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KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004

പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/SWM/AR/18/2019

Date: 23/07/2019

From

Member Secretary

To

The Chairman
Central State Pollution Control Board
Parivesh Bhavan
East Arjun Nagar
New Delhi- 110032

Kind attention
Dr. S.K Nigam
Addl. Director & I/c UPC-II

Sub:- Annual Report on Implementation of Solid Management Rules, 2016- reg:-

Ref:- Letter of even No.PCB/HO/MSW/AR/13/2016-18 dated. 26/09/2018.

Sir,

As per provision 24(3) of the Solid Waste Management (SWM) Rules, 2016,
the Annual Report for the year 2018-19 is submitted herewith.

Yours faithfully,

MEMBER SECRETARY

Form - V

[see rule 24(3)]

Format of annual report to be submitted by the state pollution control board or pollution control committee committees to the central pollution control board

PART A

To,

The Chairman
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
DELHI- 110 0032

ANNUAL REPORT '2018-2019'

1.	Name of the State/Union territory	KERALA
2.	Name & address of the State Pollution Control	KERALA STATE POLLUTION CONTROL BOARD, PLAMOOD, PATTON(C.P.O), THIRUVANANTHAPURAM, KERALA-695004
3.	Number of local bodies responsible for management of solid waste in the State/Union territory under these rules	93
4.	No. of authorisation application Received	23
5.	A Summary Statement on progress made by local body in respect of solid waste management	Please attach as Annexure-I Attached annexure -1
6.	A Summary Statement on progress made by local bodies in respect of waste collection, segregation, transportation and disposal	Please attach as Annexure-II Attached annexure -2
7.	A summary statement on progress made by local bodies in respect of implementation of Schedule II	Please attach as Annexure-III Attached annexure -3

Date: 23-07-2019	Chairman or the Member Secretary
Place: THIRUVANANTHA PURAM	State Pollution Control Board/ Pollution Control Committee

PART B

Towns/cities

Total number of towns/cities

- 93

Total number of ULBs

- 93

Number of class I & class II cities/towns

[Most of the facilities are decentralised facilities namely with capacity < 5 TPD.]

Authorisation status (names/number)

Number of applications received

- 23

Number of authorisations granted

- 5

Authorisations under scrutiny

- 18

SOLID WASTE Generation status

Solid waste generation in the state (TPD)

- 3903.023 TPD (Based on Population)

collected

- 772.23 TPD

treated

- 431.74 TPD

landfilled

Compliance to Schedule I of SW Rules (Number/names of towns/capacity)

Good practices in cities/towns

House-to-house collection

Segregation

Storage

Covered transportation

} Material Collection facilities, Resource Recovery Units, Biogas plants, Aerobic Composting Units, Windrow Composting (Details attached).

Processing of SW (Number/names of towns/capacity)

Solid Waste processing facilities setup:

Community level

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletization
1.	721	16	216	0

Processing facility operational:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletization
1.	721	16	216	0

Processing facility under installation/planned:

Sl. No.	Composting	Vermi-composting	Biogas	RDF/Pelletisation

Waste-to-Energy Plants: (Number/names of towns/capacity)

Annexure - I

Sl. No.	Plant Location	Status of operation	Power generation (MW)	Remarks
	—	NIL	—	

Disposal of solid waste (number/names of towns/capacity):

Landfill sites identified → 1

Landfill constructed

Landfill under construction → 1

Landfill in operation

Landfill exhausted

Landfilled capped → 2

Solid Waste Dumpsites (number/names of towns/capacity):

Total number of existing dumpsites → 52

Dumpsites reclaimed/capped

Dumpsites converted to sanitary landfill

Monitoring at Waste processing/Landfills sites

Sl. No.	Name of facilities	Ambient air	Groundwater	Leachate quality	Compost quality	VOCs
1.						
2.		←	NIL	→		
3.						

Status of Action Plan prepared by Municipalities

Total number of municipalities:

Number of Action Plan submitted:

Form - VI

[see rule 25]

Accident Reporting

1.	Date and time of accident	22-02-2019 at Brahmapuram, Ennakulam
2.	Sequence of events leading to accident	
3.	The waste involved in accident	

4.	Assessment of the effects of the accidents on human health and the environment	
5.	Emergency measures taken	
6.	Steps taken to alleviate the effects of accidents	
7.	Steps taken to prevent the recurrence of such an accident	
Date:	26/7/2019	Signature: <i>[Signature]</i>
Place:	Thiruvananthapuram	Designation: Member Secretary

[F. No. 18-3/2004-HSMD]

BISHWANATH SINHA, Jt. Secy.

Kerala State Pollution Control Board

Annexure 1

SUMMARY STATEMENT ON PROGRESS MADE BY LOCALBODY IN RESPECT OF SOLID WASTE MANAGEMENT

The Government of Kerala has taken efforts to implement the Solid Waste Management Rules, 2016 in the State. There are 6 Corporations, 87 Municipalities and 941 GPs in the State. The Kerala State Pollution Control Board (KPSCB) issued repeated directions to all local bodies to ensure compliance of the Solid Waste Management Rules, 2016. 3903 TPD of solid waste is generated from the cities and towns. The status of the present facilities is attached.

The Government of Kerala constituted a State Level Advisory Committee on Waste Management chaired by the Chief Secretary; this Committee has conducted 27 meetings, till date, for monitoring solid waste management on monthly basis. **The** Government has accorded sanction for establishing Waste to Energy plants in 8 cities having 1 Lakh or more population and in three local bodies having population below 1 lakh. The progress is given below:

A. Progress in establishing Waste to Energy plants in eight cities having population above 1 lakh

Sl. No	Corporation/ Municipality	Identified site	Area in acre	Status	Completion date
a)	Kollam	Kureepuzha (Govt land)	7.05	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents 	2 years from the date of obtaining environmental clearance

				<p>were forwarded to each of them.</p> <ul style="list-style-type: none"> • Further follow-ups were being done to evince their interest in the project. • SLAC directed to clear the site and to do the bio mining. 	
b)	Ernakulam	Brahmapuram (Govt land)	20	<ul style="list-style-type: none"> • Work awarded to M/s G.J Eco Power Pvt. Ltd. Public hearing held on 10-6-2019. • Draft EIA report is modified based on the minutes of the public hearing and will be submitted to SEIAA soon. • KSREC has accorded sanction and the power purchase agreement between G.J. Eco Power Pvt Ltd and KSEB was executed on 19-6-2019. 	2 years from the date of obtaining environmental clearance
c)	Palakkad	Kanjikode (Land taken over from Kerala State Electricity Board Ltd. in advance possession)	15	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Prebid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project 	2 years from the date of obtaining environmental clearance
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	<ul style="list-style-type: none"> • After the completion of tendering process, the work awarded to Zonta Infratech Private Limited. • Letter of intent issued to Zonta Infratech Pvt Limited 	2 years from the date of obtaining environmental clearance

