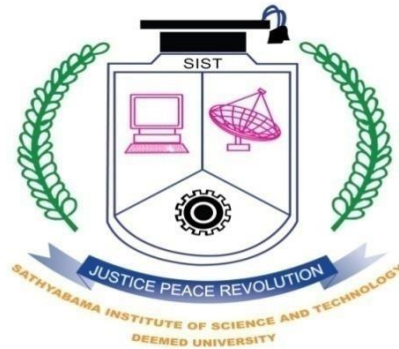




WATER AUDIT



Sathyabama Institute of Science and Technology
Chennai, Tamil Nadu-600119

June 2022 – May 2023



Executive Summary

In Sathyabama Institute of Science and Technology, the audit process involved walk through inspections, initial interviews with management to clarify policies, activities, records and the co- operation of staff and students in the implementation of mitigation measures. This was followed by staff and student interviews, collection of data through the questionnaire, review of records, observation of practices and observable outcomes. In addition, the approach ensured that the management and staff are active participants in the Auditing process.

The baseline data prepared for the Sathyabama Institute of Science and Technology will be a useful tool for campus water management, planning of future projects for such audit purpose, and a document for implementation of sustainable development goal 6 in the institution. Existing data will allow the institution to compare its programs and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects. It is expected that the management will be committed to implement the Water Audit recommendations.

**VICE CHANCELLOR
SATHYABAMA INSTITUTE OF SCIENCE & TECHNOLOGY**

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CHAPTER 1

INTRODUCTION

About Sathyabama Institute of Science and Technology

Sathyabama is a prestigious institution which excels in the fields of Engineering, Science and Technology for more than three successful decades. It offers multi-disciplinary academic programmes in various fields of Engineering, Science, Technology, law, Dental Science, Pharmacy, Nursing, Management, Arts and Science and Allied Health Sciences. It is established under Sec.3 of UGC Act, 1956 and is been Accredited with 'A++' Grade by the National Accreditation and Assessment council. The Institution persistently seeks and adopts innovative methods to improve the quality of higher education and is responsive to the changes taking place in the field of education on a global scale. The Institution has a team of dynamic and outstanding faculty, innovative pedagogical practices, state of the art infrastructure and world class Research Facilities. This glorious Institution is functioning under the dynamic leadership of Dr. Mariazeena Johnson, Chancellor, Dr. Marie Johnson, President, Mr. J. Arul Selvan Vice President, Ms. Maria Bernadette Tamilarasi, Vice President and Ms. Maria Catherin Jayapriya Vice President.

Sathyabama has a good presence in rankings and ratings at National and International level. The Institution has been ranked in 51st position by the National Institutional Ranking Framework (NIRF), Government of India among the Universities in India for the year 2023 and ranked one among the top 100 Universities for eight consecutive years. Sathyabama is ranked among the Top 5 Institutions in the Country for Innovation by ATAL ranking of Institution for Innovation Achievements, Govt. of India. Times Higher Education and QS has ranked Sathyabama among the top Institutions worldwide. Sathyabama Institute of Science & Technology has alliances with leading Universities and research establishments at National and International Level. It is a research-intensive University with world class laboratories and research facilities and is involved in research in the emerging areas of Science and Technology. Sathyabama has undertaken various sponsored and collaborative R&D projects funded by National and International Organizations. Sathyabama has written a special page in the history of space research on 22nd June 2016 with the launch of "SATHYABAMASAT" in association with ISRO. Sathyabama has emerged as a leading Institution and achieved excellence in higher education to international standards owing to its research and academic excellence.



Campus View of Sathyabama Institute of Science and Technology



Layout Plan of the Sathyabama campus

Vision of the Institute

Sathyabama Institute of Science and Technology envision being a leading multidisciplinary Institute, producing world class talents to address global challenges.

Mission of the Institution

- To attain excellence in Education and Research through effective collaboration with Industries and other International/National organisations
- To consistently remain an attractive ecosystem for students and employees, a hub of innovation for researchers and an incubating platform for entrepreneurs
- To create an inclusive environment that caters to all forms of diversity
- To engage in outreach and community development activities, creating an impact on the society

Objectives of the Institution

The Institution endeavours to prepare its student for fulfilling careers by enabling them to realize their full potential and by inculcating in them the spirit of intellectual enquiry, independent thinking, self-reliance, leadership, co-operation, expression of cultural talents and service to society.

