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December 1, 2017

Mr. Kent Zimmerman
Nebraska Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, Nebraska 68509-4676

Re: **WSF 2017 Final Report # 4144**

Dear Mr. Zimmerman,

Please find enclosed the Final Report for the above-referenced project under WSF Grant Contract #4144 between the Nebraska Department of Natural Resources (NDNR) and the Lower Loup Natural Resources District (LLNRD).

This should conclude all contractual agreements associated with this project.

Please contact me if you have any questions or comments or need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tyler Naprstek', is written over a white background.

Tyler Naprstek

Modeling Coordinator-Lower Loup NRD

Enclosures (1)

WSF 2017 FINAL Status Report # 4144

PROJECT: Lower Loup NRD Aquifer Framework Mapping –WSF Application #4144 (awarded April 2016)

DATE: DECEMBER 1, 2017
(ANNUAL REPORT DUE ON OR BEFORE APRIL 1, 2018)

See Application 4144 Section D #2 For Project Scope Summary and Timeline

PROJECT PROGRESS APRIL 2017 TO APRIL 2018:

The final LLNRD AEM Report from AGF was delivered April 10, 2017, approximately 5 days ahead of schedule. The final report summarizes the AEM survey results and incorporates the AEM results with existing cross section and Conservation and Survey Division (CSD) test-hole data, GIS spatial data, and NDNR registered well data (select logs of registered wells will be used for general reference and comparisons). The report results are publically available from <http://enwra.org/coop.html> as:

- Full Report text as a pdf document
- Appendix 1 pdfs of two-dimensional (2-D) profiles: Columbus, Nebraska block flight area and transects west and southwest of Columbus
- Appendix 2 pdfs depicting Columbus block flight area in 3-D and transects west and southwest of Columbus in 3-D
- Interactive Google Earth datasets and associated interpreted profile images

Additionally, the full set of electronic deliverables (borehole data, raw and interpreted AEM datasets, GIS files etc.) are available from the LLNRD upon request (provided to Nebraska Department of Natural Resources via Dropbox link May 31, 2017).

ANTICIPATED ACTIVITIES FROM NOW UNTIL NEXT ANNUAL REPORT DUE APRIL 1, 2018:

N/A, this report will serve as the FINAL report for the Lower Loup NRD Aquifer Framework Mapping –WSF Application #4144 (awarded April 2016) previously anticipated for submittal April 1, 2018.

ANTICIPATED CASH FLOW FOR REMAINDER OF THE PROJECT:

\$0 - The LLNRD (40%) and WSF (60%) have completed funding obligations (\$416,666 total project costs) under grant award #4144.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 4144 WILL BE REALIZED:

From the 4144 WSF Application: "With the hydrogeologic framework updated through this Project, the LLNRD will be better equipped to assess the overall susceptibility of the Project area groundwater resources to impacts from potential contamination sources and increasing use and development. The updated hydrogeologic framework will directly inform the delineation of the groundwater resources to be included in the update of the LLNRD GMP. CSD may use the AEM data to update bedrock maps, transmissivity and specific yield maps, and maps of secondary aquifers."

Based on the report presentation by the Consultant, use of the report in the Columbus Water Resource Assessment, and other anticipated District planned analyses and evaluations, the project achieved the benefits to the LLNRD as described in the application and is anticipated to continue to do so. The data will be incorporated into the Nebraska GeoCloud (WSF award #4164) by the Conservation and Survey and U.S. Geological Survey (CSD and USGS). Hydrogeological Frameworks were provided for the Project area identifying Potential Recharge Zones and providing estimated Aquifer Volume and Water in Storage values for the Columbus Block (<http://enwra.org/coop.html>).