				<p>on 27-5-2019 as per the tender procedure detailed in the RFP.</p> <ul style="list-style-type: none"> • M/s. Zonta Infratech Pvt Limited communicated the acceptance of LOI vide their letter dated 10-6-2019. • M/s.Zonta Infratech Pvt Limited filed documents before Registrar of Companies(RoC) and the RoC allotted the name "Zonta Malabar Waste Management Pvt Limited" to the SPV, which is a fully owned subsidiary of the lead bidder, Zonta Infratech Pvt Limited with an initial share capital of Rs. 10 crores and it is expected that SPV could be incorporated before 10-7-2019. 	
e)	Kannur	Chelora (Govt. Land)	9.7	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Prebid meeting held on 21-6-2019 and representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project 	2 years from the date of obtaining environmental clearance
f)	Thiruvananthapuram	Peringamala (Govt. Land)	15	Alternate land is being identified for the solid waste processing plant. The feasibility for setting up the plant at Valiyathura is being explored.	2 years from the date of obtaining

g)	Thrissur	Laloor (Govt. Land)	15	Stakeholder meetings have been conducted. Further action to tender the work will be initiated soon.	2 years from the date of obtaining environmental clearance
h)	Malappuram	Panakkad (Land in possession with Kerala State Industrial Development Corporation)	10	Further action is being taken	2 years from the date of obtaining environmental clearance

B. Progress in establishing Waste to Energy plants in eight cities having population below 1 lakh

Local Body	Nature of Plant	Status/Time of completion
SulthanBathery Municipality in Wayanad District	5 TPD modern bio gas plant	Construction of plant is going on. Expected to be commissioned by August 2019.
Munnar and Devikulam Grama Panchayat in Idukki District	Modern Waste to Energy Plant	<ul style="list-style-type: none"> Decided to award the work to M/s AG Dauters Waste Processing Pvt. Ltd. Decision taken by State Level Advisory Committee to issue final notice to M/s AG Dauters Waste Processing Pvt. Ltd to take action as per the agreement executed and to submit applications with sufficient details to the concerned departments and also if they fails to adhere to directions and statutory provisions within thirty days,actin is to be taken to terminate concession agreement and tender the project to find a private partner for setting up processing plant. Sanction was given to Munnar Grama Panchayath to clear the legacy waste from the site.
Perinthalmanna Municipality.	Modern Waste to Energy bio gas plant of two tone/day capacity.	Work awarded to GPS Renewables, Bangalore.Expected to be completed within 12 monthsfrom April, 2019.

The Government of Kerala vide G.O. (Rt.) No. 45/2019/Env. dated 31-5-2019 selected three model cities, three model towns and 42 model villages (3 each in 14 districts) in the State. The model cities are Thiruvananthapuram, Thrissur and Kozhikode and three model towns are Attingal, Punalur and Kunnamkulam. The order is enclosed.

A workshop was convened on 1st June 2019 by the Kerala State Pollution Control Board in association with Suchitwa Mission and Clean Kerala Company for giving training to President /Secretary/ Health officer/ Health Standing Committee of Model city to make the local bodies fully complied with environmental norms. The presentations were made on the orders of the Hon'ble NGT and on environmental rules. 155 representatives participated in the workshop. Statutory requirement on authorization and annual report, specific action to be taken on solid and liquid waste management, and action plan submission have been brought to their notice. The minutes of the workshop is enclosed.

Annexure 2

INVENTORY OF SOLID WASTE MANAGEMENT IN KERALA

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Sl. No.	Districts	Local body	Type	Population as per 2011	Projected population for 2019	Quantity of Waste generated (TPD)	Door to door collection	Covered vehicle	Institutional level SWM Plants	Community Level SWM Plants	Household Level SWM Plants	Centralized	Non-Bio Degradable Waste Management	Site identified for Sanitary land fill	Dump sites identified	Quantity of waste collected	Quantity of waste processed	Authorization applied	Authorization obtained	Annual report (Form IV)	Action plan submitted	Remarks
1	Thiruvananthapuram	Thiruvananthapuram	C	958000	996204	498.1	100% Covered	Nil	Biobin 109	Biogas Plant - 50 Nos, Aerobin (Thumboormuzhi model) -37 Nos having 9.6 TPD	Pipe compost-87000 Nos., Kitchen Bin-7000, Biocomposter-15833 Biogas plant-1749 Nos.	22 Acre site (Govt. Land) identified at Muttathara for integrated solid waste treatment plant 300TPD with Waste-To-Energy Plant.	Material Collection Facility in 35 locations Resource Recovery Unit - 4 numbers Plastic Shredding Units - 2 Nos Bailing Unit - 1 Number	No	30000 m ³	As per the report 175TPD of solid waste is collected.	As per the report 175TPD of solid waste is treated .	Yes	Under processing	Submitted	Nil	100% Manual sweeping.
2	Kollam	Kollam	C	397000	412832	206.41	42 wards covered, 56204 Houses and 2520 Non residential.	1 Tipping truck.	Nil	Aerobic composting (Thumboormuzhi model) - 24 bins at three locations.	Vermi composting 13 Nos. Biogas plant-600 Nos. Pipe compost -578	7.05 Acre of land is identified for the setting up of Waste to Energy Plant at Kureepuzha. Retendered the project through E-tender portal on 06-06-2019	Material collection facility (200 sq ft)-one Plastic shredding machine (150 sq ft) - one number	Nil	17000m ³	Nil	Nil	Granted	Yes (Upto 06-08-2021)	Submitted	Nil	

3	Ernakulam	Kochi	C	677000	703999	351.9	74 wards covered, 89469 Houses and 17937 Non residential.	24 Tipping trucks, 13 Compactors	Nil	Biogas plant-60 Compost pits-1212	All the municipalities (Kalamassery, Aluva, Angamaly, , Thrikkakara, Thripunithura) except Maradu is treating is treating their Biodegradable waste in dumping yard at Brahmapuram . Windrow composting.	Plastic Shredding Unit	Nil	It is reported that 230 TPD solid waste is collected .	It is reported that 130TPD solid waste is treated.	Submitted	Under processing	Submitted	Nil	
ccc	Thrissur	Thrissur	C	317526	330189	177	16500 houses and 3000 Non-biodegradable.(51 wards covered)	3 Tractors, 1 Non Tipping truck,4 Tipping truck,35 Petty auto,1 JCB.	Total quantity of biodegradable managed-6.71TPD Non-biodegradable-0.75TPD	Organic Waste Converter-2 Nos of 4 and 8TPD Piggeries and agrifarms- 15 TPD Biogas plant- 9	15 Acre Govt. Land is Identified at lalur.	Material collection facility-7 Resource recovery facility-3	100,000m ³	It is reported that 37TPD solid waste is collected .	It is reported that 37TPD solid waste is treated.	Submitted	Under processing	Submitted	Nil	100% Manual sweeping.

