

A study on qualitative and quantitative analysis of Ground Water Mapping and Water Quality Parameters In Valangaiman Taluk

K. Senthil Kumara Sundaram¹, C.Gokul², A.C.Krishnadaya³, S.Manikandan⁴, M.Nethaji⁵

¹ Assistant Professor, Dept of Civil Engineering

^{2, 3, 4, 5} UG student, Dept of Civil Engineering

^{1, 2, 3, 4, 5} Anjalai Ammal Mahalingam engineering college, Kovilvenni, Thiruvarur , Tamil Nadu , India , affiliated to anna university

Abstract- *his study has made a sincere attempt to characterized the ground water in various places in Thiruvarur district at Valangaiman taluk. The study of characteristics of water, Analysis the characteristic of resources, comparison of characteristic with permissible limit which is followed By identify of the procedure for water sample. The physical Chemical parameters like temperature, pH, TDS, electrical conductivity, alkalinity ,chloride , total hardness, turbidity, are tested in the laboratory and these parameters are compared with IS 10500:2012BUREAU of Indian standards. To prepare water quality map for each parameter by QGIS Software*

Keywords- Ground water quality; Valangaiman taluk; chemical parameter in water; QGIS; water quality test

I. INTRODUCTION

At Valangaiman taluk there are 71 villages available. We collect the water sample from Valangaiman villages. At the same time we mark our exact location at where we are collect the water sample, we mark our location by ODK

Total dissolved solids (TDS)

TDS range was tested for 71 villages by using the TDS meter (COM-80 [TDS/EC/TEMP]). Among the 71 villages 18 villages are within the acceptable limit. A village named Mathur was above the permissible limit the TDS value is above 2000. In the fig1.1 the range of TDS value are cleared marked in the QGIS map

Electrical Conductivity

Electrical conductivity test was conducted for Valangaiman taluk villages by using the meter (COM-80 [TDS/EC/TEMP]). 3 villages are above the permissible limit the TDS value is above 2000. In the fig1.2 the range of

electrical conductivity value are cleared marked in the QGIS map

pH

pH value for each villages are tested by the digital pH meter MK VI, we use pH9 and pH4 for calibration purpose. Among the 71 villages 64 villages are within the acceptable limit. 2 villages are below acceptable limit. 5 villages are above the acceptable limit. In the fig1.3 the range of pH value are cleared marked in the QGIS map

Chloride

Chloride content in water samples are tested by mohr's method for 71 villages. Among the 71 villages in Valangaiman taluk, all the villages are within the acceptable limit 250mg/l. In the fig1.4 the range of Chloride value are cleared marked in the QGIS map

Total hardness

Total hardness test was conducted by the method (EDTA method using CaCO₃as standard) for villages of Valangaiman taluk. Among the 71 villages 48 villages are within the acceptable limit. 23 villages are above the acceptable limit. In the fig1.5 the range of Total hardness test results are cleared marked in the QGIS map

Alkalinity

Alkalinity in water sample was tested for 71 villages by using the titration method at the end of titration pink color is changed into the reddish orange color. Among the 71 villages 1 villages named Kethanoor is within the acceptable limit. 5 villages are within the permissible limit. Other than this 6 villages all villages are above the permissible limit. In the fig1.6 the range of alkalinity value are cleared marked in the QGIS map

Dissolved oxygen

Dissolved oxygen test was tested by using the (DO-5510) apparatus for all villages. Among the 71 villages 1 village named Uthamadhanapuramis within the acceptable limit. other70 villages are below the acceptable limit. In the fig1.7 the range of dissolved oxygen test was value are cleared marked in the QGIS map

Turbidity

Turbidity test was conducted by using the Nepheloturbidity meter 132. Among the 71 villages 60 villages are within the acceptable limit.7 villages are within the permissible limit. 4 villages are above the permissible limit In the fig1.8 the range of turbidity value are cleared marked in the QGIS map

