearing today through Video Conference, there was no representation for the applicant in both the cases. Smt. M.E. Saraswathi represented first respondent in O.A. No.439/2013, Smt. Rema Smrithi represented third respondent in both the cases, Sri. E.K. Kumaresan represented respondents 2 & 5 in both the cases and M/s. Nivedita S. Menon represented M/s. D. Kamatchi counsel who is appearing for 4th respondent in both the cases.



5. We have also received an alleged action taken report filed by Kollam Municipal Corporation which reads as follows:

“Kollam Corporation has invited tender for bio mining of legacy waste on 23.10.2019. M/s. Zonta Infrotech Pvt. Ltd has been selected as the lowest bidder from the three bidders. Corporation had issued a letter to the company requesting to sign the agreement on or before 16th March 2020 and start the process at the earliest, that the Company has given assurance to sign the agreement by 20/03/2020. In between, the company had visited the site and put forth a suggestion that they want to resurvey the quantity of legacy waste.

Hence, a survey team was called for by the selected bidder and found that there is huge like in the quantity of legacy i.e., instead of 40,300 m³ there exists an additional quantity of 71,974m³ (including the legacy waste dumped on the land leased for KSIDC). The amount we had estimated for the project was Rs. 3,82,85,000 which will increase to an amount of 10,66,60,300/-, if the total quantity of waste is cleared.

Meanwhile, the 34th SLAC (State Level Advisory Committee (SLAC) held on 13.03.2020 directed Secretary, Kollam Corporation to provide a letter of comfort regarding bio-mining the entire quantity of legacy waste dumped on the entire land at Kureepuzha (i.e., including land leased to Kerala State Industrial Development Corporation (KSIDC). As the complete lock down prevailed in India due to the

COVID-19 Pandemic from 23/03/2020, the day to day working of the office was stalled. Due to COVID-19 protocol, the council meeting to decide on the letter of comfort could not be held.

In the 35th State Level Advisory Meeting (SLAC) decided to share the draft agreement done by the Kerala State Industrial Development Corporation (KSIDC) for Kozhikode Municipal Corporation on 27.04.2020 and it was shared and verified by the officials found that M/s. Zonta has requested to sanction 25% of the contract value as mobilization advance and that the amount of performance guarantee (5%) to be remitted may be deducted from each of Running Amount bill at 2.5% of contract value which are not in tune with the Kerala Public Works Department (PWD) manual and prevailing Government orders. A concurrence from the State Government is needed if any such changes as requested is be made in the agreement.

In the council being the decision-making authority of the Kollam Municipal Corporation decided to proceed with the agreement only after the re-survey Total Station) by Kollam Municipal Corporation and formed a committee for verifying the terms and conditions of the agreement.

Bio-mining could be started only after obtaining the sanction from the council of Kollam Municipal Corporation.”

6. It is quite unfortunate that the report is not satisfactory at all. It is mentioned in the report that the M/s. Zonta Infratech Private Limited had inspected the site and put forth a suggestion that they wanted to resurvey the quantity of legacy waste. So, the survey was conducted by the selected bidder and found out that there was a huge hike in the quantity of legacy i.e., instead of 40,300 m³ there existed an additional quantity of 71,974m³ (including the legacy waste dumped on the land leased for Kerala State Industrial Development Corporation (KSID). They have estimated the project cost as Rs.10,66,60,300/- (Rs. Ten Crore Sixty Six Lakhs Sixty Thousand and Three Hundred Only) instead of Rs. 3,82,85,000/- (Rs. Three Crore Eighty Two Lakhs and Eighty Five thousand only) which was the original bid.

7. It is also mentioned in the report the 34th State Level Advisory Committee (SLAC) meeting was held on 13.03.2020 and the Secretary, Kollam Corporation was directed to provide a letter of comfort regarding bio-mining the entire quantity of legacy waste dumped on the entire land at Kureepuzha (i.e., including land leased to Kerala State Industrial Development Corporation (KSIDC). Due to lock down, they were not able to conduct the council meeting and decide the question regarding the issuance of comfort.

8. In the 35th State Level Advisory Meeting (SLAC) meeting, it was decided to share the draft agreement done by the Kerala State Industrial Development Corporation (KSIDC) for Kozhikode Municipal Corporation on 27.04.2020 and it was shared and verified by the officials and found that M/s. Zonta has requested to sanction 25% of the contract value as mobilization advance and that the amount of performance guarantee (5%) to be remitted may be deducted from each of Running Amount bill at 2.5% of contract value which were not in tune with the Kerala Public Works Department (PWD) manual and prevailing Government orders. So, a concurrence from the State Government is required for such change.

9. Since the council being the decision-making authority, the Kollam Municipal Corporation decided to proceed with the agreement only after the re-survey of total area by Kollam Municipal Corporation and formed a committee for verifying the terms and conditions of the agreement.

10. Bio-mining could be started only after obtaining the sanction from the council of Kollam Municipal Corporation.

11. It may be mentioned here, there also they did not mention as to when the Kollam Municipal Corporation will be convening its meeting for deciding this aspect. So, this Tribunal cannot

give an adjournment in this matter indefinitely for resolving the issue of disposal of legacy waste that is dumped in that area and consideration of which is pending in this Tribunal since 2013 onwards.

12. Neither the Pollution Control Board nor other regulating authorities are taking any stringent action against the persons who are not following the implementation of Solid Waste Management Rules, 2016 inspite of the directions given by the Principal Bench of National Green Tribunal, New Delhi in *Original Application No.606 of 2018*.

13. Further, the Principal Bench of National Green Tribunal in O.A. No.606 of 2018 had entrusted the work of supervision of implementation of the Solid Waste Management Rules, 2016 with the respective Chief Secretaries of the State. Inspite of that no fruitful improvement has happened in this case to resolve the issue. That shows the sorry state of affairs of implementation of the Solid Waste Management Rules, 2016 in Kollam Corporation.

14. So under such circumstances, we direct the Chief Secretary of Kerala State to look into the issue and resolve the issue by taking appropriate decision in consultation with the Government and see that the directions issued by the Principal

Bench of National Green Tribunal in O.A. No.606 of 2018 is implemented in its letter and spirit, so as to save environment which is a primary responsibility of the State to provide clean air and water as part of right to life as enshrined in *Article 21 of Constitution of India*.

