



Global Waste
Cleaning Network

Member Ref: GWCN/M22.926



CERTIFICATE

This is to certify that

Lakshmibai National Institute of Physical Education Gwalior (M.P) India 474002

has been assessed by us for institutional performance against its environmental policies and objectives to fulfil the requirement of

Environmental Audit

As per the findings detailed in the submitted report, it has been verified that the Institute's environmental protection measures meet the required standards and are deemed satisfactory.

enviraj
CONSULTING

Audit Year: 2023-24

Audit Date: 12/11/2024



Rajdeep Pandey

Director

QCI Certified EMS Auditor

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ENVIRONMENTAL AUDIT REPORT

2023-24



Lakshmibai National Institute of Physical Education
Gwalior, Madhya Pradesh

Submitted by:



Enviraj Consulting Private Limited
(An ISO 14001:2015 & 50001:2018 Certified)

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Quality Information

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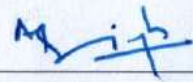
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Executive Summary

The purpose of this Environmental Audit is to assess the environmental performance of the Lakshmibai National Institute of Physical Education (LNIFE) in alignment with relevant environmental laws and guidelines. This audit aims to evaluate the effectiveness of the institute's environmental measures and provide recommendations for continuous improvement.

The audit analysed data for the year 2023-24 across three key areas: air quality, water management, and solid waste management. The evaluation involved assessing the quality, usage, management, disposal, and discharge in these areas, with findings compared against regulatory and industry standards.

Key Findings:

i. Air and Noise Quality

- Ambient air quality on campus remains clean, with greenery contributing to a healthy environment.
- Noise levels across various locations are within permissible limits. The highest noise levels recorded were at the mess (56-59 dB), while the lowest were observed at the Admin Building (42-51 dB).

Recommendations: Install real-time ambient air and noise monitoring systems to ensure continuous data collection and maintain oversight of air quality and noise levels. Conduct annual air and noise monitoring of DG sets.

ii. Water Management

- The institute relies on 19 borewells, with a total estimated daily water consumption is 2,95,945 Liters. Additionally, rainwater harvesting pits have been implemented on campus to help recharge groundwater.
- Approximately 507 water tanks are used for storage, with regular cleaning conducted at scheduled intervals to ensure water quality.
- Softeners and RO plants are employed to provide safe drinking water, keeping TDS levels below 150 mg/L.

Recommendations: Install water meters and a sewage treatment plant, implement regular water quality monitoring, annual water audits, and micro-irrigation systems, while developing Water Performance Indicators (WPIs) and monitoring groundwater levels to improve water efficiency and sustainability on campus.

iii. Solid Waste Management

- The Segregation Practices: The institute has adopted a two-bin system for dry and wet waste segregation.
- The composting plant is installed which processes 40 kg of kitchen waste daily.
- E-Waste Management: E-waste is sold along with other types of waste to the recycler on periodic basis
- SUP-free campus policy is well established.

Recommendations: Implement waste quantification, segregate and recycle materials through EPR-registered recyclers, establish a composting unit, install waste bin signage, and reduce paper usage through double-sided printing and a paperless office culture.

1. Introduction

Environmental auditing is essentially an environmental management tool for measuring the effects of institutional activities on the environment (air, water, and land) against set standards or environmental laws, as well as investigating, understanding, and identifying gaps in existing institutional performance and assisting in its improvement through recommendations.

Therefore, to assess its environmental performance as well as to meet with NAAC Criteria 7; Institutional Values and Best Practices, the Institution has undergone the Environmental Audit. This audit evaluates an organization's environmental performance including air, water and waste management, while also suggests the ways to improve it.

1.1 About Institute

The Lakshmibai National Institute of Physical Education (LNIFE), situated in Gwalior, India, has a rich history and a significant impact on the fields of Physical Education, Sports, and Research. Established as Lakshmibai College of Physical Education (LCPE) in August 1957 by the Ministry of Education & Culture, Government of India, the institution evolved over the years. It initially operated as an affiliated college of Vikram University, Ujjain, and later became part of Jiwaji University, Gwalior, in 1964. Recognized for its national importance, the institution was renamed Lakshmibai National College of Physical Education (LNCPE) in 1973. In 1982, it achieved the status of an "Autonomous College" of Jiwaji University and, in 1995, gained recognition as a "Deemed to be University," subsequently being named Lakshmibai National Institute of Physical Education (LNIFE).

