

ORDINANCE NO. 24-2084

AN ORDINANCE OF THE CITY OF DENTON, A TEXAS HOME-RULE MUNICIPAL CORPORATION, AUTHORIZING THE CITY MANAGER TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT WITH FREESE AND NICHOLS, INC., FOR REGULATORY PERMITTING, PROCESS EVALUATION, AND DESIGN SERVICES FOR THE RAY ROBERTS WATER TREATMENT PLANT EXPANSION PROJECT FOR THE WATER UTILITIES DEPARTMENT AS SET FORTH IN THE CONTRACT; PROVIDING FOR THE EXPENDITURE OF FUNDS THEREFOR; AND PROVIDING AN EFFECTIVE DATE (RFQ 7574-029 – PROFESSIONAL SERVICES AGREEMENT FOR REGULATORY PERMITTING, PROCESS EVALUATION, AND DESIGN SERVICES AWARDED TO FREESE AND NICHOLS, INC., IN THE NOT-TO-EXCEED AMOUNT OF \$21,000,000.00).

WHEREAS, on March 23, 2021, the City Council approved a pre-qualified engineer list for Water and Wastewater (Ordinance 21-546), and the professional services provider (the “Provider”) mentioned in this ordinance is being selected as the most highly qualified on the basis of its demonstrated competence and qualifications to perform the proposed professional services; and

WHEREAS, this procurement was undertaken as part of the City’s governmental function; and

WHEREAS, the fees under the proposed contract are fair and reasonable and are consistent with, and not higher than, the recommended practices and fees published by the professional associations applicable to the Provider’s profession, and such fees do not exceed the maximum provided by law; NOW, THEREFORE,

THE COUNCIL OF THE CITY OF DENTON HEREBY ORDAINS:

SECTION 1. The City Manager, or their designee, is hereby authorized to enter into an agreement with Freese and Nichols, Inc., for regulatory permitting, process evaluation, and design services for the Ray Roberts Water Treatment Plant Expansion Project for the Water Utilities Department a copy of which is attached hereto and incorporated by reference herein.

SECTION 2. The City Manager, or their designee, is authorized to expend funds as required by the attached contract.

SECTION 3. The City Council of the City of Denton, hereby expressly delegates the authority to take any actions that may be required or permitted to be performed by the City of Denton under this ordinance to the City Manager of the City of Denton, or their designee.

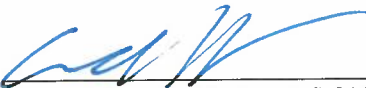
SECTION 4. The findings in the preamble of this ordinance are incorporated herein by reference.

SECTION 5. This ordinance shall become effective immediately upon its passage and approval.

The motion to approve this ordinance was made by Brandon Chase McGee and seconded by Joe Holland. This ordinance was passed and approved by the following vote [ 7 - 0 ]:

|                                        | Aye      | Nay   | Abstain | Absent |
|----------------------------------------|----------|-------|---------|--------|
| Mayor Gerard Hudspeth:                 | <u>X</u> | _____ | _____   | _____  |
| Vicki Byrd, District 1:                | <u>X</u> | _____ | _____   | _____  |
| Brian Beck, District 2:                | <u>X</u> | _____ | _____   | _____  |
| Paul Meltzer, District 3:              | <u>X</u> | _____ | _____   | _____  |
| Joe Holland, District 4:               | <u>X</u> | _____ | _____   | _____  |
| Brandon Chase McGee, At Large Place 5: | <u>X</u> | _____ | _____   | _____  |
| Jill Jester, At Large Place 6:         | <u>X</u> | _____ | _____   | _____  |

PASSED AND APPROVED this the 22nd day of October, 2024.

  
GERARD HUDSPETH, MAYOR

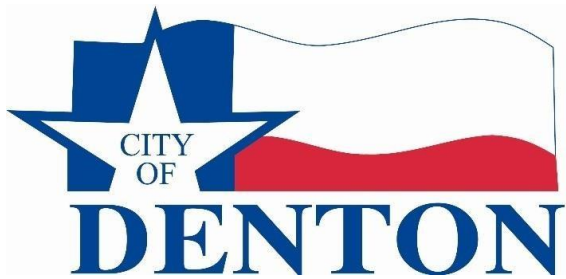
ATTEST:  
LAUREN THODEN, CITY SECRETARY

BY: 

APPROVED AS TO LEGAL FORM:  
MACK REINWAND, CITY ATTORNEY

BY: 





Docusign City Council Transmittal Coversheet

|                          |                        |
|--------------------------|------------------------|
| PSA                      | 7574-029               |
| File Name                | RRWTP Expansion Design |
| Purchasing Contact       | Erica Garcia           |
| City Council Target Date | OCTOBER 22, 2024       |
| Piggy Back Option        | Not Applicable         |
| Contract Expiration      | N/A                    |
| Ordinance                | 24-2084                |

## **CITY OF DENTON, TEXAS**

### **STANDARD AGREEMENT FOR ENGINEERING RELATED PROFESSIONAL SERVICES**

This AGREEMENT is between the City of Denton, a Texas home-rule municipality ("CITY"), and Freese and Nichols, Inc., with its corporate office at 101 South Locust St, Suite 202, Denton, TX 76201 and authorized to do business in Texas, ("ENGINEER"), for a PROJECT generally described as: Ray Roberts Water Treatment Plant Expansion (the "PROJECT").

#### **SECTION 1** **Scope of Services**

- A.** The CITY hereby agrees to retain the ENGINEER, and the ENGINEER hereby agrees to perform, professional engineering services set forth in the Scope of Services attached hereto as Attachment A. These services shall be performed in connection with the PROJECT.
- B.** Additional services, if any, will be requested in writing by the CITY. CITY shall not pay for any work performed by ENGINEER or its consultants, subcontractors and/or suppliers that has not been ordered in advance and in writing. It is specifically agreed that ENGINEER shall not be compensated for any additional work resulting from oral orders of any person.

#### **SECTION 2** **Compensation and Term of Agreement**

- A.** The ENGINEER shall be compensated for all services provided pursuant to this AGREEMENT in an amount not to exceed \$21,000,000 in the manner and in accordance with the fee schedule as set forth in Attachment A. Payment shall be considered full compensation for all labor, materials, supplies, and equipment necessary to complete the services described in Attachment A.
- B.** Unless otherwise terminated pursuant to Section 6. D. herein, this AGREEMENT shall be for a term beginning upon the effective date, as described below, and shall continue for a period which may reasonably be required for the completion of the PROJECT, until the expiration of the funds, or completion of the PROJECT and acceptance by the CITY, whichever occurs first. ENGINEER shall proceed diligently with the PROJECT to completion as described in the PROJECT schedule as set forth in Attachment A.

#### **SECTION 3** **Terms of Payment**

Payments to the ENGINEER will be made as follows:

## **A. Invoice and Payment**

- (1) The Engineer shall provide the City sufficient documentation, including but not limited to meeting the requirements set forth in the PROJECT schedule as set forth in Attachment A to reasonably substantiate the invoices.
- (2) The ENGINEER will issue monthly invoices for all work performed under this AGREEMENT. Invoices for the uncontested performance of the particular services are due and payable within 30 days of receipt by City.
- (3) Upon completion of services enumerated in Section 1, the final payment of any balance for the uncontested performance of the services will be due within 30 days of receipt of the final invoice.
- (4) In the event of a disputed or contested billing, only that portion so contested will be withheld from payment, and the undisputed portion will be paid. The CITY will exercise reasonableness in contesting any bill or portion thereof. No interest will accrue on any contested portion of the billing until mutually resolved.
- (5) If the CITY fails to make payment in full to ENGINEER for billings contested in good faith within 60 days of the amount due, the ENGINEER may, after giving 7 days' written notice to CITY, suspend services under this AGREEMENT until paid in full. In the event of suspension of services, the ENGINEER shall have no liability to CITY for delays or damages caused the CITY because of such suspension of services.

## **SECTION 4 Obligations of the Engineer**

### **A. General**

The ENGINEER will serve as the CITY's professional engineering representative under this AGREEMENT, providing professional engineering consultation and advice and furnishing customary services incidental thereto.

### **B. Standard of Care**

The ENGINEER shall perform its services:

- (1) with the professional skill and care ordinarily provided by competent engineers practicing in the same or similar locality and under the same or similar circumstances and professional license; and
- (2) as expeditiously as is prudent considering the ordinary professional skill and care of a competent engineer.

### **C. Subsurface Investigations**

- (1) The ENGINEER shall advise the CITY with regard to the necessity for subcontract work such as special surveys, tests, test borings, or other subsurface investigations in connection with design and engineering work to be performed hereunder. The ENGINEER shall also advise the CITY concerning the results of same. Such surveys, tests, and investigations shall be furnished by the CITY, unless otherwise specified in Attachment A.
- (2) In soils, foundation, groundwater, and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration, and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect the total PROJECT cost and/or execution. These conditions and cost/execution effects are not the responsibility of the ENGINEER.

### **D. Preparation of Engineering Drawings**

The ENGINEER will provide to the CITY the original drawings of all plans in ink on reproducible mylar sheets and electronic files in .pdf format, or as otherwise approved by CITY, which shall become the property of the CITY. CITY may use such drawings in any manner it desires; provided, however, that the ENGINEER shall not be liable for the use of such drawings for any project other than the PROJECT described herein.

### **E. Engineer's Personnel at Construction Site**

- (1) The presence or duties of the ENGINEER's personnel at a construction site, whether as on-site representatives or otherwise, do not make the ENGINEER or its personnel in any way responsible for those duties that belong to the CITY and/or the CITY's construction contractors or other entities, and do not relieve the construction contractors or any other entity of their obligations, duties, and responsibilities, including, but not limited to, all construction methods, means, techniques, sequences, and procedures necessary for coordinating and completing all portions of the construction work in accordance with the AGREEMENT Documents and any health or safety precautions required by such construction work. The ENGINEER and its personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions.
- (2) Except to the extent of specific site visits expressly detailed and set forth in Attachment A, the ENGINEER or its personnel shall have no obligation or responsibility to visit the construction site to become familiar with the progress or quality of the completed work on the PROJECT or to determine, in general, if the work on the PROJECT is being performed in a manner indicating that the

PROJECT, when completed, will be in accordance with the AGREEMENT Documents, nor shall anything in the AGREEMENT Documents or this AGREEMENT between CITY and ENGINEER be construed as requiring ENGINEER to make exhaustive or continuous on-site inspections to discover latent defects in the work or otherwise check the quality or quantity of the work on the PROJECT. If the ENGINEER makes on-site observation(s) of a deviation from the AGREEMENT Documents, the ENGINEER shall inform the CITY.

- (3) When professional certification of performance or characteristics of materials, systems or equipment is reasonably required to perform the services set forth in the Scope of Services, the ENGINEER shall be entitled to rely upon such certification to establish materials, systems or equipment and performance criteria to be required in the AGREEMENT Documents.

## **F. Opinions of Probable Cost, Financial Considerations, and Schedules**

- (1) The ENGINEER shall provide opinions of probable costs based on the current available information at the time of preparation, in accordance with Attachment A.
- (2) In providing opinions of cost, financial analyses, economic feasibility projections, and schedules for the PROJECT, the ENGINEER has no control over cost or price of labor and materials; unknown or latent conditions of existing equipment or structures that may affect operation or maintenance costs; competitive bidding procedures and market conditions; time or quality of performance by third parties; quality, type, management, or direction of operating personnel; and other economic and operational factors that may materially affect the ultimate PROJECT cost or schedule. Therefore, the ENGINEER makes no warranty that the CITY's actual PROJECT costs, financial aspects, economic feasibility, or schedules will not vary from the ENGINEER's opinions, analyses, projections, or estimates.

## **G. Construction Progress Payments**

Recommendations by the ENGINEER to the CITY for periodic construction progress payments to the construction contractor will be based on the ENGINEER's knowledge, information, and belief from selective sampling and observation that the work has progressed to the point indicated. Such recommendations do not represent that continuous or detailed examinations have been made by the ENGINEER to ascertain that the construction contractor has completed the work in exact accordance with the AGREEMENT Documents; that the final work will be acceptable in all respects; that the ENGINEER has made an examination to ascertain how or for what purpose the construction contractor has used the moneys paid; that title to any of the work, materials, or equipment has passed to the CITY free and clear of liens, claims, security interests, or encumbrances; or that there are not other matters at issue between the CITY and the construction contractor that affect the amount that should be paid.

## **H. Record Drawings**

Record drawings, if required, will be prepared, in part, on the basis of information compiled and furnished by others, and may not always represent the exact location, type of various components, or exact manner in which the PROJECT was finally constructed. The ENGINEER is not responsible for any errors or omissions in the information from others that is incorporated into the record drawings.

## **I. Right to Audit**

- (1) ENGINEER agrees that the CITY shall, until the expiration of five (5) years after final payment under this AGREEMENT, have access to and the right to examine and photocopy any directly pertinent books, documents, papers and records of the ENGINEER involving transactions relating to this AGREEMENT. ENGINEER agrees that the CITY shall have access during normal working hours to all necessary ENGINEER facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. The CITY shall give ENGINEER reasonable advance notice of intended audits.
- (2) ENGINEER further agrees to include in all its subconsultant agreements hereunder a provision to the effect that the subconsultant agrees that the CITY shall, until the expiration of five (5) years after final payment under the subcontract, have access to and the right to examine and photocopy any directly pertinent books, documents, papers and records of such subconsultant, involving transactions to the subcontract, and further, that the CITY shall have access during normal working hours to all subconsultant facilities, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with the provisions of this section together with subsection (3) hereof. CITY shall give subconsultant reasonable advance notice of intended audits.
- (3) ENGINEER and subconsultant agree to photocopy such documents as may be requested by the CITY. The CITY agrees to reimburse ENGINEER for the cost of copies at the rate published in the Texas Administrative Code in effect as of the time copying is performed.

## J. INSURANCE

### (1) ENGINEER'S INSURANCE

- a. Commercial General Liability – the ENGINEER shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than \$1,000,000.00 per each occurrence with a \$2,000,000.00 aggregate. If such Commercial General Liability insurance contains a general aggregate limit, it shall apply separately to this PROJECT or location.
  - i. The CITY shall be included as an additional insured with all rights of defense under the CGL, using ISO additional insured endorsement or a substitute providing equivalent coverage, and under the commercial umbrella, if any. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to the CITY. The Commercial General Liability insurance policy shall have no exclusions or endorsements that would alter or nullify: premises/operations, products/completed operations, contractual, personal injury, or advertising injury, which are normally contained within the policy, unless the CITY specifically approves such exclusions in writing.
  - ii. ENGINEER waives all rights against the CITY and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the commercial general liability or commercial umbrella liability insurance maintained in accordance with this AGREEMENT.
- b. Business Auto – the ENGINEER shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than \$1,000,000 each accident. Such insurance shall cover liability arising out of “any auto”, including owned, hired, and non-owned autos, when said vehicle is used in the course of the PROJECT. If the engineer owns no vehicles, coverage for hired or non-owned is acceptable.
  - i. ENGINEER waives all rights against the CITY and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the business auto liability or commercial umbrella liability insurance obtained by ENGINEER pursuant to this AGREEMENT or under any applicable auto physical damage coverage.
- c. Workers' Compensation – ENGINEER shall maintain workers compensation and employers liability insurance and, if necessary,

commercial umbrella liability insurance with a limit of not less than \$100,000.00 each accident for bodily injury by accident or \$100,000.00 each employee for bodily injury by disease, with \$500,000.00 policy limit.