Core Values of the Institution

Sathyabama Institute of Science and Technology is committed in practices that are fair, honest and objective in dealing with students, faculty members and other stake holders, which fosters a climate of ethical conduct, respect, responsibility and trust. Sathyabama Institute of Science and Technology believes in stakeholder partnership for holistic Institutional development and to promote a healthier working atmosphere with the following core values.

- **Integrity:** We emphasise on high ethical standards in our actions and are committed in being transparent, responsible and accountable.
- **Nobility:** We inculcate ethical values parallel to the curriculum enrichment to the student community, so that they outstand amongst their peers irrespective of the environment in which they are placed.
- **Sustainability:** We develop, practise and emphasize protocols in academics and research enabling ourselves to be competitive, ensuring environmental and social sustainability.
- **Partnership and Collaboration:** We encourage academic and research partnerships with organisations and Universities at National and International level. We value and applaud the relationships we have with our partners.
- **Inclusion and Diversity:** We are committed to facilitate diverse student and Faculty culture and encourage multi-cultural learning in the University. We provide opportunity to work, learn and embrace the diversity of every individual irrespective of race, gender, religion, nationality, age, social background, physical ability and mental competence.

- **Responsibility:** We believe in Education for all. We take pride in owning responsibility and commitment towards society by supporting the education of students from rural, economically backward communities, differently abled and acid attack victims with full Financial Assistance.
- **Excellence:** We focus on excelling in all our academic and research activities, ensure best academic quality in our programmes, encourage innovations and receptive to the ever-changing needs of our stake holders.

About WasmanPro Environmental Solutions LLP

WasmanPro has in-depth understanding and practical experience with Environmental and Energy Audit, Green Practices, Environmental Policies, Regulatory Programs, and Remediation Strategies. The firm offers comprehensive regulator address a full spectrum of air, water, wastewater and hazardous waste issues, regulations, and policies. Drawing up on the collective experience of the team, it has developed technically sound and cost-effective strategies to achieve environmental compliance. The development and implementation of these strategies have led to:

- Faster Consent Management Services
 - Reducing waste streams
 - Improving mechanisms to track consent conditions
 - Executing effective monitoring
 - Implementing phased compliance and clean up strategies

Core Environmental Compliance & Remediation Services

WasmanPro helps clients in adopting advanced environmental sustainability, maintain environmental compliance, and reduce environmental diverse set of core services including:

- | | |
|--|--|
| • Environmental Compliance | •Ground water and Sub surface Investigations |
| • Air Emission Inventories and Reporting | •Green Audit |
| • Air Quality and Clean Air Act Compliance | •Soil Management Plans |
| • Environmental Due Diligence | •Hazardous and Solid Waste Management Plans |
| • Environmental Impact Assessment | •Remedial Design and Monitoring |
| • Site Investigation and Feasibility Studies | •Brown field Cleanup |
| • EHS Audits & Training | •Pollution Prevention Plans |
| • Environmental Management System and | •Environmental, Health and Safety |

Compliance Auditing

- Environmental Monitoring

Plans

- Hydro geological studies

M/S WasmanPro Environmental Solutions LLP has also undertaken several Environmental and Energy Audits as per NAAC requirements.

WasmanPro Team

M/S WasmanPro Environmental Solutions LLP is spearheaded by Dr. K. Karthikeyan, a certified Lead Auditor for ISO 14001, sha 18001 certified by CII-NABET certification program.

Dr. Karthikeyan was former Member Secretary of TNPCB and has vast experience in the field of Environmental Impact Assessment (EIA), Marine Impact Assessment (MIA), Solid Waste Management (SWM), Environmental and Social Management Framework (ESMF), Disaster Management Plan (DMP), Risk Assessment, Water and Wastewater treatment, Training of Engineers. The Company is also lead by senior retired professionals like G. Sathiamoorthi, Former Engineering Director Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), V. Ganesan, Former Member State Environmental Impact Assessment Authority, Government of India, K.M.M. Annamalai, with more than 35 years of experience in EPC Project Management in various private sector companies, T.S. Murli with rich experience in various project executions and project management in several private sector companies. WasmanPro has talented & committed employees as engineers and scientists across multiple sectors.

