

GREEN AUDIT REPORT

For

GITAM UNIVERSITY



Rushikonda, Visakhapatnam

By



Conserve Consultants Pvt. Ltd.,

No -181, 2nd Floor, 1st Main Road, Nehru Nagar, OMR,
Chennai - 600 096, India. Email: info@conserveconsultants.com
Website: www.conserveconsultants.com

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ACKNOWLEDGEMENT

Conserve Consultants Private Limited wishes to thank all the staff, Management & Technical Team of **GITAM UNIVERSITY, VISAKHAPATNAM** for the kind co-operation and assistance extended to our Auditor during the course of the Green audit.

Energy Consultants

S Vijaya Kumar

R K Arun Prabhu

K G Balasubramaniam

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1. EXECUTIVE SUMMARY

Green Audit of GITAM University, Visakhapatnam was carried out by Conserve Consultants during March 2022.

The approach taken in this facility included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and associated systems & equipment, The study covered the following areas to summarize the present status of environment management in the campus:

- Water management
- Waste management
- Green area management

The report compiles a list of possible actions to conserve and efficiently access the available scarce resources and their saving potential was also identified.

On an overall note, there is no Waste record in the site to monitor the daily Solid Waste Generation, it is recommended to monitor all type of Wastes like Solid Wastes, Bio medical wastes, E-Wastes, Paper Wastes and Food Wastes etc. on daily basis.

In GITAM University campus all the degradable waste is converted fed for composting & Biogas production. Garden wastes are sent for composting & Food wastes are collected by Third party vendor for Vermi Compost production. On an overall waste collection, **food waste, Bio Medical Wastes are collected by third party vendors with contract agreement made with the Management. In addition 100 kg/day of Solid Wastes** of non-degradable waste is sent to the municipal segregation for landfills.

In GITAM University campus overall Landscape is good. In landscape turf is with non-native species and it consumes water, it is requested to replace turf to 'energy plantation' as it acts as a rich producer of oxygen and absorber of carbon dioxide. **Beema Bamboo** can produce 62 tons of oxygen and absorbs 88 tonnes of carbon dioxide per acre per year.

For continuous improvement, every identified Performance Improvement Measure, a detailed M&V Plan shall be established for continuous monitoring & evaluation of the effect of the system over which PIM will be implemented.

2. PERFORMANCE IMPROVEMENT MEASURE AT GITAM UNIVERSITY, VISAKHAPATNAM

S No.	WCM Description	Annual Water savings, kL	Annual savings, Lakhs.	Cost of Measure, Lakhs.	Payback Months
	Water saving through the efficient water faucets	2,184,251	196.6	2	0
Total					

3. PROJECT BACKGROUND

GITAM Visakhapatnam campus was established in 1980, with modern infrastructure supported by dedicated faculty and administrative staff. The campus is located in an ideal environment in the Coromandel coast area near Rushikonda Beach of Bay of Bengal, close to Visakhapatnam International Airport and at a distance of 15 km from Visakhapatnam Railway Station. The campus is provided with smart classrooms, laboratories, auditorium, seminar halls, play fields, student hostels and other student support services.

Visakhapatnam campus consists of Eleven schools: GITAM School of Technology, GITAM School of Science, GITAM School of Business, GITAM School of Pharmacy, GITAM School of Architecture, GITAM School of Law, GITAM Institute of Nursing, GITAM School of Humanities and Social Science, GITAM School of Physiotherapy, Centre for Distance learning, GITAM institute of Medical Science and Research to impart high quality training in the fields of Technology and Management in the Vizag of India.

The campus is located near the Seashore of the city. The campus has two Administration blocks, Thirty three Academic blocks, eight common amenities and facilities, and nearly about Eighty eight blocks. One spacious library building, Five Staff quarters and twelve hostels. All the academic departments have adequate number of smart classrooms, staff rooms, seminar halls well- equipped laboratories, central library, and other facilities.

4. GREEN AUDIT

The main objective of the green audit is to promote the Environment Management and Conservation in the GITAM University Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To introduce and aware students to real concerns of environment and its sustainability
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.

Green Audit also includes the preliminary analysis and more detailed energy calculations-financial analysis of proposed Performance Improvement Measures (PIM). The financial analysis provides the facility team the understanding of the financial benefits in implementing specific Performance Improvement Measures. Utility bills were collected for three months period to allow the auditor to evaluate the facility's energy/demand rate structures and energy usage profiles. A detailed financial analysis is performed for each measure based on implementation cost estimates; site-specific operating cost savings, and the customer's investment criteria. Sufficient detail is provided to justify project implementation.

5. WATER

Drinking Water for the entire GITAM University Campus are from purchased outside on monthly basis and RO water sourced from Bore well. For RO plant, flushing and cleaning purpose, water is sourced from the bore wells. STP Water is used for Irrigation purpose. Bore well water is pumped to the raw water sump then the OHT at terrace levels. There are totally 25 nos. RO plants with capacity 250 KLD and 27 nos. Bore wells.

