

**AGREEMENT SUMMARY
BROKEN ARROW MUNICIPAL AUTHORITY
OLD TOWN WATER SYSTEM IMPROVEMENTS
PROFESSIONAL CONSULTANT AGREEMENT
PROJECT NO. 195422**

1.0 Professional Consulting Firm:

- 1.1 Name: Garver, LLC
- 1.2 Telephone No.: 918-250-5922
- 1.3 Address: 6450 South Lewis Avenue, Suite 300, Tulsa, OK 74136

2.0 Project Name/Location: Old Town Water System Improvements

3.0 Statement of Purpose: Identify, model, and evaluate water system improvements to address fire flow and water quality concerns for the Old Town area.

4.0 Agreement Summary:

- 4.1 Agreement Amount: \$117,200.00
- 4.2 Agreement Time: 200 calendar days
- 4.3 Estimated Construction Cost: N/A

5.0 Contract Documents and Priority: The Broken Arrow Municipal Authority (OWNER), represented by the City Manager, and the Professional Consulting firm, (CONSULTANT), identified in paragraph 1.0 agree to perform this AGREEMENT in strict accordance with the clauses, provisions, and the documents identified as below, all of which are made part of this Contract. In the event of conflict, these documents shall be interpreted in the following order:

- 5.1 AGREEMENT with corresponding Attachments;
- 5.2 Duly authorized Amendments to the AGREEMENT;
- 5.3 AGREEMENT Summary;
- 5.4 Specific project written correspondence mutually recognized; and
- 5.5 Specific project verbal instructions mutually recognized.

6.0 Agreement Approved by the Owner on: _____

**AGREEMENT
FOR
PROFESSIONAL CONSULTANT SERVICES
BETWEEN
BROKEN ARROW MUNICIPAL AUTHORITY
AND
GARVER, LLC
FOR
OLD TOWN WATER SYSTEM IMPROVEMENTS
PROJECT NO. 195422**

This AGREEMENT, including Attachment A through Attachment E, between the Broken Arrow Municipal Authority (OWNER) and Garver, LLC, (CONSULTANT);

WITNESSETH:

WHEREAS, OWNER intends to identify water system improvements for the Old Town Area (PROJECT) for which, OWNER has requested that CONSULTANT provide certain professional services as required and,

WHEREAS, CONSULTANT is qualified and capable to provide the professional services required;

NOW, therefore, in consideration of the promises contained in this AGREEMENT, OWNER and CONSULTANT agree as follows:

ARTICLE 1 - EFFECTIVE DATE

The effective date of this AGREEMENT shall be the 7 day of May, 2019.

ARTICLE 2 - GOVERNING LAW

This AGREEMENT shall be governed by the laws of the State of Oklahoma and venue for any action concerning this Agreement shall be in the District Court of Tulsa County, Oklahoma.

ARTICLE 3 - SERVICES TO BE PERFORMED BY CONSULTANT

CONSULTANT shall perform the SERVICES described in Attachment A, Scope of Services. If construction phase services are included, the CONSULTANT shall be the OWNER'S agent and representative to observe, record and report with respect to all services that are required or authorized by the construction documents.

ARTICLE 4 – ORGANIZATION OF SUBMITAL DOCUMENTS

CONSULTANT shall prepare the documents as described in Attachment B as part of this Agreement.

ARTICLE 5 - COMPENSATION

OWNER shall pay CONSULTANT in accordance with Attachment D, Compensation.

ARTICLE 6 - OWNER'S RESPONSIBILITIES

OWNER shall be responsible for all matters described in Attachment C, OWNER'S Responsibilities and Special Conditions.

ARTICLE 7 - STANDARD OF CARE

CONSULTANT shall perform the SERVICES undertaken in a manner consistent with the prevailing accepted standard for similar services with respect to projects of comparable function

and complexity, and with the applicable state laws, as well as the specific codes, regulations, design criteria and construction specifications adopted by the owner and other governing policies published and generally considered authoritative by CONSULTANT'S profession that are in effect at the time of performance of these SERVICES. CONSULTANT is obligated to perform professional services in accordance with the foregoing standard with respect to the laws, codes, regulations, design criteria and construction specifications that are applicable pursuant to this AGREEMENT.

ARTICLE 8 - LIABILITY

8.1 General. Having considered the potential liabilities that may exist during the performance of these SERVICES, the benefits of the PROJECT, and CONSULTANT'S fee for the SERVICES; and in consideration of the promises contained in this AGREEMENT, OWNER and CONSULTANT agree to allocate and limit such liabilities in accordance with Article 10.

8.2 Indemnification. CONSULTANT agrees to defend, indemnify, and hold harmless OWNER, and its agents and employees, from and against legal liability for all claims, losses, damages, and expenses to the extent such claims, losses, damages, or expenses are caused by the negligent or intentional acts, errors, or omissions of CONSULTANT, its agents or employees. In the event claims, losses, damages, or expenses are caused by the joint or concurrent negligence of OWNER and CONSULTANT, or their agents or employees, then they shall be borne by each party in proportion to each entity's own negligence.

8.3 Consequential Damages. OWNER shall not be liable to CONSULTANT for any special, indirect, or consequential damages resulting in any way from the performance of the SERVICES such as, but not limited to, loss of use, loss of revenue, or loss of anticipated profits.

8.4 Survival. Upon completion of all SERVICES, obligations, and duties provided for in this AGREEMENT, or if this AGREEMENT is terminated for any reason, the terms and conditions of this Article 8 shall survive.

