Abstract

Fifteen groundwater samples are collected from Fifteen groundwater wells in different depth and different location inside Kapran basin in Erbil governorate. The sampling was started in May 2023 and were analyzed for heavy metals (As,Cd,Zn,Pb,Ag,Li,Bo,Se,Ni,Cr,Mn) in ALS lab in Czech. Majority is to found the samples have concentrations within the acceptable limits as prescribed by Iraqi drinking water standards. Analyzed data were used to calculating heavy metal pollution index (HPI) for groundwater. The concentration of heavy metals for cadmium (Cd), copper (Cu), lead (Pb), manganese (Mn), arsenic (As), nickel (Ni), chromium (Cr), and zinc (Zn) are not coming suppressed with IRQ guideline, except in wells 1, 2, 3,4 and 45, which are higher than IRQ due to the effect of hydrocarbon, and refinery industry and activity has existed in the last two decades. classification of HPI 12% water sample is excellent,6% percent of samples is good, 40% percent of samples is poor,30%percent of samples is very poor, and12% percent of samples is unsuitable. The water samples 7to50 are vary from excellent to very poor, while sample,7,8, 9, an50 are unsuitable. Excessive HPI values in the sample,1,2,3,4and 40 are attributed to the presence of oil refinery of kawrgosk close to wells. The increased HPI value is due to higher levels of total cadmium, copper, lead, nickel, zinc, and vanadium in groundwater samples

Keywords: Heavy metals, Kapran basin, Heavy metal pollution index, ground water,

Dedication

I dedicate this project the head of the department and to the research supervisor and finally to all those who would benefit from this project. Presented to all who brought the Kurdistan closer to freedom and happiness with their minds, words and lives.

Acknowledgment

We acknowledgement our utmost appreciation to Dr. Masoud, the supervisor, the college librarians, the internet center at college of science which exposed us to a variety of project details on the web as well as to all those who made this project feasible.

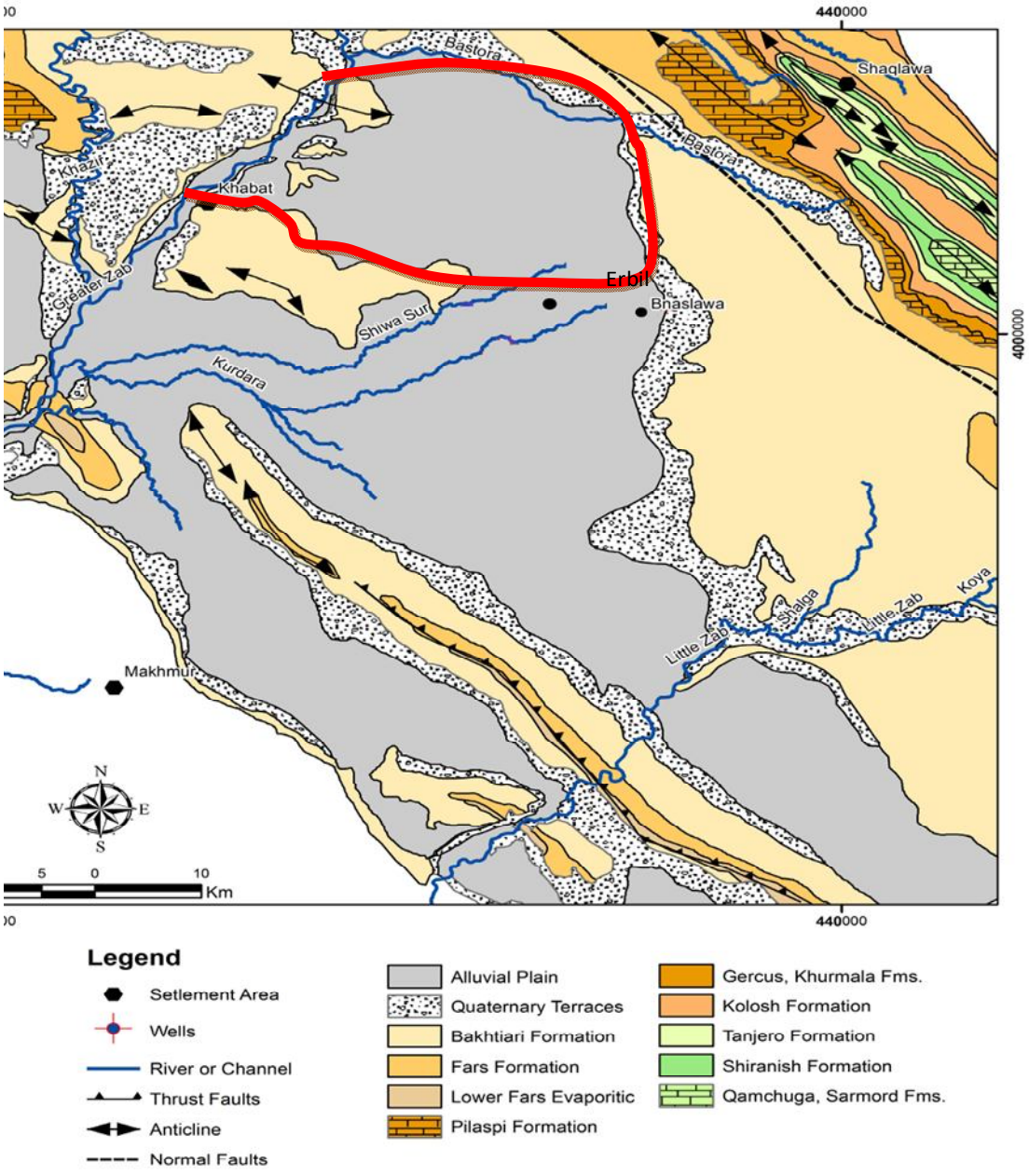

Figure 1.2. Geological map of the study area