5.1 PERFORMANCE ANALYSIS OF WATER FAUCETS

Water flow is measured in faucets at University's various blocks toilets and wash basins

S. No.	Description	NBC Baseline (LPM)	Actual (LPM)
1	ICT Bhavan Wash basin	1.5	7.2
2	ICT Bhavan Toilet Tap	3	11.7
3	Sir Arthur cotton bhavan – Gents Toilet Wash basin	1.5	6.9
4	Sir Arthur cotton bhavan - Ladies Toilet Tap	3	8.8
5	Institute of Pharmacy – Gents Toilet Tap	3	3.8
6	Institute of Pharmacy – Wash basin	1.5	4.8
7	Institute of Pharmacy – Ladies Toilet Tap	3	8
8	Kokila sadan Wash Basin	1.5	9.4
9	Kokila sadan Toilet	3	15
10	Rabindra Sagar Sadan Wash Basin	1.5	10.1
11	Rabindra Sagar Sadan Bathing Tap 1	3	13
12	Rabindra Sagar Sadan Bathing Tap 2	3	20
13	Rabindra Sagar Sadan Hot water Tap	3	18.5
14	Sadarma Sadan Canteen Wash basin Tap 1	1.5	6.5
15	Sadarma Sadan Canteen Wash basin Tap 2	1.5	12.5
16	Sadarma Sadan Canteen Wash basin Tap 3	1.5	9.6

Comments: Water flow in the faucets and tap are higher (in above highlighted area) compared to the NBC standard. The baseline standards are as per the NBC 2016 part no: 9 section 1 table – 2.

5.2 WATER NEUTRALITY

Presently fresh water source i.e., bore well and purchased outside waters are used for the entire building. Sewage Treated water is used only for the Gardening.

Strategies for Water Neutrality:-

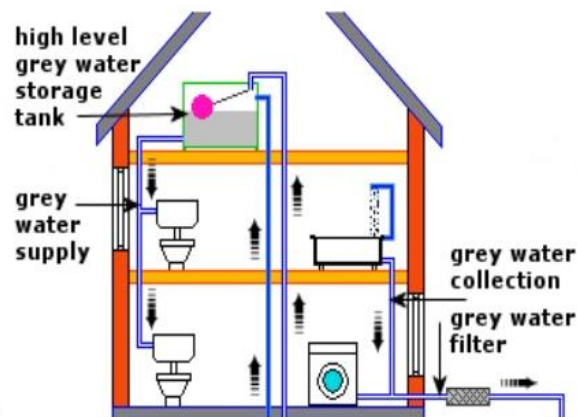
a. Low flow aerators.

To reduce the fresh water consumption by installing the aerators for faucets in all guest rooms, common area restrooms, kitchen etc., this reduces the 40% of water consumption from the baseline of LEED.



b. Dual Plumbing System.

To reduce the freshwater consumption by installing the dual flush system. This reduces the fresh water consumption and using the STP treated water & the fresh water consumption is zero.



c. Native Plant Species.

For landscape STP treated water is used for irrigation. In landscape so many non-native species like Cynodon Dactylon (Grass) is high water consumption. To reduce the water consumption by replacing the drought tolerant/xeriscape species.



5.3 WATER QUALITY ANALYSIS

In the University Campus, drinking water is taken from purchased outside by tanker lorry and RO Plant. Normally, for drinking water daily consumption of the University Campus and Hostel are approximately 312 Kilo liters is consumed. For Bore wells and RO plants the total dissolved solid (TDS) level is given below.

Location	Water TDS level	Temperature in ° C
RO Plant 1 (at Cotton bhavan)	44	31.7
RO Plant 2	30	30.8
RO Plant 3	51	30.5
Purchased Water	350	31.3
Bore Well 1 (near Bhatnagar Bhavan)	285	31.4
Bore Well 2 (near IE Bhavan)	295	30.2
Bore Well 3 (near GITAM bhavan)	260	31
Bore Well 4 (near Shanti Sadan)	350	31.5

Bore Well 5 (near GITAM Centre south side on road)	416	31.4
Bore Well 6 (near Kokila Sadan)	247	29.4

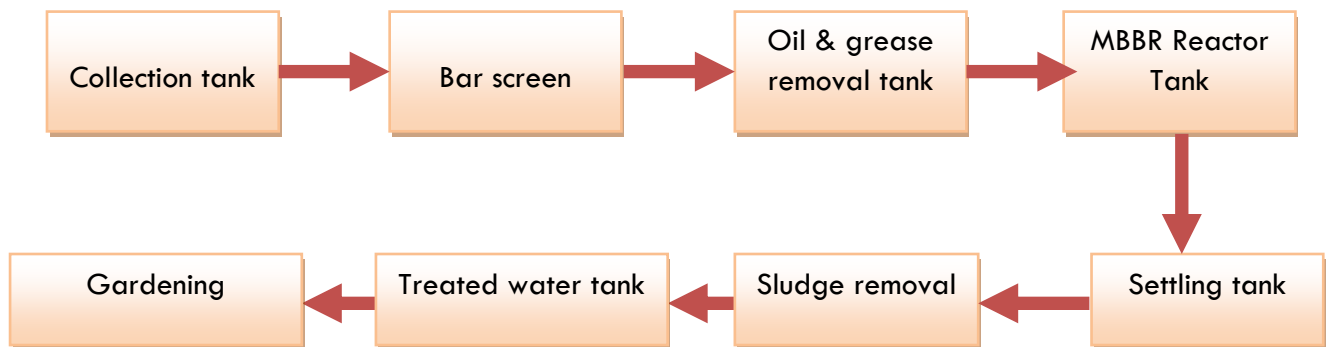
Comments:

As per the WHO recommended drinking water TDS level is < 300. In our campus drinking water TDS level is within the limit. For Bore well, water treatment system is required to reduce the TDS level.