ARTICLE 9 - INSURANCE

During the performance of the SERVICES under this AGREEMENT, CONSULTANT shall maintain the following insurance:

- (1) General Liability Insurance, with a combined single limit of \$1,000,000 for each occurrence and \$1,000,000 in the aggregate;
- (2) Automobile Liability Insurance, with a combined single limit of not less than \$1,000,000 for each person, not less than \$1,000,000 for each accident and not less than \$1,000,000 for property damage; and
- (3) Professional Liability Insurance, with a limit of \$1,000,000 annual aggregate.

CONSULTANT shall furnish OWNER certificates of insurance, which shall include a provision that such insurance shall not be canceled without at least thirty (30) days written notice to OWNER. All PROJECT sub-consultants shall be required to name OWNER and CONSULTANT as certificate holders on their certificate of insurance for the PROJECT, and shall be required to indemnify OWNER and CONSULTANT to the same extent. CONSULTANT shall be held responsible to submit certificates of insurance for sub-consultants to OWNER prior to the sub-consultant's release to commence work.

ARTICLE 10 - LIMITATIONS OF RESPONSIBILITY

CONSULTANT shall not be responsible for: (1) construction means, methods, techniques, sequences, procedures, or safety precautions and programs in connection with the construction of the PROJECT; or (2) procuring permits, certificates, and licenses required for any construction unless such responsibilities are specifically assigned to CONSULTANT in Attachment A, Scope of Services.

ARTICLE 11 - LIMITATIONS OF RESPONSIBILITIES FOR ACTS OF OTHERS

CONSULTANT shall not at any time supervise, direct, control or have authority over any work performed by any employee, contractor or other agent of OWNER. CONSULTANT shall not be responsible for the acts or omissions of any employee, contractor or other agent associated with the PROJECT except for its own employees, subcontractors and other agents.

ARTICLE 12 - OPINIONS OF COST AND SCHEDULE

Since CONSULTANT has no control over the cost of labor, materials, or equipment furnished by others, or over the resources provided by others to meet PROJECT schedules, CONSULTANT'S opinion of probable costs and of PROJECT schedules shall be made on the basis of experience and qualifications as a professional. CONSULTANT does not guarantee that proposals, bids, or actual PROJECT costs will conform to OWNER'S cost estimates or that actual schedules will conform to OWNER'S projected schedules.

ARTICLE 13 - REUSE OF DOCUMENTS

All documents, including, but not limited to, drawings, specifications, and details, reports, etc. prepared by CONSULTANT pursuant to this AGREEMENT are instruments of service in respect to the PROJECT. They are not intended or represented to be suitable for reuse by CONSULTANT or others on extensions of the PROJECT or on any other project. Any reuse or adaptation without prior written verification by the OWNER for the specific purpose intended will be at CONSULTANT'S sole risk and without liability or legal exposure to the OWNER. CONSULTANT shall defend, indemnify, and hold harmless the OWNER against all claims, losses, damages, injuries, and expenses, including attorney's fees, arising out of or resulting from such reuse.

ARTICLE 14 - OWNERSHIP OF DOCUMENTS AND INTELLECTUAL PROPERTY

Except as otherwise provided herein, engineering documents, drawings, and specifications prepared by CONSULTANT as part of the SERVICES shall become the property of OWNER. CONSULTANT shall retain its rights in its standard drawing details, specifications, data bases, computer software, and other proprietary property. Rights to intellectual property developed, utilized, or modified in the performance of the SERVICES shall remain the property of CONSULTANT, but shall be provided to the OWNER, at no additional expense to the OWNER.

ARTICLE 15 - TERMINATION

This AGREEMENT may be terminated by either party upon written notice in the event of substantial failure by the either party to perform in accordance with the terms of this AGREEMENT. The non-performing party shall have fifteen (15) calendar days from the date of the termination notice to cure or to submit a plan for cure acceptable to the other party.

OWNER may suspend performance of this AGREEMENT for OWNER'S convenience upon written notice to CONSULTANT. Upon restart, an equitable adjustment may be made to CONSULTANT'S compensation, if the period of suspension has created an economic hardship for the CONSULTANT.

ARTICLE 16 - DELAY IN PERFORMANCE

Neither OWNER nor CONSULTANT shall be considered in default of this AGREEMENT for delays in performance caused by circumstances beyond the reasonable control of the non-performing party. For purposes of this AGREEMENT, such circumstances include, but are not limited to, abnormal weather conditions such as floods, earthquakes, fire; civil disturbances such as war, riots, or other civil epidemic; power outages, strikes, lockouts, work slowdowns, or other labor disturbances; sabotage; judicial restraint, and inability to procure permits, licenses, or authorizations from any local, state, or federal agency for any of the supplies, materials, accesses, or services required to be provided by either OWNER or CONSULTANT under this AGREEMENT.

Should such circumstances occur, the non-performing party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this AGREEMENT.

ARTICLE 17 - COMMUNICATIONS

Any communication required by this AGREEMENT shall be made in writing to the address specified below:

OWNER: Broken Arrow Municipal Authority
485 N. Poplar Street
Broken Arrow, OK 74012
Contact: Mr. Roger D. Hughes, P.E.
Engineering Division Manager

CONSULTANT: Garver, LLC
6450 South Lewis Avenue, Suite 300
Tulsa, OK 74136
918-250-5922

Contact Name: Ms. Mary Elizabeth Mach, P.E.
Senior Project Manager

Nothing contained in this Article shall be construed to restrict the transmission of routine communications between representatives of OWNER and CONSULTANT.

