

WSF 2024 Annual Report # 5312

PROJECT: ENWRA Groundwater Recharge Mapping and Focus Area Assessments #5312 (awarded December 2021)

DATE: MARCH 30, 2024

(FIRST ANNUAL REPORT DUE
ON OR BEFORE APRIL 1, 2024)

See Application 5312 For Project Scope Summary and Timeline

PROJECT PROGRESS APRIL 2023 TO APRIL 2024:

The United States Geological Survey (USGS) and University of Nebraska - Lincoln Conservation and Survey Division (UNL CSD) project team completed initial Phase 1 regional mapping activities and started Phase 2 Focus Area work and Phase 3 reporting considerations for the Project. Phase 2 areas: Dorchester-Sterling Paleochannel (DSP), Fremont-Arlington-Leshara, Burt County, and Knox County areas, each spanning across Natural Resource District (NRD) boundaries. UNL CSD worked on the borehole and geological datasets, the water level mapping approach and initial Phase 2 Focus Area interpretations. USGS used technical expertise and supercomputing systems to run recharge map scenarios with the top 50 feet of airborne electromagnetic (AEM) survey data using the appropriate supporting quality data inputs and constraints gathered during Phase 1. USGS also prepared various evaluations for the team to consider during Phase 2 efforts, provided preliminary presentations (example: northeast Nebraska Field Trip for the Nebraska Well Drillers Association September 12, 2023) and preliminary Phase 3 report outline formats and results for the upcoming publication. Phase 2 Focus Area task planning and evaluations with USGS and UNL CSD were also coordinated with the Eastern Nebraska Water Resources Assessment (ENWRA) Project. Several separate but related projects were delivered to several of the ENWRA NRDs in early 2024 and a last call data cutoff was made after newer uploads to the Nebraska GeoCloud were downloaded and reviewed in spring 2024 for the Project region.

ANTICIPATED ACTIVITIES FROM NOW UNTIL NEXT ANNUAL REPORT DUE APRIL 1, 2025:

The USGS will finalize the regional High Moderate Low Recharge map scenarios with the early 2024 related NRD deliverable considerations and update the results discussions in the draft Phase 3 report. The addition of the early 2024 deliverables is key to filling in gaps for a data lean area on the recharge map and updating the most data dense of the AEM blocks (reinverted Sprague-Firth AEM blocks on the western part of DSP). The team decided it was worth it to delay the Project end date (originally projected December 31, 2024) in order to incorporate the AEM survey updates along with general review of the early 2024 NRD geologic model deliverables (example: aquifer vulnerability and groundwater flow maps). The UNL CSD team will build cross-sections and an online interactive map portal for the Project deliverable to demonstrate the hydrogeological relationships for the Phase 2 Focus Areas. The cross-section locations will be designed to showcase the Focus Area recharge characteristics serving as a coarse level interpretive view based in an interactive map environment with the regional high-moderate-low recharge basemap and supporting dataset layers. The detail of the multiple cross sections for each of Focus Areas will provide highlighted recharge related examples which will translate to the various regional geologic settings (paleochannel, unconfined, confined, perched, secondary bedrock aquifer unit example displays with linked legends and descriptive text regarding potential saturation, vulnerability and sustainability). Several interactions between the project team members and the ENWRA NRDs are anticipated during this time in addition to a planned team presentation at one of the NRD conferences (late 2024 or early 2025). The Phase 2 and 3 work, which will continue throughout the remainder of 2024 and into early 2025, will be summarized in the next April 1, 2025 WSF Annual status report (planned final project closeout report with a final publication and interactive map portal anticipated to be available at that time). A link to the Preliminary Map currently in progress: <https://go.unl.edu/enwra2024map>

ANTICIPATED CASH FLOW FOR REMAINDER OF THE PROJECT:

The third reimbursement for the project, claim 3 (\$22,533.35), was received by ENWRA in March 2024. The fourth reimbursement claim, Claim 4, is anticipated to be about \$32,000 (60% of eligible USGS and UNL CSD costs) likely submitted on or near the 2024 fiscal year end in June 30, 2024. The final claim for the remaining \$16,464 of the \$144,000 award (60% of \$240,000 original project total not including \$74,000 in USGS cooperative dollars) will be anticipated by April 1, 2025, the **updated anticipated project end date**.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 5312 WILL BE REALIZED:

Based on previous project results provided by USGS and UNL CSD and summary herein, the project is on target for achieving the benefits as described in the application.