6. SEWAGE TREATMENT PLANT

In GITAM campus there are 3 nos. of STP are installed. One STP is 500 KLD capacity located at the Backside of the Sai Baba Temple, 350 KLD capacity located near the Santhi Sadan Hostel and another one is 300 KLD located near the GIMSR Medical Campus.

The new STP plant 350 KLD Capacity STP is working based on the MBBR (Moving Bed Bio Reactor Technology). It is an advanced high-rate wastewater treatment process utilizing free-floating media which houses active biological cells. MBBR system is a hybrid process where attached growth and suspended growth treatment processes functions simultaneously. The treated water is used for the gardening purposes. Equipment’s studied and done performance analysis are air blower, transfer pump & treated water pump.





Quality of Treated Water:

Parameters	Unit	Reuse
PH	--	6.5 – 7.5
BOD	mg/l	<20
COD	mg/l	< 100
Suspended Solids	mg/l	< 40
Oil and Grease	mg/l	< 10

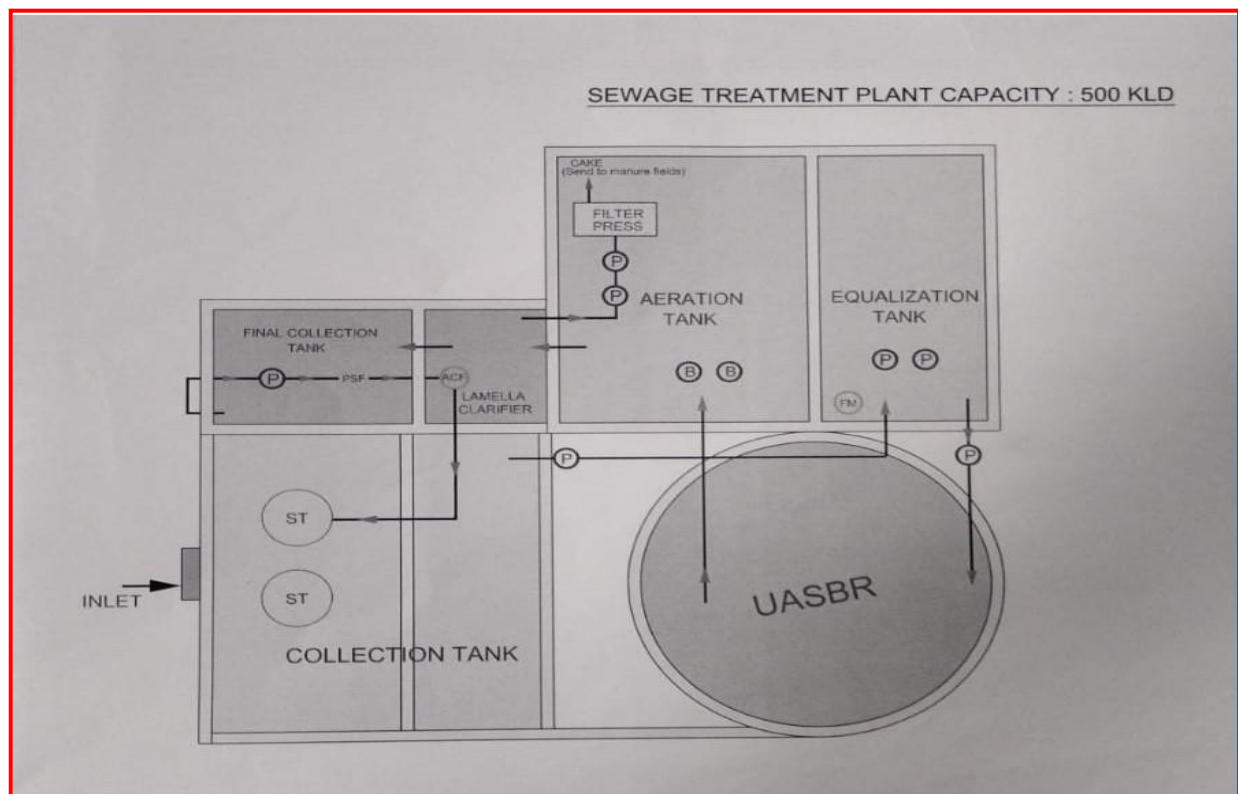
500 KLD STP AT UNIVERSITY’S CAMPUS:-

The 500 KLD Capacity STP is working based on the The effluent from UASBR feed sump can be pumped to UASB Reactor through a specifically designed distribution pipes. The multiple distributions ensures uniform distribution of flow throughout the sludge blanket making maximum rises to the top of Anaerobic reactor along with bio-gas generated and also some sludge particles. A unique three-phase gas – solid – liquid separator shall be provided at the top to separate out the gas, liquid and the sludge particles. Gas will be collected in the domes provided at the top. The liquid overflows through the gutters and suspended solids then separated are allowed to settle down in the sludge blanket thereby retaining valuable bacterial population. The gas will be carried