15. The Kollam Corporation is also directed to file a proper progress report regarding the steps taken by them to resolve the issue of disposal of legacy waste, till any fruitful decision is expected to be taken by the Corporation on executing the contract and implementing the same.

16. Kerala State Pollution Control Board is also directed to inspect the area in question and submit a status report showing the real state of affairs including the violation if any of non-implementation of provisions of the Solid Waste Management Rules, 2016 in Kollam Corporation and any damage has been caused on account of the negligence act of miss-management of legacy waste, assess environmental compensation and take steps to realize the same from the defaulter and submit a detailed report to this Tribunal.

17. The State Level Monitoring Committee in respect of Kerala is also requested to submit a status report regarding the

implementation of the Solid Waste Management Rules, 2016 as far as Kollam Corporation is concerned before the next hearing date.

18. The District Collector, Kollam who is also having a responsibility of monitoring the implementation of Solid Waste Management Rules, 2016 as per Rule 12 of the said Rules in respect of handling solid waste generated in Kollam Corporation and what are the steps taken by him to resolve the issue in this regard as envisaged under the above said rules and submit a report to this Tribunal before the next hearing date.

19. The authorities are reminded of the fact that the monsoon has already set in the State of Kerala and not treating the legacy waste will only result in more disaster to the environment which will in turn affect the health of the people adversely.

20. The Registry is directed to communicate this order through email to the Chief Secretary, State of Kerala and also to the Chairman, State Level Monitoring Committee in respect of Kerala appointed by the Principal Bench of National Green Tribunal in O.A. No.606 of 2018 for monitoring the implementation of the Solid Waste Management Rules, 2016 and District Collector, Kollam District.

21. The Registry is also directed to communicate this order to the Kerala State Pollution Control Board and Kollam Corporation through e-mail immediately so as to enable them to comply with the direction.

22. For consideration of further report post on 14.10.2020.

.....J.M.
(Justice K. Ramakrishnan)

.....E.M.
(Shri. Saibal Dasgupta)

O.A.439/2013 &
O.A.456/2013.
13th July, 2020. Sr &MN

Annexure R3 (b)



Compound wall enclosure to the dump yard



Internal road currently not in use


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The heap of legacy waste: View from outside



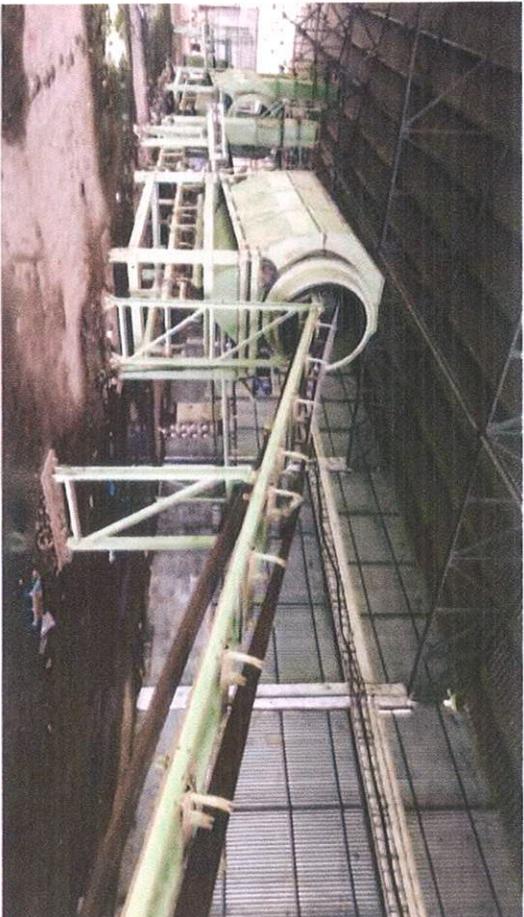
Secured Land Fill: Construction not completed as a portion falls in CRZ area.



Ashramudi lake: View from near the dump yard.




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The abandoned solid waste treatment plant machinery



Shed housing machinery

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Inside view of the treatment plant. Segregated plastic from the old waste seen lying in a portion.

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Annexure B3(c)



KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
കേന്ദ്ര പരിഷ്കരണ ശാല



Certificate No. TC-8525

Ref:PCB/CLAR/2009

Date: 06/10/2020

From
Chief Environmental Scientist

To
The Environmental Engineer,
D O KOLLAM

Sub: Analysis Report of Water Samples

Sir,
I am enclosing here with the analysis report of the samples received from that office. The bill for the analysis charge is also enclosed herewith. The details are given below

Sl	AR NO	That Office Reference	Source Name	No of Samples
1	747/20-21	PCB/KLM/DL-1/17 VOL II dated 22.09.20	Pond,Lake,Well	12
2	748/20-21	PCB/KLM/DL-1/17 Vol II dated 22.09.20	Pond,Lake,Well	12

Yours faithfully

CHIEF ENVIRONMENTAL SCIENTIST

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**KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY**

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കേന്ദ്ര പരിഷ്കരണ ശാല



Certificate No.
TC-8525

ANALYSIS REPORT

Analysis Report No.	PCB/CL/747/20-21	Date	06 Oct 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/KLM/DL-1/17 VOL II dated 22.09.20	Date Of Collection	22 Sep 2020	
Received From	D O KOLLAM	Date Of Receipt	23 Sep 2020	
No. Of Sample	12	Period Of Analysis	23 Sep 2020 - 06 Oct 2020	
Source	Pond,Lake,Well	Scientist-in-charge	Rajeena	
Sample Condition	fit for analysis	Sample Type	Surface Waters / Drinking Water	
Sample collected by	EE, DO KOLLAM	Sample volume & container type	2 L Plastic can	
Sample preservation	As per APHA/IS :3025(Part-1)	Type of test	CHEMICAL	

SAMPLE ID : G 1

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH		5.5	APHA, 4500- H+B, 4-95 to 4- 99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	BDL	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	135.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L
4	Chloride	mg/L	38.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	BDL	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric) 23rd Edition: 2017	0.02 mg/L

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8	Biochemical Oxygen Demand (BOD)	mg/L	0.61	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5-19, 23rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.2	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 2

