

WSF 2019 Status Report # 5195

PROJECT: LLNRD Columbus Area Recharge Project –
WSF Application #5195 (awarded November 28, 2017)

DATE: MARCH 29, 2019
(FIRST ANNUAL REPORT DUE ON
OR BEFORE APRIL 1, 2019)

See Application 5195 Section D #2 For Project Tasks Summary and Timeline

PROJECT PROGRESS APRIL 2018 TO APRIL 2019:

This is the second annual report. The LLNRD has continued to work with the City of Columbus and Platte County to develop a Columbus Recharge Project to examine several options for implementing a functional recharge project that will help offset water detriments in the area. As discussed in the application, the LLNRD, County, and the City are working with Archer Daniels Midland Company (ADM) and the Christopher's Cove Homeowners Association to offset depletions by utilizing diverted reuse water near the Loup Public Power Tailrace Canal and conveying it to the remnant Lost Creek channel. Water would also be conveyed into Christopher's Cove to help provide additional recharge. Both channel and lake structures will allow the recycled water to infiltrate into the water table, thus counteracting groundwater declines in the area. Two separate pumping plans have been proposed to the group: one includes several shallow wells adjacent to the canal which then pipe to both the channel and lake structures, the other includes using tailrace canal water to charge the remnant channel then utilizing another pump to add water into Christopher's Cove. Both these methods would prevent potential infestation from invasive species (Asian Carp, Zebra Mussel, etc.) which could be in the tailrace water from getting into Christopher's Cove. Additionally, it has been discovered while working with NDEQ that there are some potential contaminants east of the canal that could be displaced by the additional pumping. A sampling protocol is being developed by the NRD.

ANTICIPATED ACTIVITIES FROM NOW UNTIL NEXT ANNUAL REPORT DUE APRIL 1, 2020:

The proposed recharge project options are being modeled and permits for construction will be in place in the fall of 2019. The following activities will be performed this coming calendar year:

- Select the appropriate method for pumping and discharge of recharge water
- Design the pump and pipeline hydraulics based on the required total dynamic head
- Coordinate with the power utility to get sufficient power to the pump station
- Evaluate the electrical and the instrumentation and controls systems to allow for remote operation and monitoring
- Secure access easements for construction of the ponding structures
- Begin construction starting late fall 2019 complete by summer 2020.

ANTICIPATED CASH FLOW FOR REMAINDER OF THE PROJECT:

\$1,224,000 - The LLNRD and its partners and WSF have funding obligations towards this project (\$2,040,000 total project costs) under grant award #5195.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 5195 WILL BE REALIZED:

From the 5195 WSF Application: Tangible benefits of the project include reduced pumping costs from area groundwater wells and avoided emissions, specifically criteria air contaminants (CAC) and greenhouse gas (GHG) emissions associated with the production of electricity used to power groundwater well pumps. The resulting benefits and energy calculations for each entity were calculated as follows:

- The downtown City wellfield pumping water levels were reduced by 1 foot from 35 to 34 feet
- Irrigation pumping water levels were reduced by 10 feet from 65 feet to 55 feet
- ADM pumping water levels were also reduced by 10 feet from 65 feet to 55 feet
- The recharge project could save up to 223,580 kilowatt hours per year for a total savings of \$5.7 million over 50 years.