ARTICLE 18 - WAIVER

A waiver by either OWNER or CONSULTANT of any breach of this AGREEMENT shall be in writing. Such a waiver shall not affect the waiving party's rights with respect to any other or further breach.

ARTICLE 19 - SEVERABILITY

The invalidity, illegality, or unenforceability of any provision of this AGREEMENT or the occurrence of any event rendering any portion or provision of this AGREEMENT void shall in no way affect the validity or enforceability of any other portion or provision of this AGREEMENT. Any void provision shall be deemed severed from this AGREEMENT, and the balance of this AGREEMENT shall be construed and enforced as if this AGREEMENT did not contain the particular portion or provision held to be void. The parties further agree to amend this AGREEMENT to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this Article shall not prevent this entire AGREEMENT from being void should a provision which is of the essence of this AGREEMENT be determined void.

ARTICLE 20 - INTEGRATION

This AGREEMENT represents the entire and integrated AGREEMENT between OWNER and CONSULTANT. It supersedes all prior and contemporaneous communications, representations, and agreements, whether oral or written, relating to the subject matter of this AGREEMENT.

ARTICLE 21 - SUCCESSORS AND ASSIGNS

To the extent permitted by Article 22, OWNER and CONSULTANT each binds itself and its successors and assigns to the other party to this AGREEMENT.

ARTICLE 22 - ASSIGNMENT

Neither OWNER nor CONSULTANT shall assign its duties under this AGREEMENT without the prior written consent of the other party. Unless otherwise stated in the written consent to an

assignment, no assignment will release or discharge the assignor from any obligation under this AGREEMENT. Nothing contained in this Article shall prevent CONSULTANT from employing independent sub-consultants, associates, and sub-contractors to assist in the performance of the SERVICES. However, third party entities must comply with Article 9.

ARTICLE 23 - THIRD PARTY RIGHTS

Nothing in this AGREEMENT shall be construed to give any rights or benefits to anyone other than OWNER and CONSULTANT.

ARTICLE 24 - COMPLETION

CONSULTANT shall complete the services within the time frame outlined on Attachment E, Schedule, subject to conditions which are beyond the control of the CONSULTANT.

ARTICLE 25 - IMMIGRATION COMPLIANCE

25.1 Consultant shall demonstrate that he:

25.1.1 Has complied, and shall at all times during the term of this Contract, comply in all respects with all immigration-related laws, statutes, ordinances and regulations including without limitation, the Immigration and Nationality Act, as amended, the Immigration Reform and Control Act of 1986, as amended, and the Oklahoma Taxpayer and Citizen Protection Act of 2007 (Oklahoma HB 1804) and any successor laws, ordinances or regulations (collectively, the Immigration Laws"); and

25.1.2 Has properly maintained, and shall at all times during the term of this Contract, maintain any and all employee records required by the U.S. Department of Homeland Security ("DHS"), including, without limitation, properly completed and maintained Form I-9s for each of the Consultants employees; and

25.1.3 Has verified the employment eligibility for all employees hired on or after July 1, 2008 through DHS's E-Verify system, and shall at all times continue to verify the employment eligibility of all employees hired during the term of this Contract; and

25.1.4 Has required, and will at all times during the term of this Contract, require any sub-contractor utilized, hired or sub-contracted for by Consultant for the completion or undertaking of any duties, tasks or responsibilities under this Contract, to comply the requirements and obligations imposed by the Immigration Laws and set forth in Paragraph (I), parts (a), (b) and (c), above, with regards to each of the sub-contractor's employees.

25.2 Consultant will indemnify, defend and hold harmless City against any loss, cost, liability, expense (including, without limitation, costs and expenses of litigation and reasonable attorney's fees) demands, claims, actions, causes of action, liabilities, suits, damages, including special and consequential damages that arise from or in connection with, directly or indirectly, Consultants failure, deliberate or negligent, to fulfill its obligations and representations regarding verifying the employment eligibility of its employees and the employees of any subcontractor utilized by Contractor as set forth more fully in Paragraph 25.1 above.

IN WITNESS WHEREOF, the City Manager has hereunto set his hand, for and on behalf of the Broken Arrow Municipal Authority and the CONSULTANT has signed, or caused his name to be signed, and seal affixed by proper authority, the day and year first above written and these presents have been executed in triplicate counterparts.

OWNER:
Broken Arrow Municipal Authority

CONSULTANT:
Garver, LLC

Approved as to form:

By *[Signature]*
Assistant-City Attorney

By *R McIntyre*
Randall G. McIntyre, Vice President

Date *4/15/19*

By _____
Michael L. Spurgeon, City Manager

(CORPORATE SEAL) if applicable

Date _____

Attest:

Attest:

By _____
Curtis Green, City Clerk

By *[Signature]*
Mary Elizabeth Mach, Sr. Project Manager

Date *April 15, 2019*

Date _____

VERIFICATION

State of Oklahoma)
County of Cleveland) §

Before me, a Notary Public, on this 15th day of April, 2019, personally appeared Randall McIntyre, known to be to be the (President, **Vice-President**, Corporate Officer, Member, Partner, or Other: _____) of Garver, LLC, and to be the identical person who executed the within and foregoing instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

My Commission Expires:

3/22/23

Lisa Nipper

Notary Public



**RESOLUTION ADOPTED
BY THE BOARD OF DIRECTORS OF
GARVER-USA, INC.
AND
THE MANAGERS COMMITTEE OF
GARVER, LLC,
MEETING JOINTLY**

The Board of Directors of Garver-USA, Inc., and the Managers Committee of Garver, LLC, meeting jointly, hereby certify that as duly elected and qualified officers of said firms, that the following resolution was adopted at a specially called meeting held on the 16th day of February, 2018, and that said Resolution is now in full force and effect:


NOW, THEREFORE, IT IS RESOLVED, that:

Daniel H. Williams, Chairman of the Board, Chair, President, Chief Executive Officer
Brock E. Hoskins, Executive Vice President – Treasurer, Chief Operating Officer
Herbert J. Parker, Senior Vice President – Secretary, Chief Administrative Officer
Michael J. Griffin, Senior Vice President
Jerry D. Holder, Senior Vice President
Steven M. Jones, Senior Vice President
Clayton J. Dollerschell, Vice President
Glynn A. Fulmer, Vice President
Michael J. Graves, Vice President
Glenn G. Gregory, Jr., Vice President
Jerry D. McCarley, Vice President
Frank O. McIlwain, Vice President
Randall G. McIntyre, Vice President
Wm. Earl Mott, Jr., Vice President
John H. Ruddell, Vice President
Brent S. Schniers, Vice President
Brian S. Shannon, Vice President
Patrick R. Sisemore, Vice President
Wallace C. Smith, Vice President
Jeffrey L. Sober, Vice President
Nicci D. Tiner, Vice President
John T. Watkins, III, Vice President
Scott H. Zotti, Vice President
Dathan A. Gaskill, Chief Financial Officer
Gregory A. Archer, Director of Architecture
Christopher M. Bohm, Senior Project Manager
Nick J. Altobelli, Senior Project Manager
Steven L. Haynes, Senior Project Manager
Jason C. Langhammer, Senior Project Manager
Ronald S. Petrie, Senior Project Manager

are authorized and empowered to execute proposals and contracts on behalf of Garver, LLC and Garver-USA, Inc.

IN WITNESS WHEREOF we have signed by name and affixed the seal of the Company this 16th day of February, 2018.




Daniel H. Williams, Chairman, Chair


Herbert J. Parker, Secretary

**ATTACHMENT A
TO AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND GARVER, LLC (CONSULTANT)
FOR
OLD TOWN WATER SYSTEM IMPROVEMENTS (PROJECT NO. 1954 22)**

SCOPE OF SERVICES

The following scope of services shall be made a part of the AGREEMENT dated the 7 day of May, 2019.

1.0 PROJECT UNDERSTANDING

CONSULTANT understands that the OWNER has retained their professional services in order to identify, model, and evaluate improvements to address fire flow and water quality concerns for the Old Town area. Additionally, a list of projects will be developed with an opinion of probable construction cost for each. The project area will be the square mile between Kenosha Street and Houston Street from Elm Place to 9th Street (focus area), as shown in Figure 1.

2.0 PROJECT SCOPE

CONSULTANT shall provide consulting services as follows:

Project Management
Water System Improvements for the Old Town Area, including:
 Water Model Update
 Hydraulic Model Validation and Calibration
 Recommendations for Waterline Improvements
 Capital Improvements Evaluation

3.0 SCOPE OF SERVICES

3.1 Project Management

3.1.1. Project Administration

CONSULTANT will prepare a Quality Control (QC) Plan to document the approach for quality assurance and quality control.

CONSULTANT will also prepare and provide monthly invoicing progress reports and summary of progress (% complete) for each task.

3.1.2. Meeting and Workshops

A kickoff meeting will be held with OWNER Staff to review the project objectives, identify roles and responsibilities, outline QC plan protocol and discuss informational needs. CONSULTANT will facilitate monthly progress meetings with the OWNER's project management team.

3.2 Water Model Update

The OWNER will provide the most current version of the existing InfoWater hydraulic model to CONSULTANT. This will include the most recent updates for the Battle Creek area performed by others.

3.2.1. Hydraulic Model Geometry Update

CONSULTANT assumes that the hydraulic model geometry has been updated for 12-inch and larger pipes outside of the focus area. CONSULTANT will use OWNER operator as-built information to update pipes in the focus area based on maps provided by the OWNER. CONSULTANT assumes all information provided by the OWNER as correct.

CONSULTANT will assign elevations to junctions in the updated area(s) based on topographical information (e.g., contour shapefiles) provided by the OWNER. CONSULTANT will reassign demands to junctions in the updated area(s), as necessary, to accommodate the geometry changes from the model update. Demands will be reassigned based on the demand in the OWNER's existing model.

3.2.2. Hydraulic Model Demand Update

CONSULTANT will update the hydraulic model demands within the focus area to accurately reflect current average and maximum day conditions based on the following information provided by the OWNER:

- Daily Production from Verdigris River Water Treatment Plant (WTP) and Wholesale Sources for 2010-2018
- Monthly Total System Demand for 2017-2018 from Customer Meter Records
- Number of Connections Annually for 2010-2018

CONSULTANT will adjust the demands in the model based on the differences between the existing model demands and current demand conditions for average and maximum day scenarios. CONSULTANT will add model demands associated with redevelopment areas provided by the OWNER. The OWNER will provide a map of the focus area with areas delineated and average and maximum day demand increases per area to apply to the model for the focus area. CONSULTANT will create a new demand scenario for maximum month demand based on nodal demands in the average and maximum day demand scenarios and maximum month demand values derived from monthly operating reports (MORs) provided by the OWNER.