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	--	5.5	APHA, 4500- H+B, 4-95 to 4-99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	18.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	124.0	APHA, 2540-C, 2-69 to 2-70 23rd Edition:2017	10 mg/L
4	Chloride	mg/L	43.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -,B,4-127 , 23rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric),23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	1.1	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5-19, 23rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.3	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

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Sample ID : G 3

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	5.6	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Suspended Solids	mg/L	21.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	145.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L
4	Chloride	mg/L	47.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F, C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	0.07	APHA, 4500 NO3 -B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric),23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	1.1	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.2	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 4

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH		6.1	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Suspended Solids	mg/L	13.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017.	10 mg/L
3	Total Dissolved Solids	mg/L	216.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L

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4	Chloride	mg/L	43.0	APHA, 4500- Cl /B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	0.05	APHA, 4500 NO3 -,B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric):23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.2	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	16.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.5	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C:22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 5

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	6.1	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017.	1
2	Suspended Solids	mg/L	11.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	228.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L
4	Chloride	mg/L	47.0	APHA, 4500- Cl /B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -,B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L

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 Page 4 of 10



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7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method, Colourimetric), 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.7	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5-19, 23rd Edition: 2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.5	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C, 22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 6

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH		5.5	APHA, 4500- H+B, 4-95 to 4- 99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	BDL	APHA, 2540- D, 2-70 to 2-71, 23rd Edition: 2017	10 mg/L
3	Total Dissolved Solids	mg/L	165.0	APHA, 2540-C, 2-69 to 2-70 23rd Edition: 2017	10 mg/L
4	Chloride	mg/L	43.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -B, 4-127 , 23rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method, Colourimetric), 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.3	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5- 19, 23rd Edition: 2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.2	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C, 22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

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Sample ID : G 7

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	5.1	APHA, 4500- H+B, 4-95 to 4-99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	13.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	113.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L
4	Chloride	mg/L	34.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric) 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.2	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.3	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 8

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	5.0	APHA, 4500- H+B, 4-95 to 4-99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	BDL	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
	Total Dissolved Solids	mg/L	154.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L

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[Signature]
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4	Chloride	mg/L	47.0	APHA, 4500- Cl /B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO ₃ -B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH ₃ F, 4-119 to 4-120, (Phenate method, Colourimetric),23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.3	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.2	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 9

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH		4.4	APHA, 4500- H+B, 4-95 to 4- 99, 23rdEdition: 2017	1
2	Suspended Solids	mg/L	12.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	215.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L
4	Chloride	mg/L	43.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.2	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO ₃ -B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L

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7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method, Colourimetric), 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.3	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5-19, 23 rd Edition: 2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.5	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C, 22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 10

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	4.5	APHA, 4500- H+B, 4-95 to 4-99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	15.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition: 2017	10 mg/L
3	Total Dissolved Solids	mg/L	142.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition: 2017	10 mg/L
4	Chloride	mg/L	43.0	APHA, 4500- Cl/B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.1	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -,B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric), 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.5	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	8.0	APHA, 5220 B, 5-18 to 5-19, 23 rd Edition: 2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.2	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C, 22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

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Sample ID : G 11

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	4.4	APHA, 4500-H+B, 4-95 to 4-99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	13.0	APHA, 2540-D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	186.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L
4	Chloride	mg/L	60.0	APHA, 4500- Cl /B, 4-75 to 4-76, 23 rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.2	APHA, 4500- F C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method): 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	BDL	APHA, 4500 NO3 -B,4-127 , 23 rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	BDL	APHA, 4500 NH3 F, 4-119 to 4-120, (Phenate method , Colourimetric), 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	0.3	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	16.0	APHA, 5220 B, 5-18 to 5- 19, 23 rd Edition:2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	0.5	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/L
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

Sample ID : G 12

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	6.6	APHA, 4500- H+B, 4-95 to 4- 99, 23rd Edition: 2017	1
2	Suspended Solids	mg/L	22.0	APHA, 2540- D, 2-70 to 2-71, 23rd Edition:2017	10 mg/L
3	Total Dissolved Solids	mg/L	7664.0	APHA, 2540-C, 2-69 to 2-70 23 rd Edition:2017	10 mg/L

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4	Chloride	mg/L	4892.0	APHA, 4500-Cl/B, 4-75 to 4-76, 23rd Edition: 2017	1 mg/L
5	Fluoride	mg/L	0.6	APHA, 4500-F, C, 4-89 to 4-90, 23rd Edition (Ion Selective Electrode Method) 2017	0.1 mg/L
6	Nitrate as Nitrogen	mg/L	0.13	APHA, 4500 NO ₃ -B, 4-127, 23rd Edition (Ultraviolet Spectrophotometric Method): 2017	0.05 mg/L
7	Ammonia as Nitrogen	mg/L	3.15	APHA, 4500 NH ₃ F, 4-119 to 4-120, (Phenate method, Colourimetric), 23rd Edition: 2017	0.02 mg/L
8	Biochemical Oxygen Demand (BOD)	mg/L	2.2	IS 3025 (Part 44): 1993	0.1 mg/L
9	Chemical Oxygen Demand (COD)	mg/L	16.0	APHA, 5220 B, 5-18 to 5-19, 23rd Edition: 2017	3 mg/L
10	Total Kjeldahl Nitrogen	mg/L	4.5	APHA, 4500-N org B, 4-139 to 4-140, 23rd Edition: 2017	0.2 mg/L
11	Phenolic compounds	mg/l	BDL	APHA 5530-C, 22nd Edition	0.001mg/l
12	Cyanides	mg/L	BDL	APHA, 3111-B	0.01 mg/L

-- End of Report --

Note: The test results relate to the sample submitted for analysis and it shouldn't be reproduced except with the written permission of the authorised signatory of the lab.