5	Kozhikode	Kozhikode	C	550000	571934	285.97	Nil	4 Tractors, 13 Dumper placers, 1 JCB, 2 Refuse collectors.		Biogas-261 Pipe compost-10250 Biogas plant at public utility place-4Nos Aerobins-28	Windrow Composting with leachate treatment facility	Material collection facility-1, Plastic shredding and Bailing.			It is reported that 75 TPD solid waste is collected .	It is reported that 7 TPD solid waste is treated.	Granted		Submitted	Nil	90% Mechanical sweeping.
6	Kannur	Kannur	C	356000	370197	185.09	1090 houses are having D2D collection	Nil	Biomethanation Trenching	Kitchen bin-102 Biogas - 50 Pipe Compost - 1892		Material collection facility-3 Plastic shredding unit at Chelora-1					Granted		Submitted	Submitted	
7	Thiruvananthapuram	Attingal	M	37648	39150	16	6840 Houses and 2100 Non residential	Yes	Biogas Plant(Dheenabandhu) 6 Nos with capacity of 1TPD Biogas plant (Portable) 5 Nos with capacity of 107.5 kg/day Vermi Compost 1 No with capacity of 0.25 TPD	Biogas Plant 4 Nos - 3.25 TPD	Biogas Plant 214 Nos - 0.5 m ³	Resource Recovery Facility - SWM Plant, Chudukadu Plastic Shredding Machine -SWM Plant, Chudukadu	Yes	13,000m ³	It is reported that 14 TPD solid waste is collected and treated.		Granted	Valid up to 29-10-2021	Submitted	Nil	
8	Thiruvananthapuram	Neyyattinkara	M	70850	73676	40	Nil	Nil	Boiogas plant-20	Aerobins-10 Biogas plant-1	Biogas plant-95 Compost pit-14360				It is reported that 5 TPD solid waste is collected.	It is reported 0.35 TPD waste is treated.	Not applied		Submitted	Submitted	100% Manual sweeping.
9	Thiruvananthapuram	Nedumangad	M	60161	62561	19	39 wards covered, 18000 Houses and 1000Non residential.	Tipping lorry	Aerobins-10 Ring compost - 15, Bio digester.	Biogas plant-200 Kitchen bin-2000		MRF, Plastic Shredding unit	Yes		It is reported that 10 TPD solid waste is collected.	It is reported that 9.5 TPD Waste is treated.	Not applied		Submitted	Nil	100% Manual sweeping

10	Thiruvananthapuram	Varkala	M	40048	41646	18.076	2570 houses and 450 non residential building having door to door collection	Yes		Aerobic Compost (Thumboormuzhi Model) - 33 bins at 33 locations with capacity of 33 Cubicles Biogas Plant - 1 No - 100Kg	Biogas Plant - 200 Nos	Windrow Compost 1 No at 1 location with the capacity of 5TPD (not working)	Plastic Shredding Machine -1 (under construction); Material Collection Centre, MRF	Yes	6000m ³	One dumpsite converted to sanitary landfill(under construction). It is reported that 1 TPD solid waste is collected and 0.75TPD waste is treated.	Yes	Under processing	Submitted		
11	Kollam	Karungapalli	M	47483	49377	15.6	1000 houses are having D2D collection	Nil	2.9TPD of biodegradable waste is managed 0.3 TPD of non-biodegradable waste is managed	Compost pit, Vermicomposting.	Biogas plant-21 Compost pit-8521		Resource recovery facility-1		3000m ³		Not applied		Submitted	Submitted	
12	Kollam	Paravoor(South)	M	36798	38266	19.74	Collecting plastic from individual house.	Nil	10 biogas plant	8 biogas plant, Aerobins at 32 wards.	Pipe compost-162 Biogas plant-121				5000m ³		Not applied		Submitted		
13	Kollam	Punalur	M	48648	50589	20	Yes	Nil		Aerobic Compost (Thumboormuzhi Model) - 2 bins at 2 locations with capacity of 12 Cubicles		Windrow Compost - 1 bin at 1 location with 5 TPD capacity (Non operational)	Material Collection Facility - 233sq ft -233 locations - Small collection facilities)		7000m ³		Not applied		Submitted		
14	Kollam	Kottarakkara	M	31256	32503	13	Nil	Nil	Biogas Plant - 1 No - Taluk Hospital Biogas Plant (Portable) - 1 No - Boys HSS Total -16 biogas plants	Biogas Plant 1 No - Market, Chandamukku	Biogas Plant - 106 Nos Ring compost-250	Windrow Compost 1 No with capacity 6 TPD	Resource Recovery Facility - SWM Plant, Ugrankunnu		6000m ³		Not applied		Submitted		

15	Alappuzha	Alappuzha	M	174000	180939	79.866	Nil		Aerobic Compost (Thumboormuzhi Model) - 36 bins at 4 location with capacity of 216 tonne/year	Aerobic Compost (Thumboormuzhi Model) - 229 bins at 19 locations with capacity of 1374 tonne/year	Biogas Plant - 1964 Nos. Pipe compost- 1263 Nos.				Material Collection Facility (2750 sqft)- 11 locations Resource Recovery Facility(650sqft) - 1 number Plastic Shredding Machine - 1 number	It is reported that 126.4TPD solid waste is collected.	It is reported that 24.71 TPD waste is treated.	Not applied		Submitted	Submitted	
16	Alappuzha	Chengannur	M	23456	24392	10.179	Nil			Aerobic Compost (Thumboormuzhi Model) - 12 bins at 1 location					Plastic Shredding Machine - 1 Number			Not applied		Submitted		
17	Alappuzha	Cherthala	M	45827	47655	19.06	Nil	Tipping truck 1, Hand cart.	0.06TPD is managed	Aerobic Compost (Thumboormuzhi Model) - 26 bins at 2 locations	Composting units-90 Biogas plant-200 Compost pits-850					It is reported that 1TPD solid waste is collected.	It is reported that 1 TPD waste is treated.	Not applied		Submitted	Submitted	85% Street sweeping covered.
18	Alappuzha	Kayamkulam	M	71376	74223	29.69	Nil		0.06 TPD is managed	Biogas Plant - 1 bin- Slaughter house, Aerobic compost (Thumboormuzhi Model 4 bin) Location with capacity of 24 kg/day	Composting unit-1431 Biogas plant-102 Compost pits-4450				Material Collection Facility - 1 location Resource Recovery Facility - 1 location			Submitted	Under processing	Submitted	Submitted	
19	Alappuzha	Mavelikkara	M	26421	27475	11.466	Nil			Aerobic Compost (Thumboormuzhi Model) - 12 bins at 1 location with capacity of 10kg/day					Collection Facility 1 location Resource Recovery Facility -1 location Plastic Shredding Machine - 1 location			Not applied		Submitted	Submitted	