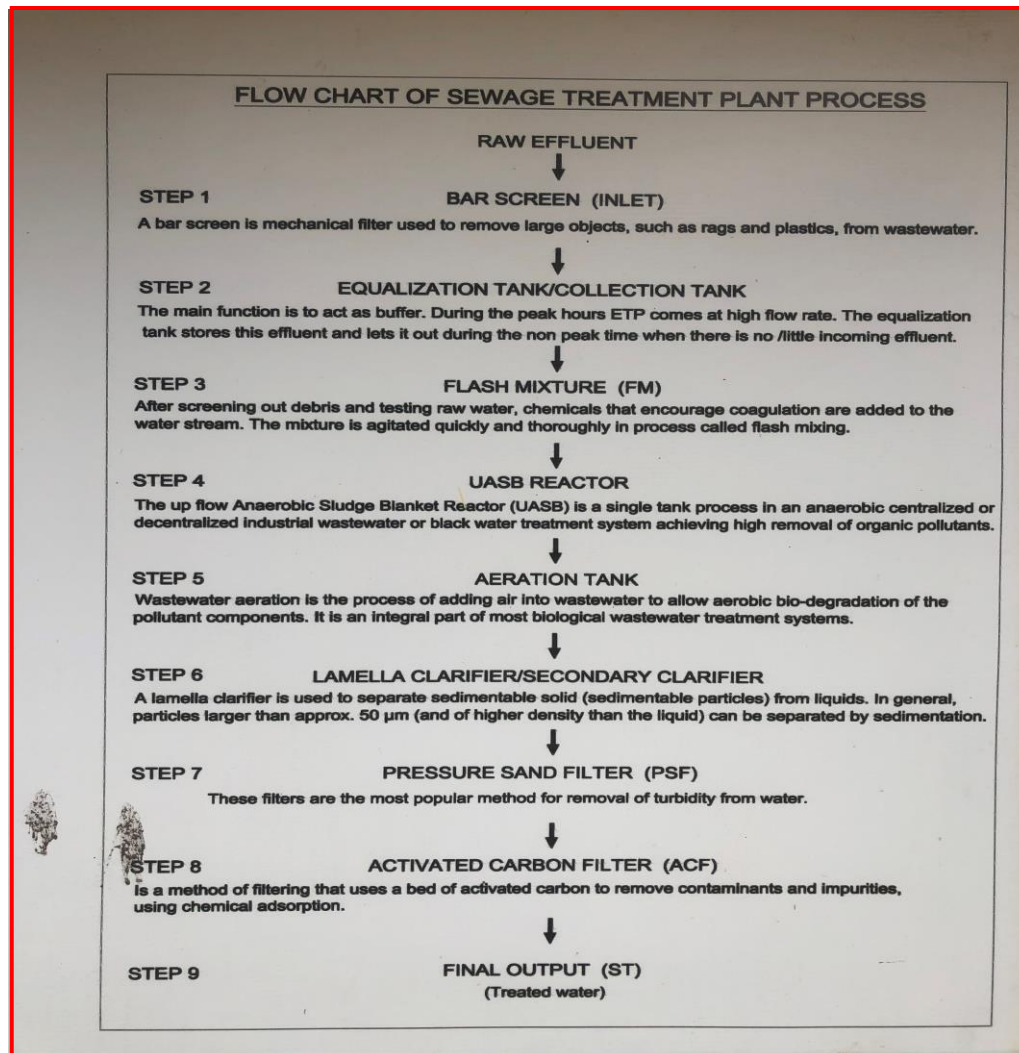
through a gas line equipped with safety devices and burnt at the flare stack/collected in gas holder.



Process Flow Diagram:-



Flow Chart of the Work flow process:-



Optimum condition for Anaerobic treatment:-

Oxygen (air)	Nil
Temperature	20-42°c
PH	6.5-8.5
Toxic materials	Nil

7 RAINWATER HARVESTING SYSTEM

In the GITAM University campus rainwater is collected and recharged to the ground with the help of a rainwater harvesting pits (RWH) and the pits are located within University Campus. East Campus of the University with 34 nos. and GIMSR Campus with 10 nos. and total 44 nos. of RWH pits. The size of RWH pits are 1.2m x 1.2m x 3m with capacity is 4.3 m³. Rainwater trenches are built according to the slope of the surface level and it connect the roof and non-roof rainwater to rainwater harvesting pits.



8 WASTE MANAGEMENT SYSTEM

In University campus, separate dry waste and wet waste type of waste collection bins are provided for collection of waste. All waste generated from the building operation was analyzed. A waste audit was performed on 16/02/2022 at GITAM UNIVERSITY, Visakhapatnam to identify opportunities to divert waste streams from landfills and to determine further source reduction opportunities.