Internal Audit Team

The audit is conducted by members of the Centre for Waste Management with due support and association from the faculty members of various teaching and non-teaching departments of the institution.

Following members are associated in the Audit

Centre for Waste Management

Dr.Dawn S S

Dr.J.Arun

Dr.Nirmala N

Dr.P.Priyadharsini

Dr.M.Sivasakthi

Dr.R.Sathish Kumar

Mr.A.Santhosh

Mr.J.Jeyakanth

Ms.A.Bhuvaneshwari

Chapter 2

Auditing for Water Management

Water is a natural resource; all living matters depend on water. While water is available in many natural environments, in human settlements potable (drinkable) water is less readily available. We need to use water wisely to ensure that drinkable water is available for all, now and in the future. A small drip from a leaky tap can waste more than 180 liters of water to a day; that is a lot of water to waste - enough to flush the toilet eight times! Aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water. It is therefore essential that any environmentally responsible institution examine its water use practices.

General Methodology of Auditing

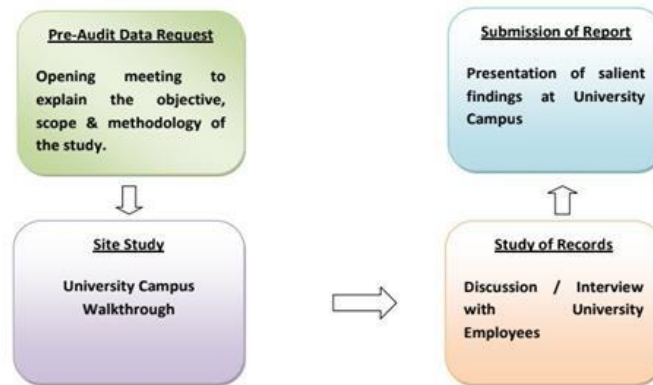
The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Environmental Policy adopted by the institution is according to NAAC Criteria (MoEFF & CC Guidelines). The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a step by step process comprising of:

- 1. Data Collection** – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements. Following steps were taken for data collection:
 - The team went to each department, Library, canteen, hostels, research centers etc.
 - Data about the general information was collected by observation and interview.
 - The power consumption of appliances was recorded by taking an average value in some cases.
- 2. Data Analysis** - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan

provided by the Tamilnadu State Electricity Board (TNEB). Data related to water usages were also analyzed using appropriate methodology.

3. **Recommendation/Suggestions**–On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended.

The above target areas particular to the college was evaluated through questionnaire circulated among the students for data collection. Five categories of questionnaires were distributed. The formats of these are given below.



Audit Stages

Sewage Treatment Plant

**Sewage Treatment Plant at Sathyabama University Campus
(Capacity of 1.50 Million Liters per Day)**

Total population	13722 persons
Staying in hostels	6384 persons
Day-scholars	5635 persons
Boys’ hostel rooms available	620 Nos
Number of boys in one room	6
Staying boys strength 620*6	3720 boys
Girls’ hostel rooms available	444 Nos
Number of girls in one room	6
Staying girls strength 444*6	2664 girls
Total Hostlers	6384 students
Input flow to STP	1070928 liters (1.1MLD)
STP designed for	1.5 MLD

