

EXHIBIT A-1M
SCOPE OF SERVICES for
UTILITY PROJECT FUNDING ASSISTANCE (TASKS 1-4) and
FIELD TESTING, MODEL CALIBRATION, and DIURNAL ANALYSIS (TASKS 5 and 6)

INTRODUCTION

This Scope of Services is prepared as Modification No. 1 to the Agreement dated 6/28/2021 (City RFQ No. 2021-063) for Professional Engineering Services for the Water Master Plan. Modifications to the Scope include Tasks 1 through 4 for Utility Project Funding Assistance. Tasks. Modifications to the Scope also include Tasks 5 and 6 for additional field testing, model calibration, and diurnal analyses. These modifications are discussed in further detail below.

Tasks 1 through 4

With the passage of the Infrastructure Initiative and Jobs Act (IIJA) and American Rescue Plan Act (ARPA), significant increases in federal funding is available for water infrastructure projects. In addition, state funds are also available for a variety of water-related activities. The City of Lee's Summit (City) seeks assistance to identify funding opportunities and application processes for the City's water utility projects. These projects include drinking water distribution and wastewater collection. For the purposes of this Task Order, stormwater projects are not included in this scope of work.

The City has either completed a Capital Improvement Plan (CIP) or is in the process of completing a CIP for the identified utilities. This Task Order will determine which of the identified projects are eligible for grant and/or loan funding. The Task Order will identify the application schedules for the different funding sources and advise the City of the process for making application for the appropriate projects.

Federal and State funding sources to be evaluated for this Task Order include but are not limited to Missouri State Revolving Loan Funds (SRFs) Programs [Drinking Water SRF and Clean Water SRF]; American Rescue Plan Act (ARPA); Bipartisan Infrastructure Law (BIL) [also known as Infrastructure Investment and Jobs Act]; and Federal Emergency Management Administration.

Tasks 5 and 6

Tasks 5 and 6 include additional field testing, model calibration, and diurnal analysis. An open 12-inch water distribution system valve, thought to be normally closed which isolates the South pressure zone from the North pressure zone, compromised model calibration efforts. Another open valve, thought to be normally closed, was found upstream of the High Service Pump Station meter vault and connected to the distribution system; flow through this valve was not captured in the metered flow data from the pump station.

Additional field testing was required in the North and South pressure zones to adequately calibrate the model now that both open valves are closed. The diurnal analysis is a mass balance determination of flow entering each system and drafting/filling rates from elevated storage to calculate system demand; flow through the open valves could not be estimated, therefore, the diurnal analysis had a systemic error that could not be quantified by any of the many approaches taken to do so. The valve upstream of the High Service Pump Station meter vault was found open, thought to be normally closed, also impacted the diurnal analysis.

SCOPE OF WORK

The following is intended to be a scope of work summary for this project.

Task 1.0 – Review CIPs

- 1.1 Obtain and review pertinent CIP documents to develop a list of projects that are suitable, in part or in whole, for near-term funding. City shall provide a written description of CIP if requested by Engineer.
- 1.2 A current project list has been made available to Burns & McDonnell that includes twenty-one (21) drinking water projects and thirty-six (36) wastewater projects. These projects are summarized with projects names, purpose, and budget, and year to be considered / completed. Several projects may need further definition to determine how, and if, they may be considered compatible with various funding agency's objectives / goals.

Task 2.0 – Identify funding sources and methods

- 2.1 Identify sources (governmental agencies) and application processes (written applications / on-line submittals) that are appropriate for acquiring funds for utility infrastructure projects. Consideration will be given to both planning projects (if deemed necessary) and construction projects. Coordinate in-person meeting(s) with the appropriate Federal and Missouri State Department personnel, as needed.
- 2.2 Provide project description recommendations to align with the goals of funding agencies where applicable. In some cases, a project may have more than one purpose, and thus, could be described in multiple ways for funding agency approval.

Task 3.0 – Research Qualifications & Schedules

- 3.1 Provide research which reveals the qualifications for grant funding and grant/loan combination funding. Ascertain the scheduling deadlines for funding applications /submissions. Determine prerequisites, qualifiers, and disqualifiers for various funding programs. Communicate with Federal and State of Missouri government

representatives to ascertain upcoming deadlines /issues (if any) regarding various funding stream options. Compose correspondence, if needed.

Task 4.0 – Compose Technical Memorandum

- 4.1 Provide a technical memorandum to the City summarizing the infrastructure funding research. This deliverable will include a project matrix matched with possible funding sources, significant eligibility criteria, project maximums, application and funding deadlines, and key contact information.

Task 5.0 – Field Testing and Model Calibration

- 5.1 Prepare a field test plan for City review to include the following:
 - a. Data collection for pump station status (on/off), flow, suction pressure, discharge pressure, ground storage level, and elevated storage level from City's SCADA system in 30-minute intervals for a period of seven days.
 - b. Conduct up to 25 fire hydrant tests per zone.
 - c. Deploy data loggers for pressure recording in the distribution system during the entire duration of the fire hydrant testing.
 - d. Calibrate the model within +/- five pounds per square inch (psi) of the SCADA data points, data loggers, and fire hydrant test data.
 - e. Prepare calibration tables comparing measured field test data with model results for each fire hydrant test, the pressure at data logger locations, and associated SCADA points.

Task 6.0 – Diurnal Analysis

- 6.1 Conduct diurnal analyses for each pressure zone to include the following:
 - a. Determine peak hour, minimum hour, and equalization storage factors for each 24-hour period within a seven-day field period captured by City's SCADA system and:
 - b. Prepare distribution system diurnal patterns from SCADA data for each pressure zone.
 - c. Prepare a representative 24-hour diurnal pattern from SCADA data for each pressure zone and integrate into the model.