3.2.3. Review System Storage

CONSULTANT will review the configuration of the storage in the existing model. CONSULTANT assumes that elevations, dimensions/volumes, and approximate tank mixing models are included in the existing model. Any updates to system storage will be considered Extra Work. Detailed tank evaluations using computational fluid dynamics (CFD) software are not included in this work.

3.2.4. Review System Pumping Configurations and Controls

CONSULTANT will review the configuration and controls for the WTP high-service pump station in the existing model. CONSULTANT assumes that the existing

pump configurations, pump curves, and pump control information are included in the existing model. Updating the configuration or controls for these facilities will be considered Extra Work.

3.2.5. Review Existing Water Quality Data

CONSULTANT will provide one (1) data request, which will include existing monitoring plans and sampling locations, corrosion control plans, historical raw water, finished water, and distribution system water quality parameters and customer complaint records for the focus area. OWNER staff will compile this data and provide it to CONSULTANT for analysis. CONSULTANT will summarize this data in tables and plots to help define water quality issues such as turbidity, color, residual loss, or others. CONSULTANT will also use existing water quality data to evaluate the occurrence of nitrification events in the Old Town area. CONSULTANT will identify likely nitrification events, any trends in their locations and timing, and water quality factors that may have contributed to these events.

If water quality data gaps are identified, CONSULTANT will prepare a request for additional field sampling to be performed by OWNER staff at current sampling locations. OWNER staff will be responsible for coordinating the appropriate equipment, sampling supplies, chain of custody on samples, and delivery of samples to the laboratory if not conducted in-house. Laboratory fees for testing not conducted by the OWNER will be paid by CONSULTANT and reimbursed by the OWNER as noted in Attachment D.

3.3 Hydraulic Model Validation and Calibration

3.3.1. Hydraulic Model Validation

CONSULTANT will utilize historical data to validate the hydraulic model and define typical initial and boundary conditions for scenarios. Modeling will include up to three (3) scenario runs that correspond to the various demand conditions (i.e., average day, maximum month, and maximum day) in model scenarios, and comparisons will be made between model results and historical SCADA and water quality data. Specifically, it is anticipated that SCADA data for the WTP high-service pump station will be used as model boundary conditions. Tower levels, pressure, and flow information for the tanks and sources of supply serving the Old Town area will be used to assess the agreement between field and model results.

3.3.2. Water Quality Data Collection

CONSULTANT will provide sampling plans to be executed by OWNER staff to evaluate water quality within the distribution system on the basis of dissolved metals and corrosivity and identify bulk reaction kinetics for chloramines (focused on residual decay) and evaluate corrosivity in up to two (2) finished waters. OWNER staff will be responsible for coordinating the appropriate equipment, sampling supplies, chain of custody on samples, and delivery of samples to the laboratory if not conducted in-house. Laboratory fees for testing not conducted by the OWNER will be paid by CONSULTANT and reimbursed by the OWNER as noted in Attachment D.

3.3.3. Hydraulic Field Data Collection

CONSULTANT will prepare a field data collection plan, consisting of pressure logging and hydrant flow testing for up to ten (10) hydrants within and adjacent to

the focus area. CONSULTANT will provide the pressure logging and hydrant flow testing equipment, which will be installed and uninstalled by OWNER staff. The intent of the field data collection is to improve model calibration of hydraulics impacting the focus area. . It is anticipated that pressure data loggers will be installed for a two-week period near the beginning of the project and concurrent with the hydrant flow testing. CONSULTANT staff will accompany OWNER staff to conduct the flow tests. It is anticipated that OWNER staff will provide system data as noted in section 3.3.1 for conditions during the flow tests. One (1) CONSULTANT staff will be present for one (1) day to guide data collection operations in cooperation with OWNER staff. CONSULTANT staff will not operate any OWNER facilities.

3.3.4. Hydraulic Model Calibration

CONSULTANT will calibrate the hydraulic model based on results from the hydraulic model validation and the collected water quality and field data. The intent of the hydraulic model calibration is to improve hydraulic and water quality results of interest in the focus area. The calibration may include adjustment to demands in certain areas of the system, adjustment of pump curves to match system conditions, and adjustments to friction factors and bulk chloramine decay coefficients, among other factors. Pipe wall reaction coefficients are not included in this modeling. The results of the hydraulic model calibration will be documented in a TM.

3.3.5. Hydraulic Model Calibration and Validation TM

CONSULTANT will prepare a technical memorandum (TM) documenting the results of the hydraulic model calibration and validation. This TM will include a recommendation on the need for additional hydraulic and/or water quality calibration for the Old Town area, including field investigations, as necessary. If identified as critical to project success, CONSULTANT will prepare an additional filed data collection plan for any additional recommended field investigations and assist the OWNER with subsequent field data collection and model calibration as additional work.

3.4 Capital Improvements Evaluation

CONSULTANT will evaluate a total of twenty-five (25) individual distribution system improvement projects to improve fire flow and/or water quality in the focus area. The projects will be evaluated using the hydraulic model and other factors that may affect water quality, such as pipe material. The individual distribution system improvement projects will consist of continuous or adjacent pipe segments of one mile or less. CONSULTANT will also evaluate up to five (5) changes in system operations to improve water quality.