II. RESULTS BY QGIS SOFTWARE

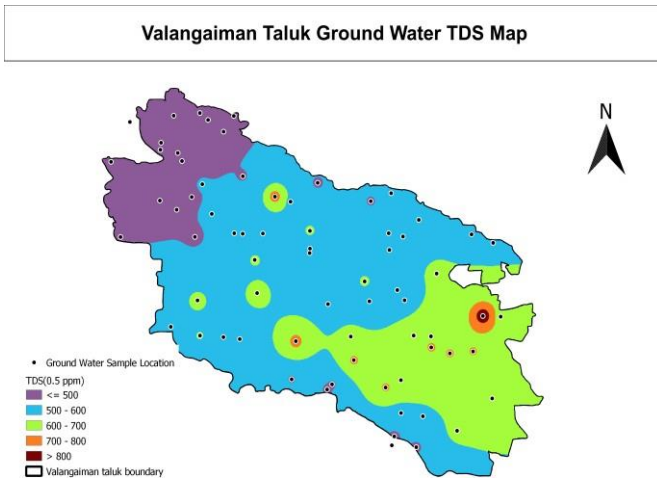


Fig 1.1 TDS RESULT

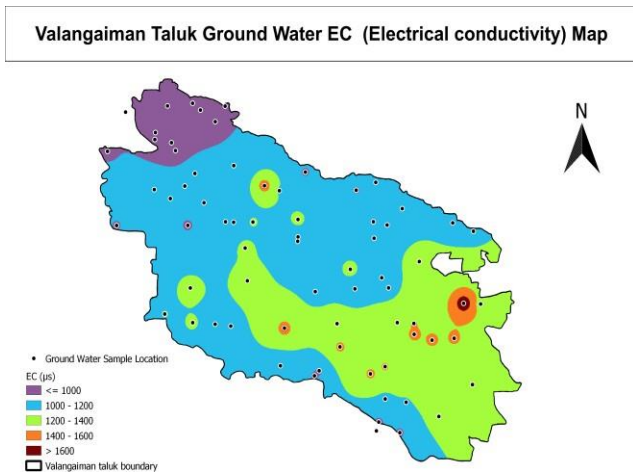


Fig 1.2 ELECTRICAL CONDUCTIVITY RESULT

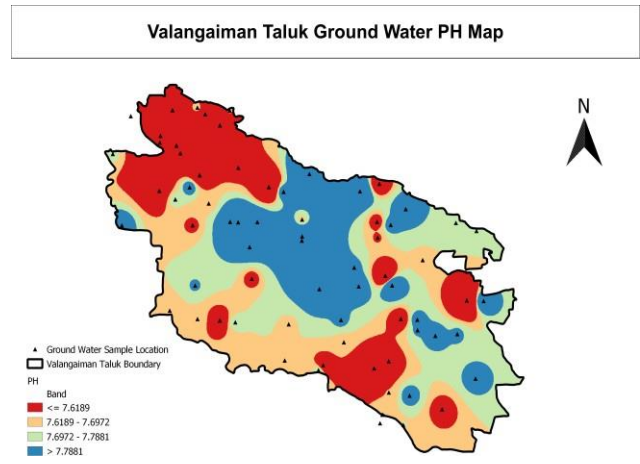


Fig1.3 pH RESULT

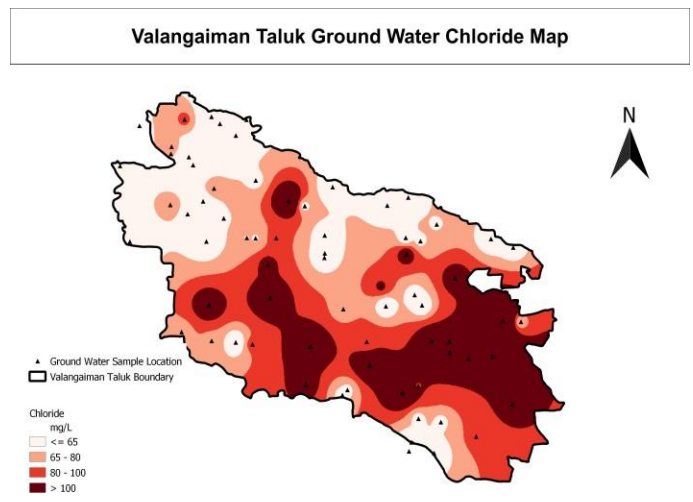


Fig1.4 CHLORIDE RESULT

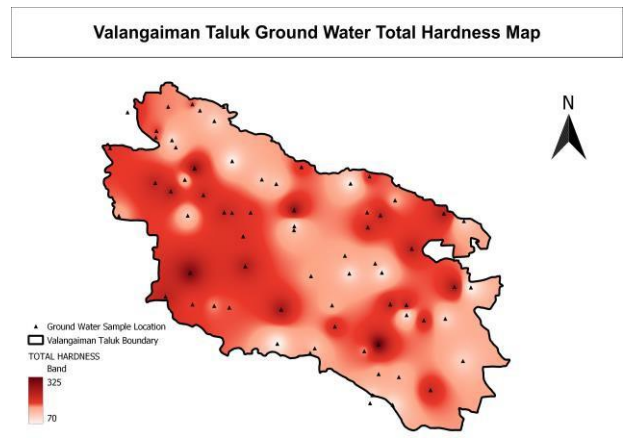


Fig 1.5 TOTAL HARDNESS RESULT

Valangaiman Taluk Ground Water Alkalinity Map

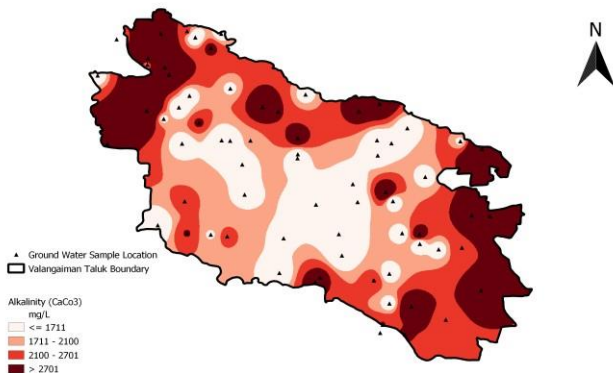


Fig 1.6ALKALINITY RESULT

Valangaiman Taluk Ground Water Dissolved Oxygen Map

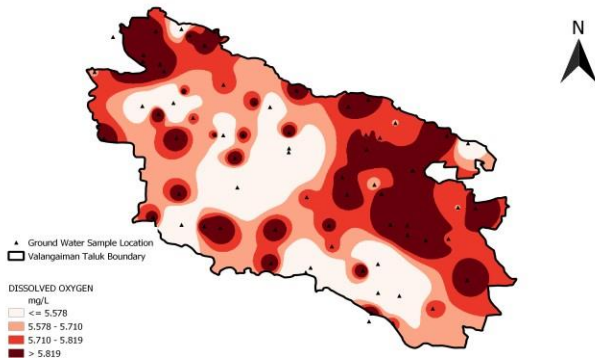


Fig 1.7DISSOLVED OXYGEN RESULT

Valangaiman Taluk Ground Water Turbidity Map

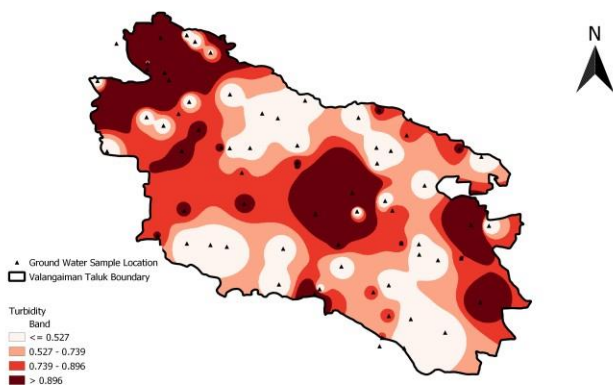


Fig 1.8 TURBIDITY RESULT

III. CONCLUSION

The villages which are not in the permissible limit, that villages peoples are prefer to drink the purify water for the better health.

IV. ACKNOWLEDGMENTS

We extend our sincere thanks to **MR.K. KALAIVENDHAN, B.E.**, for guiding us throughout the project and helping us regarding various defects that have been faced by us during the project.

We are very glad to thank our **MR.K. SENTHIL KUMARA SUNDARAM, M.TECH., MBA.**, For encouraging us to take in such project activities.

We are very delighted to thank **A TREE ASSOCIATE**, for funding and supporting us in our project.