LNIFE is dedicated to elevating the status of Physical Education through the production of high-quality teachers and leaders. It introduced the three-year Bachelor of Physical Education (BPE) in 1957, followed by the two-year Master of Physical Education (MPE) in 1963. A milestone was reached in 1980 when it became the first institution in India to offer a one-year program of Master of Philosophy (M.Phil.) in Physical Education. The institute also provides

Ph.D. programs on both regular and part-time bases, along with various Certificate/Diploma/PG Diploma courses in different disciplines of Physical Education and Sports.

To meet professional degree standards and international benchmarks, the Bachelor of Physical Education (B.P.E.) course duration was extended to four years, renamed as Bachelor of Physical Education (B.P.Ed.), an integrated program. This course received recognition from the National Council of Teacher Education (NCTE) and University Grants Commission (UGC) in 2006.

LNIFE holds the distinction of being the first "Deemed to be University" in the field of Physical Education in India, marking its unique place in South Asia. The institution has played a pioneering role in shaping the landscape of physical education and sports in the country. Through its comprehensive academic programs and a commitment to excellence, LNIFE continues to be a leading institution for the development of educators and leaders in the field of Physical Education and Sports.



1.2 Environmental Policy of an Institute

The institute established its environmental policy in 2017 with the primary objective of maintaining a clean environment for students and all stakeholders. The policy focuses on preserving and enhancing greenery on the campus, conserving water, utilizing solar energy, recycling waste and wastewater, and reducing the overall carbon footprint. Throughout the year, the institute organizes various campaigns to raise environmental awareness among students and residents of the campus



Green Diwali Celebration on Campus: No Single-Use Plastics or Firecrackers [12.11.2023]



स्वदेश ग्वालियर - मुख्य संस्करण
2 Oct 2023

पूरा-पूरा योगदान देना है। इस मौके पर श्री प्रजापति, सतेंद्र सोलंकी आदि उपस्थित थे।



मेला ग्राउंड तक चलाया सफाई अभियान

भारत सरकार की स्वच्छता ही सेवा कार्यक्रम के अंतर्गत एलएनआईपीई संस्थान के छात्रों ने सैनिक पैट्रोल पंप से मेला ग्राउंड तक स्वच्छता सेवा में सहयोग प्रदान किया। स्वच्छता ही सेवा कार्यक्रम में कुलपति प्रो.जी.डी.घई एवं प्रभारी कुलसचिव अमित यादव और संस्थान के खेल विद्यार्थी एवं अधिकारी और कर्मचारी मौजूद रहे।

Swachhta Abhiyan [02.10.2023]



As part of the LiFEStyleForEnvironment initiative, students have pledged to save the environment and make positive changes in their daily lives [29.09.2023]



As part of the Azadi Ka Amrit Mahotsav, under the Meri Mati Mera Desh program by NSSLNIPE, 75 trees were planted at various locations across the institute campus [09.08.2023]

2. Objectives of the Audit

The objectives of environmental audit are:

- To determine the environmental performance status of an institute.
- To monitor ambient environmental condition of the air and noise in the campus.
- To assess water usage and solid waste management system.
- To ensure compliance with relevant environmental laws and regulations.

3. Methodology

The methodology adopted for this audit was a three-step process comprising of:

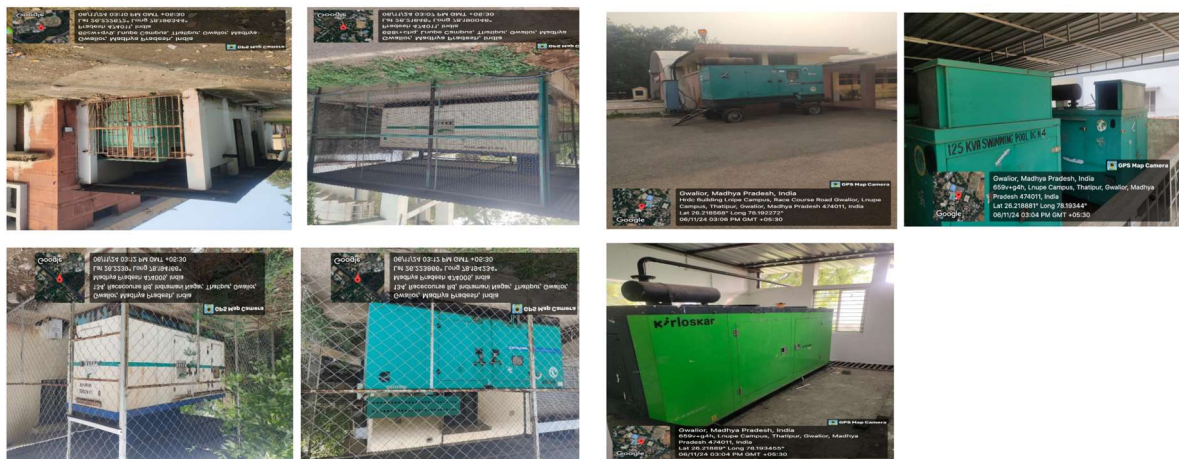
1. **Data collection:** In this phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements. Following steps were taken for data collection:
 - Site Visit
 - Data about the air & noise, water, solid waste was collected by observation and interview.
2. **Data Analysis** - The collected data analysed and compared with the relevant standards.
3. **Findings & Recommendations** – On the basis data analysis results and site observations, recommended were made for further improving environmental performance of the institute.

