

WSF 2020 Status Report # 5206

PROJECT: Lower Loup NRD Aquifer Framework Mapping Project –
WSF Application # 5206 (awarded December 18, 2018)

DATE: MARCH 25, 2020
(ANNUAL REPORT DUE ON OR
BEFORE APRIL 1, 2020)

See Application 5206 Section D #2 For Project Tasks Summary and Timeline

PROJECT PROGRESS APRIL 2019 TO APRIL 2020:

The Lower Loup Natural Resources District (LLNRD) secured Aqua Geo Frameworks, LLC. (AGF) for the above referenced mapping project for the Buffalo County / South Loup Basin area. An airborne electromagnetics (AEM) survey utilizing the SkyTEM304M system was flown over 612.4 line-miles on October 19-25, 2019. At the LLNRD Board of Directors meeting on November 21, 2019, the required 50% of the total project cost (\$233,000) due to AGF following data collection, was approved unanimously, and payment was issued.

After final processing, 548.6 line-miles of data were retained for the final inversions for the LLNRD AEM survey area. After inversion, AGF derived 2D cross-sections, 3D electrical models, and interpreted geologic and hydrogeologic surfaces. At the LLNRD Board of Directors meeting on February 27, the final invoice of 20% of total project cost (\$93,200) due to AGF was unanimously approved, to be paid out following LLNRD staff review and delivery of the final report, expected in March.

On March 19, LLNRD staff met with AGF staff via conference call to discuss LLNRD's review of the first draft report and related data files. Several changes were agreed to and AGF submitted the final report on March 24, which was reviewed and accepted by LLNRD staff, with final payment issued on March 25. The final report included a complete hydrogeologic framework of the surveyed area, and included maps of aquifers, maps of aquifer materials relationships to available test holes and production groundwater wells, maps of estimated potential recharge areas in the surveyed area and estimates of water storage capacity. Since the LLNRD Board of Directors monthly meeting was cancelled for March, AGF is tentatively scheduled to present the AEM interpretations at the next Board meeting on April 23.

ANTICIPATED ACTIVITIES FROM NOW UNTIL NEXT ANNUAL REPORT:

Delivery of the raw AEM data from this project to the Nebraska GeoCloud web-based system is expected in April 2020. AGF, LLNRD, and the Conservation Survey Division at the University of Nebraska-Lincoln will cooperate on accomplishing this task.

ANTICIPATED CASH FLOW FOR REMAINDER OF THE PROJECT:

\$0 – As of March 25, 2020, the LLNRD and Water Sustainability Fund (WSF) met their funding obligations towards this project (\$466,000 total project costs) under grant award # 5206.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 5206 WILL BE REALIZED:

Benefits of the LLNRD Aquifer Framework Mapping Project were realized. A complete hydrogeologic framework was developed in the surveyed area of Buffalo County, covering groundwater quantity and quality issues. The LLNRD is now positioned to make educated decisions on groundwater management planning in this water decline area of the District, including potential development of targeted groundwater recharge project(s).

The collection of AEM data across this portion of the state now will have applicable, real-world data to be used by LLNRD, NDNR and other entities for upgrading all area water modeling efforts to determine impacts of groundwater use on surface water availability and hydrologically connected reaches.