Authorised by

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 Environmental Swathout the
 Central Pollution Control Board
 Kerala State Pollution Control Board
 Gandhi Nagar, Cochin-20

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CENTRAL LABORATORY**

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Certificate No.
TC-8525

ANALYSIS REPORT

Analysis Report No.	PCB/CL/748/20-21	Date	30 Sep 2020	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/KLM/ML-17 Vol II dated 22.09.20	Date Of Collection	22 Sep 2020	
Received From	D O KOLLAM	Date Of Receipt	23 Sep 2020	
No. Of Sample	12	Period Of Analysis	23 Sep 2020 - 30 Sep 2020	
Source	Pond,Lake,Well	Scientist-in-charge	Rajeena	
Sample Condition	fit for analysis	Sample Type	Surface Waters / Drinking Water	
Sample collected by	EE DO KOLLAM	Sample volume & container type	2 L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : M 1

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.06	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

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Sample ID : M 2

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	0.08	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.08	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 3

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	0.13	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.05	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L

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8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 4

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.04	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 5

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	0.62	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L

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6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Amc Mn	mg/L	0.04	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	0.02	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 6

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	0.16	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.03	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 7

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L

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Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
4	Iron	mg/L	0.06	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.08	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 8

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Ni cke	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.13	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 9

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L

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2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.11	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 10

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Gadimium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	0.05	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to 3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.08	APHA, 3111-B, 3-20 to 3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

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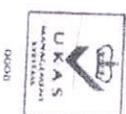
Sample ID : M 11

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.15	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to3-27, 23rd Edition:2017	0.01 mg/L

Sample ID : M 12

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	Cadmium	mg/L	BDL	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.01 mg/L
2	Chromium Total	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition:2017	0.03 mg/L
3	Copper	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.02 mg/L
4	Iron	mg/L	0.42	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
5	Nickel	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
6	Lead	mg/L	BDL	APHA, 3111-B,3-20 to3-21, 23rd Edition : 2017	0.05 mg/L
7	Zinc	mg/L	0.14	APHA, 3111-B, 3-20 to3-21, 23rd Edition : 2017	0.02 mg/L

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SIMIP,
 ENVIRONMENTAL ENGINEER

(Handwritten Signature)

8	Arsenic	mg/L	BDL	APHA, 3114-B, 3-36 to 3-40, 23rd Edition:2017	0.01 mg/L
9	Mercury	mg/L	BDL	APHA, 3112-B, 3-25 to 3-27, 23rd Edition:2017	0.01 mg/L

--- End of Report ---

Checked by

Kalyana
28/11

Pratheep P
 Environmental Scientist

Authorised by

Geetha
20/11/2020

P. GEETHA
 Environmental Scientist

Note: The test results relate only to the sample submitted for analysis and it shouldn't be reproduced except in full without the written permission of the authorised signatory of the lab.

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SIMMI P.
 ENVIRONMENTAL ENGINEER

Anneese R (cd)

KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, KOLLAM

Water Quality of Wells near Kureepuzha Dumping Site
Date of Sample Collection 01-08-2011

Parameters	Unit	Sreeatha Kuthinte Vadakkathils	Vattamana Sree Durga Devi Temple Mamoottilkadayu	Chandran Pillai Kuthinte Kizhakkathil	Kamamma Kuthinte Kizhakkathil	Radha Krishnan Nandanam
pH	-	5.50	6.25	5.63	6.25	4.9
Conductivity	µs/cm	217.9	297.8	314.7	318.3	232.4
Colour	Hazen	<5	<5	<5	<5	<5
Odour	-	Nil	Obj	Nil	Nil	Nil
Chloride	mg/l	54	46	84	74	58
Total Hardness	mg/l	44	94	58	72	36
Calcium Hardness	mg/l	26	70	42	58	28
Magnesium Hardness	mg/l	18	24	16	14	8
TDS	mg/l	156	212.7	224	227	166
Ammoniacal Nitrogen	mg/l	ND	25	ND	ND	ND
Nitrite Nitrogen	mg/l	0.023	0.178	0.065	0.078	ND
Nitrate Nitrogen	mg/l	4.54	8.75	6.45	7.23	4.01
Nitrate Nitrogen	mg/l	10	400	ND	ND	ND
Sulphate	mg/l	0.8	3.5	1.3	1.2	0.1
BOD	mg/l	1.7	2.3	2.8	1.3	3.1
Dissolved Oxygen	mg/l	ND	ND	ND	ND	ND
Iron	mg/l	0.098	0.171	0.081	0.094	0.064
Flouride	mg/l	360	200	340	920	240
Total Coliforms	TC/100 ml	180	80	160	440	20
Faecal Coliforms	FC/100ml					

Assistant Environmental Scientist

SIMI P.

ENVIRONMENTAL ENGINEER



KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, KOLLAM

Water Quality of Wells near Kureepuzha Dumping Site

Date of Sample Collection 01-08-2011

Parameters	Unit	Tankamany Amma Mattathu Veedu	Kunju Krishnan Marakkazathu Thekkatil	Gopinathan Pillai Vadkke Meakkazathu	Kareenazhikam Sree Bhadra Devi Temple	Neelakandan Echanazhikathu Kayalavaram.
pH	-	4.86	4.69	5.58	4.39	5.68
Conductivity	µs/cm	177.7	233.8	249	312	319.6
Colour	Hazen	<5	<5	<5	<5	20
Odour	-	Nil	Nil	Obj	Nil	Nil
Chloride	mg/l	48	56	80	66	94
Total Hardness	mg/l	36	38	54	50	48
Calcium Hardness	mg/l	20	22	22	26	38
Magnesium Hardness	mg/l	16	14	32	24	10
Total Dissolved Solids	mg/l	127	168	176	222	228
Ammoniacal Nitrogen	mg/l	ND	ND	ND	ND	15
Nitrite Nitrogen	mg/l	0.048	0.021	0.016	0.009	0.041
Nitrate Nitrogen	mg/l	6.72	4.21	4.43	3.97	4.97
Sulphate	mg/l	ND	ND	20	ND	10
B.O.D	mg/l	0.6	1.5	0.1	1.2	5.6
Dissolved Oxygen	mg/l	3.7	3	3.2	2.8	0
Iron	mg/l	ND	ND	ND	ND	50
Flouride	mg/l	0.24	1.28	0.087	0.102	0.35
Total Coliforms	TC/100 ml	1080	120	580	460	440
Faecal Coliforms	FC/100ml	520	40	300	120	280

Assistant Environmental Scientist

SIMI P.
ENVIRONMENTAL ENGINEER

Amesara R3(e)

