



# COLLECTOR TUNNEL SYSTEM GEOTECHNICAL BORINGS

## Partnership with University of Nebraska-Lincoln Benefits CSO Program

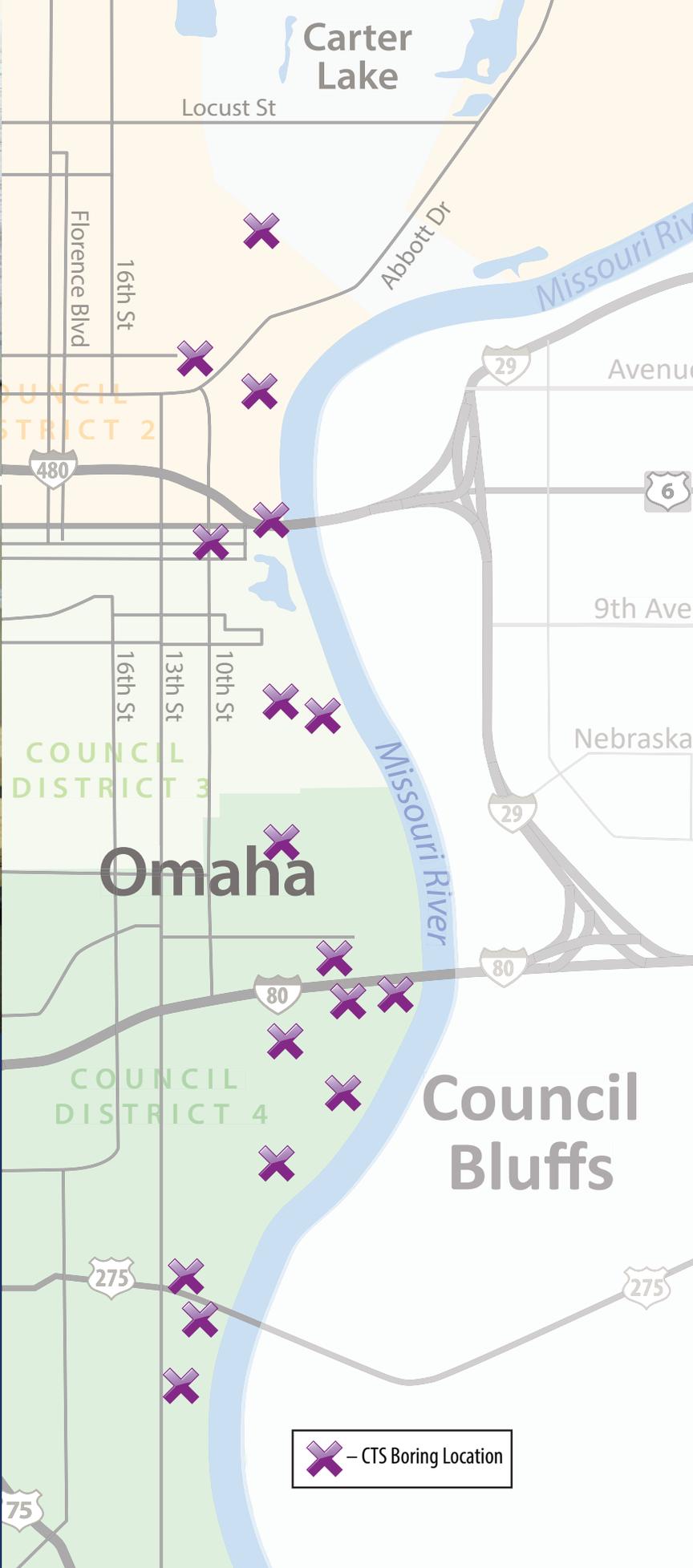
The Collector Tunnel System (CTS) is a significant, potential component of the CSO Program. The CTS would convey combined sanitary sewage and stormwater through a two-mile long tunnel extending parallel to the Missouri River to a Retention Treatment Basin (RTB). The tunnel is envisioned to be up to 18 feet in diameter and constructed in rock up to 200 feet below the surface. Part of conceptual development is to determine potential tunnel alignment between the Missouri River and 10th Street.

The CSO Program first engaged the University of Nebraska-Lincoln (UNL) and Dr. RM (Matt) Joeckel (pictured above, right) in 2008. The purpose of this partnership is to gain assistance from the State Conversation and Survey Division (State Geologic Survey) in evaluating the rock core and providing insight into structural geology in the Omaha area. Dr. Joeckel is the State Geologist, Associate Director for the Conservation and Survey, and a Professor with the UNL School of Natural Resources. Dr. Joeckel provided a lithologic

description of measured intervals, and an overall stratigraphic correlation of stratigraphic units, applying names to individual units as recognized in existing literature.

Five initial geotechnical borings occurred in 2008 to determine if a rock tunnel concept was feasible in Omaha. The rock core was evaluated and stored at Nebraska Hall in Lincoln and then transferred to a UNL storage facility near Mead, NE. As part of further tunnel alignment evaluations in 2018 and 2019, 17 additional borings were performed to determine variation in the rock mass along each alignment.

This information was used to further our understanding of subsurface conditions and associated challenges when considering horizontal alignment alternatives. The team more clearly understands how the bedrock changes with depth and composition in critical locations along the proposed



tunnel alignment. In a future phase, additional borings will help determine tunnel depth.

Recovered rock cores from the investigation are stored at the Mead facility along with many other geotechnical borings from projects throughout the State of Nebraska. Dr. Joeckel offered to store cores at UNL and requested access for students to log and study bedrock geology in the Omaha area. The City entered into an agreement with UNL for storage and ultimately possession of cores at the completion of the Program.

Dr. Joeckel and UNL's involvement with the CSO Program has been mutually beneficial. The CSO Program is able to maximize value to ratepayers through the integration of the State Geologist and UNL resources into the geotechnical investigations, while the University recognizes, values and will maintain historical geological assets for future testing and reference.