4. Findings and Recommendations

4.1 Air and Noise

4.1.1 Ambient Air Quality

During the site visit, it was observed that the air quality appeared clean, with a significant amount of greenery contributing to a healthy campus environment. The emission sources in the campus include internal combustion engine (ICE) vehicles, PNG combustion, and emissions from the diesel generator used as a power backup.



DG Sets

4.1.2 Noise level

The noise level measurements were carried out using a noise meter at three locations. The noise levels measured on campus are found within the permissible limits.

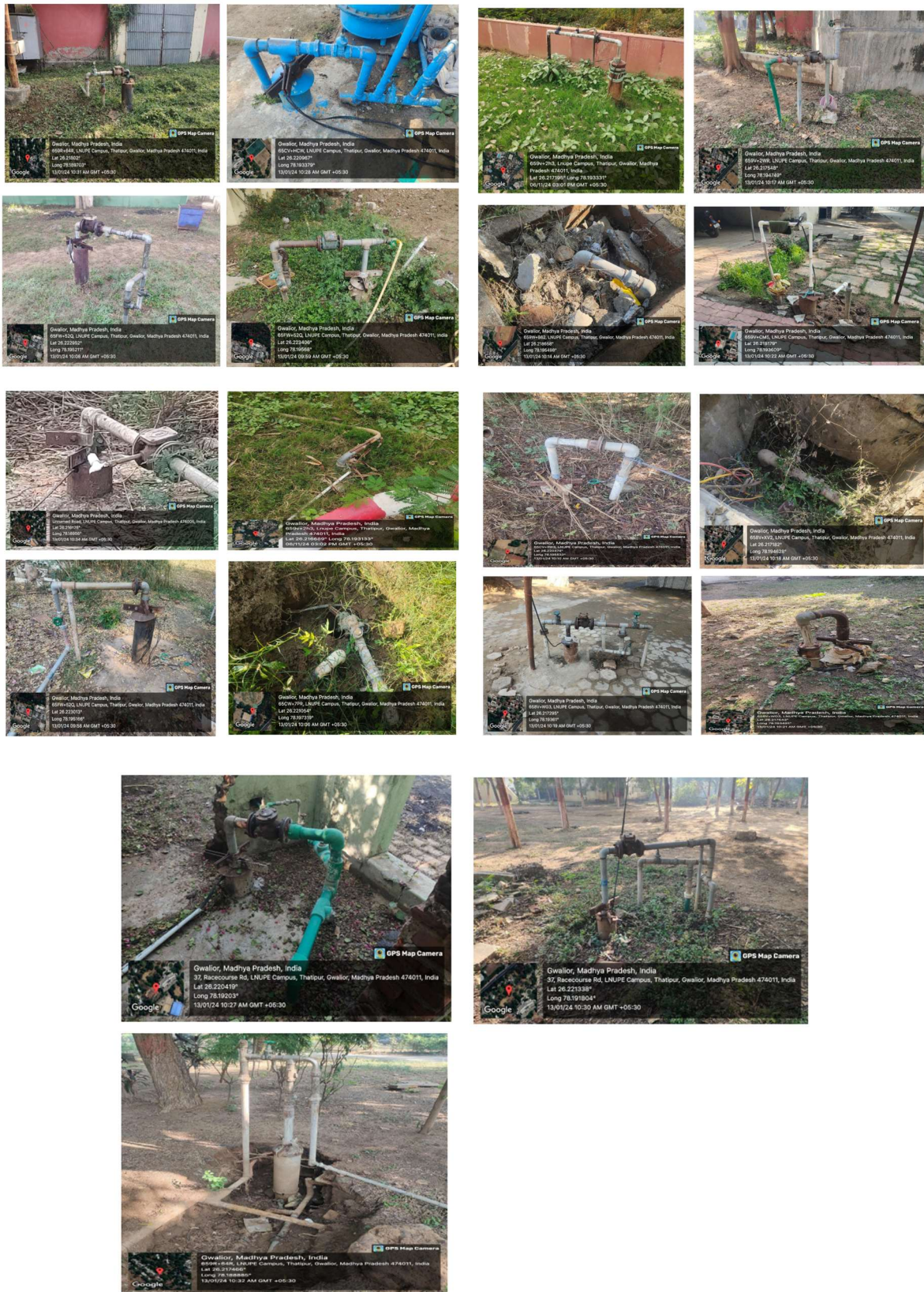
Sr. No	Location	Min Reading (dB)	Max. Reading (dB)
1	Admin Building	42	51
2	Mess Area	56	59
3	Main Gate	51	58