20	Alappuzha	Haripad	M	15588	16210	8.3	Nil		2.02TPD of biodegradable waste is managed	Aerobic Compost (Thumboormuzhi Model) - 21 bins at 4 locations	Composting units-783 Biogas plants-87 Compost pits-1579							Not applied			Submitted	Submitted		
21	Pathanamthitta	Adoor	M	29171	30335	12.478	2 Wards covered, 65 Nonresidential.	Tipping truck.	1.427TPD of biodegradable waste is managed		1.15TPD of biodegradable waste is managed	Windrow Compost Plant				It is reported that 1 TPD solid waste is collected.	It is reported that 0.8 TPD waste is treated.	Not applied			Submitted	Submitted	100% Manual sweeping.	
22	Pathanamthitta	Pathanamthitta	M	38002	39518	15.81	Nil	Tipping truck 1.	0.92TPD of biodegradable waste is managed and 0.35TPD of non-biodegradable waste is managed	Biogas Plant - 2 Nos. Five Thumboormuzhi model aerobic bin.	Biogas plant - 400 Compost pits-520	5 Hectres of land available for waste processing.			It is reported that 1.5 TPD solid waste is collected.	It is reported that 1 TPD waste is treated.	Submitted	Under processing	Submitted	Submitted	Submitted	Submitted	10% Manual sweeping	
23	Pathanamthitta	Thiruvalla	M	52883	54992	27.393	39 Wards covered, 12000 Houses .	Tipping truck is used.	4.79TPD of biodegradable waste is managed. 1.5 TPDF of non biodegradable waste is managed.	Biogas Plant - 2 with capacity of 350 kg Biogas Plant - 1 with capacity of 750Kg	Biogas Plant - 303Nos Pipe Compost - 4000 Nos		Plastic Shredding Unit.		It is reported that 3.5 TPD solid waste is collected.	It is reported that 3.5 TPD waste is treated.	Submitted	Under processing	Submitted	Submitted	Submitted	Submitted	100% Manual sweeping. 47 workers engaged for street sweeping and drain clearing.	
24	Pathanamthitta	Pandalam	M	41604	43264	17.31	105 Non residential covered.	Non tipping truck 1, Tipping truck 1.	0.89TPD of biodegradable waste is managed		Compost bins - 2650	25 cent land is available for waste processing.			It is reported that 2 TPD solid waste is collected.	It is reported that 2 TPD waste is treated.	Not applied			Submitted	Submitted	Submitted	Submitted	100% Manual sweeping

25	Idukki	Thodupuzha	M	52045	54121	26.959	15 Wards covered, 4275 Houses and 4306 Non residential.	Tractors 1, Tipping trucks 2.	Biogas Plant - 1 Tonne Vermi compost - 7 bin at 1 location	Biogas Plant - 30 Nos - 1 m3		Resource Recovery Facility (300s ft)- 1 No Three MRFs started, Plastic shredding unit.		It is reported that 4 TPD solid waste is collected.	It is reported that 4 TPD waste is treated.	Not applied	Submitted	Submitted	80 % Manual sweeping, Waste to energy Technology 900 TPD.	
26	Idukki	Kattapana	M	42646	44347	18.5708	34 Wards covered, 7500 residences and 1500 Non residential.	1 Tipping truck.	2.23TPD of biodegradable waste is managed 0.4TPD of non-biodegradable waste is managed	Composting unit-1505 Biogas plants-345 Compost pit-450		Plastic shredding unit.		It is reported that 3.63 TPD solid waste is collected.	It is reported that 1.40 TPD waste is treated.	Not applied	Submitted	Submitted	100% Manual sweeping.	
27	Kottayam	Changanassery	M	127987	133091	53.23	Nil		Aerobic Compost(Thumboormuzhi model) 3 bins at 3 locations with capacity of 4 Cubicle(1) and 8 cubicle(2) Vermi Compost - 1 bin with capacity 1 TPD (Non operational) Aerobin (4 units) 2 TPD			Resource Recovery Facility - 1 No. (under construction)				Not applied	Submitted	Submitted		
28	Kottayam	Ettumanoor	M	26423	27477	11.457	Nil		Biogas Plant at location with capacity of 500kg	Ring Compost - 450 Nos Bucket Compost- 150 Nos		Plastic Shredding Machine - 1 Number					Not applied	Submitted	Submitted	

29	Kottayam	Erattupetta	M	29675	30859	12.878	Nil		Aerobic composting (Thumboormuzhi mode) - 25 bins at 1 location			Plastic Shredding Machine- 1 No					Not applied	Submitted		
30	Kottayam	Kottayam	M	136812	142268	60.881	Nil	2 Lorry, Tipping truck 2.	Aerobic Compost (Thumboormuzhi Model)- 24 bins at 6 locations Biogas Plant at locations with capacity 10.5 m ³	Biogas plant - 1400 Nos Pipe Compost- 2300 Nos		Resource Recovery Facility (2000sqft)- 1 Number Plastic Shredding Machine - 1 Number Baling Machine - 1 number		It is reported that 2.5 TPD solid waste is collected.	It is reported that 0.65 TPD solid waste is treated.		Not applied	Submitted	Submitted	
31	Kottayam	Pala	M	123000	127906	56.924	Nil		Aerobic Compost (Thumboormuzhi Model) -6 bins at 1 location with capacity of 30kg Biogas Plant - 1 location with capacity 100 Kg	Biobin - 43 Nos Vermi Compost - 26 Nos Biodigester Pot - 4 Nos Ring Compost - 59 Nos Bucket Compost - 170 Nos Pipe Compost - 3253 Nos		Resource Recovery Facility - 1 No Plastic Shredding Machine - 1 No					Not applied	Submitted	Submitted	
32	Kottayam	Vaikom	M	23234	24161	10.083	Nil		Aerobic composting (Thumboormuzhi mode) -4 bins at 2 locations Biogas Plant - 1 bin at 1 location	Aerobic composting (Thumboormuzhi mode) - 3 bins at 1 location							Not applied	Submitted	Submitted	
33	Ernakulam	Aluva	M	24110	25072	14	Nil										Not applied	Submitted		
34	Ernakulam	Angamaly	M	33465	34800	15.104	Nil	Aerobins-2	Biogas plant - 1No	Biogas - 504 Nos Pipe compost - 979		RRF-2 Nos; MCF-1; Biodigester bins- 300Nos SWAP shop-1 No.					Not applied	Submitted		

35	Ernakulam	Eloor	M	31468	32723	13.657	Nil		Biogas Plant - Hospitals, Hotels, TCC Canteen	Aerobic Compost (Thumboormuzhi Model) - 4 bins at 4 locations with capacity 1TPD	Biogas Plant - 310 Nos Biodigester Pot - 350 Nos		MRF					Not applied	Submitted		
36	Ernakulam	Koothattukulam	M	17942	18658	7.46	2010 residences			Biogas Plant - 1 No with capacity 150kg	0.4TPD of biodegradable waste is managed 0.402TPD of non biodegradable waste is managed							Not applied	Submitted	Submitted	
37	Ernakulam	Kalamassery	M	71038	73871	29.54	18000 residences			2.3TPD of biodegradable waste is managed	Biogas plant-9 Compost pit-800		Plastic shredding unit					Submitted	Under processing	Submitted	Submitted
38	Ernakulam	Kothamangalam	M	114574	119144	50.985	2997 residences		0.75 TPD of biodegradable waste is managed.	0.124TPD of non biodegradable waste is managed	Biogas plant-150 Compost pit-2303		Material collection facility-1 Plastic shredding machine and bailing machine					Not applied		Submitted	Submitted
39	Ernakulam	Muvattupuzha	M	30397	31610	13.192	Nil			Composting - 5 bins at 1 location (not working)			Resource Recovery Facility - 807 sq ft Plastic shredding unit-1 Material collection facility Seggregation Place - 1935 sq ft					Not applied		Submitted	