Design Details

STP Design Capacity : 1500 m³ / day

Hours of Operation : 20 Hours

Average Flow rate : 75 m³ /Hr

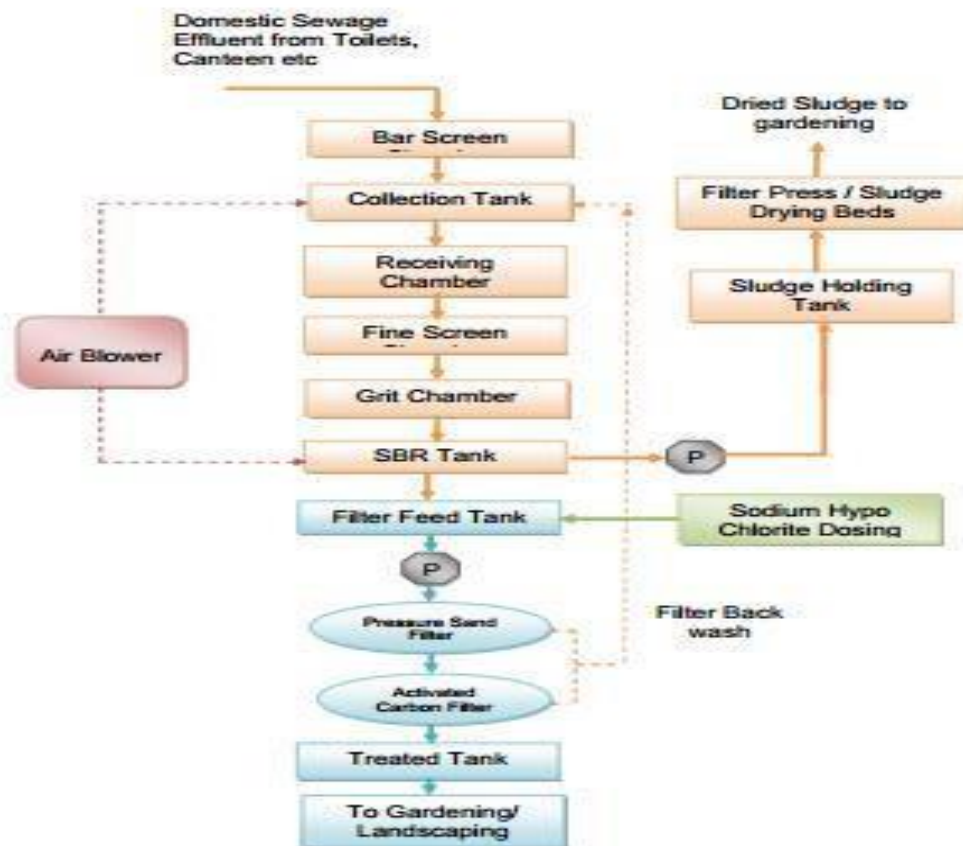
Table 1: Characteristics of Raw Sewage

<u>SLNo</u>	Parameters	Inlet Character	Unit
1	Flow	1500	m ³ /day
2	pH	7.2	-
3	BOD at 3 days	400	mg/l
4	COD	900	mg/l
5	TSS	400	mg/l

The BOD and COD values are displayed higher than the raw sewage characteristics as high strength organic loading are coming from institute, medical college and hospital, mess, labs.

Sewage Treatment Plant

Capacity - 1500 KL/Day



Flow diagram of the treatment process in the STP

Sewage Treatment Plant Description:

1. Primary treatment

- BAR SCREEN CHAMBER for removing floating particles like paper waste, cloths present in the sewage effluent.

Peak flow: 225 m³ /h,

Area provided : 3.75 m²

- RAW SEWAGE COLLECTION TANK It is a balancing tank is provided with coarse bubble aeration system to keep the effluent in live condition without septic.

Average flow: 75.0 m³/hr,
Retention time : 8.00 hrs,
Volume required: 600 m³ and
Volume provided: 624 m³

- FINE SCREEN CHANNEL is a manual type screen with 10 mm spacing to remove the fine floating particles present in the sewage effluent.
- GRIT CHAMBER MANUAL it is a sedimentation basin to remove the inorganic particles such as sand, gravel, grit and egg shells.

2. Biological treatment

- Sequential Batch Reactor (SBR) BASINS, treated sewage is pumped into the two SBR Basins which are work in sequential way and influent flow is controlled using automatic sluice gates.

Operation time 4 hours
Average flow : 75.0 m³ /day,
Frequency : 12 Batches / Day,
SBR Process : 4.00 Hrs
Size of SBR tank : 15.0 x 6.0 x 5.0 (LD)+0.5 (FB)

- CHLORINATION TANK - For the purpose of disinfection.

Backwash period : 4 hrs
No of pumps: 2 any (1 working + 1 standby)

PRESSURE SAND FILTER - It is a Mild Steel two coats of Epoxy paint and filled with filter media

- Top portion of the filter is filled with filter sand.
- Middle portion of the filter is filled with two types of Sand.
- Bottom portion of the filter is filled with three layers of pebbles
- Filter back wash has to be carried out

Size of vessel provided : 2.5 m dia
Height : 1.5 m

ACTIVATED CARBON FILTER - To remove organics and the filter back wash has to be carried out based on the differential pressure between the inlet and the outlet.

Size of vessel provided : 2.5 m dia
Height : 1.5 m

- SLUDGE DISPOSAL- A sludge pump is provided to remove the solids at the bottom of SBR tank.