Waste Treatment:

Bio Medical wastes from Hospital is collected, segregated and sent to centralized bin, then it is collected and treated by “Maridi Eco Friendly Industries” a third party vendor on daily basis. Food waste is collected from the canteen & other places are collected by “Vadapalli Bhavani” Garbage pickup a third party vendor on contract basis, then it is collected and treated for Vermi compost. Dry Waste like (Paper waste, e-waste, Scrap, Plastics etc.) are separated and sent to Visakhapatnam Municipality for Recycling towards “**Swachh Mission of India**”. The unit has specific sections where solid waste is segregated as ‘wet’ and ‘dry’. The organic waste such as dried leaves from University’s Garden, Nursery and plantation are used for Natural manure production in the University campus. Thus, GITAM University is a wholesome solution for solid waste management and the diverted waste list is given below.

Month	Food Waste, Kg	Garden wastes (Dry leaves), Kg	Plastic Waste, Kg	Bio Medical Kg	Total Waste, Kg
Apr-21	-	1200	-	-	1200
May-21	-	1200	-	-	1200
Jun-21	-	1200	-	-	1200
Jul-21	-	1200	-	-	1200
Aug-21	-	1200	-	-	1200
Sept-21	-	1200	-	-	1200

Oct-21	-	1200	-	-	1200
Nov-21	-	1200	-	-	1200
Dec-21	24788	1200	-	-	25988
Jan-22	12305	1200	-	-	13505
Feb-22	14371	1200	-	-	15571
Mar-22	13445	1200	-	-	14645
Total	64909	14400	-	-	
Total Wastes					79,309

Agreement made towards the contribution of Dry and Wet Wastes for Recycling to the third party vendor "Vadapalli Bhavani" garbage pickup on 22.12.2021



GITAM
GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(REGISTERED SOCIETY NO. 277 OF 1980)

Service Order

GV/HOSP/Garbage-lifting/Exp/654 Dated: 22.12.2021

M/s Vadapalli Bhavani
(Garbage Pickup)
Priyadarshini Colony,
Opp.Ganesh Nagar, Madhurawada,
Visakhapatnam-48
Mobile no.8374497872

Dear Sirs,

Sub: Wet and Dry Garbage Lifting from various locations in the GIMSR and GITAM Campuses at Rushikonda Visakhapatnam
Ref: You offer no: NIL Dtd. 12.11.2021

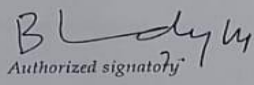
With reference to above, this Service Order is being issued to you for "Garbage Lifting from GIMSR and GITAM Campuses for a value of Rs. 1,20,000/- per month totalling to Rs. 6,00,000/- (Rupees Six Lakhs only) including GST ("Contract Price"). The Contract Price is for the period of 5 months from 1st November 2021 to 31st March 2022, as per the enclosed price schedule and the terms conditions attached herewith.

1. Key Terms & Conditions:

Prices:	Prices are firm and for Services at GIMSR and GITAM Visakhapatnam Campuses
Price:	Rs. 1,20,000 including GST per month for a period of 5 months total amounting to Rs. 6,00,000/- (Including 18% GST)
Payment terms:	Monthly within 7 days from the date of receipt of certified invoice.
Invoicing:	Registrar, Gandhi Institute of Technology and Management, Rushikonda, Visakhapatnam-530 045, in acceptable format of GST regime.
Jurisdiction	The courts within Visakhapatnam, Andhra Pradesh India alone shall have exclusive jurisdiction in respect of the matters arising out of or in connection with this Service Order.

2. Please contact our Hospitality Department and proceed with lifting of Garbage.

For Gandhi Institute of Technology and Management


Authorized signatory

Encl:
1. Price Schedule

Gandhi Nagar Campus, Rushikonda, Visakhapatnam - 530 045, A.P. INDIA
Grams: "GITAM" Phones: +91-891-2840208, EPABX: 2790101 (8 Lines), Fax: 2790222,
Website: www.gitam.edu E-mail: admin@gitam.edu

Public Health Certificate from Greater Visakhapatnam Municipal Corporation

O/o the Greater Visakhapatnam
Municipal Corporation
Visakhapatnam.

Rc. No.6042/2000/F3/F2/PH/CMOH
Dt.31.03.2019

SRI VEERANJANEYA RADAL PANIVARALA MUTUA
AIDED LABOUR CONTRACT CO-OPERATIVE SOCI

ENDORSEMENT

Sub : Public Health - GVMC - Collection of Garbage & Waste Generated from Commercial & Eatable Establishments in Zone-I, II & III through private agencies - User charges collection basis - Permitted - Endorsement - issued - Reg.


Ref : 1) Representation of Smt. Vadapalli Bhavani Panivarala Mutually Aided Labour Contract Co-op Society, Dt.28-12-2019.
2) Note Order of Commissioner 21.03.2020.

Smt. Vadapalli Bhavani Panivarala Mutually Aided Labour Contract Co-op Society, Visakhapatnam hereby permitted to collect Garbage & Food Waste generate from Hotels, Restaurants, Hostels, Messes, Commercial establishments, waste Generated from mutton and chicken stalls etc., in Zone - I, II & III GVMC area till finalization of finalization of tenders as per Govt. new guidelines issued subject to the terms and conditions mentioned in the MOU entered with GVMC earlier.

The agency has to furnish particulars of establishment i.e. Hotels, Restaurants, Commercial establishments waste generated from mutton and chicken stalls etc. covered by them area wise in each zone to the concerned Zonal Commissioners / AMOHs.