40	Ernakulam	North paravur	M	31503	32760	13.672	Nil		Aerobic composting (Thumboormuzhi model) -1 bin at 1 location with capacity 4 Cubic (Not Operating)	Biogas Plant - 1 bin with capacity 100kg (not working) Vermi Compost - 1 bin with capacity 1 TPD	Biogas Plant - 25 Nos Pipe compost - 2500 Nos	Windrow Compost - bin with 3 TPD Capacity	Material Collection Facility - 1 Plasting Shredding Machine at 1 location					Not applied	Submitted		
41	Ernakulam	Maraduru	M	44704	46487	19.401	Nil				Biogas Plant - 166 Nos Biodigester Pot - 215 Nos Bucket Compost - 2330 Nos Pipe Compost - 940 Nos		Material Collection Facility - 30 m2 Plastic Shredding Machine -1 No Baling Machine - 1 No					Not applied	Submitted		
42	Ernakulam	Perumbavoor	M	28110	29231	12.99	4401 Houses		0.75TPD of biodegradable waste is managed 0.75 TPD of non biodegradable waste is managed	Bio-gas, aerobic compost, MRF	Biogas Plant - 161 Nos Biodigester Pot - 1500 Nos Ring Compost - 1000 Nos Pot compost-894		Resource Recovery Facility - 2000 sq ft					Not applied	Submitted	Submitted	
43	Ernakulam	Piravam	M	27229	28315	11.817	Nil											Not applied	Submitted		
44	Ernakulam	Thrikkakara	M	77319	80403	40.05	Nil											Not applied	Submitted		
45	Ernakulam	Thripunithura	M	92522	96212	47.526	5626 houses	Tractor 2, Tipping truck 2.	Aerobic composting (Thumboormuzhi model) - 2 bins at 2 locations with capacity 14 unit & 8 unit Biogas Plant - 1 No with 100 kg capacity	1.62TPD of biodegradable waste is managed 0.124 non biodegradable waste is managed. Thumbur muzhi model at Anapparambu - 41 ward	Biogas Plant - 300 Nos Biodigester Pot - 125 Nos Bucket Compost - 2400 Nos Pipe Compost - 10000 Nos		Material Collection Facility - 1 No (Non Operation) Plastic Shredding Machine - 1 No Baling Machine - 1 No			It is reported that 4 TPD solid waste is collected .	It is reported that 4 TPD waste is treated.	Not applied	Submitted	Submitted	100% Manual sweeping.

46	Thrissur	Chalaky	M	49525	51501	26.68	36 Wards covered, 11880 Houses, 2553 Non Residential building.	2 Tipping trucks, 1 Tractor, 1 JCB	5 SWM Plants(50kg capacity)	Thumbur muzhi model at Anapparambu - 41 ward Vermicomposting, Biogas - 3(33kg/day)	83 SWM Plants(207.5 kg capacity)	windrow composting(2tpd)	MRF-1, MCF-1	One available near Potta(0.5 Acres)	5,000m ³	It is reported that 2 TPD solid waste is collected.	It is reported that 2 TPD waste is treated.	Not applied	Submitted	2 Biogas plants for slaughter houses. 100% Manual sweeping.
47	Thrissur	Chavakkad	M	39098	40658	17.647	started		Vermi composting 1.5TPD	Biogas Plant - 614 Nos Pot Compost - 548 Nos			Material Collection Facility (1000sqft) - 1 number Plastic Shredding machine 1 number	One Land Fill in Operation (1.5-2.5 TPD)		It is reported that 3TPD solid waste is collected.	It is reported that 1 TPD waste is treated.	Submitted	Under processing	Submitted
48	Thrissur	Guruva yoor	M	70012	72805	29.12	4317 Houses	3 Tractors.	Biogas Plant(3.5tpd)	Bio organic management	Biogas Plant-400 Composting units-2545 Compost pits-1899 Kitchen Gardening	Windrow Compost (2tpd)	Plastic Shredding-1 and bailing Machine MRF-2			It is reported that 4.5 TPD solid waste is collected.	It is reported that 3.75 TPD solid waste is treated.	Not applied	Submitted	100% Manual sweeping.3
49	Thrissur	Irinjalakuda	M	62532	65026	26.721	Nil		SWM plt-2 (600KG)	SWM-2(600kg)	Biogas Plant - 382 Nos Composting units-2577 Compost pits-5702		Material Collection Facility (550sqft) - 1 Number Plastic Shredding Machine - 1 Number Baling Machine - 1 Number Trenching Ground - 1 location					Not applied	Submitted	Submitted

50	Thrissur	Kodungallur	M	94883	98667	49.149	Nil		Aerobic Compost (Thumboormuzhi Model) - 6 bins at 3 locations with capacity of 10 kg/day	Aerobic composting	Biogas Plant - 650 Nos Pipe Compost - 2600 Nos Compost pits-4840 Composting units-455	Windrow Compost -1No- with capacity of 4TPD	Non bio degradable waste segregated at source level and collected and handed over to Clean Kerala Company and other private agencies for recycling	5,000m ³			Not applied	Submitted	Submitted			
51	Thrissur	Kunnankulam	M	54071	56228	20.569	25% Motorized vehicle	2 Tractors	Aerobic compost (Thumboor Mozhi model)	1.889 TPD Biodegradable waste managed, 0.81 TPD Non biodegradable waste managed.	Bio bin - 1628 Nos Biogas-73, Compost pits-2906, Compost unit-508	5 Acres of land is available with the llocal bodies for waste processing. Windrow composting.	Plastic Shredding Machine			It is reported that 3 TPD solid waste is collected .	It is reported that 3 TPD solid waste is treated.	Submitted	Under processing	Submitted	Submitted	28 workers for sweeping.
52	Thrissur	Vadakkanchery	M	15674	16300	20.385	490 Houses		1.93TPD waste managed(Bio&Nonbiodegradable)		Compost units-1918, Biogas-100,Compost pits-4471						Not applied	Submitted				
53	Palakkad	Cheruplassery	M	30730	31956	13.336	33 Wards covered 7603 Houses,1200 Non residential.	2 Tractors	0.482 TPD biodegradable waste managed, 0.427 TPD Non biodegradable waste managed.	1.43 TPD Nonbiodegradable waste managed.	Pipe Compost - 1000 Nos Biogas Plant - 200 Nos Composting units-1050		Recovery Facility - 1 number under construction Plastic Shredding Machine - 1 number under construction Baling Machine - number under construction			It is reported that 2 TPD solid waste is collected .	It is reported that 1 TPD solid waste is treated.	Not applied	Submitted	Submitted	100% Manual sweeping.	
54	Palakkad	Chittur - Thattamangalam	M	33000	34317	14.017	29 Wards covered, 6450 Houses and 155 Non residential.	Tractors 2, Tipper 2.	Biogas Plant - 5 bins at 5 locations	Aerobic bin (Thumboormuzhi) - 8 bins at location with capacity 50kg/day/bin	Biogas Plant - 55 Nos Bucket Compost - 1168 Nos Ring Compost - 239 Nos Composting units-1407	Aerobic Composting Plant -1 bin with capacity 3 Tons/day, Windrow composting. 50 cents of land available for waste processing.	Material Collection Facility - 1 number Plastic Shredding Machine - 1 number(85kg/day)			It is reported that 4.5 TPD solid waste is collected .	It is reported that 3 TPD solid waste is treated.	Not applied	Submitted	Submitted	100% Manual sweeping.	

