International Journal of Engineering Science Invention (IJESI)
ISSN (Online): 2319 – 6734, ISSN (Print): 2319 – 6726
www.ijesi.org ||Volume 7 Issue 10 Ver III || Oct 2018 || PP 37-42

Environmental Auditing (Ea) Of Abuad Sawmill, Southwestern Nigeria.

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Abstract:*An environmental audit assessment of the facilities and operations of ABUAD SAWMILL for the year 2015 has been conducted. The various activities involved in the operation of this outfit were examined and the likely impacts and necessary mitigations were proposed. Five (5) soundings were conducted and a profile was traversed along the study area. The protective capacities of the geo-electric layers were inferred. The risk of both soil and water contamination arising from the activities of this outfit were also examined. A total number of seven (7) people were gainfully employed by the outfit. The bye-products/waste from the mill is gathered for collection by small-scale furniture and particle board makers.*

The likely negative impacts that could result from both the activities and operations of this outfit include slight disturbance of flora and fauna, though no endangered species exists in this localities. There is no risk of air and noise pollution. However the risk of soil and water contamination exists. There is need for proper construction of access road and concrete floor for the mill. The top half meter (0.5m) of the earth materials within the mill should be removed, filled with concrete. No records of EIA, EMP and EAR in place. The level of awareness of the staff in this yard on HSE is very low.

The need for greater awareness and training on HSE has been stressed, likewise the provision of PPE for all the staffs have been suggested. EMP has to be produced. There is no provision for ablution and canteen facilities, no proper means of waste disposal. Action plan and time frame have been proposed.

With adequate provisions for the listed requirements, regular implementation and monitoring will go a long way in making the sawmill a blessing to the people and the immediate environs.

Keywords: *Mitigations, Endangered Species, EIA, EMP, EAR*

Date of Submission: 08-10-2018 Date of acceptance: 23-10-2018

I. Introduction

A sawmill is a facility which processes raw timber into dimensional lumber for shipping and eventual sale. Logs obtained from felling of trees in the forest leads to deforestation which in turn threatens the ecosystem. Ylva Svensson (April 2004), conducted an environmental audit for the forest company La Chonta Ltd., Bolivia. This study showed that the sawmill section of the company is not properly enclosed at its sides, thereby leaving the mills wastes to be exposed easily to the environment. Companies environmental impacts can be reduced while making good use of available resources maximizing profits (Brorson & Larsson, 2006).

Health safety and environment policy should be put in place, reviewed and updated periodically by organization in accordance with government legislation and company requirements with the assistance of the Joint Health and Safety Committee (JHSC). Such record shall be made readily available, for the viewing of by all employees, at all times.

Environmental education (EE) a learning process through which the people's knowledge and awareness about the environment and associated challenges are increased is a must for saw mill workers and this will enable them to evolve an environmentally friendly disposal practice. Schaefer (1980).

Sawmill wastes are the eventual wastes generated in the planning, sawing and processing raw timber into dimensional lumber. Saw mills by nature generate a lot of wastes i.e. saw dusts, wood off cuts, wood backs, plain shavings, wood rejects, etc. Such wastes degrade the urban environment, reduce its aesthetic value, produce offensive odours during the rains and pollute the air with smoke when the wastes are burnt uncontrollably. They also constitute health hazards in themselves if they are not timely disposed; they become breeding places for worms and insects (Dosunmu and Ajayi, 2002).

Indiscriminate logging results in loss of biodiversity, migration of wildlife, ecological imbalance, soil erosion, flooding, desert encroachment and disruption in hydrological cycle of water catchments area (Fuwape & Onyekwelu, 1995). Fuwape and Onyekwelu (1995) reported that clear felling of trees by sawmills as a source of raw material has been recognized as one of the factors responsible for environmental degradation in arid and semi-arid parts of Africa.

Welford (2000) reported that there has been a rapid growth in recent years in environmental legislation and other policies aimed at reducing environmental impacts.

Environmental impact assessment (EIA) is the study of the effects of a proposed project, plan or program on the environment thereby achieving sustainable developments (Pacifica F. Achieng Ogola, 2007). The EIA process must proffer mitigation measures to avoid, reduce or minimize the negative impacts on the environment, public health and property and may highlight the foreseeable positive impacts. The proffered mitigations and recommendations are the basis for subsequence environmental auditing check-ups.

Location and Geology of the study area

ABUAD Sawmill is located within ABUAD farm complex, in Ado-Ekiti, off Ijan road, behind ABUAD International School. The terrain in the study area is gently undulating, with topographic elevation ranging from 350m to 370m above sea level.

Ado Ekiti is underlain by crystalline rocks made of Older Granite, Migmatite and Charnockites with little or no fracture in most location and shallow overburden.

