



SDI Review Form 1.6

Journal Name:	<u>British Journal of Applied Science & Technology</u>
Manuscript Number:	Ms_BJAST_29608
Title of the Manuscript:	Groundwater Assessment and Aquifer Vulnerability Studies of Emure Ile, Southwestern Nigeria
Type of the Article	

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



SDI Review Form 1.6

PART 1: Review Comments

	Reviewer's comment	Author's comment
Compulsory REVISION comments	In which month have you carried out hydrogeological investigation? This information can help better understand your result. The ways data are treated and interpreted do not help to appraise GW assessment. This just looks like a field report about wells thickness in the area. Much more analysis and further investigations are needed to assess groundwater condition (validate the results with borehole logs from the area; estimate groundwater potential in the area). There is a lot of confusion. The authors said that the layer above the weathered layer is the topsoil, non aquiferous. Later on, they link the thickness of this layer with the water table depth and conclude to corroboration! There is no corroboration. This supposes that the aquifer is full of capacity, which could occur at the end of the humid period. But, no information has been said regarding the investigation period The authors mislead the definition of an aquifer and this conducted to a wrong identification of aquiferous formation in the study area. The contain of the manuscript does not reflect the title	The investigation was conducted during the dry season. The reviewer has made important and sound observations which totally complied to in the process of writing the revised version of the paper. All the criticism has really added and broadened our knowledge in the area of groundwater studies.
Minor REVISION comments	Page 2: <i>The area is within the rainforest belt of Nigeria with a climate of long wet season (April to October): a long wet season is it a climate?</i> Page 2: <i>Annual temperature varies from 1000 to 1500 mm.</i> correct this sentence. I guess you want to talk about rainfall Page 2: <i>total of twenty seven (28) existing non flowing wells.</i> Is it 28 or 27 wells? Page 2: <i>The measurements were used to compute the thickness of the water.</i> I don't agree. Do you compute	

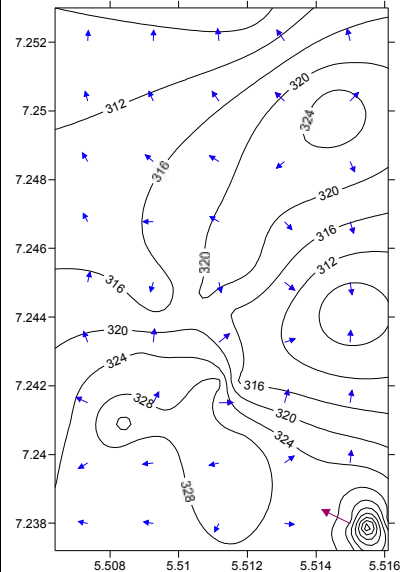


SDI Review Form 1.6

	the thickness of the vadose zone or of the water? Page 3: the study area is not visible on the land use map Page 4: This figure is not very useful. It cannot be use to understand the groundwater flow mechanism. A 3D map showing the landscape and the position of monitoring wells would be better Page 5: <i>static water level and hydraulic head of the wells across the area were used in developing groundwater flow model for the area. Where is the groundwater flow model?</i> Authors should avoid using expressions that are not developed inside the manuscript. Page 5 results. <i>The depth to Static Water Level, an approximation of vadose zone thickness, ranges from 2.6 m to 4.7 m, with a modal range of 1 – 3 m, suggesting a thin vadose zone. Based on DRASTIC index rating.</i> What is the value of this index for the current study? The conclusion is not reliable. Page 6: <i>the vadose zone thickness is generally fall within low vulnerability rating [16] across the area, thus suggesting that the surficial aquifers would be very vulnerable to anthropogenic activities.</i> Can you explain this suggestion? I don't agree with you. Page 6, table 1. Please give the precision on the elevation data and the water table depth data. As there is just minute difference on the elevation of various wells position, the accuracy of data may play an important role while plotting the flow directions. Page 7, figure 5. This map is the piezometric map rather than hydraulic head map. The map shows an interaction between the stream and the groundwater, the stream is recharging the aquifer. If this configuration is true and the stream is perennial, where does the stream recharge from during dry period? More ever, you showed on figure 4 that the stream takes it	
--	---	--

SDI Review Form 1.6

rise from Aboludo area, but the piezometric map tells different story, can you explain this? I got different results and interpretation from your data: **groundwater is contributing to sustain the river base flow**. See the northern area in the attached figure.



Page 7: what is the importance of the water column map? It has no clear meaning because the depth of hand dug wells does not give any indication on hydro-geological studies. Each well's owner can dig as far as he/she want or can stop as soon as he/she has enough water column for he/her uses. The map may be deleted.

Page 8: *groundwater always flows in the direction of decreasing head. This was evidenced by thicker water columns obtained for Well number 19, 25, 28 and others located within the central zone. From the above comments, you may understand that the thickness of*



SDI Review Form 1.6

	water column may not give an indication on the groundwater flow direction, so your conclusion may not be true. Page 8: <i>The thickness of the layers above the weathered layer in the area is presented in Fig. 11. The area is dominated by thickness in the range of 0.5 m – 5.5 m corroborating the 4.7 m maximum obtained for static water level measurement. However, the southern parts show thicker variation.</i> I may not agree. There may not be a link between the 2 values. Do you not think that you need borehole logs to verify the aquifer thickness you obtained by VES investigation? Page 8: The authors first said that the topsoil has thickness varying from 0.7m to 16.5 m. later on; they said that the same topsoil has thickness varying from 0.5 to 5.5 m. There is a lot of confusion. Page 10: Authors said the aquifer units in the area would be fairly protected and in the conclusion, they said that the aquifers in the area are significantly vulnerable to contaminants! What a contradiction? Page 12: <i>The major aquifer identified in the area is the unconfined weathered layer with resistivity ranging from 7 to 101 Ohm-m suggestive of clayey material and thickness ranging from 2.0 to 84.9 but generally less than 20 m. Clay materials are not aquiferous.</i> Please check the definition of an aquifer in hydrogeological studies. Clay material may content enough water, but this water cannot be easily mobilized, they are not an aquifer.	
<u>Optional/General</u> comments	From the method presented here, the study is mainly about VES investigation and groundwater level monitoring. There is nothing about groundwater assessment. The number of figures may be considerably reduced.	