ATTACHMENT "A"
SCOPE OF SERVICES

I. PROJECT DESCRIPTION

Freese and Nichols, Inc. (FNI) understands that the City of McKinney is seeking assistance to meet compliance requirements for the American Water Infrastructure Act of 2018, which consists of two primary components, a Risk and Resilience Assessment of the Drinking Water System and an update to the Water Utilities Emergency Response Plan.

In the last several years, FNI has provided substantial water utility engineering services for the City and as a result has a strong understanding of the system assets that will provide direct benefit for the evaluations necessary for this compliance requirement. FNI will leverage existing information and ready access to utility system data from its prior projects to efficiently conduct this compliance effort for the City.

- Drinking Water Risk and Resilience Assessment: All hazards approach to identify hazards, cybersecurity risks, relative probabilities of occurrence, identify assets at risk, and develop a management plan to mitigate risks. Required by Federal law to be completed by March 31, 2020.

- Emergency Response Plan Development/Update: Guidance document during emergencies that provides utility staff with well-defined response procedures intended to restore and maintain service delivery during times of crisis. Required by Federal law to be completed by September 30, 2020.

The scope of work below is specifically for the Risk and Resilience Assessment (RRA) and is based on the approaches outlined in the following guidance documents:

- ANSI/AWWA J100: Risk Analysis and Management for Critical Asset Protection (RAMCAP) Standard for Risk and Resilience Management of Water and Wastewater Systems
- AWWA Process Control System Security Guidance for the Water Sector

The following guidance documents will also serve as references for this scope of work:

- AWWA G430: Security Practices for Operation and Management
- AWWA G440: Emergency Preparedness Practices

The detailed scope of services to be performed is as follows:

II. GENERAL REQUIREMENTS

The table below outlines the compliance schedule based on utility size. The City of McKinney falls into the "100,000 or more" population category, with a corresponding deadline of March 31, 2020 and September 30, 2020 for the Risk and Resilience Assessment and Emergency Response Plan, respectively.

DEADLINE

System Size (Population Served)	Risk and Resiliency Assessment	Emergency Response Plan
100,000 or more	March 31, 2020	September 30, 2020
50,000 – 99,999	December 31, 2020	June 30, 2021
3,300 – 49,999	June 30, 2021	December 30, 2021

The Scope of Work includes Basic Services that must be performed to meet the minimum requirements of the AWIA Risk and Resilience Assessment.

Section III below lists tasks that must be completed to meet minimum compliance with the requirements of the AWIA Risk and Resilience Assessment. Requirements to update the current Emergency Response Plan are not included in this scope but remain as a future requirement for compliance.

III. BASIC SERVICES - Water System Risk and Resilience Assessment

Task 1. Project Administration and Meetings

i. Project Management
- Monthly Progress Reporting
- Accounting/invoicing

ii. Kick-off Meeting
- Discuss scope, schedule, goals, communication, and data needs.

iii. Data Collection and Review
- Prepare data request memorandum
- Assemble, review, and organize relevant data

iv. Progress Meetings / Workshops
- Attend up to three progress meetings to discuss project progress with City staff

- Conduct up to two workshops to facilitate discussions with various groups within the City's organization and to solicit input on the deliverables

Task 2. Asset Characterization

i. Identify mission or critical functions of utility to determine which assets support these functions
ii. Identify list of potentially critical assets
iii. Identify critical internal/external supporting infrastructures
iv. Document existing protective countermeasures and features
    i. In partnership coordination with City IT staff, conduct a screening to assess current cybersecurity level based on AWWA and NIST guidelines.
v. Estimate worst reasonable consequences from asset loss
vi. Prioritize critical assets using estimated consequences

Task 3. Threat Characterization

i. Identify malevolent threats
ii. Identify natural hazards in accordance with EPA requirements.
iii. Dependency and proximity hazards
iv. Evaluate and rank threat/asset pairs
    - Group into qualitative categories based on magnitude of consequences
    - In partnership coordination with City IT staff, identify key weaknesses, if any, and provide recommendations for the areas where Cybersecurity Practice Guides should be developed
v. Identify critical threat-asset pairs for risk planning

