

Grant helps with groundwater study

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Central Platte Natural Resources District will receive \$243,600 from the Nebraska Environmental Trust for magnetic resonance soundings that will be used for a groundwater model development study.

Magnetic resonance sounding is a quick, non-intrusive surface geophysical technique that directly measures groundwater to gather information similar to that gained by aquifer pump tests, specifically hydraulic conductivity and water in storage.

These are valuable parameters that can improve the accuracy of groundwater models, therefore enabling water-resource managers to make more informed decisions regarding the central Platte River ecosystem.

To better understand future and long-term effects related to integrated management including drought on the central Platte River riparian ecosystem and to effectively manage water resources, the COHYST groundwater flow model is being constructed to simulate current and/or future groundwater and surface water conditions.

The predictive accuracy of this model depends upon the quality and quantity of hydrogeologic data available in the study area. Input parameters are typically derived from test holes and aquifer pump tests, and the existence of this data is often sparse and additional drilling can be time-consuming and expensive.

A recent application of the MRS technique at Lexington showed excellent results. However, ground truth data in the form of long term aquifer tests is limited to only one site among the 11 sites surveyed to make an assessment of the accuracy of this data, or to assure that the proper calibration parameters are being used. Two additional sites have been selected for these aquifer tests.

Additional MRS measurements are necessary in conjunction with timely, appropriately located ground truth data to realize the full potential of this technology as an alternative to extensive well drilling and pumping test.

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The data collected will be used in a sub regional groundwater model, based on the COHYST model, which is currently under construction by the Central Platte NRD and Nebraska Public Power District.