KERALA STATE POLLUTION CONTROL BOARD, DISTRICT OFFICE, KOLLAM

Water Quality of Wells near Kureepuzha Dumping Site

Date of Sample Collection 23-07-2012

Parameters	Unit	Sreedharan Pillai Opposite to dumping yard	Drain from Dumping yard	Ashtamudi Lake near dumping yard	Puthiyakavu Central School	Radhakrishnan	Kunjukrishnan	Bhaskaran	Parukkuttiyamma	Neelakandan
pH	-	5.6	6.8	8	5.3	5.1	4.8	4.8	4.8	5.2
Total Dissolved Solids	mg/l	134	200	22320	220	164	168	210	176	190
Chloride	mg/l	46	66	11500	64	56	56	66	62	68
Total Hardness	mg/l	10	55	5000	20	18	18	27	22	28
Iron	mg/l	0.077	0.71	0.030	0.011	0.019	0.01	0.03	0.016	0.22
Sulphate	mg/l	10	10	4873	4.8	8.5	5.4	5.17	BDL	17.2
Nitrate	mg/l	175.4	146.5	163	124	20.37	112.3	138.6	100.1	8.9
Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Phenolic compounds	mg/l	BDL	BDL	0.679	BDL	BDL	BDL	BDL	BDL	BDL

23




S.M.P.
ENVIRONMENTAL ENGINEER


Assistant Environmental Scientist

23

Annexure R34

KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, KOLLAM

WATER QUALITY OF WELLS, POND, LAKE NEAR KUREEPUZHA DUMPING SITE

DATE OF SAMPLE COLLECTION : 22/09/2020

Sl No	Parameters	Unit	Ashtamudi	Lake	Sakthikalangara Sreedharanasala Temple Pond	Sudha, Mattathukkethal	Sreelatha, Devikasadamam	Ciandranpilla, Kulathumkuzhakkethal	Kamaliamma, Kulathumkuzhakkethal
1	pH	-	6.6		5.6	5.5	5.5	6.1	6.1
2	Suspended Solids	mg/l	22		21	BDL	18	13	11
3	Total Dissolved Solids	mg/l	7664		145	135	124	216	228
4	Chloride	mg/l	4892		47	38	43	43	47
5	Fluoride	mg/l	0.6		0.1	BDL	0.1	0.1	0.1
6	Nitrate as Nitrogen	mg/l	0.13		0.07	BDL	BDL	0.05	BDL
7	Amonia as Nitrogen	mg/l	3.15		BDL	BDL	BDL	BDL	BDL
8	Biochemical Oxygen Demand (BOD)	mg/l	2.2		1.1	0.61	1.1	0.2	0.7
9	Chemical Oxygen Demand (COD)	mg/l	16		8	8	8	16	8
10	Total Kjeldahl Nitrogen	mg/l	4.5		0.2	0.2	0.3	0.5	0.5
11	Phenolic Compounds	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
12	Cyanides	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
13	Cadmium	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
14	Chromium Total	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
15	Copper	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
16	Iron	mg/l	0.42		0.13	BDL	0.08	BDL	0.62
17	Nickel	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
18	Lead	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
19	Zinc	mg/l	0.14		0.05	0.06	0.08	0.04	0.04
20	Arsenic	mg/l	BDL		BDL	BDL	BDL	BDL	BDL
21	Mercury	mg/l	BDL		BDL	BDL	BDL	BDL	0.02



Simi P.

SIMI P.
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KERALA STATE POLLUTION CONTROL BOARD

DISTRICT OFFICE, KOLLAM

WATER QUALITY OF WELLS, POND, LAKE NEAR KUREEPUZHA DUMPING SITE

DATE OF SAMPLE COLLECTION : 22/09/2020

Sl No	Parameters	Unit	Sunilal, KulathinteKizhakkethil	Vineeth, Mattathuveedu	Rajan, Marakkazhath	Aravindakshan, Anitha Bhavan	Rajendran Pillai, Vidya Bhavan	Ganesh, PB Nivas
1	pH	-	5.5	5.1	5	4.4	4.5	4.4
2	Suspended Solids	mg/L	BDL	13	BDL	12	15	13
3	Total Dissolved Solids	mg/l	165	113	154	215	142	186
4	Chloride	mg/L	43	34	47	43	43	60
5	Fluoride	mg/l.	0.1	0.1	0.1	0.2	0.1	0.2
6	Nitrate as Nitrogen	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
7	Amomia as Nitrogen	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
8	Biochemical Oxygen Demand (BOD)	mg/L	0.3	0.2	0.3	0.3	0.5	0.3
9	Chemical Oxygen Demand (COD)	mg/L	8	8	8	8	8	16
10	Total Kjeldahl Nitrogen	mg/L	0.2	0.3	0.2	0.5	0.2	0.5
11	Phenolic Compounds	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
12	Cyanides	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
13	Cadmium	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
14	Chromium Total	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
15	Copper	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
16	Iron	mg/L	0.16	0.06	BDL	BDL	0.05	BDL
17	Nickel	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
18	Lead	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
19	Zinc	mg/l.	0.03	0.08	0.13	0.11	0.08	0.15
20	Arsenic	mg/L	BDL	BDL	BDL	BDL	BDL	BDL
21	Mercury	mg/L	BDL	BDL	BDL	BDL	BDL	BDL

Simi P.

**SIMI P.
ENVIRONMENTAL ENGINEER**



Anurag R 3



KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
E-mail: ms.kpcb@gov.in Fax: 0471 - 2318154, 2318152 web: www.keralapcb.nic.in

Pattom P.O., Thiruvananthapuram - 695 004
പാട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/SEE-2/OA 515-2018/2019

Date: 24/09/2020

From

The Chairman

Registered with A/D

To

The Secretary
Kollam Corporation

Sub: Video Conference on levying of Environmental Compensation for non compliance of SWM Rules, 2016.

- Ref: 1.The Hon'ble NGT order in OA No. 439/2013 and OA 456/2013 dated 09.10.2018, 07.01.2019, 11.12.2019 and 13/07/2020.
2. Letter No. PCB/KO/MSW/4/06 dated 04/09/2020 from Environmental Engineer,
District Office, Kollam
Sir,

The Hon'ble NGT vide order dated 13-07-2020 directed the Kerala State Pollution Control Board to inspect the legacy waste dumping yard at Kureepuzha and submit a status report showing the real state of affairs including the violations if any of non implementation of provisions of the Solid Waste Management rules, 2016 in Kollam Corporation and any damage that has been caused on account of the negligence, act of mismanagement of legacy waste and then to assess environmental compensation (EC), and take steps to realize the same from the defaulter. Accordingly, inspection was conducted by our Engineers and the EC assessed, as follows.