Recommendations

- ✓ The ambient air quality is generally clean. On closer monitoring of historical data from the nearest monitoring station (MPPCB-City Center), it is found that air quality deteriorates in the region during the winter season. Therefore, real-time monitoring of air quality within the campus is recommended.
- ✓ The campus is equipped with seven DG sets for power backup. Conducting annual noise and stack emission monitoring is recommended to monitor emission levels as well as ensure the health of the DG sets.

4.2 Water Management

Groundwater serves as the principal water supply source for the institute, with a total water demand of approximately 2,95,945 Liters per day. Currently, all water requirements are met through 19 borewells.



Geotagged photos of 19 borewells

4.2.1 Water Usage

The campus utilizes water for various purposes, including drinking, toilet facilities, the swimming pool, and maintenance of green spaces. The approximate water usage pattern is as follows:

S. N	Description	Daily Water Consumption (LPD)
1	Domestic water requirement (Total permanent resident in the campus including staff, faculty and students: 820; Per capita demand @ 135 LPD)	1,10,700
2	Kitchen and Dining (@70 LPD)	57,400
3	Visitors @ 15% Population (@15LPD)	1,845
4	Waterbody makeup (Indoor and outdoor swimming pool)	4,000
5	Maintenance of Grass football field (x2) and Hockey field (x1) (@3LPD/sq.m)	75,000
6	Maintenance of other green spaces	45,000
7	Road washing	2,000
Total		2,95,945



Football Field and Irrigation Pumping System

4.2.2 Water Quality

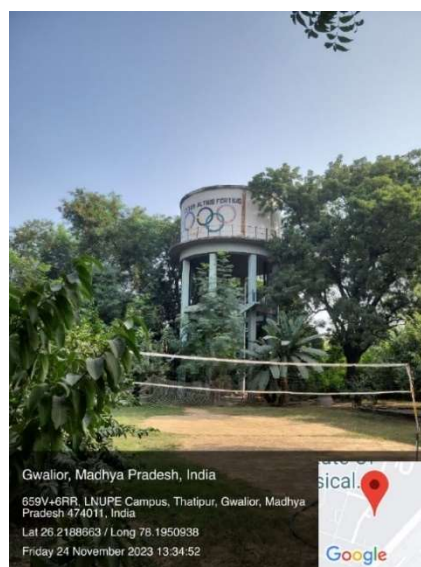
The prevailing groundwater hardness in the campus is high. To address this issue, a multiple RO purifiers and water softening plant has been installed to improve the water quality. The drinking water TDS levels are maintained below 150 mg/L.

S.N	Capacity of RO Units	Nos
1	1000 LPH	1
2	250 LPH	19
3	100 LPH	4
4	50 LPH	4
5	20 LPH	5
6	10 LPH	1
7	Water Softeners	2

The institute is comprised of approximately 507 water tanks. To ensure water quality in these tanks, regular tank cleaning is conducted, as outlined in the table below:

S. N	Tank Location	Capacity	Nos	Cleaning Frequency
1	Hostels and Mess	Up to 5000 Liters	165	Once every two months
2	Non-residential Buildings	Up to 5000 Liters	150	Once every Four months
3	Residential buildings including VC bungalow	Up to 1000 Liters	188	Once every six months
4	Overhead Tanks	Up to 35000 Liters	4	Once a year & as required

This schedule ensures the consistent maintenance and cleanliness of the water tanks throughout the institute.



