**INTRODUCTION**

The study of the pollution sensitivity of near-surface materials is important for understanding the movement of contaminants through the unsaturated and saturated zones of the Earth's crust. This is particularly true for areas such as Carver County, Minnesota, where groundwater quality is a concern. The study conducted in this area, funded by the Minnesota Department of Natural Resources, aimed to determine the pollution sensitivity of the near-surface materials, which includes sand and gravel aquifers and the bedrock surface. The pollution sensitivity was assessed based on the migration of contaminants dissolved in water through unsaturated and saturated sediments.

**METHODOLOGY**

The methodology involved the use of a geologic sensitivity model called Geologic Sensitivity (GSEN). This model was used to estimate the travel time from the land surface to a depth of three feet and to estimate transmission rates through soils and surficial geologic units. The model also considered the unsaturated and saturated hydraulic conductivity of the soil and surficial geologic units. The unsaturated hydraulic conductivity was estimated to be 25 percent of the saturated hydraulic conductivity.

**RESULTS**

The study found that the pollution sensitivity of the near-surface materials in Carver County varied. The results indicated that most of the top of the bedrock in the county was rated as very low sensitivity. The sand and gravel aquifer locally in the western part of the county had vintage tritium age, which is consistent with the very low sensitivity rating for most of the top of the bedrock. The test hole at the Kilkenny–Four Mile area indicates moderate sensitivity, which is consistent with the very low sensitivity rating for most of the top of the bedrock.

**DISCUSSION**

The pollution sensitivity of near-surface materials is crucial for the protection of groundwater resources. The study in Carver County highlights the importance of understanding the pollution sensitivity of near-surface materials, especially in areas with high population density and intensive agriculture. The results of the study can be used to inform decisions on land use and management practices to protect groundwater resources.

**CONCLUSION**

In conclusion, the study of the pollution sensitivity of near-surface materials is a critical aspect of groundwater protection. The results from Carver County demonstrate the importance of understanding the pollution sensitivity of near-surface materials to inform land use and management practices. Further studies in other areas are needed to improve our understanding of the pollution sensitivity of near-surface materials.