- i. ENGINEER waives all rights against the CITY and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by workers compensation and employer's liability or commercial umbrella insurance obtained by ENGINEER pursuant to this AGREEMENT.
- d. Professional Liability – ENGINEER shall maintain professional liability, a claims-made policy, with a minimum of \$1,000,000.00 per claim and aggregate. The policy shall contain a retroactive date prior to the date of the AGREEMENT or the first date of services to be performed, whichever is earlier. Coverage shall be maintained for a period of 5 years following the completion of the AGREEMENT. An annual certificate of insurance specifically referencing this PROJECT shall be submitted to the CITY for each year following completion of the AGREEMENT.

## (2) GENERAL INSURANCE REQUIREMENTS

- a. Certificates of insurance evidencing that the ENGINEER has obtained all required insurance shall be attached to this AGREEMENT prior to its execution.
- b. Applicable policies shall be endorsed to name the CITY an Additional Insured thereon, subject to any defense provided by the policy, as its interests may appear. The term CITY shall include its employees, officers, officials, agents, and volunteers as respects the contracted services.
- c. Certificate(s) of insurance shall document that insurance coverage specified in this AGREEMENT are provided under applicable policies documented thereon.
- d. Any failure on part of the CITY to attach the required insurance documentation hereto shall not constitute a waiver of the insurance requirements.
- e. A minimum of thirty (30) days notice of cancellation or material change in coverage shall be provided to the CITY. A ten (10) days notice shall be acceptable in the event of non-payment of premium. Notice shall be sent to the respective Department Director (by name), City of Denton, 901 Texas Street, Denton, Texas 76209.
- f. Insurers for all policies must be authorized to do business in the State of

Texas and have a minimum rating of A:V or greater, in the current A.M. Best Key Rating Guide or have reasonably equivalent financial strength and solvency to the satisfaction of Risk Management.

- g. Any deductible or self insured retention in excess of \$25,000.00 that would change or alter the requirements herein is subject to approval by the CITY in writing, if coverage is not provided on a first-dollar basis. The CITY, at its sole discretion, may consent to alternative coverage maintained through insurance pools or risk retention groups. Dedicated financial resources or letters of credit may also be acceptable to the CITY.
- h. Applicable policies shall each be endorsed with a waiver of subrogation in favor of the CITY as respects the PROJECT.
- i. The CITY shall be entitled, upon its request and without incurring expense, to review the ENGINEER's insurance policies including endorsements thereto and, at the CITY's discretion; the ENGINEER may be required to provide proof of insurance premium payments.
- j. Lines of coverage, other than Professional Liability, underwritten on a claims-made basis, shall contain a retroactive date coincident with or prior to the date of the AGREEMENT. The certificate of insurance shall state both the retroactive date and that the coverage is claims-made.
- k. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption nor restrictive modification or changes from date of commencement of the PROJECT until final payment and termination of any coverage required to be maintained after final payments.
- l. The CITY shall not be responsible for the direct payment of any insurance premiums required by this AGREEMENT.
- m. Sub consultants and subcontractors to/of the ENGINEER shall be required by the ENGINEER to maintain the same or reasonably equivalent insurance coverage as required for the ENGINEER. When sub consultants/subcontractors maintain insurance coverage, ENGINEER shall provide CITY with documentation thereof on a certificate of insurance.

## **K. Independent Consultant**

The ENGINEER agrees to perform all services as an independent consultant and not as a subcontractor, agent, or employee of the CITY. The doctrine of *respondeat superior* shall not apply.

## **L. Disclosure**

The ENGINEER acknowledges to the CITY that it has made full disclosure in writing of any existing conflicts of interest or potential conflicts of interest, including personal financial interest, direct or indirect, in property abutting the proposed PROJECT and business relationships with abutting property cities. The ENGINEER further acknowledges that it will make disclosure in writing of any conflicts of interest that develop subsequent to the signing of this AGREEMENT and prior to final payment under the AGREEMENT.

## **M. Asbestos or Hazardous Substances**

- (1) If asbestos or hazardous substances in any form are encountered or suspected, the ENGINEER will stop its own work in the affected portions of the PROJECT to permit testing and evaluation.
- (2) If asbestos or other hazardous substances are suspected, the CITY may request the ENGINEER to assist in obtaining the services of a qualified subcontractor to manage the remediation activities of the PROJECT.

## **N. Permitting Authorities - Design Changes**

If permitting authorities require design changes so as to comply with published design criteria and/or current engineering practice standards which the ENGINEER should have been aware of at the time this AGREEMENT was executed, the ENGINEER shall revise plans and specifications, as required, at its own cost and expense. However, if design changes are required due to the changes in the permitting authorities' published design criteria and/or practice standards criteria which are published after the date of this AGREEMENT which the ENGINEER could not have been reasonably aware of, the ENGINEER shall notify the CITY of such changes and an adjustment in compensation will be made through an amendment to this AGREEMENT.

## **O. Schedule**

ENGINEER shall manage the PROJECT in accordance with the schedule developed per Attachment A to this AGREEMENT.

## **P. Equal Opportunity**

- (1) **Equal Employment Opportunity:** ENGINEER and ENGINEER's agents shall engage in any discriminatory employment practice. No person shall, on the grounds of race, sex, sexual orientation, age, disability, creed, color, genetic testing, or national origin, be refused the benefits of, or be otherwise subjected to discrimination under any activities resulting from this AGREEMENT.
- (2) **Americans with Disabilities Act (ADA) Compliance:** ENGINEER and

ENGINEER's agents shall not engage in any discriminatory employment practice against individuals with disabilities as defined in the ADA.

## **SECTION 5**

### **Obligations of the City**

#### **A. City-Furnished Data**

ENGINEER may rely upon the accuracy, timeliness, and completeness of the information provided by the CITY.

#### **B. Access to Facilities and Property**

The CITY will make its facilities accessible to the ENGINEER as required for the ENGINEER's performance of its services. The CITY will perform, at no cost to the ENGINEER, such tests of equipment, machinery, pipelines, and other components of the CITY's facilities as may be required in connection with the ENGINEER's services. The CITY will be responsible for all acts of the CITY's personnel.

#### **C. Advertisements, Permits, and Access**

Unless otherwise agreed to in the Scope of Services, the CITY will obtain, arrange, and pay for all advertisements for bids; permits and licenses required by local, state, or federal authorities; and land, easements, rights-of-way, and access necessary for the ENGINEER's services or PROJECT construction.

#### **D. Timely Review**

The CITY will examine the ENGINEER's studies, reports, sketches, drawings, specifications, proposals, and other documents; obtain advice of an attorney, insurance counselor, accountant, auditor, bond and financial advisors, and other consultants as the CITY deems appropriate; and render in writing decisions required by the CITY in a timely manner in accordance with the PROJECT schedule prepared in accordance with Attachment A.

#### **E. Prompt Notice**

The CITY will give prompt written notice to the ENGINEER whenever CITY observes or becomes aware of any development that affects the scope or timing of the ENGINEER's services or of any defect in the work of the ENGINEER or construction contractors.

#### **F. Asbestos or Hazardous Substances Release.**

(1) CITY acknowledges ENGINEER will perform part of the work at CITY's

facilities that may contain hazardous materials, including asbestos containing materials, or conditions, and that ENGINEER had no prior role in the generation, treatment, storage, or disposition of such materials. In consideration of the associated risks that may give rise to claims by third parties or employees of City, City hereby releases ENGINEER from any damage or liability related to the presence of such materials.

- (2) The release required above shall not apply in the event the discharge, release or escape of hazardous substances, contaminants, or asbestos is a result of ENGINEER's negligence or if ENGINEER brings such hazardous substance, contaminant or asbestos onto the PROJECT.

## **G. Contractor Indemnification and Claims**

The CITY agrees to include in all construction contracts the provisions of Article IV.E. regarding the ENGINEER's Personnel at Construction Site, and provisions providing for contractor indemnification of the CITY and the ENGINEER for contractor's negligence.

## **H. Contractor Claims and Third-Party Beneficiaries**

- (1) The CITY agrees to include the following clause in all contracts with construction contractors and equipment or materials suppliers:

"Contractors, subcontractors and equipment and materials suppliers on the PROJECT, or their sureties, shall maintain no direct action against the ENGINEER, its officers, employees, and subcontractors, for any claim arising out of, in connection with, or resulting from the engineering services performed. Only the CITY will be the beneficiary of any undertaking by the ENGINEER."

- (2) This AGREEMENT gives no rights or benefits to anyone other than the CITY and the ENGINEER and there are no third-party beneficiaries.
- (3) The CITY will include in each agreement it enters into with any other entity or person regarding the PROJECT a provision that such entity or person shall have no third-party beneficiary rights under this AGREEMENT.
- (4) Nothing contained in this Section H. shall be construed as a waiver of any right the CITY has to bring a claim against ENGINEER.

## **I. CITY's Insurance**

- (1) The CITY may maintain property insurance on certain pre-existing structures associated with the PROJECT.
- (2) The CITY may secure Builders Risk/Installation insurance at the replacement

cost value of the PROJECT. The CITY may provide ENGINEER a copy of the policy or documentation of such on a certificate of insurance.

## **J. Litigation Assistance**

The Scope of Services does not include costs of the ENGINEER for required or requested assistance to support, prepare, document, bring, defend, or assist in litigation undertaken or defended by the CITY. In the event CITY requests such services of the ENGINEER, this AGREEMENT shall be amended or a separate agreement will be negotiated between the parties.

## **K. Changes**

The CITY may make or approve changes within the general Scope of Services in this AGREEMENT. If such changes affect the ENGINEER's cost of or time required for performance of the services, an equitable adjustment will be made through an amendment to this AGREEMENT with appropriate CITY approval.

# **SECTION 6** **General Legal Provisions**

## **A. Authorization to Proceed**

ENGINEER shall be authorized to proceed with this AGREEMENT upon receipt of a written Notice to Proceed from the CITY.

## **B. Reuse of Project Documents**

All designs, drawings, specifications, documents, and other work products of the ENGINEER, whether in hard copy or in electronic form, are instruments of service for this PROJECT, whether the PROJECT is completed or not. Reuse, change, or alteration by the CITY or by others acting through or on behalf of the CITY of any such instruments of service without the written permission of the ENGINEER will be at the CITY's sole risk. The CITY shall own the final designs, drawings, specifications and documents.

## **C. Force Majeure**

The ENGINEER is not responsible for damages or delay in performance caused by acts of God, strikes, lockouts, accidents, or other events beyond the control of the ENGINEER that prevent ENGINEER's performance of its obligations hereunder.

## **D. Termination**

(1) This AGREEMENT may be terminated:

- a. by the City for its convenience upon 30 days' written notice to ENGINEER.
  - b. by either the CITY or the ENGINEER for cause if either party fails substantially to perform through no fault of the other and the nonperforming party does not commence correction of such nonperformance within 5 days' written notice or thereafter fails to diligently complete the correction.
- (2) If this AGREEMENT is terminated for the convenience of the City, the ENGINEER will be paid for termination expenses as follows:
- a. Cost of reproduction of partial or complete studies, plans, specifications or other forms of ENGINEER'S work product;
  - b. Out-of-pocket expenses for purchasing electronic data files and other data storage supplies or services;
  - c. The time requirements for the ENGINEER'S personnel to document the work underway at the time of the CITY'S termination for convenience so that the work effort is suitable for long time storage.
- (3) Prior to proceeding with termination services, the ENGINEER will submit to the CITY an itemized statement of all termination expenses. The CITY'S approval will be obtained in writing prior to proceeding with termination services.

#### **E. Suspension, Delay, or Interruption to Work**

The CITY may suspend, delay, or interrupt the services of the ENGINEER for the convenience of the CITY. In the event of such suspension, delay, or interruption, an equitable adjustment in the PROJECT's schedule, commitment and cost of the ENGINEER's personnel and subcontractors, and ENGINEER's compensation will be made.

#### **F. Indemnification**

**IN ACCORDANCE WITH TEXAS LOCAL GOVERNMENT CODE SECTION 271.904, THE ENGINEER SHALL INDEMNIFY OR HOLD HARMLESS THE CITY AGAINST LIABILITY FOR ANY DAMAGE COMMITTED BY THE ENGINEER OR ENGINEER'S AGENT, CONSULTANT UNDER CONTRACT, OR ANOTHER ENTITY OVER WHICH THE ENGINEER EXERCISES CONTROL TO THE EXTENT THAT THE DAMAGE IS CAUSED BY OR RESULTING FROM AN ACT OF NEGLIGENCE, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT, OR FAILURE TO PAY A SUBCONTRACTOR OR SUPPLIER. CITY IS ENTITLED TO RECOVER ITS REASONABLE ATTORNEY'S FEES IN PROPORTION TO THE ENGINEER'S LIABILITY.**

## **G. Assignment**

Neither party shall assign all or any part of this AGREEMENT without the prior written consent of the other party.

## **H. Jurisdiction**

The law of the State of Texas shall govern the validity of this AGREEMENT, its interpretation and performance, and any other claims related to it. The venue for any litigation related to this AGREEMENT shall be Denton County, Texas.

## **I. Severability and Survival**

If any of the provisions contained in this AGREEMENT are held for any reason to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability will not affect any other provision, and this AGREEMENT shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein. Sections 5.F., 6.B., 6.D., 6.F., 6.H., and 6.I. shall survive termination of this AGREEMENT for any cause.

## **J. Observe and Comply**

ENGINEER shall at all times observe and comply with all federal and State laws and regulations and with all City ordinances and regulations which in any way affect this AGREEMENT and the work hereunder, and shall observe and comply with all orders, laws ordinances and regulations which may exist or may be enacted later by governing bodies having jurisdiction or authority for such enactment. No plea of misunderstanding or ignorance thereof shall be considered. **ENGINEER AGREES TO DEFEND, INDEMNIFY AND HOLD HARMLESS CITY AND ALL OF ITS OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ALL CLAIMS OR LIABILITY ARISING OUT OF THE VIOLATION OF ANY SUCH ORDER, LAW, ORDINANCE, OR REGULATION, WHETHER IT BE BY ITSELF OR ITS EMPLOYEES.**

## **K. Immigration Nationality Act**

ENGINEER shall verify the identity and employment eligibility of its employees who perform work under this AGREEMENT, including completing the Employment Eligibility Verification Form (I-9). Upon request by CITY, ENGINEER shall provide CITY with copies of all I-9 forms and supporting eligibility documentation for each employee who performs work under this AGREEMENT. ENGINEER shall adhere to all Federal and State laws as well as establish appropriate procedures and controls so that no services will be performed by any ENGINEER employee who is not legally eligible to perform such services. **ENGINEER SHALL INDEMNIFY CITY AND HOLD CITY HARMLESS FROM ANY PENALTIES, LIABILITIES, OR LOSSES DUE TO VIOLATIONS OF THIS PARAGRAPH BY ENGINEER, ENGINEER'S EMPLOYEES, SUBCONTRACTORS, AGENTS, OR LICENSEES.** CITY, upon written notice to ENGINEER, shall have the

right to immediately terminate this AGREEMENT for violations of this provision by ENGINEER.

#### **L. Prohibition on Contracts with Companies Boycotting Israel**

Engineer acknowledges that in accordance with Chapter 2271 of the Texas Government Code, City is prohibited from entering into a contract with a company for goods or services unless the contract contains a written verification from the company that it: (1) does not boycott Israel; and (2) will not boycott Israel during the term of the contract. The terms “boycott Israel” and “company” shall have the meanings ascribed to those terms in Section 808.001 of the Texas Government Code. ***By signing this agreement, Engineer certifies that Engineer’s signature provides written verification to the City that Engineer: (1) does not boycott Israel; and (2) will not boycott Israel during the term of the agreement.*** Failure to meet or maintain the requirements under this provision will be considered a material breach.

