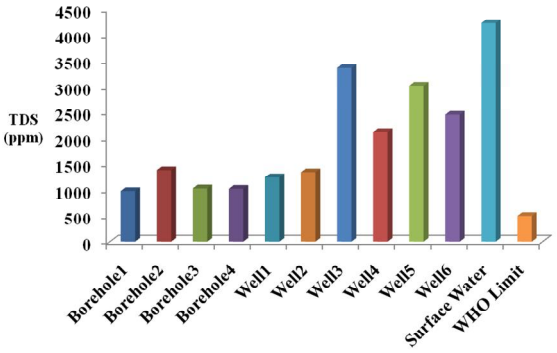


Fig. 18. Comparism of measured Total Dissolved Solid with Maximum Permissible level.

## 5 CONCLUSION

An integrated approach involving Electrical Resistivity Tomography (ERT), Vertical Electrical Sounding (VES), Very Low Frequency Electromagnetic (VLF-EM) methods and hydrochemical analysis has been used to investigate the concentration and pathway of leachates plumes beneath Laka dump site in Ogbomoso Southwestern Nigeria. The ERT effectively detected the existence of leachate plume near-surface at the west end and eastward at depth between 1.3m and 4.0m at horizontal distance between 40m and 44m. This was corroborated by two identified peaks on the conductivity map obtained from VLF-EM surveying. The interpreted apparent resistivity curve indicated the conductivity of the conductive layers beneath the dump site is enhanced as a result of enrichment by leachate plume and therefore more conductive than the conductive layers beneath the control site. The identified aquifer was sandy clay which is overlain by clayey soil that prevents or inhibits downward migration of the contaminant plumes to deep groundwater. The results of hydrochemical analysis indicated all water samples except samples from hand dug wells 1 and 2 and the bore holes are susceptible to contaminant plumes.

Thus noninvasive geophysical methods such as ERT, VES and VLF provide quick, efficient, and cost-effective methods for detecting, monitoring, and characterizing leachate migration patterns in dump sites and to a larger scale, the land fill sites. Though no priori information is currently available about spatial migration of the leachate, the results obtained could provide a basis for estimating future rates of movement by systematically repeating the survey at fixed time intervals.

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