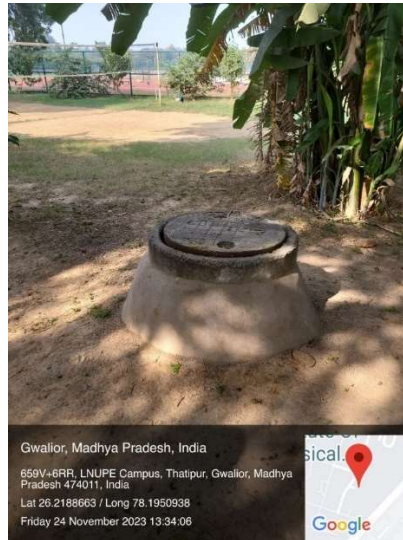
Overhead Water Tank

4.2.3 Wastewater Treatment

Currently, the institute does not have a sewage treatment plant in place; however, provisions for a sewage treatment system have been included in the design for the new boys' hostel.

4.2.4 Rainwater harvesting

Since groundwater is the primary source of water for the institute, rainwater harvesting recharge pits have been implemented across the campus to enhance groundwater replenishment.



Rainwater Harvesting Recharge Pit near Overhead Water Tank

Recommendations

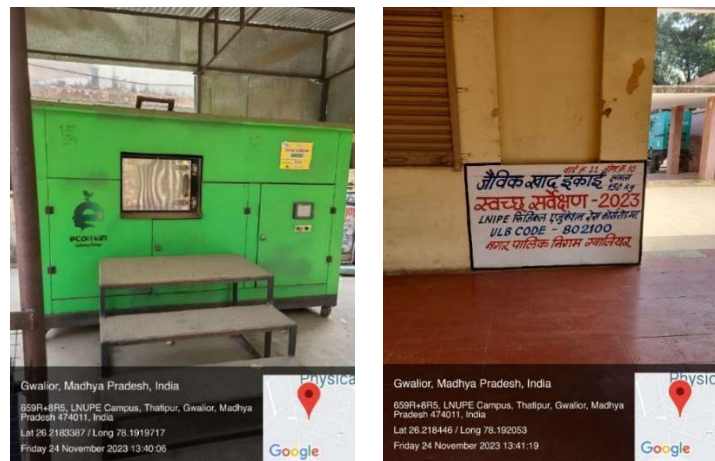
- ✓ **Install Water Meters:** To record actual water consumption, install water meters at each borewell.
- ✓ **Install Sewage Treatment Plant:** An on-campus Sewage Treatment Plant is recommended to treat and reuse wastewater generated from residential areas for gardening purposes, thereby reducing the demand for freshwater for irrigation.
- ✓ **Monitor Drinking Water Quality:** Periodically check the quality of drinking water from each RO plant in accordance with IS 10500 standards.
- ✓ **Conduct Annual Water Audits:** Perform annual water audits to analyse consumption patterns across departments, identify losses, and improve efficiency.
- ✓ **Develop WPIs (Water Performance Indicators):** Establish Water Performance Indicators (WPIs) to effectively monitor and evaluate the efficiency of water usage across the campus. These indicators could include metrics such as daily water consumption per capita, rainwater harvesting efficiency, groundwater recharge levels, and water quality compliance. Regular analysis of WPIs will provide insights into water conservation efforts, help identify areas for improvement, and support the institute's long-term sustainability goals in water management.
- ✓ **Regular Groundwater Monitoring:** Monitor groundwater levels and quality to assess the impact of recharge on water quality and the effectiveness of the rainwater harvesting

system.

- ✓ **Adopt Micro Irrigation Systems:** Implement micro irrigation systems to further enhance water use efficiency on campus.

4.3 Solid Waste Management

- The institute generates various kind of waste that includes paper cups, metal, plastics etc.
- Two bin waste collection system is adopted in the campus; hence segregation of waste is done in the form of dry (non-biodegradable) and wet (biodegradable) waste.
- The compostable waste from the mess kitchen is composted in a 150 kg composting plant. Each day about 40 kg of kitchen waste is processed.
- Plastic, paper, and e-waste are stored and supplied to a recycler through an auction.



150 kg Capacity Composting Machine near the Mess Area



Recommendations

- ✓ **Waste Segregation & Quantification:** Quantify the different waste types generated by the institute through a systematic report by students. This will establish a baseline for waste minimization and improve waste handling.
- ✓ **EPR-Aligned Recycling & Disposal:** Segregate paper, plastic, e-waste, tyres, used oil, and batteries, and ensure proper recycling or disposal by partnering with EPR-registered recyclers.
- ✓ **Composting Green Manure:** Establish a composting unit for leaves, tree droppings, and plant waste to produce green manure.
- ✓ **Waste Bin Signage:** Install signage near waste bins to guide proper waste segregation.
- ✓ **Reduce Paper Usage:** Minimize paper use through double-sided printing and adopting a paperless office culture.