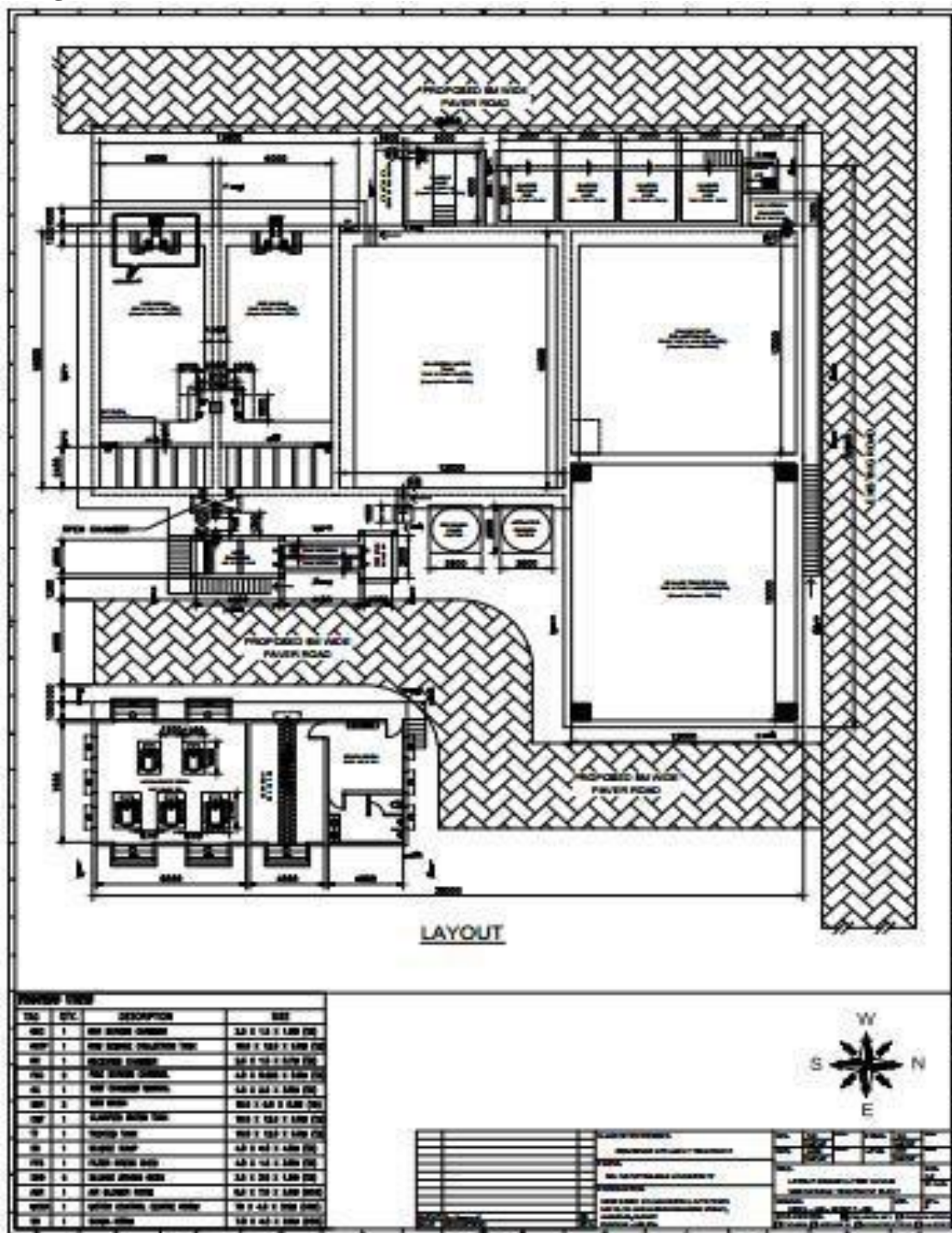
It is pumped to a Sludge Holding tank and sent to the filter press for sludge drying.

Average flow : 75.0 m³ / day
Suspended solids : 400mg/l

- TREATED TANK - The treated water can be utilized for gardening and flushing.