#### **M. Prohibition on Contracts with Companies Doing Business with Iran, Sudan, or a Foreign Terrorist Organization**

Sections 2252 and 2270 of the Texas Government Code restricts CITY from contracting with companies that do business with Iran, Sudan, or a foreign terrorist organization. ***By signing this agreement, Engineer certifies that Engineer’s signature provides written verification to the City that Engineer, pursuant to Chapters 2252 and 2270, is not ineligible to enter into this agreement and will not become ineligible to receive payments under this agreement by doing business with Iran, Sudan, or a foreign terrorist organization.*** Failure to meet or maintain the requirements under this provision will be considered a material breach.

#### **N. Prohibition on Contracts with Companies Boycotting Certain Energy Companies**

Engineer acknowledges that in accordance with Chapter 2274 of the Texas Government Code, City is prohibited from entering into a contract with a company for goods or services unless the contract contains written verification from the company that it (1) does not boycott energy companies; and (2) will not boycott energy companies during the term of the contract. The terms “boycott energy company” and “company” shall have the meanings ascribed to those terms in Section 809.001 of the Texas Government Code. ***By signing this agreement, Engineer certifies that Engineer’s signature provides written verification to the City that Engineer: (1) does not boycott energy companies; and (2) will not boycott energy companies during the term of the agreement.*** Failure to meet or maintain the requirements under this provision will be considered a material breach.

#### **O. Prohibition on Contracts with Companies Boycotting Certain Firearm Entities and Firearm Trade Associations**

Engineer acknowledges that in accordance with Chapter 2274 of the Texas Government Code, City is prohibited from entering into a contract with a company for goods or services unless the contract contains written verification from the company that it (1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and (2) will not discriminate during the term of the contract against a firearm entity or firearm trade association. The terms “discriminate against a firearm entity or firearm trade association,” “firearm entity” and “firearm trade association” shall have the meanings ascribed to those terms in Chapter 2274 of the Texas Government Code. ***By signing this agreement, Engineer certifies that Engineer’s signature provides written verification to the City that Engineer: (1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and (2) will not discriminate during the term of the contract against a firearm entity or firearm trade association.*** Failure to meet or maintain the requirements under this provision will be considered a material breach.

#### **P. Termination Right for Contracts with Companies Doing Business with Certain Foreign-Owned Companies**

The City of Denton may terminate this Contract immediately without any further liability if the City of Denton determines, in its sole judgment, that this Contract meets the requirements under Chapter 2274, and Engineer is, or will be in the future, (i) owned by or the majority of stock or other ownership interest of the company is held or controlled by individuals who are citizens of China, Iran, North Korea, Russia, or other designated country (ii) directly controlled by the Government of China, Iran, North Korea, Russia, or other designated country, or (iii) is headquartered in China, Iran, North Korea, Russia, or other designated country.

#### **Q. Prohibition Against Personal Interest in Contracts**

No officer, employee, independent consultant, or elected official of the City who is involved in the development, evaluation, or decision-making process of the performance of any solicitation shall have a financial interest, direct or indirect, in the Contract resulting from that solicitation as defined in the City’s Ethic Ordinance 23-1165 and in the City Charter chapter 2 article XI(Ethics). Any willful violation of this section shall constitute impropriety in office, and any officer or employee guilty thereof shall be subject to disciplinary action up to and including dismissal. Any violation of this provision, with the knowledge, expressed or implied, of the Contractor shall render the Contract voidable by the City. The Contractor shall complete and submit the City’s Conflict of Interest Questionnaire.

#### **R. Certificate of Interested Parties Electronic Filing**

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that the City may not enter into this contract

unless the Contractor submits a disclosure of interested parties (Form 1295) to the City at the time the Contractor submits the signed contract. The Texas Ethics Commission has adopted rules requiring the business entity to file Form 1295 electronically with the Commission.

Contractor will be required to furnish a Certificate of Interest Parties before the contract is awarded, in accordance with Government Code 2252.908.

The contractor shall:

1. Log onto the State Ethics Commission Website at :  
<https://www.ethics.state.tx.us/filinginfo/1295/>
2. Register utilizing the tutorial provided by the State
3. Print a copy of the completed Form 1295
4. Enter the Certificate Number on page 2 of this contract.
5. Complete and sign the Form 1295
6. Email the form to [purchasing@cityofdenton.com](mailto:purchasing@cityofdenton.com) with the contract number in the subject line. (EX: Contract 1234 – Form 1295)

The City must acknowledge the receipt of the filed Form 1295 not later than the 30th day after Council award. Once a Form 1295 is acknowledged, it will be posted to the Texas Ethics Commission's website within seven business days.

## **S. Agreement Documents**

This AGREEMENT, including its attachments and schedules, constitutes the entire AGREEMENT, which supersedes all prior written or oral understandings, and may only be changed by a written amendment executed by both parties. This AGREEMENT may be executed in one or more counterparts and each counterpart shall, for all purposes, be deemed an original, but all such counterparts shall together constitute but one and the same instrument. The following attachments and schedules are hereby made a part of this AGREEMENT:

### **Attachment A - Scope of Services, Compensation, and Project Schedule**

These documents make up the AGREEMENT documents and what is called for by one shall be as binding as if called for by all. In the event of an inconsistency or conflict in any of the provisions of the AGREEMENT documents, the inconsistency or conflict shall be resolved by giving precedence first to the written AGREEMENT then to the AGREEMENT documents in the order in which they are listed above.

The parties agree to transact business electronically. Any statutory requirements that certain terms be in writing will be satisfied using electronic documents and signing. Electronic signing of this document will be deemed an original for all legal purposes.

Duly executed by each party's designated representative to be effective on  
10/22/2024

BY:  
CITY OF DENTON, TEXAS

DocuSigned by:  
*Sara Hensley*  
8236DB296270423  
Sara Hensley, City Manager

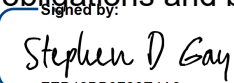
BY:  
ENGINEER  
Freese and Nichols, Inc.

DocuSigned by:  
*James Naylor*  
250287AE3C534C4  
James Naylor, PE

Full Name: James Naylor

2024-1220441  
\_\_\_\_\_  
TEXAS ETHICS COMMISSION  
CERTIFICATE NUMBER

THIS AGREEMENT HAS BEEN  
BOTH REVIEWED AND APPROVED  
as to financial and operational  
obligations and business terms.

Signed by:  
  
FEB46BB9726E4A9...  
Signature

Director Water Utilities

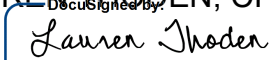
Title

Water Utilities

Department

Date Signed: 09/30/2024

ATTEST:  
LAUREN THODEN, CITY SECRETARY

DocuSigned by:  
  
BY: D00D09CAD33D487...

APPROVED AS TO LEGAL FORM:  
MACK REINWAND, CITY ATTORNEY

DocuSigned by:  
  
BY: 4B070831B4AA438

**June 24, 2024****ATTACHMENT A****!££! / I a 9b£ A – ENGINEERING SCOPE OF SERVICES****City of Denton, Texas****Ray Roberts WTP Expansion to 40 MGD****PROJECT UNDERSTANDING AND ASSUMPTIONS:**

The City of Denton (Owner) desires to make improvements to the existing Ray Roberts Water Treatment Plant (WTP) to expand the treatment capacity. The existing Ray Roberts WTP has a treatment capacity of approximately 20 million gallons per day (MGD) and is a conventional surface water treatment plant utilizing pre-ozone, intermediate ozone, and biologically active filters. With the continued residential, commercial, and industrial growth experienced by the Owner, the Owner intends to expand the capacity to approximately 40 MGD (i.e., existing 20 MGD conventional treatment plus new 20 MGD expanded treatment). It is currently anticipated that the Ray Roberts WTP site will need to support a build-out capacity of approximately 110 MGD. This build-out condition will be reviewed as part of the Project in the preliminary design phase.

The expanded treatment strategy for the Ray Roberts WTP will generally include the following major processes:

- Raw water pump station (modified, serves existing Conventional WTP and proposed Membrane WTP),
- Pre-ozone contactor (proposed, serves proposed Membrane WTP),
- Pumped diffusion/rapid mix (proposed, serves proposed Membrane WTP),
- Flocculation and sedimentation basins with inclined plate settlers and differential head clarifiers (proposed, serves proposed Membrane WTP),
- Low-pressure membrane filtration (proposed, serves proposed Membrane WTP),
- Intermediate ozone contactor (proposed, serves proposed Membrane WTP),
- Biologically active filtration (proposed, serves proposed Membrane WTP),
- Disinfection by sodium hypochlorite (12.5-percent solution) and liquid ammonium sulfate (modified, serves existing Conventional WTP and proposed Membrane WTP),
- Transfer and filter backwash pump station (proposed, serves proposed Membrane WTP),
- Clearwell/potable water ground storage (expanded, serves existing Conventional WTP and proposed Membrane WTP),
- High service pump station (modified, serves existing Conventional WTP and proposed Membrane WTP),
- Chemical systems:
  - Aluminum chlorohydrate or polyaluminum chloride storage and feed systems (proposed, serves proposed Membrane WTP),
  - Sodium hydroxide/caustic storage and feed systems (proposed, serves proposed Membrane WTP),
  - Sodium hypochlorite storage and feed (modified, serves existing Conventional WTP and proposed Membrane WTP),
  - Liquid ammonium sulfate storage and feed systems (modified, serves existing Conventional WTP and proposed Membrane WTP),

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- Fluoride feed systems (modified, serves existing Conventional WTP and proposed Membrane WTP), and
- Solids handling utilizing a solids holding tank/thickener and centrifuge dewatering process (proposed, serves Membrane WTP).

Additional information regarding each of the major project features is provided in the attached *Memorandum of Understanding* (MOU) dated April 4, 2024, and consisting of 20 pages.

Pilot Study: With the addition of low-pressure membranes, a pilot study will be required to comply with the Texas Commission on Environmental Quality (TCEQ) requirements for innovative treatment technologies. Freese and Nichols, Inc. (FNI) will prepare a pilot study protocol, assist the Owner with the execution of the pilot study, and prepare a pilot report for review and approval by the TCEQ. This pilot study will be limited to the minimum 90-day requirement established by the TCEQ.

Preliminary Design: FNI will prepare a preliminary design report (PDR) summarizing the reviewed water quality and flow data and the basis of design for each of the major project units identified in the MOU. This Preliminary Design phase will expedite the design for those processes where the expansion can largely follow the concepts laid out in the original plant design and will allow for more detailed analysis in the specific areas of the WTP that require a new expansion concept to be established, such as the inclined plate settlers and the low-pressure membrane system.

Survey: FNI will subcontract the services of a licensed surveyor to complete a survey of the existing site and key hydraulic structures as well as complete boundary and topographic surveying of the proposed expansion area to develop one-foot contours. The survey will also tie in proposed bores and existing piping tie-in locations as identified by the construction manager at risk (CMAR) subsurface utility exploration (SUE) work.

Geotechnical: FNI will provide geotechnical services that include the development of a geotechnical memorandum to support the design for new structures at the Ray Roberts WTP. Services will include the drilling of bores at the existing plant site to document the subsurface conditions at new key structures as defined in the Special Services section below. The proposed geotechnical report will include recommendations for foundations, pavement, dewatering, excavation, shoring, fill, subgrade preparation, and slope stability for the proposed structures.

Detailed Design: FNI will provide the following design phase services for the processes described in this Scope of Services and the MOU, as may be adjusted based on the outcome of the preliminary design phase. The project will be executed using Autodesk AutoCAD, Autodesk Civil 3D, and Autodesk Revit design software for major structures. Design will include the following:

- Process mechanical design,
- Structural design,
- Electrical design,
- Instrumentation and controls design,
- SCADA design,

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Ray Roberts WTP Expansion to 40 MGD  
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- Architectural design,
- HVAC and plumbing design, and
- Drainage, paving, yard piping, and general site civil improvements.

Deliverables will be provided for Owner review at Level I (approximately 20-30%), Level II (approximately 50-60%), and Level III (approximately 80-90%) deliverable phases. The primary deliverable at Level I will be the initial Revit designs of major unit processes, electrical one-line diagrams, and process and instrumentation diagrams (P&IDs) which will be reviewed at a workshop as described in Article I. For subsequent deliverables, a status set of drawings and specifications will be produced for review by the Owner and the CMAR. A workshop will be conducted to collect and document all comments for inclusion in each subsequent design milestone deliverable. The CMAR has primary responsibility to develop, update, and maintain the cost model for all phases of the Project, with input from FNI. FNI will work with the CMAR to review the cost model and any updates as well as to confirm the assumptions built into the cost model are in line with the anticipated remaining design development.

Construction Manager at Risk: The Owner has selected that this Project will utilize a collaborative delivery method including the use of a construction manager at risk (CMAR). FNI will work with the CMAR through design and construction phases of the Project. The scope of work assumes preparation and issuance of a maximum of five (5) guaranteed maximum price (GMP) proposal packages for this Project. A general assumption of the scope of the proposed GMP packages is described below. Construction Contract Document packages beyond five (5) will be an Additional Service.

- GMP Package #1: Procurement of the inclined plate settler and low-pressure membrane pilots, constructing the pilot support facilities, and installing the pilot units.
- GMP Package #2: Procurement of long lead-time equipment and electrical components.
- GMP Package #3: Plant components not impacted by the low-pressure membrane pilot.
- GMP Package #4: Low-pressure membrane procurement documents.
- GMP Package #5: Plant components associated with the outcome of the low-pressure membrane pilot.

The CMAR will have primary responsibility for developing and maintaining all cost and schedule models for the Project.

Advertisement/Proposal Phase: Support the Owner and CMAR in their bidding and procurement of equipment, materials, contracting, and subcontracting services based on the number of packages identified above. FNI will assist the CMAR and Owner by providing an "issued for bid" (IFB) (100%) set of documents, participating in pre-bid meetings, and responding to bidder questions.

Construction Contract Administration: FNI will provide construction contract administration services and furnish construction management and specialty observation services as outlined in this Exhibit. The construction duration is estimated to be thirty-eight (38) months. Resident Project Representation and Specialty Construction Electrical Inspection services will be provided for thirty-four (34) months and 10 months, respectively. A construction duration longer than this assumption or the need for additional

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construction management/inspection time onsite will require additional construction contract administration services, which may be provided as an Additional Service.

Other Services: In addition to these services, FNI will provide the following services, as outlined in this Exhibit:

- Facility startup and commissioning;
- Operations and maintenance manual preparation;
- Operations training and support;
- United States Army Corps of Engineers coordination;
- Environmental services as required for Texas Water Development Board (TWDB) funding; and
- Funding support.

Project Assumptions: The scope of work, level of effort, budget and schedule is based on the following assumptions. Additional efforts may be provided as an Owner directed service.

- This scope of work assumes the Project is delivered using CMAR.
- A maximum of five (5) construction contract packages will be prepared for the Owner and CMAR. Additional packages will be provided as an Additional Service.
- The CMAR will be responsible for potholing utilities at tie-in points and critical crossings, based on requests and directions provided by FNI as part of their subsurface utility exploration (SUE). It is further assumed that the CMAR will be responsible for obtaining the necessary permits and utility locates (Texas One-call) ahead of any potholing activities.
- The CMAR will be responsible for developing Division 00 Contract Documents. The CMAR must include provisions in the Division 00 contract documents to comply with the Texas Water Development Board (TWDB) State Water Implementation Fund for Texas (SWIFT) requirements. FNI will review. The Owner agrees to include provisions in the General Conditions that require the CMAR to include FNI: (1) as an additional insured and in any waiver of subrogation rights with respect to such liability insurance purchased and maintained by the CMAR and/or Contractor for the Project (except workers' compensation and professional liability policies); and (2) as an indemnified party in the Contractor's indemnification provisions where the Owner is named as an indemnified party.
- In performing these services, it is understood that FNI does not guarantee the CMAR's performance, nor is FNI responsible for the supervision of the CMAR's operation and employees. FNI shall not be responsible for the means, methods, techniques, sequences, or procedures of construction selected by the CMAR, or any safety precautions and programs relating in any way to the condition of the premises, the work of the CMAR, Contractor or any Subcontractor. FNI shall not be responsible for the acts or omissions of any person (except its own employees or agents) at the Project site or otherwise performing any of the work of the Project.
- FNI will provide a Resident Project Representative (RPR) and a Specialty Construction Electrical Inspector during construction, but FNI will not provide a Construction Manager. The Owner will provide a Construction Manager and inspection staff during construction.
- The CMAR will be primarily responsible for the cost model and maintenance of a design change trend log. FNI will participate in the monitoring and review of the cost model as the design progresses.