The Zonal Commissioners / AMOHs are requested to assess the garbage collection by the agency and see that all establishments are covered in their respect zones. The work entrusted will be cancelled if the sanction is not improvement in the areas covered by the agency.

The in-charge of dumping yard of Kapuluppada is instructed to maintain separate register for each agency and record the particulars i.e. vehicle number quantity & No. of Trips etc. and submit report every fortnight to CMOH.


For Commissioner

To
Smt. Vadapalli Bhavani Panivarala Mutually Aided Labour
Contract Co-op Society.
Copy to SSs/AMOHs & Zonal Commissioner of Zone-I, II & III
Copy submitted to Commissioner's table for favour of information

teira

Agreement made towards the contribution Bio Medical Wastes for proper disposal to the third party vendor "Maridi Eco Friendly industries" garbage pickup on 01.04.2021

MEMORANDUM OF UNDERSTANDING

This memorandum of understanding is entered into this day 1st April 2021

Between

Maridi Eco Industries (Andhra) Pvt. Ltd., is a company having its registered office at – 50-27-15/4, T.P.T. Colony, Seethammadhara, Visakhapatnam-13 hereinafter referred to as "MARIDI" and represented by Mr. B. Shivaji, Executive Director, has set up a Common Waste Treatment facility for Bio – Medical Waste on the site at Survey No. 314, Kapuluppada Village, Visakhapatnam on a site allotted by the Municipal Corporation of Visakhapatnam and the technical and environmental consent or establishment issued by the Andhra Pradesh Pollution Control Board.

And

GITAM Institute of Medical Sciences and Research
Director/General Manager Medical Superintendent
Hereinafter referred to as "HCE" represented by *Medical Superintendent* who is running a hospital is a "Generator" of Bio – Medical Waste (as defined in Schedule – 1 of the Ministry of Environment & forests, Government of India Notification Dated 04th April 2016 & hereinafter referred to as BMW Rules.)

The "HCE" hereby agrees to register as a member with the **Common Waste Treatment Facility (CWTF)** set up by 'MARIDI' who will collect, treat and dispose of the Bio-Medical Waste generated by the former as per the regulations stipulated by the **Pollution Control Board** on the following terms of reference.



Medical Superintendent
GITAM Institute of Medical Sciences & Research
Rushikonda, Visakhapatnam-530 045

Public Health certificate authorized by Greater Visakhapatnam Municipal Corporation



The certificate is framed in red and contains the following text and logos:

- Logos: Recycle symbol, Maridi Eco Industries (Andhra) Pvt. Limited logo (M), Biohazard symbol.
- Text: **Maridi Eco Industries (Andhra) Pvt. Limited**
in Pursuit of Clean Environment
- Section Header: **Certificate of Membership**
- Text: *This is to certify that M/s. Gitam Institute of Medical Sciences & Research Centre,
No. of Beds / Clinic 650 (Six hundred and fifty) Rushikonda, Visakhapatnam
The healthcare establishment is a member of Maridi's (Maridi Eco Industries (Andhra) Pvt. Limited)
Common Bio-Medical Waste Treatment Facility at Visakhapatnam.*
- Text: *Maridi is authorized by the Greater Visakhapatnam Municipal Corporation and AP Pollution Control Board to Collect, Transport, Treat and safely dispose the bio-medical waste, Maridi has been collecting bio-medical waste generated from this health care establishment.*
- Text: *This Certificate is valid from 1st April 2021 to 31st March 2022.*
- Signatures: **K. Ramalinga Raju**, Managing Director (left); **B. Sivaji**, Executive Director (right).
- Seal: Maridi Eco Industries (Andhra) Pvt. Limited seal.

Waste Audit Procedure:

- Waste auditing was carried out by sorting and measuring the building's waste over a given time period, i.e. 24 hours' time. And Audit team selected a time period of 16th Feb 2022.
- The Audit Team was equipped with all necessary safety and personal protective devices including safety glasses, respirator masks, coveralls and gloves.
- The Audit team has taken the waste audit form and marked the following types:
 - Papers
 - Carton boxes
 - Tissue paper
 - Pet bottles
 - Plastic covers
 - Printed hard paper
 - Food waste

- Each waste type was separated and measured for the weight through a weighing scale. The values were entered in the waste audit form and compared against the total weight of all wastes.

SI NO.	Type Of Wates	kg/Day
1.	Solid Wastes (Paper, carton boxes, Plastics, Tissue papers etc.)	100
2.	Food Wastes	100
3.	Bio Medical Wastes	201

Bio Medical Wastes:-

There are 27 wards in the hospital, at present 16 wards wastes are only generated for three shifts A, B and C. For one ward nearly 30 beds. And daily average waste generated for one ward are 4.2 Kg for one shift.



Fig – Separate bin for Bio Medical waste segregation



Fig – Trolley for Waste Transport



Fig – Handle the waste by holding the neck



Fig – The waste is transferred to centralized bin.



Fig – centralized Bio medical waste bin



Fig – Bio Medical wastes weighed

The Waste generated in this hospital is managed and disposed off in an environment friendly manner, in conformance with the prevailing national regulations.