EC = Capital Cost Factor x Marginal Average Cost for Waste Management x (Per day waste generation-Per day waste disposed as per the Rules) + O&M Cost Factor x Marginal Average O&M Cost x (Per day waste generation-Per day waste disposed as per the Rules) x Number of days violation took place + Daily Environmental Externality x N

Waste Quantity in tons per day (TPD)

N= Number of days from the date of direction of CPCB/SPCB/PCC till the required capacity systems are provided by the concerned authority



SMP P.
ENVIRONMENTAL ENGINEER

Environmental Compensation in lakhs (Rs.) = 2.4(Waste Generation - Waste Disposed as per the Rules) +0.02 (Waste Generation - Waste Disposed as per the Rules) x N^{1/4} + Daily Environmental Externality x N

City	KOLLAM
Population (2011)	3,48,657
Class	Class I
Waste Generation (kg. Per person per day)	0.3
Waste Generation (TPD)	104.60
Waste disposed as per Rules (TPD)	25
Waste Management capacity Gap (TPD)	79.60
Calculated EC (capital cost component) in lakhs, Rs.	191.03
Minimum and Maximum values of EC (Capital cost component) recommended by the committee (lakhs, Rs.)	Min. 100; Max 1000
Final EC (capital cost component) in lakhs, Rs.	191.03
Calculated EC (O&M component) in lakhs, Rs./day	1.59
Minimum and Maximum values of EC (O&M cost component) recommended by the committee (lakhs Rs./day)	Min. 0.1 Max. 1.0
Final EC (O&M component) in Lakhs. Rs./day	1
Calculated Environmental Externality (lakhs Rs. / day)	0.004
Minimum and Maximum values of Environmental Externality recommended by the committee (lakhs, Rs./day)	Min. 0.05 Max. 0.10
Final Environmental Externality (Rs. Per day)	0.05
EC to be collected (from 22/11/18-17/9/2020)	889.28

Environmental Compensation (Rs. in lakhs): 191.03+1x665+0.05 x 665=889.28 Lakhs



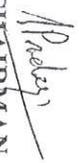
SIMIP.
ENVIRONMENTAL ENGINEER

[Handwritten Signature]

Thus, the Environmental Compensation for Kollam Corporation is assessed as Rs. 889.28 lakhs (Rupees Eight Crore Eighty Nine Lakhs Twenty Eight Thousand Only) from 22-11-2018 to 17-09-2020 for 665 days.

In this context, a video conference is scheduled to be held on 29th September 2020 at 3.30 P.M from the chamber of Chairman, KSPCB Head Office, Thiruvananthapuram to discuss the matter further. Please attend the video conference with all updated documents without fail.

Yours faithfully,


CHAIRMAN

Copy To:

1. The Director, Directorate of Urban affairs
 2. The Regional Joint Director, Kollam
 3. CEE, RO, Thiruvananthapuram
 4. SEE, Legal cell, Ernakulam
 5. EE, DO, Kollam
 6. CA to Chairman, Member Secretary & CEE, HO
 7. IT cell- Please make necessary arrangements
- } (Please attend with all relevant details)




SIMI P.
ENVIRONMENTAL ENGINEER

Original no: 71101
Annexure K3 (in)



KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

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പാട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/SEE2/OA 515/2018/2019 Dated: 07/10/2020

From
The Chairman
To
The Secretary
Kollam Coproration

Sub: Video conference on 29/09/2020 at 3.30 PM in O.A. No 439/2013 & 456/2013 of Hon'ble NGT - Reg.

Ref: 1.The Hon'ble NGT order dated 13/07/2020 O.A. No 439/2013 & 456/2013 .
2.Minutes of the Video Conference held on 29/09/2020 in OA No.439/2013 & 456/201.
Sir,
Attention is invited to the subject matter. The minutes of the V.C. held on 29/09/2020 is enclosed for necessary action and report.

Yours faithfully

Shree A7
CHAIRMAN

- Copy to:
1. The Chief Environmental Engineer Regional Office, Thiruvananthapuram.
 2. The Senior Environmental Engineer Legal Cell, Ernakulam
 3. The Environmental Engineer District Office, Kollam.
 4. The Environmental Engineer - 4 Legal Section



SMITH P.
SMITH P.
ENVIRONMENTAL ENGINEER

Kerala State Pollution Control Board

MINUTES OF THE VIDEO CONFERENCE HELD ON 29/09/2020 IN OA
439/2013 & 456/2013 IN THE CHAMBER OF CHAIRMAN

Hearing commenced at 3.30 P.M. The Chairman welcomed all participants to the video conference. The Member Secretary, KSPCB; Joint Director, Urban Directorate; Chief Environmental Engineer, Head Office, KSPCB; Chief Environmental Engineer, Regional Office, KSPCB, Thiruvananthapuram; Senior Environmental Engineer, Legal Cell, KSPCBs Ernakulam and Senior Environmental Engineer-2, and AEE5 Head office, KSPCB; and Environmental Engineer, District Office, KSPCB, Kollam were present for the video conferencing.

Chairman explained the seriousness of the non-compliance of the NGT orders, Solid Waste Management Rules, 2016 and informed that The Hon'ble NGT vide Order dated 13/07/2020 directed the Kerala State Pollution Control Board to inspect the legacy waste dumping yard at Kureepuzha and submit a status report showing the real state of affairs including the violations if any of non implementation of provisions of the Solid Waste Management Rules, 2016 in Kollam Corporation and any damage has been caused on account of the negligence act of mismanagement of legacy waste, assess environmental compensation and take steps to realize the same from the defaulter and submit a detailed report to the Tribunal before the next posting on 14/10/2020. The Environmental Engineer, District Office estimated Rs 889.28 lakhs as environmental compensation based on the inspection and quarterly report. Chairman asked the

Secretary, Kollam Corporation to explain the progress on biomining of legacy waste at Kureepuzha dumping yard, the status of construction of waste to energy plant and on compliance of the Solid Waste Management Rules, 2016 and the action taken on the direction of Hon'ble NGT Order dated 13/07/2020 in OA 439/2013 and 456/2013.