Retention time considered : 7.0 hrs @ average flow rate
Volume required : 525 m³
Volume considered : 810 m³
Size of the treated sewage storage tank: 15.0 x 12.0 x 4.5 (LD)+0.5(FB)

Layout of Sewage Treatment Plant



Layout of the STP

SIZE OF UNIT OPERATION OF SEWAGE TREATMENT PLANT

S.No	Description of unit operation of STP	Size/Capacity (M)	Liquid Volume (KL)	Free Board Volume (KL)
1	Bar Screen	2.5 × 1.5 × 1.0M (TD)	-	3.75
2	Raw Sewage Sump	15.0 × 12.0 × 4.0M (LD) + 1.0M (FB)	720	180
3	Receiving	2.5 × 1.5 × 0.7M (TD)	-	2.6

	Chamber			
4	Fine Screen Channel	4.0 × 0.525 × 0.8M (TD)	-	1.7
5	Grid Chamber Manual	4.5 × 2.5 × 1.5M (LD) + 0.5M (FB)	16.875	5.625
6	SBR Basins – I	15.0 × 6.0 × 4.5M (LD) + 1.0M (FB)	405	90
7	SBR Basins - II	15.0 × 6.0 × 4.5M (LD) + 1.0M (FB)	405	90
8	Clarified Water Tank	15.0 × 12.0 × 2.8M (LD) + 2.2M (FB)	504	396
9	Treated Tank	15.0 × 12.0 × 4.5M (LD) + 0.5M (FB)	810	90
10	Sludge Sump	4.0 × 4.0 × 3.5M (LD) + 0.5M (FB)	56	8
11	Sludge Drying Beds (4 Nos)	3.0 × 3.0 × 1.5M (TD)	28.8	25.2

SEWAGE TREATMENT PLANT PHOTOS



Unit operations of STP



STP-SBR-Unit



STP-Sand Filtration, Carbon Filtration

Questionnaire Used for the Audit

1. Quantity of water used to watering the ground?
2. Quantity of water used for bus cleaning?(liters per day)
3. Amount of water for other uses?(items not mentioned above)
4. At the end of the period, compile a table to show how many liters of water have been

used in the college for each purpose

5. If there is water wastage, specify why.
6. How many of the taps are leaky? Amount of water lost per day?
7. Are there signs reminding people to turn off the water?
8. How many water fountains are leaky?
9. How can the wastage be prevented/stopped?
10. Locate the point of entry of water and point of exit of waste water in your college.
11. Where does waste water come from?
12. Where does the waste water go?
13. What are the uses of waste water in your college?
14. Is there any treatment for waste water?
15. What happens to the water used in your labs? Whether it gets mixed with ground water?
16. Is there any treatment for the lab water?
17. Whether green chemistry methods are practiced in your labs?
18. Write down four ways that could reduce the amount of water used in your college.
19. Record water use from the college water meter for six months.
20. Bimonthly water charges paid to water connections if any,
21. Is there any water conservation plan in the college?
22. Does your college harvest rainwater?
23. If yes, how many rain water harvesting units are there?(Approx .amount)
24. Is there any water less toilets?
25. Is drip irrigation used to water plants outside?

26. Area of the college land without tree/building canopy.
27. Is there any water management plan in the college?
28. Are there any water saving techniques followed in your college? What are they?
29. Please share some idea on how your college could save more water.

Audit Stage

In Sathyabama institute of Science and Technology, Chennai Green auditing was coordinated with WasmanPro Environmental Solutions LLP. The entire exercise was conducted by involving different student groups, teaching and non-teaching staff. The green audit began with the team conducting walk through inspections of all the different facilities at the college, determining the different types of appliances and utilities (lights, taps, toilets, fridges, etc.) as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and learners were interviewed to get details of usage, frequency or general characteristics of certain appliances. Data collection was done in the sectors such as Energy, Waste, Greening, Carbon footprint and Water use. Institution records and documents were verified several times to clarify the data received through survey and discussions. The methodology adopted for this audit was a step by step process comprising of:

- **Involvement of Student Clubs and Forums**
- **Site inspection**
- **Interviews**
- **Review of Policies**
- **Review of Documents and Records**



Audit Stage Meeting between Sathyabama and WasmanPro officials



Audit Discussion



The Audit Team of WasmanPro Environmental Solutions LLP and Centre for Waste Management



Audit Team visits the STP

Chapter 3

Post Audit Stage

The base of any Environmental audit is that its findings are supported by documents and verifiable information. The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and in the correct manner.