Task 4. Consequence Analysis (C)

i. Develop goals for consequence analysis
ii. Develop worst-reasonable-case assumptions to threat scenarios.
iii. Estimate potential consequences; injuries, financial loss to Utility, economic loss to City and duration and severity of service denial
iv. Record consequence values for each threat/asset pair
v. Documentation of specific assumptions and procedures used for performing the consequence analysis, the worst-reasonable-case assumptions, and the results of the consequence analysis

Task 5. Vulnerability Analysis (V)

i. Review facility details and layouts
ii. Conduct site visits to assess potential vulnerabilities of critical assets
iii. Document areas of vulnerability through photos, drawings etc. of each asset
iv. Record vulnerability estimates for threat/asset pairs

Task 6. Threat Analysis (T)

i. Estimate likelihood of malevolent event based on attractiveness of region or location of facility
ii. Estimate probability of natural hazard using historical records for the specific location of asset in accordance with EPA requirements
iii. Estimate likelihood of dependency and proximity hazards using historical records for frequency, severity of occurrences
iv. Record threat analysis values for threat/asset pairs

Task 7. Risk and Resilience Analysis (Risk = C*V*T)

i. Calculate risk for each threat/asset pair as the product of Consequence analysis (C), Vulnerability analysis (V), and Threat analysis (T)
ii. Calculate overall system level of resilience using Appendix H in AWWA J-100 using 10 factors:
    - Emergency Response Plan Status
    - NIMS (National Incident Management System) compliance
    - Mutual aid assistance
    - Emergency power
    - Ability to meet minimum demands
    - Lead time for critical equipment
    - Percent of staff with backup
    - Business continuity plan status
    - Utility bond rating
    - GASB assessment
iii. Record risk and resilience estimates for each threat/asset pair

Task 8. Risk and Resilience Prioritized Recommendations

i. Define acceptable levels from risk scores

ii. Identify countermeasures or mitigation options for those threat/asset pairs including physical improvements, operational changes and enhanced processes
iii. Identify options that potentially benefit multiple threat/asset pairs.
iv. Develop Capital Costs for highest ranking mitigation recommendations
v. Initial calculation of net benefit and benefit-cost ratio to estimate total value and risk reduction efficiency
vi. Review and select the options to be included in future capital improvement plans (CIPs)

Task 9. Prepare Water System Risk and Resilience Assessment Report and Develop Certification Letter

i. Draft report (electronic PDF copy)
ii. Review with City, incorporate comments and additional mitigation recommendations
iii. Develop Final report (electronic PDF copy plus 10 hard copies)
iv. Prepare Certification Letter, containing the following information:
- Community Water System ID
- Date certified
- Statement that the utility has conducted, reviewed, and revised as applicable the Risk and Resilience Assessment in accordance with the AWIA of 2018

Task 10. Provide Two City Council Briefings and Submit Council-Approved Certification Letter to EPA

i. Provide City Council a draft briefing of the Risk and Resilience Assessment effort, findings, and recommendations.
ii. Provide City Council a final briefing for a Resolution approving the Risk and Resilience Assessment and recommendations.
iii. Submit to EPA the Council-approved Certification Letter by March 31, 2020

IV. Additional Services not included in the Basic Scope of Services

City and consultant agree that the following services are beyond the Scope of Services described in the tasks above. However, Consultant can provide these services, if needed, upon the City's written request. Any additional amounts paid to the Consultant as the result of any material change to the Scope of the Project shall be agreed upon in writing by both parties before the services are performed. These Additional Services include, but are not limited to, the following:

i. Additional Public Meeting Assistance
ii. Design of Risk Mitigation Improvements
iii. Preparation of Funding Assistance for Risk Mitigation Improvements

ATTACHMENT "B"
PAYMENT SCHEDULE

Basic Services - Water System Risk and Resilience Assessment

Task 1	Project Administration and Meetings	$13,000
Task 2	Asset Characterization	$14,110
Task 3	Threat Characterization	$13,250
Task 4	Consequence Analysis	$9,690
Task 5	Vulnerability Analysis	$12,500
Task 6	Threat Analysis	$9,690
Task 7	Risk and Resilience Analysis	$10,880
Task 8	Risk and Resilience Prioritized Recommendations	$15,020
Task 9	Prepare Water System Risk and Resilience Assessment Report and Develop Draft Certification Letter	$11,950
Task 10	Provide Two City Council Briefings and Submit Council-Approved Certification Letter to EPA	$7,780
Basic Services Total:		**$117,860**