3.4.1. Fire Flow Improvements

CONSULTANT will evaluate fire flow projects for their ability to provide fire flow at build-out, based on the information provided by the OWNER. CONSULTANT anticipates approximately five (5) major fire flow improvements projects that will be evaluated using the hydraulic model as part of up to twenty (20) prioritization sequence scenarios, which will consist of combinations of projects at intermediate points of program completion. Fire flow scenarios will be evaluated using maximum day demands based on fire flow criteria provided by the OWNER.

3.4.2. Water Quality Improvements

CONSULTANT will evaluate water quality improvements projects based on both hydraulic evaluations and other factors. Where possible, the water quality improvement projects will be developed congruently with the fire flow improvements for consistency.

CONSULTANT will complete hydraulic evaluations using the hydraulic model for up to eight (8) projects to improve water age in the Old Town area. Water age will be assessed for 7-day periods (representative weeks) under both average day and maximum month conditions, which will result in a total of sixteen (16) water age scenarios.

Water quality improvements will also include pipe replacements based on other factors, such as pipe materials, customer complaint locations, and flow patterns within the Old Town area. For these scenarios, the pipe size will be based on the fire flow analysis, and the prioritization will be based on the anticipated water quality impacts.

CONSULTANT will also analyze water quality data collected per section 3.3.2 to evaluate the aggressiveness of the waters tested. Computer programs such as the RTW model will be used to identify chemical changes recommended to improve chemical stability within the Old Town area of the distribution system.

3.4.3. Workshops

CONSULTANT will lead two workshops with OWNER staff: one (1) to review/confirm capital improvement projects and one (1) to present the final results and recommendations for the project.

3.4.4. Capital Improvements Evaluation and TM

A TM will document the results from the capital improvements evaluation and provide conceptual cost estimates for each capital improvement project for budgetary and planning purposes. The conceptual level cost estimates will include opinions of probable construction costs (OPCC) in current dollar values for both public bidding and in-house construction, including material procurement, construction, professional services, contractor overhead and profit (for public bidding), and contingency. The range of accuracy for the OPCC at this level of evaluation is anticipated to be -30% to +50% of the actual project costs, which shall be used for budget authorization or control. CONSULTANT does not warrant OPCC will be the actual bid amounts.

3.5 Old Town Area Capital Improvements Report

CONSULTANT will collect the results from tasks detailed in sections 3.1-3.4 above and compile them into a comprehensive report. The report will include:

- Executive Summary
- Introduction
- Summary of Previous Water Hydraulic Model Development
- Summary of Historical Data
- Water Model Update
 - Hydraulic Model Validation and Calibration
 - Hydraulic Model Assumptions
 - Hydraulic Modeling Results

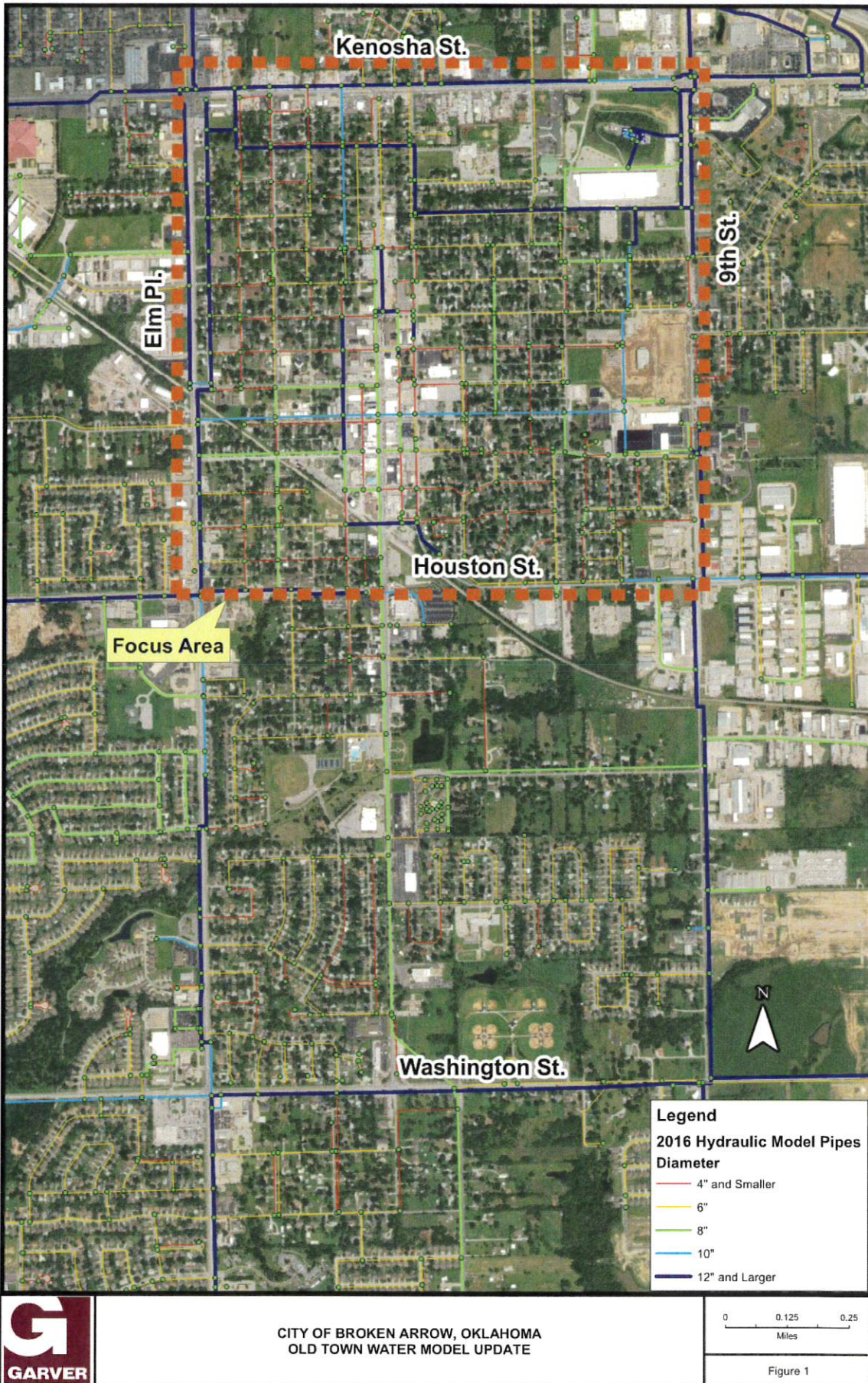
- Evaluation of Capital Improvements
- Prioritized Lists of Distribution Improvements with OPCC
 - Water Quality Improvements
 - Fire Flow Improvements