REFERENCES

- [1] R Divahar, P S aravind raj, S P sangeetha , T Mohanakavitha, T meenambal. 2020Dataset on the assesment of water quality of ground water in kalingarayan canal, erode district, Tamil nadu , India. Data in brief (32), 1-10
- [2] Mohamed saber , Mohamed mokhtar, abudeifBakheit , mohesngameh. 2022. An integrated assesment approach for fossil groundwater quality and crop water requirements in the EI-Khargaoasis , western desert , Egypt. Journal of hydrology: regional study (40). (1- 20)
- [3] Shemsugultaabdurahman ,moltotzewdie, 20218. Flouride ion and total dissolved solid distribution in ethiopian rift valley : the case of hawassa city aquifer. Journal of hydrology.regional studies (19), 240-249
- [4] M. Antilinprincela, J.Michaelahithajose , E.H.Edinsha Gladis, D.Arthi , J.Joseph, 2022. Regional assesment of groundwater quality for drinking purpose. Materials today (45), 2916-2920
- [5] Josie geris , jean-christophecome , fulviofranchi, alfred k. petros , sithabiletirivarombo , ameT.sleeping , karen G. villholth, 2022. Surface water groundwater interactions and local land use control water quality impacts of extreme rainfall and flooding in a vulnerable semi – arid region of sub –Saharan Africa. Journal of Hydrology (609), 1-18