



NATURE SCIENCE FOUNDATION

(A Unique Research and Development Centre for Society Improvement)
[ISO QMS (9001:2015), EMS (14001:2015), OHSMS (45001:2018) & EnMS
(50001:2018) Certified and Ministry of MSME Registered Organization]
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APPLICATION FOR SOIL AND WATER AUDIT TO EDUCATIONAL INSTITUTIONS AND INDUSTRIAL SECTORS

Reference Number	NSF/SWA 2022/Orgn.Name/	Dated:
Name of the organisations & Address		
Date of Audit		
Name of the Lead and EMS Auditors		
Is it a new Audit or renewal Purpose?	<input type="checkbox"/> New Audit <input type="checkbox"/> Renewal Audit Last Audit Date: __/__/____	
Purpose	To ensure the sustainable land and water use practices followed for the preservation soil fertility and water quality parameters to ensure the green cover area of an organization and to provide safe water to the stakeholders better human health. Ecofriendly youth leadership, green practices, social responsibility and institutional values towards the water and soil conservation are to comprehend the relationship with the ecosystem for sustainable environment.	

PROCEDURE

Procedure	Description	Responsibility
Annual plan	Each year a plan for the soil and water audit is prepared by the Management and to ensure that the quality of soil and water is preserved by implementing sustainable practices.	Management Representative

Walk-through Audit	Based on the checklists, the soil and water audit is carried out in the form of observations in the campus	Audit team
Follow-up of action	Corrective action has to be undertaken and implemented within the prescribed duration	Environmental Coordinator
Reporting and Recommendations	Submission of corrective action in the form of report in association with Nature Club / Eco club / Student Chapters of the Institute	Lead Auditor ISO 14001:2015 EMS Auditor

I. Requirements of general features

1. Total Area_____, Building constructed area_____, Open area
2. Year of establishment:
3. Total Strength of Students:_____ (No. of Boys_____ and No. of Girls_____)
4. Total Strength of Hostellers: _____ (No. of Boys_____ and No. of Girls_____)
5. Total Strength of Teaching Staff: _____ (No. of Males____and No. of Females____)
6. Total Strength of Non-Teaching Staff:____(No. of Males____and No. of Females____)
7. Total Strength of Employees: ____ (No. of Males____and No. of Females____)
8. The ratio of open space area to total area:
14. Total number of bore wells, open wells, water reservoirs, check dam and etc.
15. Total number of streams, spring and rain harvesting system in the campus
16. Report of Physico-chemical parameters of water quality
17. Report of Drinking / Potable water, RO water, Tap water, Corporation water
18. Total number of taps and faucets, toilets, showers, rest rooms, etc.
19. Total number of laboratory sinks, wash basins at canteens, hostels, kitchens
20. Leak detection, leak repairs, water pumping works towards water conservation
21. Sprinkler system if available for irrigation system for effective water management
22. Water contamination and related issues including water logging during heavy rains
23. Installation of water saving devices like automatic system, water meter, etc.
24. Sewage Treatment Plant availability and its uses including gardening and lawn care practices
25. Water wise landscaping, gardening, efficient irrigation and lawn care practices.
26. Detection of *Escherichia coli*, Coliform bacteria and Faecal Coliform bacteria in water
27. Report of soil profile and soil fertility analysis

