INTRODUCTION

- In Nigeria and most of African countries, groundwater abstraction for water supply and irrigation has traditionally been through hand dug wells (Adekile & Olabode, 2009).
- Manually-drilled wells for water supply or irrigation purposes are more affordable than machine-drilled wells and more productive than hand-dug wells, thereby providing access to improved sustainable water points at a lower cost.
- Manual drilling is a practical solution for tube wells less than 40 metres deep in alluvial soils.
- In Adamawa State, such alluvial formations are found along River Benue floodplains, where most of the farmers practice irrigation during the dry season period.

MATERIALS AND METHODS

Materials and methods adopted for the research involves collecting data as follows:
1. Determining elevation
2. Determining the maximum depth using augering method
3. Pumping test for estimating aquifer parameters
4. Field Shear Vane Tester

Aim of the Research

The aim of the research is to quantify the maximum drilling depths required at the peak period of the dry season for the application of hand drilling techniques.

RESULTS

The hydraulic conductivity results range from 1,849 to 34,646.4 m/day with a mean value of 10,195.2 m/day, indicating that the floodplain formations are highly permeable and can recharge the shallow alluvial aquifers for abstraction using hand drilling techniques.

CONCLUSION

- The floodplain elevation variations are relevant in precisely estimating groundwater level, which will be useful for application of hand drilling techniques.
- Drill logs obtained across the floodplain are within the depth for abstraction with the hand drilling techniques.
- The floodplain has high transmissivity which gives good yield to the shallow wells for abstraction for water supply.
- The results of Field Shear Vane Tester (FSVT) on the floodplain have identified suitable locations for drilling, especially using hand drilling method that uses human power.

References