

WSF 2021 Annual Report

Grant Application No. 5249

Titled: MRNRD Hydrogeologic Mapping

Grant Amount: \$785,764.80

#### Project Progress:

Year one for this project consists of securing the AEM contract with Aqua Geo Framwork. MRNRD signed a contract with AGF that matched our estimated costs to accomplish the AEM flights and data analysis. The total amount the AEM portion of this project will cost \$670,600. Year two of this project consists of the geologic post processing of the data collected from the AEM flight lines. We collected all the AEM data from the helicopter last year. We are now on track to begin post processing that data into useful data which we can plug into our groundwater model. AGF has finalized their initial post processing and it has been transferred over to UNL for their portion of further refining the data.

#### Project Activities for coming year:

The activities for the coming year consist of UNLs processing of the AEM data. AGF has already gone through all the resistance values and taken out any inconsistencies that may have come up within the data set. Examples of these inconsistencies would include powerlines, pipelines, or any unique geologic material. This sets up UNL to be able to compare these resistivity values to geologic test holes. They can then determine which resistivities coincide with aquifer properties. They can then calibrate the resistivity values with those aquifer properties to give us a large-scale map of the aquifer, which cannot be accomplished through geologic test hole values alone. This is the primary focus of UNL during this time of the project. There will also be some data management that will need to happen in order to move on to the next phase, which will be the groundwater model development. MRNRD is currently in communication with the firm that will be developing the groundwater model. This is the major activity that will occur in the next two years of the project. Currently there are no changes to the budget of this project and we assume our WSF request will be the same as budgeted. That cost will include \$323,325 for the rest of the payment to AGF and \$61,709 for the geologic interpretation.

#### Reassessment of the Project Benefits:

Currently the MRNRD has assessed the value of this project and we have decided the information this project gives us is far more valuable than we had initially thought. MRNRD plans to seek out more funding for similar projects like this one in the future to complete the entire MRNRD district in a similar fashion.

#### Summary:

The MRNRD is on track for completing this project on time and hasn't had any major changes in the process or timeline. We have gotten the ball rolling on the major components of this project and we look forward to seeing what sort of information it can provide. UNL CSD has everything they need from the MRNRD/AGF and is in the currently doing a full geologic assessment of the AEM data. The MRNRD hasn't worked directly with AEM data yet and it will be a great learning experience seeing this data be collected and processed. Our hope is to continue to assess the needs of our producers and maintain the

aquafer for future generations. We believe at the end of this project we will have a valuable tool to meet those needs.