I. Qualitative Measurements

S.No	Requirements and checklists of the audit	Conformity		
		Yes	No	NA
1.	Have an internal audit procedure for soil analysis been at implemented in the organisation			
2.	Whether soil profile analysis carried out in the campus?			
3.	Whether soil fertility analysis preferred in the campus?			
4.	Whether soil organic matter and above the ground biomass analysed?			
5.	Whether any streams /springs presence observed inside the campus			
6.	Does any decline in water quality and water quantity observed in recent times.			
7.	Whether any decrease in green cover observed in the campus?			
8.	Whether any key alteration in the soil species observed?			
9.	Whether any change in the water use /land used pattern followed in recent times?			
10.	Does soil erosion and associated issues observe inside the campus?			
11.	Does soil acidification and associated issues observe inside the campus?			
12.	Does soil contaminations and associated issues observe inside the campus?			
13.	Number of bore wells, open wells, water reservoirs, Water supply, check dam and etc. are sufficient in the campus			
14.	Whether any water logging problem arise inside the campus ?			
15.	Whether any loss of soil and water biodiversity observed inside in the campus			
16.	Whether any programmes launched recently on soil and water conservation?			
17.	Whether any sustainability goals formulated for sustainable land use & rain harvesting system in the campus?			
18.	Number of taps and faucets, toilets, showers, rest rooms, etc. in sufficient numbers in the campus coinciding with the human population			
19.	Efforts taken towards water leakage, leak detection & repairs, water pumping works towards water conservation			
20.	Sprinkler system if available for irrigation system for effective water management			
21.	Water contamination and related issues including water logging during heavy rains			
22.	Installation of water saving devices like automatic system, water meter, etc.**			

23.	Sewage treatment plant availability and its uses including gardening for efficient irrigation and lawn care practices, water wise landscaping, etc.			
24.	Whether vermicomposting or any similar process carried out inside the campus for soil health preservation?			
25.	Does any programmes conducted to educate stakeholders the importance of sustainable land use?			
26.	Whether any investment carried out for sustainable land use and its conservation?			
27.	Whether any action plan devised to restore the degraded land?			
28.	Whether campus comes under seismic zone and protective zone under Govt. act? **			
29.	Whether vermicomposting or any similar process carried out inside the campus for soil health preservation?			
30.	Detection of <i>Escherichia coli</i> , Coliform bacteria and Faecal Coliform in water			

II. Qualitative measurements

Table 1. Soil Profile and Soil Edaphic parameters of the Organization Campus.

S.No	Description	Results / Observations
I. Physical parameters of soils		
1.	pH	
2.	Electrical Conductivity ($\mu\text{mhos/cm}$)	
3.	Water holding capacity (%)	
4.	Sand: Gravel: Clay Ratio	
5.	Moisture Content (%)	
6.	Dry matter Content (%)	
II. Macro Nutrients estimations in soils		
7.	Total Organic carbon (%)	
8.	Available Nitrogen (%)	
9.	Exchangeable Potassium (mg/kg)	
10.	Available Phosphorous (mg/kg)	
III. Micro Nutrients estimations in soils		
11.	Calcium (mg/kg)	
12.	Magnesium (mg/kg)	
13.	Sodium (mg/kg)	
14.	Manganese (mg/kg)	
15.	Zinc (mg/kg)	
16.	Ferric (mg/kg)	

Table 2. Physical and chemical parameters of water samples collected at different sources of the Organization Campus.

S.No.	Parameters	Tap water	RO water	Recycled Wastewater
1.	pH			
2.	Conductivity (micromhos/cm)			
3.	Colour (Hazen unit)			
4.	Colour & Odour			
5.	Taste			
6.	Total dissolved Solids*			
7.	Hardness*			
8.	BOD*			
9.	COD*			
10.	Dissolved oxygen*			
11.	Dissolved CO ₂ *			
12.	Turbidity (NTU)			
13.	Alkalinity*			
14.	Salinity*			
15.	Acidity*			
16.	Nitrate*			
17.	Chloride*			
18.	Sulphate*			
19.	Fluoride*			
20.	Iron*			

* mg/l

Table 3. Number of Microbial colonies in Soil and Water samples at different locations of the Organization Campus.

S.No.	Name of the Place	Number of Microbial colonies (cfu) *			
		Bacterial colonies	Fungal colonies	Actinomycete colonies	Total colonies / Average
1.	Water Sample I				
2.	Water Sample II				
3.	Water Sample III				
4.	Soil Sample I				
5.	Soil Sample II				
6.	Soil Sample III				

* Applicable for Industrial sectors

** A minimum of 50% criteria should be attained

Note: This Audit process and Certificates are valid for three years only from the date of Audit.

Signature of the Auditing Chairman

Signature of the Lead Auditor

**Signature of the EMS Auditor
Environment Management System
(ISO 14001:2015, TUV NORD)**

**Signature of the Soil / Water Auditor
(NABL Accredited Lab Specialist)**