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- The CMAR will be responsible for providing construction materials testing for the purposes of Owner quality control during construction. In addition, the CMAR will be responsible for coordinating the work of testing laboratories and inspection bureaus required for testing or inspection of materials.
- The CMAR will provide electrical relay, power system, and arc flash studies as required by the technical specifications. These studies will be submitted during the construction phase of the Project.
- The Owner and/or CMAR will handle all requirements and activities associated with the City of Denton building permit process, if required.
- Building construction will be concrete masonry units (CMU) with a split face veneer and a standing seam metal roofing system with a hip configuration.
- The CMAR will be responsible for developing a Commissioning Plan, splitting the project into manageable Functional and Performance Test Packages (FAPTPs), developing these packages as described below, and submitting commissioning documentation for each FAPTP. The CMAR will also develop the Training Schedule for the Owner's operations and maintenance staff.
- The Owner's water quality laboratory will be used for the pilot stud.

**ARTICLE I - BASIC SERVICES:** Freese and Nichols, Inc. (FNI) shall render the following professional services for the development of the Project:

**A. Project Management, Quality Control, and Quality Assurance:**

1. Perform daily FNI management duties associated with the Design and Construction Phase services for the Project, including progress monitoring and monthly progress reporting, scheduling, general correspondence, documentation, office administration, project team management, implementation of a quality assurance (QA) and quality control (QC) program for the Project, and invoicing for the scope items identified below. Documentation shall be in accordance with Owner requirements for the Project. These duties include maintaining regular communication with the Owner to help meet the needs of the Owner in a timely manner and executing work per the work plan, budget, and schedule.
2. Project controls shall include the management of the following "living documents." Some of these Project controls, as indicated below, will be the responsibility of others and FNI will provide a supporting role:
  - a. Comment Log – FNI will be primarily responsible for the comment log with input from the CMAR and the Owner.
  - b. Decision Log – FNI will be primarily responsible for the decision log with input from the CMAR and the Owner.
  - c. Action Item Log – FNI will be primarily responsible for the action item log during design with input from the CMAR and the Owner. During construction, the CMAR will be primarily responsible for the action item log with input from FNI and the Owner.
  - d. Risk Register – The CMAR will be primarily responsible for the risk register with input from FNI and the Owner.

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- e. Cost Model – The CMAR will be primarily responsible for the cost model and maintenance of a design change trend log. FNI will review and monitor the CMAR's cost model as the design progresses. The scope of work assumes the review of the cost model updates at Level I (20-30%), Level II (50-60%), Level III (80-90%), and Issued for Bid (100%) submittal stages and intermittently at the request of the Owner if major scope change is introduced into the project.
3. Manage efforts of internal design team and subconsultants on the Project and perform quality control reviews of all deliverables. Quality control reviews will include use of FNI's disciplinary QC checklists, provision of QC plan documentation and provision of comment/response forms for documenting and responding to Owner comments on all submittals.
4. Prepare a Microsoft Project schedule and provide monthly updates including necessary revisions to bring the Project back on schedule if needed. The Project schedule will not be resource loaded.
5. Utilize the Owner provided web-based document control system (DCS) (Procore). Share documents through the DCS including all deliverables, minutes, decision logs, action items, reports, construction submittals, and pertinent documents.
6. Prepare monthly project reporting including status report, recent activities, upcoming activities, action items log, decisions made log, budget updates, schedule updates, and scope changes. Prepare and submit monthly invoices.

**B. Opinions of Probable Construction Cost:**

1. Opinions of probable construction cost (OPCC) will be developed by the CMAR for the various project completion levels.
2. In providing opinions of costs, financial analysis, economic feasibility projections, and schedules for the Project, the Owner recognizes that FNI has no control over any of the following: the cost or price of labor and materials from Contractors and suppliers; unknown conditions of existing equipment or structures that may affect operations and maintenance costs; competitive bidding procedures and market conditions; time or quality of performance by third parties; quality, type, management, or direction of operation personnel; and other market, economic and operational factors that may materially affect the ultimate project cost or schedule. Therefore, the Owner recognizes that FNI makes no warranty or guarantee that the actual project cost, financial aspects, economic feasibility, or schedules will not vary from FNI's opinions, analyses, projections, or estimates.

**C. Phase 1 - Preliminary Design:**

1. Meetings and Site Visits:
  - a. Conduct up to two (2) site visits by the engineering team to the WTP, for field evaluation and coordination of preliminary design needs for completion of the Project.

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- b. Preliminary Control Strategy Workshop No. 1: Conduct one (1) workshop with the Owner to discuss the control strategy for the following process areas:
          - i. Raw Water Pump Station.
          - ii. High Service Pump Station.
          - iii. Clearwell/Potable Water Ground Storage.
        - c. Preliminary Control Strategy Workshop No. 2: Conduct one (1) workshop with the Owner to discuss the control strategy for the following process areas:
          - i. Pre-Ozone Contactor.
          - ii. Pumped Diffusion/Rapid Mix.
          - iii. Flocculation/Sedimentation Basins.
          - iv. Intermediate Ozone Contactors.
        - d. Preliminary Control Strategy Workshop No. 3: Conduct one (1) workshop with the Owner to discuss the control strategy for the following process areas:
          - i. Membrane Feed Pump Station.
          - ii. Low-Pressure Membrane Filtration.
          - iii. Biologically Active Filtration.
          - iv. Transfer/Filter Backwash Pump Station.
        - e. Preliminary Control Strategy Workshop No. 4: Conduct one (1) workshop with the Owner to discuss the control strategy for the following process areas:
          - i. Disinfection System (Ozone production and sodium hypochlorite and liquid ammonium sulfate storage and feed).
          - ii. Other Chemical Systems (Coagulant and caustic storage and feed).
        - f. Preliminary Control Strategy Workshop No. 5: Conduct one (1) workshop with the Owner to discuss the control strategy for the following process areas:
          - i. Solids Handling System.
2. Advise Owner as to the necessity of Owner's providing or obtaining data or services from others and assist Owner regarding any such services.
3. Data Collection and Review: Owner will provide available plant operations data, flow data, population and growth projections, and other data listed below. FNI will review and analyze data provided. The historical data listed below is requested for the previous five years.
  - a. Owner Data Request – Raw Water Quality: Microsoft Excel file containing all periodic measurements of raw water alkalinity, aluminum, barium, bromide, bromate, calcium, chloride, iron, magnesium, manganese, organic carbon – dissolved, organic carbon – total, pH, silica, sodium, sulfate, total dissolved solids, total hardness, total suspended solids, turbidity, UV<sub>254</sub> absorbance, and water temperature for the designated period.
  - b. Owner Data Request – Finished Water Quality: Microsoft Excel file containing all periodic measurements of finished water alkalinity, aluminum, barium, bromide, bromate, calcium, chloride, iron, magnesium, manganese, organic carbon – dissolved, organic carbon – total, pH, silica, sodium, sulfate, total dissolved solids, total hardness, total suspended solids, turbidity, UV<sub>254</sub> absorbance, and water temperature for the designated period.

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- c. Owner Data Request – Raw Water Flow Measurements: Microsoft Excel file containing 15-minute increment raw water flow measurements for the treatment plant for the designated period.
  - d. Owner Data Request – Finished Water Flow Measurements: Microsoft Excel file containing 15-minute increment finished water flow measurements for the treatment plant for the designated period.
  - e. Owner Data Request – Chemical Dosing: Microsoft Excel file containing 1-hour increment chemical dosing setpoints for each chemical used at the WTP.
  - f. Owner Data Request – Copies of Surface Water Monthly Operating Reports (SWMORs) containing daily operational information for the designated period.
  - g. Owner Data Request – Copy of current TCEQ approved concentration-time (CT) study.
  - h. Owner Data Request – Previous regulatory inspection reports of the treatment plant for the designated period.
  - i. FNI will analyze the historical raw water data to develop raw water basis of design concentrations.
  - j. FNI will review relevant Owner-provided record drawings, equipment shop drawings, and/or O&M manuals.
4. Regulatory Compliance and Process Capacity Review:
- a. Perform a desktop capacity assessment of major treatment processes for compliance with TCEQ regulatory design criteria and redundancy guidelines. The following processes will be included in the assessment:
    - i. Ozone generation.
    - ii. Liquid oxygen.
    - iii. Sodium hypochlorite (12.5-percent solution).
    - iv. Liquid ammonium sulfate.
5. Preliminary Design Report:
- a. Evaluate results of the Data Collection and Review and Regulatory Compliance and Process Capacity Review above and develop solutions for plant improvements and/or expansions required to meet Project goals.
  - b. Prepare preliminary designs for the following processes as described in the Project Understanding and Assumptions section of this Exhibit and the MOU:
    - i. Raw water pump station (existing to be modified/expanded).
    - ii. Pre-ozone contactor (proposed).
    - iii. Pumped diffusion vault/rapid mix (proposed).
    - iv. Flow split (proposed).
    - v. Flocculation/sedimentation utilizing inclined plate settlers and differential head clarifier solids removal technology – based on the results of the inclined plate settler pilot study (proposed).
    - vi. Membrane Feed Pump Station (proposed)
    - vii. Low-pressure membrane – based on the results of the low-pressure membrane pilot study (proposed).

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- viii. Intermediate ozone contactor (proposed).
- ix. Biologically active filters (proposed).
- x. Transfer and backwash pump station (proposed).
- xi. Clearwell (proposed).
- xii. High service pump station (existing to be modified/expanded).
- xiii. Chemical improvements associated with the liquid oxygen storage system (existing to be expanded), oxygen vaporizers (existing to be expanded), ozone generation (existing to be replaced and expanded), Membrane WTP coagulant storage and feed (proposed), Membrane WTP sodium hydroxide storage and feed (proposed), sodium hypochlorite storage and feed (existing to be modified/expanded), and liquid ammonium sulfate feed (existing to be modified/expanded).
- xiv. Biologically active filter blowers (proposed).
- xv. Main drain sump pump station (proposed).
- xvi. Spent backwash equalization and recycle pump station (proposed).
- xvii. Administration/Operations/Membrane building (proposed).
- xviii. Membrane WTP solids handling: solids equalization/thickening and centrifuge dewatering (proposed).
- xix. Maintenance and electrical shop (proposed).
- xx. Electrical improvements (existing to be modified/expanded).
- xxi. Instrumentation and control improvements (existing to be modified/expanded).
- xxii. Yard piping and site civil improvements (existing to be modified/expanded).
- c. Review Workshops and Meetings:
  - i. Conduct a Draft PDR (Level I) Review Workshop - (20-30% Design Level): The Level I review will include a single-day workshop to review the draft preliminary design report, initial process and instrumentation diagrams, process control concepts, relevant one-line diagrams, proposed process layouts, and specification list.
- d. Deliverables:
  - i. Preliminary Design Report (PDR) documenting the calculations and preliminary design of the facilities. The PDR will clearly identify the selected equipment, process flow and instrumentation diagrams (P&ID), process control concepts, relevant one-line diagrams, proposed process layouts and detailed sketches, cut sheets and equipment O&M information. This will include up to 30% design-level drawings, detailed design criteria development and outline specifications for the design phase. Provide one (1) electronic PDF draft copy to Owner for review. Incorporate comments and provide one (1) electronic PDF upon incorporation of review comments. The PDR will be prepared to comply with the Texas Water Development Board (TWDB) State Water Implementation Fund for Texas (SWIFT) requirements.

**D. Construction Manager-at-Risk (CMAR) Coordination:**

- 1. Conduct one (1) 8-hour partnering and kickoff meeting with the CMAR and Owner to review scope, schedule, and budget; to determine any special conditions that may affect the Project; to discuss administrative requirements of Owner; and to review Project criteria and the Owner's goals and expectations for the Project.

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2. CMAR and Design Team Coordination Meetings: The FNI Design Team will attend up to forty (40) one-hour biweekly design coordination videoconferences with the CMAR to discuss design-related items.
3. CMAR and Owner Coordination Meetings: The FNI Design Team will attend up to twenty (20) one-hour monthly coordination videoconferences with the CMAR and Owner to discuss the Project.
4. CMAR and Owner Funding Coordination Meetings: The FNI Design Team will attend up to two (2) one-hour coordination videoconferences with the CMAR and Owner to discuss the funding application prior to meeting with the TWDB's Regional Water Project Development Team.
5. Program Evaluation Review:
  - a. FNI will review the evaluation of the Project and project budget prepared by the CMAR.
  - b. FNI will attend one (1) four-hour videoconference with the CMAR and OWNER to discuss the CMAR program evaluation.
6. Construction Management Plan Review:
  - a. FNI will review the construction management plan prepared by the CMAR.
  - b. FNI will attend up to four (4) two-hour videoconferences with the CMAR and OWNER to discuss the CMAR's construction management plan and updates.
7. Project Phasing and Schedule Review:
  - a. FNI will review the project phase and schedule prepared by the CMAR.
  - b. FNI will attend up to four (4) four-hour videoconferences with the CMAR and OWNER to discuss the CMAR's project phasing and schedule.
8. Cost Model Review:
  - a. FNI will review the cost model prepared by the CMAR.
  - b. FNI will attend up to four (4) two-hour videoconferences with the CMAR and OWNER to discuss the CMAR's cost model.
9. Design Documents Reviews:
  - a. The CMAR will participate in design document reviews for each deliverable identified in this Scope of Services.
  - b. FNI's participation in design document review meetings are identified in the Preliminary Design Phase and Detailed Design Phase sections of this Scope of Services.

**E. Phase 2 – Final Design Services:**

1. Meetings and Site Visits:
  - a. Conduct up to two (2) additional site visits by the engineering team to the treatment plant, for coordination on detailed design aspects for completion of the Project.