The real value of Environmental audits is when they are carried out at defined intervals, and their results can illustrate improvement or change over time.

Although Environmental audits are carried out using policies, procedures, documented systems and objectives as a test, there is always an element of subjectivity in an audit. The essence of any Environmental audit is to find out how well the organization, departments and equipment are performing keeping the environmental sustainability in mind. Each of the three components is crucial in ensuring that the organization's environmental performance meets the goals set in its green policy. The individual functioning and the success of integration will all play a role in the degree of success or failure of the organization's environmental performance.

Key Findings and Observations : Water Audit

Main water uses in the campus

1. Gardening
2. Cleaning
3. Drinking
4. Toilets
5. Bathrooms
6. Hostel
7. Cooking
8. Washbasin
9. Lab
10. Canteen
11. Office uses
12. Floor Cleaning

Source of Water

Number of Tankers	25-30 per day (during full strength), (of 12,000lts capacity)
Number of bore wells	3 bore well within 25-30 kms from institution (One owned, two hired)
Number of ponds	Nil

Water Storage

Water Storage

Number of Raw Water Tank	4
Number of Fire Water Storage Tank	1
Number of Treated Water Tank	3 -(50,000lt) (3-4 days it will get filled)
Number of Rain Water Collection Tank	1
Number of water tanks for storage	9
Total capacity of water storage tank	1 MLD

Total Qty of Water Pumped from these Storage Structures to distribution tanks

- ❖ **No. of distribution tanks with Tank capacity :30 -50 thousand L**
 - Gents hostel : 3 tanks
 - Ladies : 4 tanks
 - Dental: 2 tanks
- ❖ **No. of distribution tanks with Tank capacity: 25-50 thousand L**
 - Small blocks : 3
 - Other blocks :7 tanks
- ❖ **Syntax tanks with capacity (5000L-20000L)**
 - Number of Syntax tanks -15

Various points of Usage of Water

RO Plant 40000 L Capacity	2 tanks (20000 L each)
Number of Urinals and Toilets	688,1475
Number of water less urinals	nil
Number of bathrooms	975
Number of water taps	1685
Water taps in laboratories	114
Number of Washbasin	375
Water pumps–Nos. HP each	6 (10HP)
Quantity of water pumped	25 - 30 Lorries (12000L)

Number of Water Cooler Details

SL.NO	Location	Numbers
1	Block (Research)	6
2	Block (admin)	6
3	Block (hospital)	12
4	Block (academics)	9
5	Block (dental)	8
6	Centre for Advanced Studies	10
7	Hostel	5
8	Hostel	4
9	Hostel (New Blocks)	8
10	Work shop 3 & 4	2
11	Library	8
12	Ladies Hostel	7
13	Mess	11
14	Canteen	Nil
	Grand Total	96

Various Points of Water Wastage

Number of Leaky Taps	Nil
Number of leaky pipes	Nil
Number of Urinals	Nil

Treated Water

No. of water treatment system in place	1
Total Quantity Water being treated	1.1 MLD
Total Quantity Water Reused	0.88 MLD

Number of Leaky Tanks	Nil
Overflow water Wastage	Max 5 mts overflow- immediate switch off followed
Any Evaporation Loss from Storage Tanks	No Evaporation Loss as the Storage Tanks are completely covered

Chapter 4

Audit Findings

Water

Water is precious. Water management is important for every community for its conservation. The principles of circular economy defined to have better water usage, treatment, Recycling and Conservation. The institution should be aware on establishing water quality and effluent standards, as well as monitoring wastewater quality.

The main source of water for the University is water bought from the lorry tankers. 12,000 litres capacity tankers nearly 25-30 per day are bought on a daily basis. This water is used by the college for its different uses. The three bore wells are located 25- 30 kms from institution. Two of these wells are own wells and one rental. Water from the public water supply is not utilized. Totally 4 water storage tank are located inside the Campus to store water of capacity 10,00,000 liters.

The Storm water drainage was present in the campus roadways connecting each building whereas rainwater is collected during the rainy seasons. Only Minimum amount of water is lost per day through the Improper closing of the taps, overflow and other misuses. This can be prevented by generating more awareness. There are no water leakages as the leaky taps are repaired whenever such leaks come to the notice of the authority.