55	Palakkad	Mannarkadu	M	39463	41037	17.126	Nil	Nil								Nil	Nil	Not applied	Submitted	100% Manual sweeping. 10 workers for street sweeping.
56	Palakkad	Ottapalam	M	53792	55938	27.864	Nil	Tractor 1, Tipping truck 1.		Biogas 112, Pipe compost 4312.						It is reported that 1.4TPD solid waste is collected.	It is reported that 0.98 TPD solid waste is treated.	Not applied	Submitted	100% Manual sweeping.
57	Palakkad	Palakkad	M	131000	136225	54.48	52 wards covered, 23600 Houses and 5200 Non residential	Tipping truck 6, Dumper placers 1.			15 Acres of land is available at Kanjikode for setting up solid waste processing plant. Tendering process is going on. As per annual report 2.1 Hectre of land is available. Windrow composting is in operation.					It is reported that 12TPD solid waste is collected.	It is reported that 12TPD solid waste is treated.	Not applied	Submitted	179 sanitation workers engaged in sweeping(100%).
58	Palakkad	Pattambi	M	28632	29774	12.426	Nil	Tractor 1.		Open composting in trench						It is reported that 1 TPD solid waste is collected.	It is reported that 1 TPD solid waste is treated.	Not applied	Submitted	100% Manual sweeping.
59	Palakkad	Shornur	M	43533	45270	18.893	33 Wards covered, 10407 Houses.	Tipper 1.		Biobin								Not applied	Submitted	

60	Malappuram	Kondotty	M	28794	29943	12.496	40 wards covered, 12000 Houses and 100 Non residential covered	Nil				0.42 Hectre land available for waste processing.			It is reported that 0.10 TPD solid waste is collected.	Nil	Not applied	Submitted		100% Manual sweeping.	
61	Malappuram	Kottakkal	M	44382	46152	19.261	Nil	Tipper 1.	Biogas Plant - 1 number with capacity of 250kg/day (not working) Aerobic bin compost-10 bins	Aerobic compost - 12 bins	Ring Compost - 1000 Nos., Biobin-2000	Incinerator. MRF,MCF,SW AP SHOP, BIOBIN, Ring compost under construction)	Material Recovery Facility - 3 number Plastic Shredding Machine - 1 number Baling Machine - 1 number, Reuse (Swap shop, Repair shop, Recycling industries) -1 unit		It is reported that 1 TPD solid waste is collected.	It is reported that 1 TPD solid waste is treated.	Not applied	Submitted		100% Manual sweeping.	
62	Malappuram	Malappuram	M	101000	105028	44.945	32 wards covered, 15489 Houses and 1712 Non residential	1 Tipping trucks and JCB		Composting		1 Hectre land is available for waste processing	Shredding and Bailing	4000m ³	It is reported that 2.5 TPD solid waste is collected.	It is reported that 2.5 TPD solid waste is treated.	Not applied	Submitted			
63	Malappuram	Manjeri	M	97104	100977	50.299	Nil	2 Trucks	Biogas-1 (1000kg)	Aerobic Compost (Thumboormuzhi model)- 8 bins at ward 33 Biogas Plant at ward 14 Vermi Compost-Trenching Ground- 500kg	Pipe Compost - 3800 Nos	Windrow Compost-Trenching Ground-1 ton		5000m ³	It is reported that 3 TPD solid waste is collected.	It is reported that 1 TPD solid waste is treated.	Submitted	Under processing	Submitted	Submitted	100% Manual sweeping.

64	Malappuram	Nilambur	M	46366	48216	20.122	33 wards covered 5146 Houses and 42 Non residential	2 Tractors			Biogas Plant - 70 Nos. Pipe composting				It is reported that 2 TPD solid waste is collected.	It is reported that 1.5 TPD solid waste is treated.	Not applied	Submitte d		75% Manual sweeping, 14 workers for sweeping
65	Malappuram	Parappanangadi	M	35243	36649	15.295	12 wards covered 1500 Houses and 70 Non residential	Tipping truck.			Biogas Plant - 200 Nos Biodigester Pot - 300 Nos						Submitted	Under processin g	Submitte d	100% Manual sweeping.
66	Malappuram	Perinthalmanna	M	49723	51706	21.579	34 wards covered,369 8 Houses and 1163 Non residential	2 Non- Tipping truck, 2 Tipping truck			Bio bin - 1000 Nos Biogas Plant - 480 Nos Biodigester Pot - 1189 Nos Pipe Compost - 700 Nos	Windrow Compost - 1 No Material Recovery Facility - 1 No Plastic Shredding Machne - 1 No Baling Machne - 1 No		It is reported that 12 TPD solid waste is collected.	It is reported that 12 TPD solid waste is treated.	Not applied	Submitte d		100% Manual sweeping.	
67	Malappuram	Ponnani	M	90491	94100	46.874	In 51 Wards covered, 17000 Houses.				One (Private parties property used for landfilling)			It is reported that 10 TPD solid waste is collected.	It is reported that 8 TPD solid waste is treated.	Not applied	Submitte d		19 Permanent workers involved.	
68	Malappuram	Tanur	M	44973	46767	21.6	In 44 Wards covered, 8000 Houses and 950 Non residential.		Biogas Plant in 4 locations		Pipe Compost - 200 Nos ODF Latrine - 400 Nos		MCF		It is reported that 0.3 TPD solid waste is collected.	It is reported that 0.3 TPD solid waste is treated.	Not applied	Submitte d		100% Manual sweeping.
69	Malappuram	Thirurangadi	M	56632	58891	29.335	39 wards 7450 Houses	Tipping truck.			Pipe Compost - 1912 Nos	86 Cents of land is available	Plastic shredding unit.		It is reported that 2 TPD solid waste is collected.	Nil	Not applied	Submitte d		100% Manual sweeping.