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- b. Final Control Strategy Workshop No. 1: Conduct one (1) workshop with the Owner to discuss the final control strategy for the following process areas:
          - i. Raw Water Pump Station
          - ii. High Service Pump Station
          - iii. Clearwell/Potable Water Ground Storage
          - iv. Pre-Ozone Contactor
          - v. Pumped Diffusion/Rapid Mix
          - vi. Flocculation/Sedimentation Basins
          - vii. Intermediate Ozone Contactors
          - viii. Solids Handling System
        - c. Final Control Strategy Workshop No. 2: Conduct one (1) workshop with the Owner to discuss the final control strategy for the following process areas:
          - i. Membrane Feed Pump Station
          - ii. Low-Pressure Membrane Filtration
          - iii. Biologically Active Filtration
          - iv. Transfer/Filter Backwash Pump Station
          - v. Disinfection System (Ozone production and sodium hypochlorite and liquid ammonium sulfate storage and feed)
          - vi. Other Chemical Systems (Coagulant and caustic storage and feed)
        - d. SCADA and Security Requirements Workshops: Conduct up to two (2) 2-hour videoconference calls with the Owner to discuss SCADA and security requirements that will be included in the specifications.
      2. Detailed design elements shall be developed using Autodesk AutoCAD, Autodesk Civil 3D, and Autodesk Revit BIM software for modeling the plant arrangement, coordinating with the Owner on the detailed mechanical, equipment, and structures, and for the development of plan sheets for bidding purposes. As such, some reviews will include 3D BIM Model reviews, and some will incorporate traditional 2D plan reviews. Proposed review workshops and milestones are listed below.
      3. Plant Hydraulics:
        - a. Existing Ray Roberts Conventional WTP Main Liquids Process: Develop a desktop hydraulic evaluation of the main liquids process flow from Raw Water Pump Station to the High Service Pump Station to validate the plant hydraulics and identify hydraulic bottlenecks. The flow scenarios for this hydraulic evaluation will be limited to the minimum, average, and maximum anticipated liquid process flows for the existing Ray Roberts Conventional WTP. This desktop evaluation will utilize FNI's standard Excel-based model.
        - b. Ray Roberts Membrane WTP Main Liquids Process: Develop a desktop hydraulic evaluation of the main liquids process flow from the Membrane WTP Pre-Ozone Contactor to the High Service Pump Station to inform the design of the process units. The flow scenarios for this hydraulic evaluation will be limited to the minimum, average, and maximum anticipated liquid process flows from the proposed Ray Roberts Membrane WTP. In addition, the ultimate

- buildout capacity will be analyzed. This desktop evaluation will utilize FNI's standard Excel-based model.
- c. **Raw Water Supply and Flow Split Hydraulics:** Develop a desktop hydraulic evaluation of the raw water supply from the Lake Ray Roberts Intake, through the Raw Water Pump Station and to the Ray Roberts WTP. This desktop evaluation will include proposed modifications and flow control scenarios to split the flow between the existing Ray Roberts Conventional WTP and the proposed Ray Roberts Membrane WTP. The flow scenarios for this hydraulic evaluation will include the minimum, average, and maximum anticipated liquid flows for the existing Ray Roberts Conventional WTP and the proposed Ray Roberts Membrane WTP as well as the ultimate buildout of the Ray Roberts Membrane WTP. This desktop evaluation will utilize FNI's standard Excel-based model.
  - d. **Ray Roberts Membrane WTP Solids Process:** Develop a desktop hydraulic evaluation of the solids flow from the proposed Flocculation/Sedimentation Basins to the proposed solids handling system. The flow scenarios for this hydraulic evaluation will include the minimum, average, and maximum anticipated solid process flows for the proposed Ray Roberts Membrane WTP and the ultimate buildout of the Ray Roberts Membrane WTP. This desktop evaluation will utilize FNI's standard Excel-based model. The solids associated with the Ray Roberts Conventional WTP are not included in this evaluation; however, they may be included as an Additional Service.
4. **Prepare BIM models, drawings, specifications, Construction Contract Documents, designs, and layouts of improvements to be constructed for each milestone submittal described below and for the final construction contract documents.** For the purposes of design planning, the alternative is assumed to include the major items listed in the narrative and as identified in the findings of the Preliminary Design Phase listed above. If a process other than the recommended alternative from the PDR is chosen, additional engineering effort required to incorporate the new alternative would be an Additional Service. The Construction Contract Documents listed below will be prepared for the Owner's and CMAR's use. Additional packages will be provided as an Additional Service.
    - a. **Construction Contract Document Package No. 1 – inclined plate settler and low-pressure membrane pilots and pilot support facilities.**
      - i. **Technical Specifications:** Division 01 through 47, as necessary to support the package components.
      - ii. **Drawings will be developed for the following project elements:**
        - 1) Pilot Support Facilities.
    - b. **Construction Contract Document Package No. 2 – long lead-time equipment and electrical components which may include generators, medium voltage switchgear, pad-mounted and unit substation transformers, 480V switchboards, motor control centers and switchgear, VFDs associated with any pre-purchased pumps/motors.**
      - i. **Technical Specifications:** Division 01 through 47, as necessary to support the package components.
      - ii. **Drawings will be developed for the following project elements:**
        - 1) Electrical one-line diagrams, elevations and control schematics.

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- c. Construction Contract Document Package No. 3 – plant components not impacted by the low-pressure membrane pilot.
  - i. Technical Specifications: Division 01 through 47, as necessary to support the package components.
  - ii. Drawings will be developed for the following project elements:
    - 1) Raw Water Pump Station.
    - 2) Raw Water Pump Station Electrical Building.
    - 3) Membrane WTP Parallel Raw Water Pipeline.
    - 4) Membrane WTP Pre-Ozone Contactor.
    - 5) Membrane WTP Pumped Diffusion Vault/Rapid Mix.
    - 6) Membrane WTP Flow Split Structure.
    - 7) Membrane WTP Flocculation/Sedimentation Basin.
    - 8) Membrane WTP Sedimentation Basin Solids Pump Station.
    - 9) Membrane WTP Low-Pressure Membrane Feed Pump Station.
    - 10) Membrane WTP Intermediate Ozone Contactor.
    - 11) Membrane WTP Biologically Active Filters.
    - 12) Membrane WTP Biologically Active Filters Blower Building.
    - 13) Membrane WTP Transfer and Biologically Active Filter Backwash Pump Station.
    - 14) Existing Transfer Pump Station.
    - 15) Membrane WTP Transfer and Biologically Active Filter Backwash Pump Station Electrical Building.
    - 16) Clearwell No. 2.
    - 17) High Service Pump Station.
    - 18) High Service Pump Station Electrical Building.
    - 19) Membrane WTP Main Drain Sump Pump Station.
    - 20) Spent Backwash Equalization and Recycle Pump Station.
    - 21) Membrane WTP Solids Equalization/Thickener and Thickened Solids Pump Station.
    - 22) Membrane WTP Dewatering Building.
    - 23) Ozone Generation Building.
    - 24) Liquid Oxygen and Vaporizers.
    - 25) Membrane WTP Chemical Storage.
    - 26) Membrane WTP Chemical Feed.
    - 27) Disinfection Building (Sodium Hypochlorite and Liquid Ammonium Sulfate).
    - 28) Main Electrical Building No. 1.
    - 29) Main Electrical Building No. 2.
    - 30) Maintenance and Electrical Shop.
    - 31) Electrical, Instrumentation, and Control Systems.
    - 32) Yard Piping and Site Civil.
- d. Construction Contract Document Package No. 4 – low-pressure membrane procurement documents.
  - i. Technical Specifications: Division 01 through 47, as necessary to support the package components.

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- ii. Drawings will be developed for the following project elements:
      - 1) None.
  - e. Construction Contract Document Package No. 5 – plant components associated with the outcome of the low-pressure membrane pilot.
    - i. Technical Specifications: Division 01 through 47, as necessary to support the package components.
    - ii. Drawings will be developed for the following project elements:
      - 1) Administration/Operation/Low-Pressure Membrane Building.
      - 2) Electrical, Instrumentation, and Control Systems.
      - 3) Yard Piping, Site Civil, and Landscaping at the Administration/Operations/Membrane Building.
5. Conduct progress review and QC workshops with the Owner and CMAR during the Design Phase. FNI will submit relevant 3D models, drawings, specifications, and detailed data for each review workshop two weeks prior to the workshop dates to allow the Owner and CMAR adequate time for review and comment. These workshops will be conducted for each of the deliverable packages identified in this Scope of Services.
- a. Level I Review - Initial Submittal (20-30% Design Level): This review is provided as part of the Preliminary Design Phase in this Scope of Services.
  - b. Conduct a Model Overview Workshop: The model review will include a single-day workshop to provide model reviews and/or printed isometric views of proposed major facility improvements. Owner shall receive a walk-through of the facility models, using designated model review software, including relevant treatment process, structural, electrical, architectural, and plumbing/HVAC elements. FNI will document and address Owner comments before developing detailed construction contract drawings.
  - c. Level II Review – Midpoint Submittal (50-60% Design Level): The Level II review will include a single-day workshop to provide a detailed review of both model spaces and conventional 2D construction contract drawings for the proposed design improvements and draft specifications. Level II review will also include various disciplinary cross-check reviews and QCs by FNI, constructability reviews by FNI, initial workshop discussions on maintenance of plant operations (MOPO) and construction sequencing, and development of a Draft MOPO and construction sequencing plan. FNI will document and address Owner comments before developing the Level III submittal.
  - d. Level III Review – Pre-Bid Submittal (80-90% Design Level): The Level III review will include a single-day workshop to provide a detailed review of all final design plans and specifications, final constructability reviews, final disciplinary cross-check reviews and disciplinary QC documentation. FNI will document and address Owner comments before developing final plans and specifications for construction.
  - e. Conduct a single-day MOPO and construction sequencing workshop at the 90% level to discuss the finalized sequence of construction and MOPO plans for the plant improvements.
  - f. All workshops will be conducted in the Owner’s designated offices.

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6. Assist Owner and CMAR in developing procurement documents for the GMP packages. In coordination with the Owner and CMAR, assist in development of selection criteria and assist in development of bidding documents using the Owner's standard construction contract documents format.
7. Plans and specifications for any potentially occupied building will be submitted through the Owner's designated planning and development process for construction permitting. The Owner will coordinate obtaining all local government permits. FNI will support the Owner in preparing materials to obtain a permit as an Additional Service.
8. Advise Owner of the need for and recommend scope of subsurface investigations, special analysis, underwater exploration and mapping, etc., and the retention of special consultants beyond those identified in these Basic Services. The cost of such services shall be Additional Services and are not included in the Basic Services performed by FNI.
9. Furnish Owner, when requested, with the engineering data necessary for applications for routine permits required by local, state, and federal authorities.
10. Submit letters, notifications, drawings, specifications, design documentation and Construction Contract Documents to the applicable federal and state agency(-ies) for regulatory approval, where required.
11. Submit drawings for improvements to occupied buildings (and new facilities as required) to the appropriate regulatory agency (i.e., the Texas Department of Licensing and Regulation) for required TAS/ADA compliance rule reviews and associated approvals. The Owner will handle all required submittals for any other required review of building facilities.
12. This Project assumes the use of the Owner's standard construction contract (Division 00) documents including the Owner's General Conditions. FNI will use its technical standards for drawings and its technical specifications. FNI will coordinate with the Owner for any changes to specification standards in the Supplemental Conditions and Front-End Documents.
13. Furnish such information necessary to utility companies whose facilities may be affected, or whose services may be required for the Project.
14. The CMAR will prepare the opinion of probable construction cost for the Level II (Class 4) and Level III (Class 3) design completion levels. FNI will review these cost models and provide input to the Owner and CMAR.
15. Furnish the Owner one electronic PDF copy of drawings, specifications, and bid proposals for each submittal review and workshop above, for review and approval by Owner. Upon final approval by Owner, FNI will provide one electronic PDF copy for each final GMP package. Hard copies or providing Mylar sets is an Additional Service.

**F. Phase 3 – Bid and Procurement Services:**

Bid phase services assume the Project delivered using CMAR with Competitive Sealed Proposal selection process to support the CMAR. Upon completion of the design services and approval of “final” drawings and specifications by Owner, FNI will proceed with the performance of services in this phase as follows:

1. Review the CMAR prepared Notice to Bidders that the CMAR will distribute to prospective Contractors and vendors, and to selected plan rooms, using the Owner’s standard bid process. Provide a copy of the notice to bidders for Owner to use in notifying construction news publications and publishing the appropriate legal notice. The cost for publications shall be paid by the CMAR.
2. Submit electronic copies of plans, specifications, and bidding documents to the Owner. The Owner/CMAR will publish the documents to an online bidding service. Prospective bidders may download and print documents from an online bidding service, which will maintain plan holder list and post addenda. FNI posting documents to CIVCAST or other online service is an Additional Service.
3. Assist Owner and CMAR by responding to questions and interpreting bid documents. Prepare and issue addenda to the bid documents to plan holders, if necessary, following the Owner’s standard bid process.
4. Assist the Owner and CMAR in conducting up to four (4) separate pre-bid conferences (one per package) for the construction project and coordinate responses to questions with Owner. Responses to the pre-bid conference questions will be in the form of addenda issued after the conference. Attend the tour of the project site after the pre-bid conference.
5. In conjunction with the CMAR, develop an example “Construction Sequence” presentation, demonstrating to potential Contractors possible methodologies for sequencing construction events. FNI will also provide special procedures and construction constraints, clearly identified in the plans, specifications and presentation, to define limitations for the CMAR and Contractor to take any unit process or plant facility out of service for construction. Present the sample construction sequence at the pre-bid conferences.
6. The Owner and CMAR will evaluate the proposals for compliance with the Contract Documents.
7. The Owner and CMAR will receive, open, and evaluate competitive sealed proposals based on the published bid/proposer evaluation criteria at the appointed time. The Owner and CMAR will recommend acceptance of the most responsible offeror or rejection of the proposal. FNI will review the technical portion of the proposal associated with GMP Package Nos. 1 and 4.
8. Assist Owner and CMAR in the preparation of “issued for construction” Construction Documents. “Issued for construction” drawings and specifications shall incorporate any changes from addenda

into the final electronic documents and the documents shall be reprinted with the appropriate changes notated and clouded per FNI drawing standards.

9. Furnish the Owner and CMAR one electronic PDF copy of the full-sized drawings and conformed technical specifications for construction. Hard copy sets of "issued for construction" documents can be provided as an Additional Service.

**G. Phase 4 – Construction Contract Administration Services:**

Upon completion of the bid/negotiation phase services, FNI will proceed with the construction phase services as described below. It is understood that FNI does not guarantee the CMAR's or Contractor's performance, nor is FNI responsible for supervision of the CMAR or Contractor's operation and employees. FNI shall not be responsible for the means, methods, techniques, sequences, or procedures of construction selected by the CMAR or Contractor, or any safety precautions and programs relating in any way to the condition of the premises, the work of the CMAR, Contractor or any Subcontractor. FNI shall not be responsible for the acts or omissions of any person (except its own employees or agents) at the Project site or otherwise performing any of the work of the Project.

1. Assist Owner and CMAR in conducting up to two (2) preconstruction conference(s) with the selected CMAR and Contractor(s), review construction schedules prepared by the CMAR pursuant to the requirements of the construction contract and proposed construction. These preconstruction conferences are associated with GMP Package No. 3 (plant components not impacted by the low-pressure membrane pilot) and GMP Package No. 5 (plant components associated with the outcome of the low-pressure membrane pilot). Preconstruction conferences beyond the number listed is an Additional Service.
2. Participate in up to thirty-eight (38) monthly construction progress meetings with the Owner and CMAR. Assist Owner and CMAR in establishing an agenda for these meetings, facilitate meeting discussion and provide minutes for each meeting for Owner and CMAR comment. A site visit to the construction site (as distinguished from the continuous services of a resident project representative) will be conducted during these monthly construction progress meetings to observe the progress and the quality of work and to attempt to determine in general if the work is proceeding in accordance with the Construction Contract Documents. In this effort, FNI will report any observed deficiencies to the Owner. Meetings and visits to the site in excess of the specified number are an Additional Service.
3. Establish communication procedures with the Owner and CMAR. Submit up to thirty-eight (38) monthly reports of construction progress. Reports will describe construction progress in general terms and summarize project costs, payments made, construction schedule, and pending and approved contract modifications. Aerial photography will be provided, when available, by the Owner or CMAR for use by FNI in project updates. Aerial photography may be provided by FNI as an Additional Service.
4. Establish and maintain a project documentation system using the Owner's Procore project document system, consistent with the requirements of the construction contract documents.

Monitor the processing of CMAR's submittals and provide for filing and retrieval of project documentation. Produce monthly reports indicating the status of all submittals in the review process. Review and respond to CMAR's submittals, including requests for information, modification requests, shop drawings, schedules, and other submittals in accordance with the requirements of the construction contract documents for the Project. Monitor the progress of the CMAR in sending and processing submittals to see that documentation is being processed in accordance with schedules.