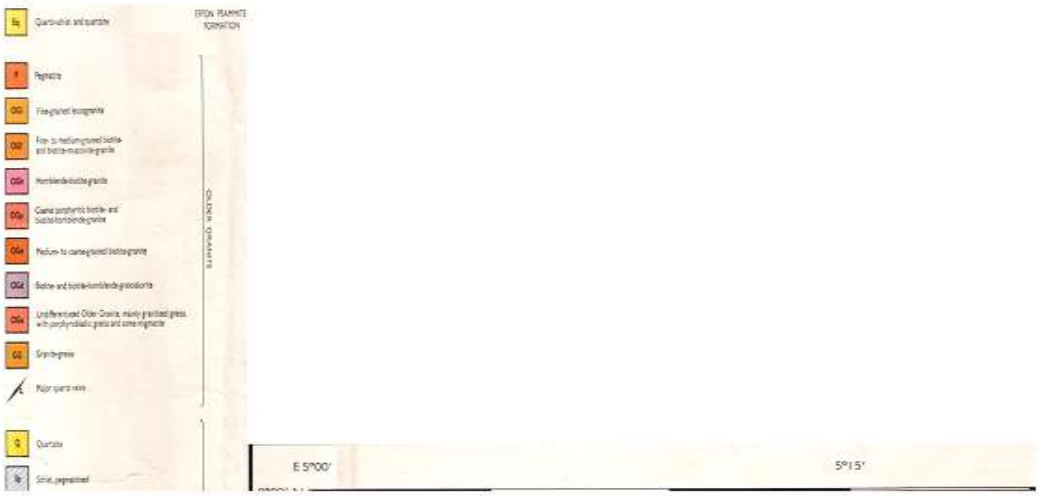
Fig. 1: Area Photograph showing the study area (Not Scaled).

Profile Line.

Ves Points

The area is situated within the tropical rain forest region, with a climate characterized by dry and wet seasons. Average annual rainfall in this area is 1300 mm, with average wet days of about 100. The annual temperature varies between 18^0C to 34^0C.

The study area lies within the basement complex of south-western Nigeria and is made up of; older granite, Migmatite and Charnockites. The overburden is relatively shallow within the study area with average of 8m. The groundwater is found within the clayey-sand materials while the area is drained by the river Ogbese which flow SW-NE direction



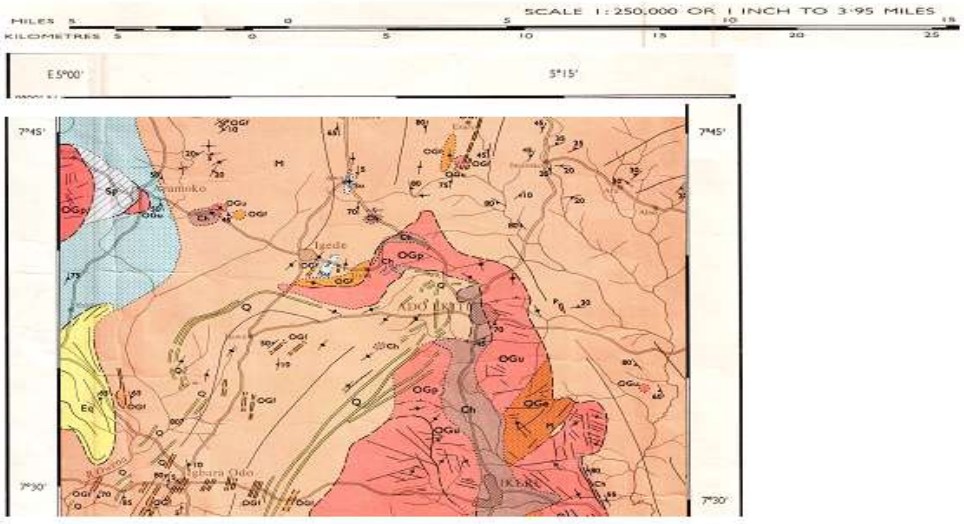


Fig. 2: Geology Map of the study area (adapted from NGSA Map)

II. Methodology

Having accepted to conduct the auditing exercise, an official meeting was held with the management and staff of ABUAD Sawmill to spell out the details and terms of the work to be done. The objective, scope, criteria, methodology and benefits of the exercise were well spelt out. The audit exercise entails gathering and reviewing of relevant environmental management system and facility, site inspection, physical observation, oral interview, site investigation/ field measurements among others. The ISO 19011:2002 Guidelines for quality and environmental management system auditing method was used and the basic steps enumerated in the Nation Guidelines for environmental auditing in Nigeria (FMENV. 1999) were applied in the course of this auditing exercise.