The University has two Reverse Osmosis plant of 20000 L capacity each which is used to meet the drinking water demand of the inmates of the hostel.

Sewage treatment Plant of Capacity 1.5MLD of one No is installed to treat the amount of wastewater that were recycled and utilized for gardening.

Awareness programs about conservation and management of water for sustainable use is highly beneficial in this college.

Sewage Treatment Plant

Sewage treatment plant with a capacity of 15, 00,000 liters /day. The process adopted for this treatment is by Sequential Batch Reactor. The major parts of this system are as follows:

- Bar Screen
- Raw Sewage Sump

- Receiving Chamber
- Fine Screen Channel
- Grid Chamber Manual
- SBR Basin
- Clarified Water Tank
- Treated Water Tank
- Sludge Sump
- Sludge Drying Beds
- Sand filter
- Activated carbon filter
- Treated water collection tank

Recommendations

- ❖ Liquid waste generated from health care facilities shall be pretreated before mixing with other wastewater
- ❖ Display Posters to motivate students to conserve water (close the taps immediately after use)
- ❖ Develop Portal where students can report leaky taps whenever it comes to their notice
- ❖ Replace conventional flush system with Latest Dual model Flush system to conserve water- as at present the toilet commodes have 10 litre flush which can be replaced with 3/6 litres or 2/4 litres dual flush cisterns. This can reduce water use by around 30-40%
- ❖ Installation of water meter to analyze water consumption
- ❖ It is recommended that flushing should be avoided for disposing toilet paper
- ❖ Need monitoring and controlling overflow from storm water drains in case of heavy rains.
- ❖ Installation of more Rainwater Harvesting pits is recommended.
- ❖ Installation of artificial ground water recharge structure
- ❖ Flow fixtures could be installed on the taps that are used for watering the plants as it controls, deliver a precise volume of water at faucets, showerheads, and hose outlets
- ❖ Use of Drip Irrigation is recommended for gardening

Follow Up Action and Plans

Environmental Audits are exercises which generate considerable quantities of valuable information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and that action plans and implementation programs result from the findings.

Audit follow up is part of the wider process of continuous improvement. Without follow-up, the audit becomes an isolated event which soon becomes forgotten in the pressures of organizational priorities and the passing of time.

Environmental Education

The following environmental education program may be implemented in the college before the next Environmental auditing:-

- Training programs to be given in solid waste management, liquid waste management, water management and conservation, tree plantation drives, energy management, E-Waste management, Biomedical Waste Management, pollution monitoring methods, rainwater harvesting methods, artificial ground water recharge methods, Plastic Waste Management.
- Increase the number of display boards for awareness such as – save water, save electricity, now a stage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.
- Paste More Brochure to create awareness about disposal of waste to color coded bags
- Increase the awareness about segregation of waste at source itself- dry waste, wet waste, non- biodegradable waste, hazardous waste.
- Encourage to reuse Electronic Products rather than discarding
- Encourage students to give the damaged electronic product to the manufacturer while buying new product
- Activate the environmental clubs
- Set up model rain water harvesting system, rain water pits, for providing proper training to the students- even encourage them to transfer this knowledge from lab to land thereby benefitting the local people.
- Conduct exhibition of recyclable waste products and demonstration how it can be reused.

CHAPTER 5

Audit Conclusion

The Environmental audit for Sathyabama University, Chennai, brings out the commitment on Environment with a greater notification by the management and teaching professionals and student community. The University has put in a great effort towards water conservation and management. The University is maintaining Marshy Land having an area of 5,120 sq m. This will help in Ground Water Recharge and help in maintaining the ground water table in the nearby areas. It also acts as a habitat for the aquatic birds and a source of drinking water to small animals and birds in the nearby area. This Marshy land also acts as a natural rain harvesting structure also. The University is having own STP to which all the waste water is been sent. The water is been treated using Sequential Batch Reactor and the water is further reused for gardening and other purposes. There by decreasing the water foot prints of the University. The Storm water is also diverted to the unit so the proper reuse of rain water is happening.

The audit has show a significant effort put in by the University in Waste Management, Water Management and Conservation, in Maintaining a Green and Eco friendly Campus focusing on reduction in Carbon Foot Print and Water Footprint. This shows the institutions commitment towards for its environmental and social responsibility.

I would like to appreciate the team effort and the commitment by the management for such a great campus activity.

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