The Secretary, Kollam Corporation explained that, Corporation invited tender with the help of Suchitwa Mission and selected M/s. Zonta Infatech Pvt. Ltd. for doing the biomining of legacy waste at Kureepuzha dump site. But the company demanded sanctioning of 25% of the contract value as mobilization advance and also requested that the amount of performance guarantee (5%) to be remitted may be deducted from each running bill at 2.5% of the contract value as same as the payment procedure followed in Kozhikode and Kochi by KSIDC. The same was informed to Government and the conditions were not approved by the State Government as they are not in tune with the Kerala Public Work Department Manual and prevailing Government orders. In this context the Corporation decided to explore the possibility of carrying out the biomining work through KSIDC as being done in Kozhikode and Kochi by allocating the available plan fund to KSIDC. The same will be intimated to SLAC within a week.

The Secretary also informed that the last SLAC meeting held on 13.03.2020 directed the Kollam corporation to carry out the biomining work of the entire quantity of legacy waste dumped on the entire land at Kureepuzha (ie, including land leased to Kerala State Industrial Development Corporation (KSIDC). Currently Corporation has earmarked 4 crore for clearing the legacy waste (as estimated earlier). The matter was put

before the council vide no 37 dated 25/09/202, council has decided to hand over the project to KSIDC as the 7.05 Acres of land that has been leased to KSIDC to setup integrated waste to energy plant also includes the legacy waste and considering that they had already taken up similar projects of Kozhikode, Kochi and Kannur respectively.

The Secretary, Kollam Corporation also informed that the works are in progress for the management of Solid waste in Kollam district. The above details will be submitted to Kerala State Pollution Control Board within two days.

The Chairman also informed that out of 88,332 nos. households in Kollam Corporation, door to door facility for dry waste is available only in 52,899 houses that is only 59.9% and urgent steps are to be taken to have hundred percent door to door collection facilities for households and establishments. Solid waste treatment facilities as per the SWM Rules, 2016 shall be in operation for the treatment of biodegradable waste generated in all households and establishments.

The Chairman concluded the meeting with the following decisions.

1. Kollam Corporation shall furnish the present status and action taken report for the biomining of Kureepuzha dumpsite within two days. This shall also include the copy of the Council decision.
2. Kollam Corporation shall submit the action taken report for the treatment and disposal of biodegradable and non biodegradable waste from both households and establishments.

3. Environmental Engineer, District Office, Kollam to furnish the report as per the direction dated 13/07/2020 in OA 439/2013 & 456/2013 before Hon'ble NGT on time.

Hearing came to an end at 4.00 PM


CHAIRMAN

29-09-2020



SIMI P.
ENVIRONMENTAL ENGINEER

Annease RSC

To
The Chairman
KSPCB
Trivandrum

Sir

Sub: Reply to the points raised in the VC on levying of EC for Noncompliance of SWM rules 2016 conducted on 29/09/2020

As per the Video conference, I here by attaching the detailed report of SWM and the status report of Bio-mining of legacy waste at Kureepuzha

With regards



Secretary
Kollam Corporation

Acc: report of SWM and the status report of Bio-mining of legacy waste at Kureepuzha




S.M.P.
ENVIRONMENTAL ENGINEER

STATUS OF SOLID WASTE MANAGEMENT IN KOLLAM CORPORATION

The Kollam Municipal Corporation (KMC) has taken imperative steps to facilitate door to door collection of non-biodegradable waste, segregation of bio-degradable and non-biodegradable waste at source, conversion of biodegradable waste into compost at source itself and proper recycle or utilisation of the non-biodegradable waste for commercial purposes.

NON-DEGRADABLE WASTE MANAGEMENT:

Non-biodegradable waste collected from household and individual establishments by Haritha Karma Sena (HKS), an initiative of Govt. of Kerala and LSGD. Currently 182 HKS members work across 55 wards of KMC. Number of members working per ward ranges from 0 - 6. Most of the HKS members follow a monthly schedule for visit to households, although the daily working time is not decided upon. Households are visited once in a month. Since each ward has different number of HKS members and due irregular attendance, total number of households visited by HKS vary markedly across 55 wards. Commercial establishments are visited by HKS only upon their request and not on any schedule in most of the wards. Hence, income generated differs each month at each ward. User fee collected is deposited in bank account (JHI-HKS ward Secretary-Joint account) monthly, from which income is taken by HKS. There exists separate bank account for each ward.

Till July, HKS status shows that they been able to visit 56% of households and 17% of commercial establishment in KMC. So HKS introduced to a more systematic work culture i.e.: Each ward was divided into clusters with each cluster having 80 houses. A cluster book is maintained by HKS in which the collection can be recorded. The households also given a consumer card for their record. However, pilot run will serve more clarity and effectiveness of the new system.

Hence, a new system has been adopted to ensure 100% collection of non-degradable waste (Cluster form). After, the introduction (Cluster Form) with 18 HKS members in one zonal area, during August 2020, they had covered 10334 houses in 16 days and have collected an amount of Rs.92340/- as user fee. This type of collection activity is initiated to be followed in all wards to achieve 100% door to door collection.

A society of HKS will register within 3 months. A single point of contact for HKS is to be made by starting an Office for HKS. It can also serve as a point of sale for eco-friendly products. Also, a helpline number and an online portal must be made functional. The income generated now is only from user fee collected. But it will not sustain for a long run as the quantity of NBW is reducing by the introduction of new Government policies. Hence other income generating activities which include biodegradable waste management, compost/fertilizer repack and selling, cloth/paper bag production, Nursery/ farming etc.



S.MIT P.
ENVIRONMENTAL ENGINEER

must be carried out. Haritha Karma Sena was given training to repair idle biogas plants in households, there will be a separate fee for it.