3.6 Extra Work (Additional Services)

The following items are not included under this agreement but will be considered as extra work (additional services):

1. Updating the water system model with any details beyond what is provided by the OWNER and listed herein, including updating storage facilities, pumping facilities, control setpoints, and any model geometry outside of the focus area.
2. Recommended field investigations and assistance with subsequent field data collection and model calibration beyond that listed herein.
3. Detailed modeling focusing on additional areas of the distribution system or other system storage tanks not included herein.
4. Water quality sampling.
5. Modeling/evaluation of potential DBP formation.
6. Modeling/evaluation of nitrification beyond that listed herein.
7. Development of a nitrification action plan.
8. Modeling of coefficients for pipe wall interactions.
9. Computational fluid dynamics (CFD) modeling.
10. Hydraulic transient/surge modeling.
11. Evaluation of additional capital improvements or reevaluation of capital improvements due to changed conditions or after previous alternate direction and/or approval.
12. Submittals or deliverables in addition to those listed herein.
13. Meetings or site visits in addition to those included herein.
14. Detailed design of any improvements associated with the capital improvements.
15. Survey or geotechnical services of any kind.
16. Construction phase services of any kind.
17. Environmental Handling and Documentation, including wetlands identification or mitigation plans or other work related to environmentally or historically (culturally) significant items.
18. Coordination with FEMA and preparation/submittal of a CLOMR and/or LOMR.
19. ODEQ engineering report submittals.
20. Coordination with county, state, and federal agencies, including ODEQ and OWRB.

Extra Work or Additional Services will be as directed by the OWNER in writing for an additional fee as agreed upon by the OWNER and CONSULTANT.



**ATTACHMENT B
TO AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND GARVER, LLC (CONSULTANT)
FOR
OLD TOWN WATER SYSTEM IMPROVEMENTS (PROJECT NO. 195422)**

ORGANIZATION OF SUBMITTAL DOCUMENTS

The CONSULTANT shall prepare the following documents as described as part of the AGREEMENT dated the 1 day of May, 2019.

- 1.0 MODEL VALIDATION AND CALIBRATION TECHNICAL MEMORANDUM:**
The CONSULTANT shall submit five (5) hardcopies and an electronic PDF copy of the Model Validation and Calibration Technical Memorandum. This technical memorandum will be provided as a preliminary document. Updates and changes to the technical memorandum will be reflected in the Old Town Area Improvements Report.
- 2.0 CAPITAL IMPROVEMENTS EVALUATION TECHNICAL MEMORANDUM:** The CONSULTANT shall submit five (5) hardcopies and an electronic PDF copy of the Capital Improvements Evaluation Technical Memorandum. This technical memorandum will be provided as a preliminary document. Updates and changes to the technical memorandum will be reflected in the Old Town Area Improvements Report.
- 3.0 DRAFT OLD TOWN AREA IMPROVEMENTS REPORT:** The CONSULTANT shall submit five (5) hardcopies and an electronic PDF copy of the Draft Old Town Area Improvements Report.
- 4.0 FINAL OLD TOWN AREA IMPROVEMENTS REPORT:** The CONSULTANT shall submit five (5) hardcopies and an electronic PDF copy of the Final Old Town Area Improvements Report.
- 5.0 ELECTRONIC COPY OF UPDATED HYDRAULIC MODEL:** The CONSULTANT shall submit the updated InfoWater hydraulic model file.

ATTACHMENT C
TO AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND GARVER, LLC (CONSULTANT)
FOR
OLD TOWN WATER SYSTEM IMPROVEMENTS (PROJECT NO. 195422)

OWNER'S RESPONSIBILITIES AND SPECIAL CONDITIONS

The following list of special OWNER'S responsibilities and contract special conditions shall be made a part of this AGREEMENT dated the 7 day of may, 2019.