5. Based on FNI's observations as an experienced and qualified design professional and review of the payment requests and supporting documentation submitted by CMAR, determine the amount that FNI recommends CMAR be paid on monthly and final estimates, pursuant to the General Conditions of the Construction Contract. Project assumes thirty-eight (38) monthly pay requests will be processed by FNI. The review of more than the stated pay requests will be an Additional Service.
6. Make up to twenty (20) additional visits to the site, non-concurrent with the monthly site visits and meetings, to provide additional specialty observation or inspection as may be required for the Project. Visits to the site in excess of the specified number are an Additional Service.
7. Interpret the drawings and specifications for the Owner and CMAR. Investigations, analyses, and studies requested by the CMAR and approved by the Owner, for substitutions of equipment and/or materials or deviations from the drawings and specifications is an Additional Service.
8. Review up to 300 quality-related documents provided by the CMAR such as test reports, equipment installation reports or other documentation required by the Construction Contract Documents. The number of quality documents identified is estimated by FNI based on performance on similar projects and the number of documents identified in the plans and specifications. Review of CMAR submittals in excess of this amount are an Additional Service.
9. Provide for review of CMAR's requests for information (RFIs). Maintain document control systems, review CMAR RFIs and prepare responses in accordance with the Contract Documents. Provide interpretation and communicate engineering intent if information is not explicitly addressed in the Contract Documents. It is anticipated that FNI will review and respond to up to a total of 250 RFIs. Review of RFIs in excess of the specified number is an Additional Service.
10. Provide for review of CMAR submittals including shop drawings, operation and maintenance manuals and other documentation required by the construction contract documents. It is anticipated that FNI will review and respond to up to a total of 900 submittals and resubmittals. Review of submittals in excess of the specified number is an Additional Service.
11. Establish procedures for administering constructive changes to the construction contracts. Process contract modifications and negotiate with the CMAR on behalf of the Owner to determine the cost and time impacts of these changes. Prepare change order documentation for approved

changes for execution by the Owner. Documentation of field orders, where completion schedule or cost to Owner is not impacted, will also be prepared. Investigations, analyses, studies, or designs for substitutions of equipment or materials, corrections of defective or deficient work of the CMAR or other deviations from the construction contract documents requested by the CMAR and approved by the Owner are an Additional Service. Substitutions of materials or equipment or design modifications requested by the Owner are an Additional Service. FNI will process up to twenty (20) CMAR cost proposals (CPs), twenty (20) requests for cost proposal (RCPs), five (5) change orders and five (5) field orders during the construction phase. Providing these services to review or evaluate construction CMAR's claim(s) or Owner-initiated changes, supported by causes not within the control of FNI, above these amounts are an Additional Service.

12. The CMAR will provide construction materials testing for purposes of Owner quality control during construction. The CMAR must coordinate the work of testing laboratories and inspection bureaus required for the testing or inspection of materials, witnessed tests, factory testing, etc. for quality control of the Project. Materials testing furnished by FNI is an Additional Service.
13. Assist in the transfer of and acceptance by the construction CMAR of any Owner-furnished equipment or materials.
14. Conduct, in company with Owner's representative, up to two (2) substantial completion walkthroughs, one each for GMP Packages No. 3 and No. 5, of the Project to establish final punchlists for project completion, conformance with the design concept of the Project and general compliance with the Construction Contract Documents. Prepare a list of deficiencies to be corrected by the CMAR before the recommendation of final payment. Assist the Owner in obtaining legal releases, permits, warranties, spare parts, and keys from the CMAR. Review and comment on the certificate of completion and the recommendation for final payment to the CMAR. Visiting the site to review completed work for more than two (2) trips is an Additional Service. Visiting the site to conduct a final completion walkthrough is an Additional Service.
15. Revise the construction drawings in accordance with the information furnished by the CMAR reflecting changes in the Project made during construction. One (1) electronic copy in PDF format of "Record Drawings" shall be provided by FNI to the Owner. Hard copies or providing Mylar sets is an Additional Service.

#### **H. Phase 5 – Post Construction Phase Services:**

1. Provide an updated operations and maintenance (O&M) manual for the treatment plant to reflect changes in the operation of the plant. The O&M manual shall be consistent with current state regulatory requirements. The O&M manual will include all equipment operations of the plant, both existing and new equipment, and related unit process operations.
2. Review Workshops and Meetings:
  - a. O&M Manual Kickoff Workshop with Owner: Conduct one (1) videoconference with the Owner to review the O&M manual table of contents.

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- b. O&M Manual Review Workshop with Owner: Conduct one (1) workshop with the Owner to review the O&M manual sections.
- 3. Deliverables:
  - a. O&M Manual Table of Contents: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
  - b. O&M Manual: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.

**ARTICLE II – SPECIAL SERVICES:** FNI shall render the following Special Services for the development of the Project:

**A. Project Management, Quality Control, and Quality Assurance Special Services:**

- 1. No special services are identified.

**B. Opinions of Probable Construction Cost Special Services:**

- 1. No special services are identified.

**C. Phase 1 – Preliminary Design Special Services:**

- 1. Topographic Survey, LiDAR Survey, and 3D Photo Documentation (Photogrammetry)
  - a. Topographic Survey: Topographic survey services will be coordinated by FNI and provided by a surveyor as a consultant to FNI.
    - i. The Ray Roberts Raw Water Pump Station, raw water pipeline easement, and Ray Roberts Water Treatment Plant area cross sections and/or mapping will be collected generally at 25-foot intervals and at all breaks in grade to produce 1-foot interval contours to support the design of the Project.
    - ii. All trees will be tagged in the field. The tree tag identification number and common name will be noted on the survey. Tree identification by a licensed arborist is an Additional Service.
    - iii. Boundary and Easement Survey: Research existing easements and prepare the following easement meets-and-bounds survey documents.
      - 1) Raw Water Pump Station (U.S. Army Corps of Engineers) – existing permanent easement.
      - 2) Raw Water Pump Station (U.S. Army Corps of Engineers) – proposed temporary construction easement.
      - 3) Raw Water Pipeline (U.S. Army Corps of Engineers) – existing permanent easement.
      - 4) Raw Water Pipeline (U.S. Army Corps of Engineers) – proposed temporary construction easement.
      - 5) Electrical Utility – proposed permanent easement.
    - iv. Orthorectified imagery, captured using UAV drone technology, will be used to provide an aerial background to the deliverable. Photogrammetry, derived from the orthorectified imagery, will be utilized to capture mapping and improvements as applicable.

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- v. Terrestrial based 3D laser scanning will be utilized to capture mapping and improvements on existing plant structures.
    - vi. In addition, the following weir elevations will be measured:
      - 1) Flow Splitter Box.
      - 2) Flocculation/Sedimentation Basin Nos. 1 and 2.
    - vii. The surveyor will conduct additional separate site visits to collect the following items:
      - 1) CMAR provided subsurface utility exploration excavations (locate points of inflection along the raw water pipeline, tie in and connection points, and verification of buried utilities).
      - 2) Soil boring markers or boring locations.
  - b. LiDAR Survey: LiDAR survey services will be coordinated by FNI and provided by FNI.
    - i. Ray Roberts Raw Water Pump Station
    - ii. Ozone Generation Building
    - iii. Liquid Oxygen
    - iv. Ray Roberts High Service Pump Station
    - v. Main Electrical Building
  - c. 3D Photo Documentation (Photogrammetry): Capture 3D photo documentation (Matterport) of the interior and exterior façade of the Owner facilities listed below:
    - i. Ray Roberts Raw Water Pump Station
    - ii. Ozone Generation Building
    - iii. Liquid Oxygen Storage Area
    - iv. Ray Roberts High Service Pump Station
    - v. Main Electrical Building
2. Easement Support
- a. United States Army Corps of Engineers
    - i. The Raw Water Pump Station and raw water pipeline are in an existing easement provided to the Owner by the United States Army Corps of Engineers (USACE). The Project improvements impact the easement document. The easement was modified in the *Lake Lewisville Phase II Improvements* to include the Raw Water Pump Station Chemical Building. Based on available information, this scope assumes that the existing permanent easement will support an expansion of the Raw Water Pump Station and a parallel raw water pipeline. A temporary construction easement will be required for the Raw Water Pump Station expansion and the raw water pipeline.
    - ii. The Owner will provide FNI with the current USACE easement document for review.
    - iii. FNI will support the Owner by providing a meets-and-bounds survey of the proposed temporary construction easements. In addition to this information, FNI will participate in the workshops and meetings outlined below.
    - iv. Any other easement requirements from the USACE will be considered an Additional Service.

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- v. Review Workshop and Meetings:
    - 1) United States Army Corps of Engineers Lake Management and Owner Coordination Meetings: Prepare meeting agenda and notes and attend up to two (2) in-person meetings with the USACE Lake Ray Roberts Manager and the Owner.
    - 2) United States Army Corps of Engineers and Owner Coordination Meetings: Prepare meeting agenda and notes and attend up to four (4) videoconferences with the USACE and the Owner.
    - 3) United States Army Corps of Engineers and Owner Temporary Easement Document Review Workshop: Prepare meeting agenda and notes and attend one (1) review workshop with the Owner.
  - vi. Deliverables:
    - 1) United States Army Corps of Engineers and City of Denton Temporary Easement Meets-and-Bounds Document: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
- 3. Provide a Geotechnical Investigation and Geotechnical Engineering Report of the plant site required for the design phase.
  - a. Geotechnical Exploration
    - i. Select appropriate locations for exploratory borings within the vicinity of the following proposed improvements:
      - 1) Raw Water Pump Station (expansion).
      - 2) Raw Water Pump Station Electrical Building (expansion).
      - 3) Parallel Raw Water Pipeline.
      - 4) Conventional WTP Flow Control Valve Vault, Conventional WTP Flow Meter Vault, Membrane WTP Flow Control Valve Vault, and Membrane WTP Flow Meter Vault.
      - 5) Membrane WTP Pre-Ozone Contactor.
      - 6) Membrane WTP Chemical Feed
      - 7) Membrane WTP Flow Split Structure.
      - 8) Membrane WTP Flocculation/Sedimentation Basins and Membrane Feed Pump Station.
      - 9) Membrane WTP Administration/Operations/Membrane Building.
      - 10) Membrane WTP Intermediate Ozone Contactor.
      - 11) Membrane WTP Biologically Active Filters.
      - 12) Washwater Reclamation Basin No. 2.
      - 13) Membrane WTP Transfer/Backwash Pump Station.
      - 14) Membrane WTP Transfer/Backwash Pump Station Electrical Building.
      - 15) Membrane WTP Ammonia Injection Vault.
      - 16) Clearwell No. 2.
      - 17) High Service Pump Station VFD Building (expansion).
      - 18) Main Electrical Building No. 2.
    - ii. Coordinate the boring locations with the Owner and notify Texas 811 to locate existing underground utilities before the commencement of the field exploration activities.

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- iii. FNI will subcontract with a drilling contractor to drill the borings identified below at the selected locations. Samples will be collected intermittently using continuous flight auger and either tube samples or a split-spoon sampler in conjunction with the Standard Penetration Test (SPT), as appropriate for the material. Rock and rock-like materials will be sampled using an NX core barrel and/or tested in-situ using a TxDOT Cone Penetration Test (CPT), as appropriate for the material. At completion, the boreholes will be backfilled with auger cuttings to the ground surface. If boreholes are located within areas of pavement or sidewalk, borings will be backfilled with a similar material to match the existing conditions. The following borings will be conducted:
    - 1) Raw Water Pump Station (expansion): 2.
    - 2) Raw Water Pump Station Electrical Building (expansion): 1.
    - 3) Parallel Raw Water Pipeline: 2.
    - 4) Conventional WTP Flow Control Valve Vault, Conventional WTP Flow Meter Vault, Membrane WTP Flow Control Valve Vault, and Membrane WTP Flow Meter Vault: 2.
    - 5) Membrane WTP Pre-Ozone Contactor: 1.
    - 6) Membrane WTP Chemical Feed: 1.
    - 7) Membrane WTP Flow Split Structure: 1.
    - 8) Membrane WTP Flocculation/Sedimentation Basins and Membrane Feed Pump Station: 1.
    - 9) Membrane WTP Administration/Operations/Membrane Building: 2.
    - 10) Membrane WTP Intermediate Ozone Contactor: 1.
    - 11) Membrane WTP Biologically Active Filters: 3.
    - 12) Washwater Reclamation Basin No. 2: 2.
    - 13) Membrane WTP Transfer/Backwash Pump Station: 2.
    - 14) Membrane WTP Transfer/Backwash Pump Station Electrical Building: 1.
    - 15) Clearwell No. 2: 5.
    - 16) High Service Pump Station VFD Building (expansion): 1.
    - 17) Main Electrical Building No. 2: 2.
    - 18) Two (2) standpipe piezometers will be installed to enable subsequent groundwater measurements. The Owner will take periodic groundwater measurements, record, and forward the information to FNI.
  - iv. FNI will provide an engineer or geologist, experienced with logging borings, to direct the drilling, log the borings, and handle the samples. Visual classification of the subsurface stratigraphy shall be provided according to the Unified Soil Classification System (USCS).
- b. Laboratory Testing
- i. Testing shall be performed on soil samples obtained from the borings. The laboratory testing will be focused upon soil classification, subsurface moisture profile, and swell tests, as well as soil strengths for supporting the various structures. FNI will select samples from the exploratory borings for laboratory testing, assign tests, and review the test results. A geotechnical testing subcontractor will perform the testing.

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- ii. Laboratory tests will be assigned based on the specific subsurface materials encountered during exploration. Test type and quantity may vary, but are expected to include:
  - 1) Classification test (liquid and plastic limits and percent pass of the No. 200 sieve or gradation);
  - 2) Moisture content;
  - 3) Dry unit weight;
  - 4) Shear strength testing;
  - 5) Unconfined compression testing;
  - 6) One-dimensional swell (restrained) testing; and
  - 7) Consolidation testing.
- c. Engineering Analysis
  - i. FNI will prepare a Geotechnical Report of the investigation that will include:
    - 1) Plan of borings illustrating the approximate location of each boring and scale to which the drawing was made.
    - 2) A log of each boring indicating the boring number, depth of each stratum, soil classification and description, and groundwater/seepage observations recorded during drilling.
    - 3) Summary of laboratory results.
    - 4) General discussion of the site geology.
    - 5) Discussion of subsurface conditions and soil properties indicated by the field and laboratory work, and the implications for design.
    - 6) Foundation and site preparation recommendations for the proposed Project components.
    - 7) General discussion of expected construction related issues.
    - 8) Earthwork related recommendations for use during development of the plans and specifications.

**D. Construction Management-at-Risk (CMAR) Coordination Special Services.**

- 1. No special services are identified.

**E. Phase 2 – Final Design Special Services:**

- 1. Council Presentations and Public Meetings: Participate in up to two (2) project update presentations to council.

**F. Phase 3 – Bid and Procurement Special Services:**

- 1. No special services are identified.

**G. Phase 4 – Construction Contract Administration Special Services:**

- 1. Resident Project Representative (RPR)
  - a. FNI will provide one (1) Resident Project Representative (RPR) for the Project to act as Owner's on-site representative during the Construction Phase.