In all the exercise was planned and conducted in a way to ensure adequate protection of both the staff and immediate environs from envisaged negative impacts that may arise from the operation and activities of this outfit. The audit procedures adopted in this exercise include: Audit planning, Literature review, Data gathering, Data analysis, Data interpretation.

The geophysical investigation was conducted to delineate the various lithologic units that underlay the site of investigation. The depth to the top of each lithologic units were identified also the thickness of each unit. The aquiferous units (water bearing units) within the site were identified, their thickness, and lateral continuity were also determined. The protective capacities of layers overlying the aquifers were inferred and the areas prone to water contamination were delineated.

Four categories of staff of this outfit were interviewed namely; The Head of Operation, Operators, Loaders and Saw Doctor. The staffs gave useful information and insight into the operations and activities of the sawmill. All available provisions were mentioned before conducting the auditing team round for site inspection and observation.

III. Results

From the geophysical investigations conducted, five sounding and one profile positions were occupied across the entire mill. Three different subsurface lithologic units were identified namely: Lateritic Top soil, followed by sandy-clay which is underlain by Fresh Basement rock. The resistivity values within the sandy-clay layers are relatively low (38.0 – 71.0 Ω-m) which suggest vulnerability to pollution and contamination, while impervious basement resistivity values relatively high due to their crystalline nature.

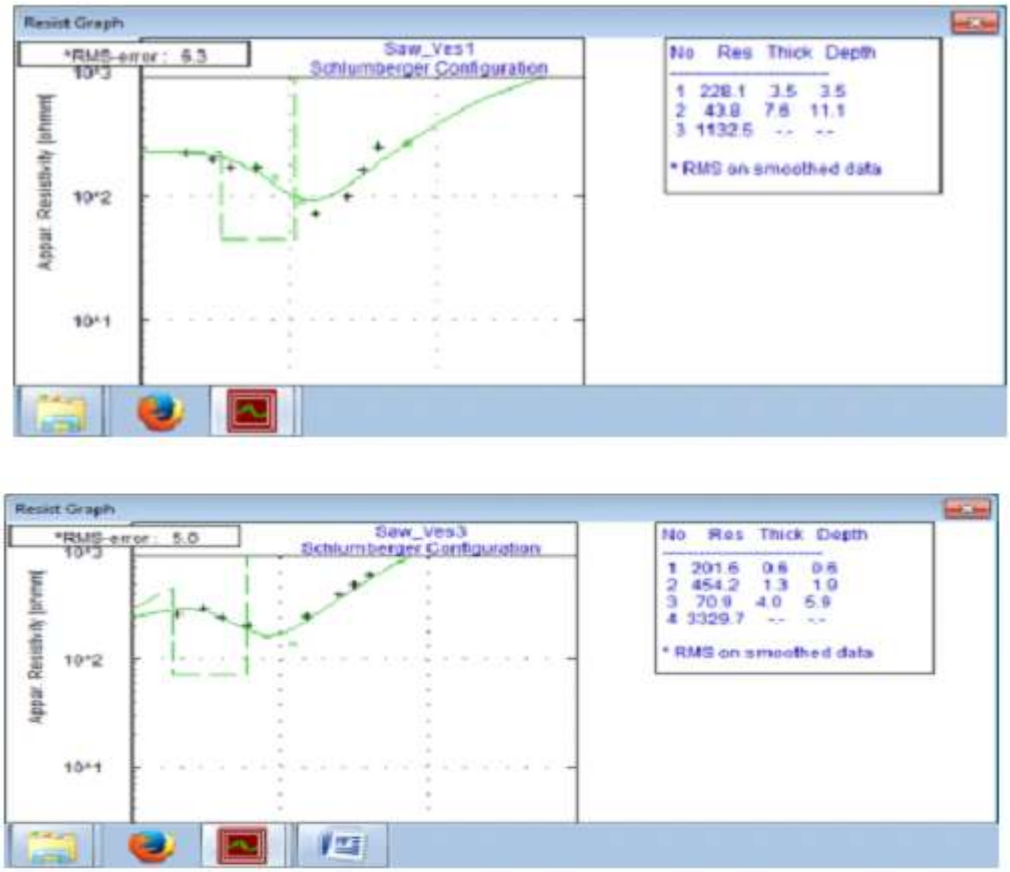


Figure 3: Typical depth sounding curves from VES 1 & 2.