1.0 OWNER'S RESPONSIBILITIES

- 1.1 OWNER shall furnish to CONSULTANT all available information pertinent to the PROJECT including previous reports and any other data relative to design and construction of the PROJECT;
- 1.2 OWNER shall furnish to CONSULTANT all public utility information available relative to the design and construction of the PROJECT.
- 1.3 OWNER shall furnish to CONSULTANT list of codes adopted by the municipality as well as subdivision regulations, design criteria and construction standards and specifications that may be pertinent to the design and construction of the PROJECT;
- 1.4 OWNER shall be responsible for all permit fees and for all reproduction costs associated with the bidding of the final approved construction documents required for the construction of this PROJECT;
- 1.5 OWNER shall be responsible for all land/easement acquisition costs and filing of the required legal documents, if necessary; and
- 1.6 OWNER shall examine all studies, reports, sketches, estimates, specifications, plan drawings, proposals, and other documents presented by the CONSULTANT and render in writing decisions pertaining thereto within a reasonable time so as not to delay the SERVICES of the CONSULTANT.

2.0 SPECIAL CONDITIONS

- 2.1 None

ATTACHMENT D
TO AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND GARVER, LLC (CONSULTANT)
FOR
OLD TOWN WATER SYSTEM IMPROVEMENTS (PROJECT NO. 195422)

COMPENSATION AND ADDITIONAL SERVICES

The following compensation and hourly rates shall apply as described in Attachment D and shall be made a part of the AGREEMENT dated the 1 day of May, 2019.

1.0 BASIC COMPENSATION

The basic compensation for the CONSULTANT to perform all duties and responsibilities associated with the Scope of Services as described in Attachment A shall be in accordance with the following payment breakdown:

- 1.1 Project Management: The OWNER shall pay the CONSULTANT a lump sum amount of \$10,400.00 for Project Management. This amount includes all labor, material, overhead and profit associated with the Scope of Services.
- 1.2 Water Model Update: The OWNER shall pay the CONSULTANT a lump sum amount of \$16,300.00 for the completion of the Water Model Update. This amount includes all labor, material, overhead and profit associated with the Scope of Services.
- 1.3 Hydraulic Model Validation and Calibration: The OWNER shall pay the CONSULTANT a lump sum amount of \$30,200.00 for the completion of the Hydraulic Model Validation and Calibration. This amount includes all labor, material, overhead and profit associated with the Scope of Services.
- 1.4 Capital Improvements Evaluation: The OWNER shall pay the CONSULTANT a lump sum amount of \$40,500.00 for the completion of the Capital Improvements Evaluation. This amount includes all labor, material, overhead and profit associated with the Scope of Services.
- 1.5 Old Town Area Capital Improvements Report: The OWNER shall pay the CONSULTANT a lump sum amount of \$9,800.00 for the completion of the Old Town Area Capital Improvements Report. This amount includes all labor, material, overhead, and profit associated with the Scope of Services.

2.0 ADDITIONAL SERVICES BASED ON TIME

The hourly rates set forth below include all salaries, benefits, overhead and other indirect costs including federal, state, and local taxes, plus profit and effective as of May 1, 2019 through July 1, 2020:

Professional Services

Engineers

E-1.....	\$ 107.00
E-2.....	\$ 123.00
E-3.....	\$ 149.00

E-4.....	\$ 174.00
E-5.....	\$ 212.00
E-6.....	\$ 266.00
Management/Administration	
X-2.....	\$ 83.00

3.0 REPRODUCTION

All charges for reproduction shall be included in Basic Compensation Fee of the Professional Consultant. No separate payment will be made for these expenses.

4.0 MILEAGE

All mileage costs shall be included in the Basic Compensation of the Professional Consultant. No separate payment will be made for these expenses.

5.0 DIRECT COSTS

All direct costs other than water quality laboratory expenses shall be included in the Basic Compensation of the Professional Consultant. No separate payment will be made for these expenses.

In addition to the Basic Compensation, the OWNER will reimburse the CONSULTANT for laboratory testing not conducted by the OWNER based on the direct costs plus 10 percent. The amount estimated for the Water Quality Laboratory Testing allowance is \$10,000.

6.0 ADJUSTMENT CLAUSE

The rates and costs described in this AGREEMENT shall not be revised annually, unless mutually agreed upon by both parties.

ATTACHMENT E
TO AGREEMENT FOR PROFESSIONAL CONSULTING SERVICES
BETWEEN BROKEN ARROW MUNICIPAL AUTHORITY (OWNER)
AND GARVER, LLC (CONSULTANT)
FOR
OLD TOWN WATER SYSTEM IMPROVEMENTS (PROJECT NO. 195422)

PROJECT SCHEDULE

The following schedule shall be made a part of the AGREEMENT dated the 7 day of May, 2019.

1.0 MODEL UPDATE:

- 1.1 Complete model update: 30 calendar days after receipt of final as-built map and OWNER input for demand update.

2.0 HYDRAULIC MODEL VALIDATION AND CALIBRATION:

- 2.1 Submit Model Validation and Calibration Technical Memorandum: 30 days from receipt of historical SCADA data or 30 days from field flow tests, whichever is later.

3.0 CAPITAL IMPROVEMENTS EVALUATION:

- 3.1 Submit Capital Improvements Evaluation Technical Memorandum: 90 days from completion of the Model Validation and Calibration Technical Memorandum or 30 days after receipt of comments from capital improvement projects workshop, whichever is later.

4.0 DRAFT OLD TOWN AREA IMPROVEMENTS REPORT

- 4.1 Submit Draft Old Town Area Improvements Report: 30 days from completion of the Capital Improvements Evaluation Technical Memorandum or 30 days after receipt of comments from capital improvements results and recommendations workshop, whichever is later.

5.0 FINAL OLD TOWN AREA IMPROVEMENTS REPORT

- 5.1 Submit Final Old Town Area Improvements Report: 20 days from receipt of comments on the draft report.