70	Malappuram	Tirur	M	56058	58294	29.038	5 wards covered, 1460 Houses.				Windrow composting, One Acre land is available	Thumboormuzhi Plastic shredding unit			It is reported that 1 TPD solid waste is collected.	It is reported that 0.75 TPD solid waste is treated.	Not applied		Submitted		
71	Malappuram	Valacherry	M	35795	37223	15.535	33 wards covered 1106 Houses		Bio Gas Plant 14			MCF - 1			It is reported that 0.3 TPD solid waste is collected.	It is reported that 0.3TPD solid waste is treated.	Not applied		Submitted	Waste treatment done through agency. 100% Manual sweeping.	
72	Kozhikode	Faroke	M	32122	33403	13.94	38 wards covered, 11017 Houses and 4000 Non residential	Non tipping truck 1.		Composting 1	Pipe compost 1000				It is reported that 4.5 TPD solid waste is collected.	It is reported that 4.5 TPD solid waste is treated.	Not applied		Submitted	100% Manual sweeping.	
73	Kozhikode	Koduvally	M	48678	50620	21.126	20wards covered,1800 House and 410 Non residential								It is reported that 0.6 TPD solid waste is collected.	It is reported that 0.6TPD solid waste is treated.	Submitted	Under processing	Submitted		
74	Kozhikode	Koyilandy	M	71873	74740	37.23	Nil			1. Thumboor muzhi model composting - 11 unit 2. biogas plant - 500 kg per day	1. portable biogas 250 nos 2. pipe, ring and vermi compost - 1 nos	1. Material Collection Facility - 1 2. MRF - 1 3. plastic shredding mechine - 2 4. Bailing Mechine -1						Not applied		Submitted	
75	Kozhikode	Mukkam	M	40670	42292	17.65	Nil				Kitchen bin 301							Not applied		Submitted	
76	Kozhikode	Payyoli	M	23576	24517	10.231	Nil											Not applied		Submitted	
77	Kozhikode	Ramanatukara	M	35937	37371	15.596	Nil				Ring Compost - 320 Nos							Not applied		Submitted	

78	Kozhikode	Vadakkara		75295	78298	39.002	Nil	Compost-20, Thumboormuzhi-1, Ring compost-1	Biogas - 1 No with capacity of 250 kg/day	Pipe Compost - 3728 Nos, Ring compost-615, Biogas- 100, Bucket compost-450,Biobin-150		MCF-1, Plastic shredding -1, Bailing-1						Not applied	Submitted	Submitted	
79	Wayanad	Kalpetta	M	31580	32840	13.705	Nil	0.508 TPD Biodegradable waste managed,0.561 TPD Non biodegradable waste managed.	1.3 TPD Biodegradable waste managed, 0.869 TPD Nonbiodegradable waste managed.	0.4 TPD Biodegradable waste managed, 0.11 TPD Nonbiodegradable waste managed	8 Acres of land is available in Vellaram kunnu Kalpetta.							8000m ³	Not applied	Submitted	Submitted
80	Wayanad	Mananthavady	M	34663	36046	15.043	Nil	1.7401 TPD Biodegradable waste Managed.		Vermi composting 317 Biogas 217 Pipe compost 4100								1000m ³	Not applied	Submitted	Submitted
81	Wayanad	Sulthan Bathery	M	23333	24264	10.126	Nil				0.5 Acres of land is available in Sulthan bathery construction of the plant is going on.							9000m ³	Granted	Submitted	
82	Kannur	Anthoor	M	36290	37738	15.749	1811Houses	Aerobic Compost (Thumboormuzhi Model) - 6 units at 3 locations with capacity of 2000 kg/bin; Biogas Plant - 1 unit with capacity 40kg/day		Biogas Plant - 55 Nos Ring Compost - 3033 Nos		Material Collection Facility - (40m2) - 1 No; Plastic Shredding Machine - 1 No; Baling Machine - 1 No; Reuse strategy(SWAP Shop, Repair shop etc.)-Swap shop -10 m ²							Not applied	Submitted	
	Kannur	Panoor	M	356000	370197	17.68	Nil												Not applied	Submitted	

84	Kannur	Koothuparambu	M	29619	30801	12.854	1287 Houses		Aerobic Compost (Thumboormuzhi Model) - 5 Bins Vermi composting and trenching Aerobic Compost (Thumboormuzhi Model) - 21 Bins	4.2672 TPD Biodegradable waste managed, 0.46332 TPD Nonbiodegradable waste managed.								Not applied		Submitted	Submitted	
85	Kannur	Iritty	M	185591	192993	82.587	Nil			Biogas plant 5 Pipe compost 110									Not applied		Submitted	
86	Kannur	Mattanur	M	47078	48956	20.431	7620 Houses		Biogas Plant - 1 bin with capacity 250kg/day Vermi Compost - 1 bin with capacity 5TPD	Ring compost - 2500 Nos. Pipe Compost - 1500 Nos.									Not applied		Submitted	Submitted
87	Kannur	Payyanur	M	72111	74987	29.99	Nil				Windrow composting								Not applied		Submitted	Submitted
88	Kannur	Sreekanthapuram	M	17630	18334	7.33	Nil		Vermi Compost - bin with capacity - 1 TPD (Not working since 2007)	Ring Compost - 125 Nos									Not applied		Submitted	
89	Kannur	Thalaseery	M	92558	96250	47.945	Nil		Biogas Plant - 3 bins at 3 locations with capacity of 1 Ton	Biogas Plant - 1021 Nos Pipe Compost - 5200 Nos									Submitted	Under processing	Submitted	Submitted
90	Kannur	Thaliparambu	M	72465	75355	37.536	Nil				Windrow Composting								Submitted	Under processing	Submitted	Submitted

Kerala State Pollution Control Board

Annexure 3

**SUMMARY STATEMENT ON PROGRESS MADE BY LOCALBODY IN RESPECT OF IMPLEMENTATION OF
SCHEDULE II**

Kochi Corporation is having Windrow composting plant at Brahmapuram. The Corporation is collecting waste from nearby municipalities namely Angamaly, Thrikkakara, Kalamassery, Aluva, Thripunithura, and two panchayaths. The quality of the compost and leachate from the plant was analyzed by the Board and it is found unsuitable for use in food crops. Leachate collection provision has been established by Kochi Corporation.



**KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY, GANDHI NAGAR, KOCHI- 682020**

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
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(An NABL accredited laboratory as per ISO 17025:2005)



Ref PCB/CL/AR/2009

Date: 18/03/2019

From

Chief Environmental Scientist (I/C)

To,

The Environmental Engineer,
KSPCB, DO, Perumbavoor

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

SI	AR NO	That Office Reference	Source Name	No of Samples
1	866/18-19	PCB/PBR/LAB/1/2013 dated 16.01.2019	Bhrahmapuram solid waste treatment facility of Kochi Corporation	2

AE/AS
21/3/19

927
19/3/19

Kerala State Pollution Control Board
Dist. Office (Ernakulam-II)
19 MAR 2019
M. C. Road
Perumbavoor-683542

Yours faithfully

CHIEF ENVIRONMENTAL SCIENTIST (I/C)

**KERALA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY, GANDHI NAGAR, KOCHI- 682020**



കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
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(An NABL accredited laboratory as per ISO 17025:2005)

ANALYSIS REPORT

Analysis Report No.	PCB/CL/866/18-19	Date	18 Mar 2019	Doc.No: PCB/CL/CH/F-7
Ref.No.	PCB/PBR/LAB/1/2013 dated 16.01.2019	Date Of Collection	14 Jan 2019	
Received From	D O Perumbavoor	Date Of Receipt	16 Jan 2019	
No. Of Sample	2	Period Of Analysis	16 Jan 2019 - 18 Mar 2019	
Source	Bhrahmapuram solid waste treatment facility of Kochi Corporation	Scientist-in-charge	JOSEMIN	
Sample Condition	Fit for analysis	Sample Type	Waste Water	
Sample collected by	EE, D O Perumbavoor	Sample volume & container type	2L plastic can	
Sample preservation	As per APHA/ IS :3025(Part-1)	Type of test	CHEMICAL	

Sample ID : PVR 32

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	7.5	APHA, 4500-H+B, 22nd Ed., 2012	0.1
2	Suspended Solids	mg/l	2883.0	APHA,2540-D	10 mg/l
3	Total Dissolved Solids	mg/l	21733.0	APHA, 2540-C 22nd Ed 2012	10mg/l
4	Chloride	mg/l	4999.0	APHA, 4500-Cl/B ,22nd Ed., 2012	1.0mg/l
5	Fluoride	mg/l	0.16	APHA, 4500-F C,22nd Ed., 2012	0.01 mg/l
6	Ammonia as Nitrogen	mg/l	5588.0	APHA, 4500-NH3 F,22nd Ed.,2012	0.02mg/l
7	Biochemical Oxygen Demand (BOD)	mg/l	10752.0	IS 3025 part 44 1993	1mg/l
8	Chemical Oxygen Demand (COD)	mg/l	12480.0	APHA, 5220-B, 22nd Ed., 2012	3.2 mg/l
9	Total Kjeldahl Nitrogen	mg/l	6256.0	APHA, 4500-N-Org B,22nd Ed,2012	0.2mg/l
10	Phenolic compounds	mg/l	7.3	APHA 5530-C,22nd Edition	0.001mg/l
11	Cadmium	mg/l	BDL	APHA, 3111-B, 22nd Ed., 2012	0.02 mg/l
12	Chromium Total	mg/l	0.07	APHA, 3111-B, 22nd Ed., 2012	0.03mg/l
13	Copper	mg/l	0.19	APHA, 3111-B,22nd Ed., 2012	0.02mg/l
14	Nickel	mg/l	0.16	APHA, 3111-B. 22nd Ed., 2012	0.05mg/l
15	Lead	mg/l	BDL	APHA, 3111-B 22nd Ed., 2012	0.05mg/l

16	Zinc	mg/l	0.43	APHA, 3111-B, 22nd Ed., 2012	0.02mg/l
17	Arsenic	mg/l	BDL	APHA, 3114-B,22nd Ed.,2012	0.01mg/l
18	Mercury	mg/l	0.14	APHA, 3112-B, 22nd Ed., 2012	0.01mg/l

Sample ID : PCB 344

Sl.No	Parameters	Unit	Value	Test Method	Detection Limit
1	pH	-	7.6	APHA, 4500-H+B, 22nd Ed., 2012	0.1
2	Suspended Solids	mg/l	823.0	APHA,2540-D	10 mg/l
3	Total Dissolved Solids	mg/l	20251.0	APHA, 2540-C 22nd Ed 2012	10mg/l
4	Chloride	mg/l	4299.0	APHA, 4500-Cl/B ,22nd Ed., 2012	1.0mg/l
5	Fluoride	mg/l	0.20	APHA, 4500-F C,22nd Ed., 2012	0.01 mg/l
6	Ammonia as Nitrogen	mg/l	4736.0	APHA, 4500-NH3 F,22nd Ed.,2012	0.02mg/l
7	Biochemical Oxygen Demand (BOD)	mg/l	9600.0	IS 3025 part 44 1993	1mg/l
8	Chemical Oxygen Demand (COD)	mg/l	11680.0	APHA, 5220-B, 22nd Ed., 2012	3.2 mg/l
9	Total Kjeldahl Nitrogen	mg/l	5079.0	APHA, 4500-N-Org B,22nd Ed,2012	0.2mg/l
10	Phenolic compounds	mg/l	BDL	APHA 5530-C,22nd Edition	0.001mg/l
11	Cadmium	mg/l	BDL	APHA, 3111-B, 22nd Ed., 2012	0.02 mg/l
12	Chromium Total	mg/l	0.07	APHA, 3111-B, 22nd Ed., 2012	0.03mg/l
13	Copper	mg/l	0.19	APHA, 3111-B,22nd Ed., 2012	0.02mg/l
14	Nickel	mg/l	0.17	APHA, 3111-B, 22nd Ed., 2012	0.05mg/l
15	Lead	mg/l	BDL	APHA, 3111-B 22nd Ed., 2012	0.05mg/l
16	Zinc	mg/l	0.71	APHA, 3111-B, 22nd Ed., 2012	0.02mg/l
17	Arsenic	mg/l	BDL	APHA, 3114-B,22nd Ed.,2012	0.01mg/l
18	Mercury	mg/l	0.07	APHA, 3112-B, 22nd Ed., 2012	0.01mg/l

-- End of Report --

Checked by


Dr. JOSEMIN
 Assistant Environmental Scientist

Authorised by


V.T. SAJIMON
 Chief Environmental Scientist (I/C)

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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ANALYSIS REPORT

Analysis Report No.	PCB/CL/866/18-19	Date	18.03.2019
Ref. No.	PCB/PBR/LAB/1/2013 dated 16.01.2019	Date of Collection	14.01.2019
Received From	D O Perumbavoor	Date of Receipt	16.01.2019
No. of Sample	2	Period of Analysis	16.01.2019 – 18.03.2019
Source	Bhrahmapuram Solid waste Treatment facility of Kochi Corporation	Scientist-in-charge	Dr. Josemin
Sample Condition	Fit for analysis	Sample Type	Waste Water
Sample collected by	EE, D O Perumbavoor	Sample volume & container type	2 L Plastic Can
Sample preservation	As per APHA/IS:3025 (Part-1)	Type of test	CHEMICAL

Sample ID: PVR 32

Sl. No.	Parameters	Unit	Value	Test Method	Detection Limit
1	Cyanide	mg/L	9.45	APHA, 3111-B	0.01

Sample ID: PCB 344

Sl. No.	Parameters	Unit	Value	Test Method	Detection Limit
1	Cyanide	mg/L	11.4	APHA, 3111-B	0.01

--End of Report--

Checked By 
Dr. JOSEMIN
 Assistant Environmental Scientist

Authorised By 

V.T. SAJIMON
 Chief Environmental Scientist (I/C)