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- b. The RPR will communicate and coordinate with the Owner on a regular basis to carry out the daily services being provided and will coordinate with the Specialty Observations staff.
- c. In performing these services, it is understood that FNI does not guarantee the CMAR's performance, nor is FNI responsible for the supervision of the CMAR's operation and employees. FNI shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by the CMAR, or any safety precautions and programs relating in any way to the condition of the premises, the work of the CMAR or any Contractor or Subcontractor. FNI shall not be responsible for the acts or omissions of any person (except its own employees or agents) at the Project site or otherwise performing any of the work of the Project.
- d. Resident Project Representative Services:
  - i. The duties, responsibilities, and the limitations of authority of the Resident Project Representative, and designated assistants, are as follows .
    - 1) Resident Project Representative is Engineer's agent at the site, will act as directed by and under the supervision of the Engineer, and will confer with the Engineer regarding Resident Project Representative's actions. Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be with the Engineer and CMAR, keeping Owner advised as necessary. Resident Project Representative's dealings with Contractors and Subcontractors shall only be through or with full knowledge and approval of the CMAR. Resident Project Representative shall generally communicate with the Owner with the knowledge of and under the direction of the Engineer.
    - 2) The Owner agrees to include provisions in the General Conditions that require the CMAR to include FNI: (1) as an additional insured and in any waiver of subrogation rights with respect to such liability insurance purchased and maintained by the CMAR for the Project (except workers' compensation and professional liability policies); and (2) as an indemnified party in the CMAR's indemnification provisions where the Owner is named as an indemnified party.
  - ii. Duties and Responsibilities of Resident Project Representative:
    - 1) Schedules: Review the progress schedule, schedule of Shop Drawing submittals, and schedules of values prepared by the CMAR and consult with the Engineer concerning acceptability.
    - 2) Conferences and Meetings: Attend meetings with the CMAR, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
    - 3) Liaison:
      - a. Serve as the Engineer's liaison with the CMAR, working principally through CMAR's superintendent and assist in understanding the intent of Contract Documents; and assist the Engineer in coordinating with the Owner's liaison and CMAR when CMAR's operations affect Owner's on-site operations.
      - b. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

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- 4) Shop Drawings and Samples:
  - a. Record date of receipt of Shop Drawings and Samples.
  - b. Receive Samples which are furnished at the Site by the CMAR, and notify the Engineer of availability of Samples for examination.
  - c. Advise the Engineer and CMAR of the commencement of any Work requiring a Shop Drawing or Sample if the submittal has not been approved by the Engineer.
- 5) Review of Work, Rejection of Defective Work, Inspections and Tests:
  - a. Conduct on-site observations of the Work in progress to determine if the Work is in general proceeding in accordance with the Contract Documents.
  - b. Report to the Engineer whenever Resident Project Representative believes that any Work will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise the Engineer of Work the Resident Project Representative believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
  - c. Verify that tests, equipment, and systems start-up and operating and maintenance training are conducted in the presence of appropriate personnel, and the CMAR maintains adequate records thereof; and observe record and report to the Engineer appropriate details relative to the test procedures and start-ups.
  - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to the Engineer.
- 6) Interpretation of Contract Documents: Report to the Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to the CMAR clarifications and interpretations as issued by the Engineer.
- 7) Request for Revisions: Consider and evaluate the CMAR's suggestions for revisions to Drawings or Specifications and report with Resident Project Representative's recommendations to the Engineer. Transmit to the CMAR in writing decisions as issued by the Engineer.
- 8) Records:
  - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and Samples, reproductions of original Contract Documents, including all Work Change Directives, Addenda, Change Orders, Field Orders, Written Amendments, the Engineer's clarifications and interpretations of the Contract Documents, progress reports, submittals and correspondence received from and delivered to the CMAR and other Project related documents.

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9) Reports:

- a. Furnish to the Engineer periodic reports as required of progress of the work and of CMAR's compliance with the progress schedule and schedule of Shop Drawings and Sample submittals.
- b. Consult with the Engineer in advance of scheduled major tests, inspections, or start of important phases of the Work.
- c. Draft proposed Written Amendments, Change Orders, and Work Change Directives, obtaining backup material from the CMAR and recommend to the Engineer Written Amendments, Change Orders, Work Change Directives, and Field Orders.
- d. Report immediately to the Engineer and the Owner the occurrence of any accident.

10) Payment Requests: Review Applications for Payment with the CMAR for compliance with the established procedure for their submission and forward with recommendations to the Owner, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment at the Site but not incorporated in the Work.

11) Certificates, Maintenance, and Operation Manuals: During the course of the Work, verify that certificates, maintenance, and operation manuals and other data required to be assembled and furnished by the CMAR are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to the Engineer for review and forwarding to the Owner prior to final payment for the Work.

12) Equipment Training:

- a. RPR will review the equipment training plans (agendas) for conformance with the Construction Contract.
- b. RPR will monitor the status of equipment training to verify completion prior to startup of the associated equipment/processes.
- c. RPR will monitor the status of equipment O&M manuals to verify completion prior to startup of the associated equipment/processes.

13) Completion:

- a. Before the Engineer issues a Certificate of Substantial Completion, submit to the CMAR a list of observed items requiring completion or correction.
- b. Observe whether the CMAR has performed inspections required by laws or regulations, ordinances, codes or orders applicable to the Work, including but not limited to those to be performed by public agencies having jurisdiction over the Work.
- c. Conduct a final inspection in the company of the Engineer, Owner, and CMAR and prepare a final list of items to be completed or corrected.
- d. Observe whether all items on the final list have been completed or corrected and make recommendations to the Engineer concerning acceptance.

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- iii. Limitations of Authority of Resident Project Representative:
    - 1) The RPR shall not authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items), unless authorized by the Engineer.
    - 2) The RPR shall not exceed limitations of the Engineer's authority as set forth in Agreement or the Contract Documents.
    - 3) The RPR shall not undertake any of the responsibilities of the CMAR, Subcontractor, Suppliers, or CMAR's superintendent.
    - 4) The RPR shall not advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
    - 5) The RPR shall not advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the Work or any activities or operations of the Owner or CMAR.
    - 6) The RPR shall not accept shop drawing or sample submittals from anyone other than the CMAR.
    - 7) The RPR shall not participate in specialized field or laboratory tests or inspections conducted by others, except as specifically authorized by the Engineer.
  - e. RPR services are estimated to average 40 hours per week over thirty-four (34) months of the estimated thirty-eight (38)-month duration of construction. If the CMAR is unable to complete the Project in the established duration, and additional RPR services are required, these services shall be included as an Additional Service to the Agreement.
- 2. Specialty Construction Electrical Inspection:
  - a. FNI will provide one (1) specialty construction electrical inspector focusing on electrical equipment for the duration outlined below.
  - b. The specialty construction electrical inspector will communicate and coordinate with the RPR on a regular basis to carry out the daily services being provided.
  - c. In performing these services, it is understood that FNI does not guarantee the CMAR's performance, nor is FNI responsible for the supervision of the CMAR's operation and employees. FNI shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by the CMAR, or any safety precautions and programs relating in any way to the condition of the premises, the work of the CMAR or any Contractor or Subcontractor. FNI shall not be responsible for the acts or omissions of any person (except its own employees or agents) at the Project site or otherwise performing any of the work of the Project.
  - d. Specialty Construction Electrical Inspection Services: The primary roles and responsibilities of the specialty construction electrical inspector include the following:
    - i. Serve as point of contact for the RPR, with primary responsibility for construction quality assurance especially related to electrical equipment.
    - ii. Inspect construction work daily to determine that construction is in conformance with the Construction Contract Documents.

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- iii. Prepare daily construction reports (DCRs) documenting construction activities, number of construction staff on site, equipment stages and/or operating on site, visits to the site, discussions of any field issues with any parties, and any other information pertinent to or potentially impacting the Project.
    - iv. Assist the RPR and Owner staff when needed to coordinate construction activities that may impact the Owner's ongoing operations.
    - v. Verify that the CMAR testing laboratories are onsite and conducting the necessary testing per the Construction Contract Documents.
    - vi. Verify quantities of work in place and assist the RPR in the review of payment request and supporting documentation.
    - vii. Attend periodic project coordination meetings (bi-weekly or monthly) when requested by the RPR to provide updates and inputs on construction progress and issues as appropriate.
    - viii. Attend other project related construction meetings as needed.
    - ix. Assist the RPR in preparation of notices of defective work. Assist in coordinating the resolution of non-compliant work with the CMAR. Document and follow up on non-conforming work to determine that acceptable correction of defects is accomplished.
    - x. Maintain a working set of record documents. Determine that measurements required for record documents are taken before work is covered.
    - xi. Take photographs to document differing site conditions, change order and claim items, and any special or unique conditions as they arise.
  - e. The specialty construction electrical inspection services are estimated to average 40 hours per week for a duration of ten (10) months. If the CMAR is unable to complete the Project within the established duration, and additional services are required, these services shall be included as an Additional Service to the Agreement.
3. Major Equipment Factory Witness Testing.
- a. The specifications for major pieces of equipment will be written such that the Owner may elect to witness the factory performance test of major equipment. The specifications will be written with the requirement that all travel expenses will be paid by the manufacturer for the Owner and FNI. These specifications will also be written such that FNI's labor and expenses incurred for witness testing following unacceptable tests must be paid for by the manufacturer.
  - b. Services of the identified engineer, including travel to the test location, witnessing the performance testing, providing recommendations to the Owner regarding acceptance, and providing a technical memorandum summarizing the testing. The following factory performance tests for major equipment are anticipated:
    - i. Motors (RWPS x 2, HSPS x 2): 2 Trips.
    - ii. Vertical Turbine Pumps (RWPS x 2, HSPS x 2): 1 Trip.
    - iii. Adjustable Frequency Drives (RWPS x 5, HSPS x 2): 1 Trips.
    - iv. Generator: 1 Trip.
    - v. Medium Voltage Switchgear: 1 Trips.
    - vi. Programable Logic Controllers and SCADA/HMI: 5 Trips.

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4. Provide Startup and Commissioning Services.

a. Pre-Commissioning

i. Pre-Commissioning Planning

- 1) Pre-Commissioning Workshops. FNI will lead four (4) 2-hour pre-commissioning workshops with the Project stakeholders to advance the commissioning planning efforts. Workshops will be held monthly six (6) months prior to the scheduled commissioning.
- 2) The CMAR will develop the Commissioning Plan for FNI review. The Commissioning Plan will consider equipment-specific conditions and constraints. The Commissioning Plan should include: Objective, Necessary Activities, Sequence of Activities, Roles and Responsibilities, Risks and Mitigation Strategies, and Safety Considerations.
- 3) The CMAR will split the Project into manageable Functional and Performance Test Packages (FAPTPs) and develop these packages. FAPTPs will include: Name and tag number of all equipment to be started up concurrently or in the same package; All pre-startup requirements including responsibilities for the CMAR, Owner, and FNI; Requirements for process mechanical, electrical, instrumentation, and automatic control needs; Detailed description of step-by-step procedures for startup, as well sequence of startup for equipment. The scope of services is based on six FAPTPs. The FAPTPs listed are assumed and FAPTPs beyond those listed are an Additional Service. The CMAR will submit all of the identified FAPTPs in one (1) submittal for review by FNI. Review of more than one (1) submittal is an Additional Service.
  - a. FAPTP No. 1: Raw Water Pump Station, Pre-ozone Contactor, Pumped Diffusion Vault/ Rapid Mix, Splitter Box, Flocculation/Sedimentation.
  - b. FAPTP No. 2: Low-pressure Membrane Feed Pump Station, Membrane System, and Membrane Support Systems.
  - c. FAPTP No. 3: Intermediate Ozone Contactor, Biologically Active Filters, Transfer and Backwash Pump Station, Filter Air Scour Blower.
  - d. FAPTP No. 4: High Service Pump Station, Electrical Distribution, Generators, SCADA.
  - e. FAPTP No. 5: Ozone Generation, Chemical Storage and Feed, Washwater Recovery, Main Drain Sump.
  - f. FAPTP No. 6: Solids Handling.

- 4) Scheduling Support. The CMAR's Project Team will develop a baseline Training Schedule for FNI's review. The Training Schedule will identify training activities.

- ii. System/Process Training. Based on the Draft System O&M Manual, FNI will provide system training for the Project. FNI will prepare an agenda for the training workshop. FNI will prepare a slide deck to accompany the training session. A copy of the slide deck will be provided to the Owner in PDF format. Each training session will be conducted over two (2) four (4)-hour periods. Up to two (2) training sessions will be conducted to provide the Owner with schedule flexibility. This training will include the topics outlined below, additional topics may be included as an Additional Service:

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- 1) Overall process diagram and process review.
- 2) Overview of major equipment and vendor furnished operation and maintenance manuals.
- 3) Membrane Overview: general operations, terminology, data analysis and trending.
- 4) Sludge removal optimization.
- 5) Solids Dewatering Overview: general operations, terminology, data analysis and trending.
- iii. Pre-Commissioning Field Testing. FNI will monitor the status of pre-commissioning field testing/documentation for each FAPTP to verify conformance with Construction Contract Documents and completion prior to startup of the associated equipment/processes.
- b. Commissioning
  - i. Commissioning Administration
    - 1) Commissioning Coordination – The Owner’s construction staff and FNI’s resident project representative will mobilize to the Project site to oversee the CMAR’s implementation of the FAPTPs.
    - 2) Recurring status meetings – FNI will participate in four (4) 2-hour commissioning team meetings to monitor the progress and coordinate the near-term upcoming commissioning activities.
    - 3) The OWNER, FNI’s RPR, and CMAR will provide updates at each of the construction progress meetings.
  - ii. Commissioning Field Testing
    - 1) The following FNI staff will be on-site as outlined below for each FAPTP to witness the CMAR’s execution of commissioning field testing.
      - a. FAPTP No. 1:
 

|                                        |        |
|----------------------------------------|--------|
| (1). Treatment Process Lead:           | 5 days |
| (2). Pump Station Lead:                | 2 days |
| (3). Electrical Treatment Lead:        | 0 days |
| (4). Electric Pump Station Lead:       | 7 days |
| (5). Instrumentation and Control Lead: | 5 days |
      - b. FAPTP No. 2:
 

|                                        |        |
|----------------------------------------|--------|
| (1). Treatment Process Lead:           | 5 days |
| (2). Pump Station Lead:                | 0 days |
| (3). Electrical Treatment Lead:        | 2 days |
| (4). Electric Pump Station Lead:       | 0 days |
| (5). Instrumentation and Control Lead: | 8 days |
      - c. FAPTP No. 3:
 

|                                        |        |
|----------------------------------------|--------|
| (1). Treatment Process Lead:           | 5 days |
| (2). Pump Station Lead:                | 0 days |
| (3). Electrical Treatment Lead:        | 2 days |
| (4). Electric Pump Station Lead:       | 7 days |
| (5). Instrumentation and Control Lead: | 2 days |

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- d. FAPTP No. 4:
  - (1). Treatment Process Lead: 5 days
  - (2). Pump Station Lead: 2 days
  - (3). Electrical Treatment Lead: 0 days
  - (4). Electric Pump Station Lead: 9 days
  - (5). Instrumentation and Control Lead: 3 days
- e. FAPTP No. 5:
  - (1). Treatment Process Lead: 5 days
  - (2). Pump Station Lead: 0 days
  - (3). Electrical Treatment Lead: 0 days
  - (4). Electric Pump Station Lead: 0 days
  - (5). Instrumentation and Control Lead: 0 days
- f. FAPTP No. 6:
  - (1). Treatment Process Lead: 5 days
  - (2). Pump Station Lead: 0 days
  - (3). Electrical Treatment Lead: 0 days
  - (4). Electric Pump Station Lead: 0 days
  - (5). Instrumentation and Control Lead: 0 days
- 2) The CMAR will submit commissioning documentation for each FAPTP. FNI will review each commissioning field testing submittal for conformance with the Construction Contract Documents.
- 3) FNI will monitor the status of each FAPTP to verify completion of commissioning field testing.

**H. Post Construction Special Services**

- 1. No special services are identified.

**I. Other Services Recommended Outside of a Traditional CMAR Type Project:**

- 1. Treatment Process Laboratory Special Services:
  - a. Coagulant determination jar tests.
    - i. FNI will conduct bench-scale jar testing of coagulants with polyaluminum chloride and aluminum chlorohydrate. Up to six (6) doses of each coagulant will be tested for a total of twelve (12) tests. The jar tests will be conducted on ozonated water from the RRWTP Pre-Ozone Contactor.
    - ii. The ozonated water will be delivered or shipped to the FNI laboratory by FNI.
    - iii. Chemical metal salts for testing will be provided by or purchased by FNI.
    - iv. Turbidity and UV<sub>254</sub> will be measured in the FNI laboratory to determine the coagulant for the pilot study.
    - v. Site Visits:
      - 1) FNI will conduct one (1) site visit to obtain the necessary water sample for the jar testing.
    - vi. Review Workshops and Meetings:
      - 1) None.