The collected non-biodegradable waste (NBW) is stored at the collection point ie: material collection facilities setup at each ward. Around 250 MCF is installing in Kollam Corporation. Then it is transported to material recovery facilities at Anchalumood which is having a shredding machine and baling machine. At the Shredding Unit run by Corporation, 4 staff were employed to segregate, bale and shred non-biodegradable waste. The final shredded plastics are sold to Clean Kerala Company, so far 5Tonne shredded plastic have been used in road tarring works by KMC itself. Moreover, in bailing unit plastic bottles, PP cover, Milma cover etc get bailed separately and sold to Clean Kerala Company for recycling. Meanwhile, we had conducted many drives for collecting hazardous wastes which is then sent to Clean Kerala Company (details were given below). Furthermore, 2RRF (Materials Recovery Facility) each of 5000sqft capacity will be establishing soon (construction under completion stage) to facilitate the separation and preparation of recyclable materials for marketing to end-user manufacturers. Details of non-degradable waste sold to clean Kerala Company is given below

Quantity of Non- Degradable Waste sold to Clean Kerala Company	
Glass Waste	7T
TubeLight	5T
Bailed Plastic	14T
Shredded Plastic	15T(given to different panjayaths and municipalities for road tarring works)
Rejects and Leather Waste	27T
Dumbed Legacy Waste	263T
TOTAL	331 Tonne handed over to clean Kerala company for recycling

BIO-DEGRADABLE WASTE MANAGEMENT

Kollam Corporation has provided bio-degradable waste management facilities in source level like bio digesters, biogas plant, bio compost bins, pipe compost, ring compost) for treatment of biodegradable waste will be ensured at each household and commercial establishment. KMC has brought out provisions


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for availing subsidised bio compost bins for achieving 100% conversion of biodegradable waste at source itself. In community level Kollam Corporation has provided de-centralised treatment systems Viz, aerobic composting units, community based bio gas plants. An integrated solid waste management with a waste to energy plant of 200Tpd capacity was proposed by Government of Kerala at Kurepuzha.

The details of the existing capacity of Solid waste treatment mechanism are furnished in the table below

BIODEGRADABLE WASTE MANAGEMENT		
Treatment Facilities	No's	Quantity
Biogas Plants(HH)	1591	7.955tpd
Pipe Compost(HH)	750	1.5tpd
Bio composter(HH)	27500	55tpd
Vermicomposting(HH)	35	0.07tpd
Aerobic Composting Unit	27	1.4tpd
Biogas Plants(Community Level)	13	6tpd
		71.91tpd

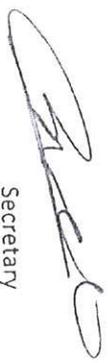
Waste collected by informal waste collectors ie, chicken waste -10Tpd,Hotel waste 15 Tpd
Hence, a total of **96.91Tpd** is processed

An amount of Rs.8,84,46,250/- has been allotted to Kollam Corporation for waste management projects from Swatch Bharat Mission (Urban) . In this Aerobic composting units (10 No's), Material Collection Facilities (250 no's) , Resource recovery Facility of 5000 Sqft (2 No's) , the construction of these facilities will be completed within three months' time. In the financial year 2020-21 for increasing the source level treatment of bio-degradable waste Kollam Corporation has allocated fund ; Ring compost (2750 no's- BPL families) Rs.6,87,500/-, Bio-gas plants(2220 No's)- Rs.2,31,00,000/-, Bio composter(27500 No's)- Rs.4,92,54,840/-. The above projects will be completed within March 2021. Also, Kollam Corporation has allocated further fund for providing compost pits in household level (2750 no's). Kollam Corporation is planning to provide source level treatment facilities for those houses that are not included in current year projects.

With the advent of integrated solid waste management – waste to energy plant, Kollam Corporation is aiming to achieve the 100% management of solid waste. For this to full fill, Government of Kerala has


SIMP P.
ENVIRONMENTAL ENGINEER

selected Kureepuzha in Kollam Corporation to setup a waste to energy plant of 200Tpd with a Bio-Methanisation plant , Refuse Derived Fuel and a Landfill . Government of Kerala has entrusted KSIDC for the implementation of this project in Design Built finance Operate and Transfer basis; they had selected M/s Zonta infiatech PVT LTD as the lowest bidder. Corporation council vide decision no 21 did 14/07/2020 decided to sign a concession agreement between Corporation, KSIDC and selected bidder.



Secretary

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SIMI P.
ENVIRONMENTAL ENGINEER

Status of Bio mining of Legacy Waste at Kureepuzha Dump Yard

OA No.435/2013 is renumbered as 515/2018 and 456/2013 is renumbered as 516/2018 by the SZ PCB, Both the cases are filed by Mannusayavakasha samrakshana samithi and Mr. Chandran pillai respectively; against Kollam corporation for the legacy waste dumped at the old dumping yard in Kureepuzha. Kollam corporation has stopped the dumping of MSW to the said site by 2012 due to public protest and orders from Hon. High court.

Hon. NGT has ordered KMC to manage the legacy waste scientifically in accordance with the SWM rules 2016 – schedule 1 – clause J. Kollam Corporation has plotted tender on 23-10-2019 for Bio-mining of Legacy waste dumped on 2.5 Acres; M/s Zonta infatech Pvt. Ltd. has been selected as the lowest bidder. In the 35th State Level Advisory Meeting (SLAC) it was decided to share the draft agreement done by the Kerala State Industrial Development Corporation (KSIDC) for Kozhikode Municipal Corporation on 27.04.2020 and it was shared and verified by the officials found that M/s. Zonta has requested to sanction 25% of the contract value as mobilization advance and that the amount of performance guarantee (5%) to be remitted may be deducted from each of Running Amount bill at 2.5% of contract value which are not in tune with the Kerala Public Works Department (PWD) manual and prevailing Government orders. As the council being the decision-making authority of the Kollam Municipal Corporation, decided to get approval from the government to sanction 25% of the contract value as mobilization advance and that the amount of performance guarantee (5%) to be remitted may be deducted from each of Running Amount bill at 2.5% of contract value as it is a mandate to get concurrence from the State Government if any such changes as requested is to be made in the agreement. As per the decision of the council a letter for approval from the council was sent to the Government.

Government has clarified KMC via Letter no:256/dc.1/20/LSGD dtd: 10/09/2020 that corporation should not deviate from the tender conditions and PWD manual. Kollam Corporation has forwarded a letter to the lowest bidder stating the clarifications that had been made by government and to abide by the tender conditions for signing the agreement. M/s Zonta infatech has informed Kollam Corporation that they are not ready to deviate from the draft agreement and expressed their non-willingness to proceed with this project. This matter was put before the council Vide no 37 dtd 25/09/2020; council has decided to hand over the project to KSIDC as the 7.05 Acres of land that has been leased to KSIDC to setup integrated waste to energy plant also includes the legacy waste and considering that they had already taken up similar projects of Kozhikode, Kochi and Kannur respectively.



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