Solid Wastes:-

For the whole Campus, the generation of Solid wastes are of average 100Kg per day. The Afternoon shift of Solid waste generation weighed of about 15.12 Kg. Mostly waste collection at morning shift is high compared to noon and evening.



Fig – Collection of Solid Wastes



Fig – Solid Wastes weighed

Food Wastes:-

The average food wastes generated for Breakfast 9.5 Kg, Lunch 19.2 Kg and Dinner 20Kg. So the average Food waste generation is about 50Kg/day for East Campus and For GIMSR Campus 50Kg/day. (If it is Non-Veg Foods, then food waste is about 70Kg/day). So totally for the whole Campus the daily Food waste generation is about 100Kg/day. In this Bainemarie wastage is about 2 to 3% daily.



Fig – Food Wastes Weighed



Fig – Food Wastes Weigh Machine

At present, daily Food wastes generated about 100 Kgs approximately, from that 2 to 3% Bainemarie Foods are diverted to Garbage. It is recommended to feed uneaten foods to Poor people or any Living organisms.

At present, the daily Solid Wastes (Dry/Wet) generated about more than 100 Kgs approximately. It is recommended to keep Centralized waste collection area for multiple waste types so that wastes can be accumulated for period of time, which in turn will make the waste recycling economically feasible for the recycling vendors

9 PERFORMANCE IMPROVEMENT MEASURES (PIM'S)

PIM 1: Water saving through the efficient water faucets

Annual Water Savings	2,184,251 KL/Year
Recurring Annual Savings Potential	196.6 Lakhs
One-time Cost of Implementation	2 Lakhs
Payback period	0 Months

Present System:

Presently average water flow in the faucets is 10 LPM it is much higher compared to the Green/Sustainable Buildings' Standards. This can lead to water wastage and higher consumption.

Proposed System:

It is recommended to install low flow aerator-based faucets to maintain max. 2 LPM as per the standards in common/lavatory rooms. This saves huge amount of water consumption.

Description	Value	Units	Formula
Average measured flow	10.3	LPM	A
Average usage per day	60	min/day	B
No of taps	12625	Nos.	C
Annual water consumption	351,860	KL/yr	D $= (A \times B \times C \times 365) / 1000$
Water consumption cost	9	Rs/KL	E
Present Water Consumption cost	3,166,740	Rs/Yr	F = E x D
After installing aerators 70% water reduction	2.4	LPM	G
Annual water Savings	2,184,251	KL/yr	H = $((A - G) \times B \times C \times 365) / 1000$
Annual Saving, Rs	196.6	Lakhs	I = H x E
Investment, Rs	2.0	Lakhs	J
Payback period	0	Months	K = J / I x 12

10 FLORA IN THE CAMPUS:-

The Management of the GITAM University planted many native Trees in the Campus, University's Horticulture Nursery and Plantations. These Matured Trees are yielding for more than decade. The total no. of Trees are available in the University is about 15,234 nos. approximately with covered vegetation land area of 2, 43,142 Sq.mt approximately.

LIST OF MATURED TREES BEING GROWN IN THE UNIVERSITY CAMPUS:-

TABLE 1:-

List of Matured Trees		
Sl.no	Plant name	Quantity
1	Coconut Trees	236
2	Mango Trees	56
3	Neem Trees	460
4	Teak Tree	1343
5	Filta palm Trees	258
6	Ponna Trees	297
7	Thurai trees	7
8	Silver voke trees	77
9	Kanuga tree	335
10	Kunkudukai tree	2
11	Rain Tree	8
12	X-mas Trees	5
13	Subabul tree	1
14	Togara Trees	14
15	Tamarind Trees	11
16	Java plum Trees	122

17	Arju Trees	2
18	Devakanchana	15
19	Tikoma Trees	209
20	Nilagiri Trees	1011
21	Royal Plam Trees	310
22	Sapodilla Trees	18
23	Maha Ghani Trees	2338
24	Banyan Trees	6
25	Chetavani tree	209
26	Bogada Trees	174
27	Jack Fruit Trees	8
28	Conocarpus Trees	204
29	Ashoka Trees	172
30	Usiri Trees	3
31	Sarugudu Trees	25
32	Chandanam Trees	9
33	Ponata	64
34	Badam Trees	6
35	Other Plants	93
36	Srisina Trees	10
37	Sacred fig Trees	4
38	Fox Tail Trees	129
39	Filta palm Trees	101
40	Nilagiri Trees	5751
41	Royal Plam Trees	129

42	Silver voke trees	108
43	Kanuga tree	171
44	Maha Ghani Trees	13
45	Chetavani tree	8
46	Bogada Trees	147
47	Other Plants	51
48	Conocarpus Trees	446
49	Devakanchana Trees	23
50	Arjun Trees	32
51	Badam Trees	3

CO₂ Reduction:-



A Matured Trees can able to absorb CO₂ nearly at a rate of 48 lbs/year (ie., nearly 21.8 Kg).

Total no. of Matured Trees available in the Campus is about 6000 nos. approximately and its contribute CO₂ reduction of about **332.10 Tons/Annum.**



There are nearly about 12 Gardens inside the University campus, few are namely Gandhi Park, NTR Park, Sai Garden, Teresa Park etc.