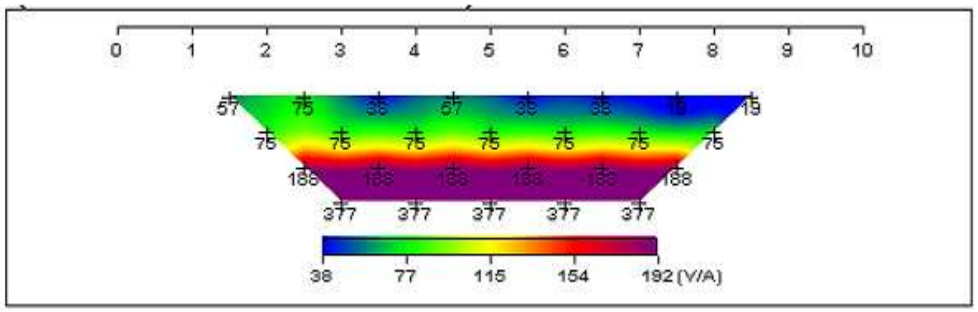


Fig. 4: Theoretical Data Pseudosection

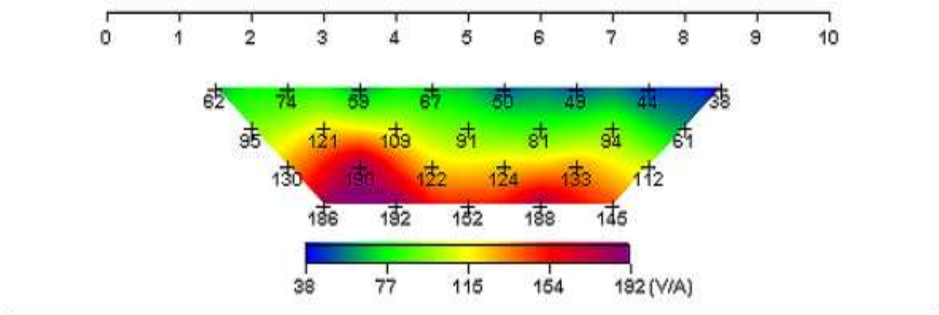


Fig. 4: Field Data Pseudosection

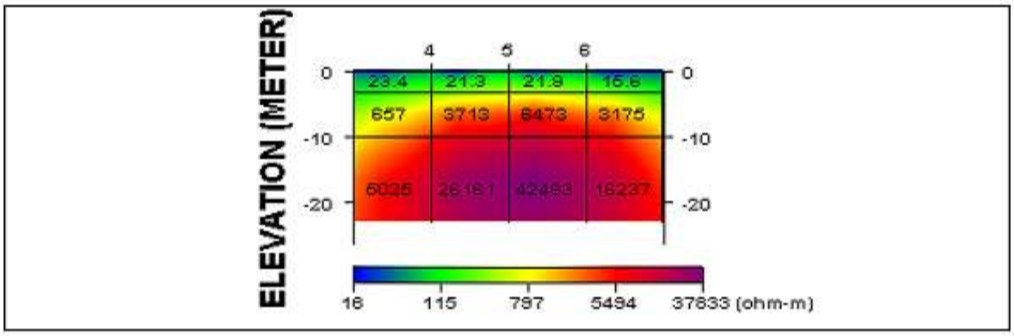


Figure 4.4c: 2-D Resistivity Structure

- **Observations**

From the study/ investigation conducted, the following observations were made;
The use of PPE is not in practice at this yard and the level of awareness and compliance with HSE standard is low. There is no provision for ablution (toilets, baths and wash basins) and proper waste disposal. There is no provision for food canteen hence the risk of food poison. There is no provision for training and awareness on HSE related matters.

- **Proposed Environmental Action Plan**

Given the importance and urgency of the observations, discoveries and recommendations in this study, the following action plan and time frame is proposed in the table below:

Table 1: Proposed Action Plan.

S/N	ACTION PLAN	RESPONSIBILITY	TIME FRAME
1	HSE training and awareness for the staff.	Management	Yearly
2	Provision and enforcement of the use of PPE.	Management	Immediately
3	Provision of ablution (Conveniences/toilets and Washing basins) facilities.	Management	Six Months
4	Provision food canteen.	Management	Six Months
5	Provision of dust bins at the various units and incinerator to take care of waste disposal.	Management	Two Months
6	Improved general housekeeping.	HSE Officer	Regularly
7	Regular EA and proper record keeping.	Management	Yearly

IV. Conclusions

The results from the environmental auditing of Abuad sawmill shows that the company is undeveloped in terms of HSE and PPE training and awareness, provision for ablution and canteen facilities, also a proper means of waste disposal. The subsurface layers underlying the sawmill are porous and susceptible to groundwater pollution therefore the top half meter (0.5m) of the earth materials within the mill should be removed, filled with concrete to prevent further pollution migration into the subsurface.

Recommendations

There is need for training and awareness on HSE related matters for the staff.
There is need for the provision of PPE and enforcement of it use.
There is need for provision of ablution (conveniences/toilets and washing basins) facilities
There is need for provision food canteen
There is need for provision of dust bins at the various units and incinerator to take care of waste disposal.
Regular EA and proper record keeping should be encouraged.

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