Fig – Trees are well preserved and protected in the Campus



Fig – Trees near Academic blocks providing shades to the Building and the pathways.



Fig – Flowering Plants in the Landscape area.



Fig – African Tulip Tree



Fig –Mahogany Tree



Fig – Kassod Tree



Fig – Crape Jasmine



Fig- Badam Indian Almond Tree




Fig-Red Ginger




Fig- campus is covered with lustrous Trees and Gardens

The Management of the University has planted nearly 15,234 Saplings and plants throughout the entire university campus and are well maintained. In next two to three years; these plants and Trees shall become matured trees and significantly contribute for CO₂ reduction.

10 SITE OBSERVATION REPORT

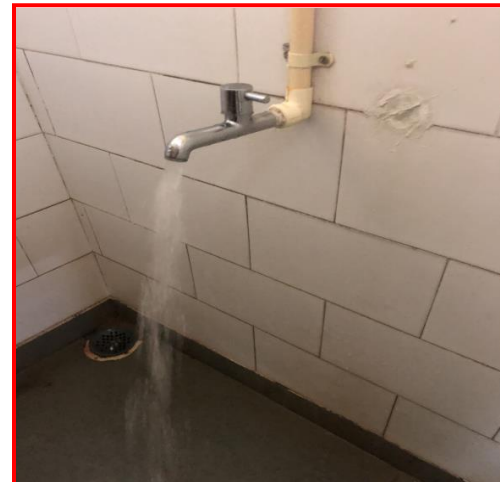
Site Observation Report (SOR)			
Report No.	C&A/SOR/01	Date	16.03.2022
Location	Canteen, Admin Block rest room, Boys and Girls Hostel Wash basin.		
Observation Images			
			
Description			
<p>Openable metal water taps are installed without any aerators. So there is no control in the flow of water. Observed much higher water flow especially in the canteen, Academic Blocks & Hostels.</p>			
Potential Sustainability Measures			
<p>It is advised to install aerators for all the water taps, which reduce the wastage of Water.</p>			

Site Observation Report (SOR)			
Report No.	C&A/SOR/02	Date	16.03.2022
Location	Class Rooms		
Observation Images			
			
Description			
Daylight in the class rooms.			
Potential Sustainability Measures			
There is enough daylight available in the class rooms, views and natural ventilation are also good.			

Site Observation Report (SOR)

Report No.	C&A/SOR/03	Date	16.03.2022
Location	Academic Blocks, Boys & Girls Hostels - Rest Rooms		

Observation Images



Description

It is observed that western toilets are not with dual type Flush.

Potential Sustainability Measures

It is advised to install dual type flush, which reduce the water consumption. Reduction in water consumptions also leads to power saving, it saves the operating duration of the water pumps directly. And also it is recommended to install metal taps in the bath rooms with Aerators.

Site Observation Report (SOR)

Report No.	C&A/SOR/04	Date	16.03.2022
Location	Canteen 4A & 4B		

Observation Images



Description

In the canteen area, Pest O Flash (Flying insect electric control system) are installed, Alternate Seating for Social distance and Drinking Water slogan pasted near Drinking Water Area. It is highly encouraged.

Potential Sustainability Measures

Nil

Site Observation Report (SOR)

Report No.	C&A/SOR/05	Date	16.03.2022
Location	Landscape & Gardening Area		

Observation Images



Description

The existing Irrigation system for Gardening is Manual Tube watering, it consumes more Water. Already Existing Irrigation are not used properly

Potential Sustainability Measures

It is recommended to use Efficient Irrigation systems for Gardening like Drip or Sprinkler Irrigation systems. And use the existing one efficiently.

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Site Observation Report (SOR)

Report No.	C&A/SOR/06	Date	16.03.2022
Location	Canteen Gardening Area		

Observation Images



Description

It is observed that the regular cleaning of the whole campus is well maintained for “Clean and Green”

Potential Sustainability Measures

Nil

Site Observation Report (SOR)

Report No.	C&A/SOR/07	Date	16.03.2022
Location	Guest Living Rooms		

Observation Images



Description

In RO Water dispenser, for one litre treated water, nearly 2.80 litres of waste water is generated and disposing to the sink to drainage

Potential Sustainability Measures

It is recommended to use 20 litre bottle can to collect the waste water and can be used for Utensils cleaning.

11 GOOD PRACTICES AT GITAM UNIVERSITY CAMPUS

During Conserve Consultant's Audit, it is observed that M/s GITAM University, Visakhapatnam Campus has already adopted the following Performance Improvement Measures in its facility;

1.1 Safety Measures for COVID-19 precautions

COVID -19 safety measure protocol is followed very strictly inside the University Campus, which creates awareness among students and staff to maintain the social distance and wear the mask.

1.2 Composting

Garden Wastes are being converted to Natural Manure/ Vermi compost for the soil, which is used for Gardening and University's Nursery. It is a good example of waste to Energy. It enriches nutrients to the fertilizer.

1.3 Bio Medical Wastes

Bio Medical Wastes are sent to 'Maridi Eco Friendly' industries a third party vendor for collecting, treating and safe disposal.

1.4 Food Wastes

Food wastes are sent to the "Vadapalli bhavani" garbage pickup a third party vendor, food wastes are collected and treated for Vermi Compost.