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vii. Deliverables:

- 1) None.

2. Inclined Plate Settler and Low-Pressure Membrane Pilot:

a. Pilot Protocol Preparation

- i. FNI will prepare a pilot protocol that will include the necessary operational goals, sampling and testing plan, schedule, and aspects required by the TCEQ. As part of the development of the pilot protocol, FNI will coordinate with the TCEQ and pilot vendors to verify that the pilot protocol meets the Project requirements and goals. FNI will review the pilot protocol with the Owner and submit the protocol to the TCEQ for approval.
- ii. The pilot protocol will be based on a single season pilot following this approximate schedule:
  - 1) Initiate Pilot Testing: 7 days.
  - 2) Stage 1 – Optimization of Pilot: 60 days.
  - 3) Clean-in-Place: 1 day.
  - 4) Stage 2 – Demonstration of Continued and Consistent Performance: 45 days.
  - 5) Clean-in-Place: 1 day.
  - 6) Stage 3 – Demonstration of Specific Flux Recovery Following a Clean-in-Place: 10 days.
- iii. Review Workshops and Meetings:
  - 1) Pilot Protocol Review Workshop with Owner. Prepare meeting agenda, attend, and prepare meeting notes for one (1) pilot protocol review meeting with the Owner.
  - 2) Pilot Protocol Review Workshop with TCEQ. Prepare meeting agenda, attend, and prepare meeting notes for one (1) pilot protocol review meeting with the Owner and TCEQ.
- iv. Deliverables:
  - 1) Pilot Protocol. Submit one (1) electronic PDF draft copy to the Owner for review and one (1) electronic PDF final copy to the Owner upon incorporation of the review comments.

b. Pilot Support Facilities

- i. Design Pilot Facilities: FNI will provide detailed design to support the inclined plate settler and low-pressure membrane pilots. These facilities will be temporary and only to support the efforts of the pilot study. The design elements will include process mechanical, chemical storage/feed, structural, and electrical components.
- ii. Advertisement/Proposal Phase Services for the Pilot Facilities: FNI will support the Owner and CMAR through the advertisement and proposal phase for the construction of the pilot facilities.
- iii. Construction Phase (General Representation) Services for the Pilot Facilities: FNI will support the Owner and CMAR through the construction phase for the construction of the pilot facilities. The CMAR will accommodate the construction of these components.
- iv. Review Workshops and Meetings:
  - 1) Pilot Support Facilities Design Review Workshop with Owner. Prepare meeting agenda, attend, and prepare notes for one (1) pilot support facilities design review workshop with the Owner.

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- v. Deliverables:
  - 1) Pilot Support Facilities Specifications and Drawings. Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
- c. Pilot Procurement/Lease Package
  - i. Pilot Procurement/Lease Package Development: FNI will support the Owner's development of the pilot unit procurement/lease package. The pilot units will include inclined plate settler and low-pressure membrane systems.
  - ii. Coordinate with Inclined Plate Settler Vendors: Based on the total flow needs of the low-pressure membrane pilots, engage with up to two (2) inclined plate settler vendors to provide pilot unit(s).
  - iii. Coordinate with Low-Pressure Membrane Vendors: Based on discussions with the Owner, coordinate with up to two (2) low-pressure (microfiltration/ultrafiltration) membrane vendors to provide pilot units.
  - iv. Advertisement/Proposal Phase Services for the Pilot Units: FNI will support the Owner and CMAR through the advertisement and proposal phase services for the selection of inclined plate settler and low-pressure membrane vendors for the pilot study.
  - v. Review Workshops and Meetings:
    - 1) Pilot Procurement/Lease Package Review Workshop with Owner. Prepare meeting agenda, attend, and prepare notes for one (1) pilot procurement/lease package review workshop with the Owner.
  - vi. Deliverables:
    - 1) Pilot Procurement/Lease Package. Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
- d. Pilot Execution
  - i. Coordinate with Pilot Vendors: FNI will coordinate with the inclined plate settler vendor(s) and low-pressure membrane vendors for the delivery and installation of the pilots. The vendors will be responsible for setting up their respective pilot units. The CMAR will be responsible for offloading and loading the pilots.
  - ii. Execute the Pilot Protocol: FNI will coordinate with the pilot vendors to execute the pilot per the TCEQ approved pilot protocol. Should pilot adjustments be needed to the protocol over the course of the pilot, FNI will coordinate with the vendors and TCEQ.
  - iii. Field Support during the Pilot: FNI will make weekly trips, to review the status of the pilot units in conjunction with weekly water sample collection.
  - iv. Water Quality and Sampling Support:
    - 1) FNI will coordinate with the City of Denton water quality testing laboratory and will execute the weekly and monthly portion of the sample protocol of the approved pilot protocol.
    - 2) FNI will make up to eighteen (18) site visits to the pilot during pilot execution.
    - 3) The Owner will provide support for the daily portion of the sample protocol.
    - 4) The water quality testing laboratory is assumed to be the City of Denton laboratory. Providing independent laboratory services may be provided as an Additional Service.

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- 5) The Owner will provide support for daily samples.
  - v. Inclined Plate Settler Pilot Report: FNI will prepare a pilot report based on the data collected from the inclined plate settler pilot. FNI will coordinate with the Owner for review of the report prior to submission to the TCEQ. This report will provide the design parameters for the full-scale project.
  - vi. Low-Pressure Membrane Pilot Report: FNI will prepare a pilot report based on the data collected from the low-pressure membrane pilots and the vendor furnished pilot reports. FNI will coordinate with the Owner for review of the report prior to submission to the TCEQ. This report will provide the design parameters for the full-scale project.
  - vii. Review Workshops and Meetings:
    - 1) Pilot Report Review Workshop with Owner. Prepare meeting agenda, attend, and prepare notes for one (1) pilot report review workshop with the Owner.
    - 2) Pilot Report Review with TCEQ. Prepare meeting agenda, attend, and prepare notes for one (1) pilot report review meeting with the TCEQ and Owner.
  - viii. Deliverables:
    - 1) Pilot Report – Inclined Plate Settlers and Low-Pressure Membrane. Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
3. SWIFT Funding Assistance and Regulatory Requirements
- a. Stage 1 – Abridged Application Phase
    - i. FNI will prepare the abridged application Form for Texas Water Development Board (TWDB) State Water Implementation Fund for Texas (SWIFT) program.
    - ii. Review Workshops and Meetings:
      - 1) Meeting with the Regional Water Project Development Team and Owner: FNI will participate in two (2) videoconference meetings with the TWDB regional water project development (RWPDP) team, the CMAR, and the Owner. This meeting will review the program requirements as they apply to the Project.
      - 2) Abridged Application Review Workshop with Owner: Conduct one (1) workshop with the Owner to review the package.
    - iii. Deliverables:
      - 1) Abridged Application to Owner: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
      - 2) Abridged Application to TWDB: Submit the abridged application to the TWDB through the TWDB online submittal tool (OLA) based on the information prepared for the Owner.
  - b. Stage 2 – Full Application Phase
    - i. FNI will prepare the full application package for submission to the TWDB SWIFT program.
    - ii. The preliminary design report (PDR) prepared in *Phase 1 – Preliminary Design* will be the basis for the required preliminary engineering feasibility report (PEFR).

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- iii. The final design report (FDR) prepared in *Phase 2 – Detailed Design* will be the basis for the required engineering feasibility report (EFR).
- iv. FNI will prepare the TWDB environmental data form. A full environmental review is not included in this Scope of Services and is considered an Additional Service. Refer to Special Services D.2 for additional information.
- v. FNI will prepare, with input from the Owner, a governing body application resolution for the Owner's use.
- vi. FNI will review and respond to requests for information and questions from the TWDB.
- vii. Review Workshops and Meetings:
  - 1) Pre-Application Meeting with the Regional Water Project Implementation Team and Owner: FNI will participate in one (1) videoconference pre-application meeting with the TWDB regional water project implementation team, the CMAR, and the Owner. The Owner should include the Owner's project manager, financial advisor, and the bond counsel at this meeting.
  - 2) Full Application Review Workshop with Owner: Conduct one (1) workshop with the Owner to review the package.
  - 3) TWDB Coordinate Conference Calls: Conduct up to three (3) conference calls with the Owner and TWDB to respond to questions.
  - 4) TWDB Board Meeting: Attend one (1) TWDB Board Meeting to support the application and commitment of funds process.
- viii. Deliverables:
  - 1) Preliminary Engineering Feasibility Report (PEFR): The PDR will be developed and submitted under *Phase 1 – Preliminary Design* and will be developed to satisfy the requirements of the PEFR.
  - 2) Engineering Feasibility Report (EFR): The PDR will be developed and submitted under *Phase 1 – Preliminary Design* and will be developed to satisfy the requirements of the EFR. Significant changes to the PDR may be provided as an Additional Services.
  - 3) Governing Body Application Resolution: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
  - 4) Full Application to Owner: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
  - 5) Full Application to TWDB: Submit the full application to the TWDB through the TWDB OLA tool based on the information prepared for the Owner.
- c. Stage 3 – Post Application
  - i. The project budget and schedule developed by the CMAR will be used as the basis to update the TWDB.
  - ii. FNI will support the Owner and TWDB with closing release.
  - iii. Review Workshops and Meetings: No review workshops or meetings are furnished as part of this stage.
  - iv. Deliverables: No deliverables are furnished as part of this stage.

**4. SWIFT Funding Assistance and SWIFT Regulatory Requirements – Environmental Data Form**

- a. FNI will prepare an Environmental Data Form (EDF) as required by Texas Water Development Board (TWDB) SWIFT or other state program (31 TAC §363.14). The EDF will be a stand-alone, self-contained document describing the project in sufficient detail to allow for resource agency review without reference to an engineering study or other documents. The EDF format will follow the guidelines provided by the TWDB (form TWDB-0800). It is assumed that the preparation of the draft EDF will begin after the project footprint is defined. The following services will be completed for the EDF.
- b. Conduct Site Visit. FNI will conduct one (1) site visit to make observations in the project area necessary to describe the existing environmental conditions and assess project impacts. Prior to conducting a site visit, FNI will compile readily available information and prepare maps of the proposed project area. The presence and locations of waters of the U.S. (such as streams, ponds, or wetlands), potential threatened/endangered species habitat, and visible areas of potential hazardous materials contamination will be identified.
- c. Environmental Risk Database Review. FNI will review environmental risk database reports to assess the potential for hazardous materials contamination on any property being acquired or constructed upon as part of the project. FNI will summarize the results of the database review and Phase I ESA in a technical memorandum and the results will be incorporated into the final EDF.
- d. Agency Coordination. FNI will submit coordination/notification letters and the draft EDF to appropriate agencies, as required, including U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service, Texas Commission on Environmental Quality, Texas Parks and Wildlife Department, local managers of the Federal Flood Insurance Program, the local council of government, and other regional agencies or local governments that may have jurisdiction. If preparation and submittal of a Pre-Construction Notification (PCN) or other Section 404 permit authorization from the USACE (e.g., Individual Permit) is required for the proposed project, then those services can be provided by FNI as an Additional Service upon written authorization. Comments received from the agencies will be incorporated into the final EDF.
- e. Coordination with Texas Historical Commission. Projects sponsored by a political subdivision of the State (including a city) that affect a cumulative area greater than five acres or that disturb more than 5,000 cubic yards require consultation with the Texas Historical Commission (THC) according to Section 191.0525 (d) of the Antiquities Code of Texas. As such, FNI will conduct a desktop cultural resources evaluation to be submitted to the THC for review by the State Historic Preservation Officer (SHPO). If archaeological or historical surveys are required by the THC, a Professional Archeologist will be sub-contracted to perform the surveys as an Additional Service upon the City's written authorization. Results of required archaeological or historical surveys and coordination with the THC will be summarized in the EDF.
- f. Preparation of Draft and Final EDF. FNI will prepare a draft EDF following appropriate TWDB guidelines. The draft EDF will be submitted to City for review and comment. FNI will incorporate City's comments into the draft EDF and submit the revised draft EDF to the City prior to submittal to agencies or the TWDB. After agency coordination, the EDF will be

finalized by incorporating required changes or comments received into the final document. The Final EDF will be submitted to the TWDB for approval.

5. High Service Pump Station System Curve Development

- a. The hydraulic water model from the 2018 Water Master Plan will be used to generate the system head curves for the High Service Pump Station. System curves will be developed under existing and future average day and maximum day demand conditions. This task does not include updating or modifying the hydraulic water model network or system operations.

6. Pump Station Hydraulic Physical Model

- a. The physical model is recommended by the Hydraulic Institute (HI) for water pumping facilities of this size. If the Owner prefers to not proceed with the physical model, FNI will take an alternative approach of using HI Guidelines for the design. There are risks associated with this approach; however, it is an alternative that some water systems have accepted.
- b. FNI will contract with a research hydraulic laboratory to develop a physical model of the pump station identified below in accordance with the Hydraulic Institute (HI) Standards. Proposed improvements shall be modeled to evaluate the hydraulic conditions at the pumps and to develop design modifications that may be necessary to correct adverse flow phenomena. The professional services associated with this Task are described herein.
- c. Physical Model Design: Develop the physical model based on the Level II (approximately 50 to 60 percent) design submittal. Verify pump station elevations and dimensions for areas that are accessible with survey from the preliminary design and incorporate them into the model. Assess suitability of the geometric scale of 1:4.125 to meet HI Standards design criteria once the final design details are available and adjust, if required.
- d. Physical Model Construction:
  - i. Ray Roberts Raw Water Pump Station: Simulate the geometric features in the vicinity of the pumps capable of influencing station hydraulics in the model. The model must include the 60-inch header and upstream geometry that may affect the flow; 60 by 36-inch tee; three 60 by 42-inch tees; three (proposed) 60 by 48-inch tees; one fully modeled 42-inch takeoff, suction can, and 20 MGD pump; and one fully modeled 48-inch takeoff, suction can, and 30 MGD pump. The fully modeled 42-inch takeoff shall be constructed in such a manner that the pump unit can be installed at either the 1st, 2nd, or 3rd takeoff to evaluate the sensitivity of hydraulic conditions for various pump locations. The fully modeled 48-inch takeoff shall be constructed in such a manner that the pump unit can be installed at either the 4th, 5th, or 6th takeoff to evaluate the sensitivity of hydraulic conditions for various pump locations. The remaining tees and laterals shall include flow meters and control valves such that various pump combinations/operating scenarios can be simulated. This model layout shall enable characterization of a range of operating scenarios for the most efficient construction cost. Additionally, the model shall also be constructed such that the can depth can be varied and the impacts of a shallower can depth can be evaluated.

- e. Physical Model Testing: The test program shall consist of three phases: baseline testing, design development testing, and documentation testing.
    - i. Baseline Testing: The scope shall include a baseline test to define the general flow characteristics within the Ray Roberts Raw Water Pump Station for an initially proposed design and identify any adverse hydraulic phenomena approaching the pump. Document the source and strength of vortices and make measurements to characterize the swirl. Up to four (4) test scenarios have been assumed for the pump station for baseline testing.
    - ii. Design Development Testing: The scope shall include up to three (3) design modification iterations to the physical models using two to three test conditions for each pump station. Conduct testing with the fully modeled assemblies described above. Analyses of additional variations, if required, may be provided as an Additional Service.
    - iii. Documentation Testing: For the pump station, the scope shall include the final selected modified design approved by FNI for four (4) test scenarios. These test scenarios shall include four tests with the fully modeled pump assemblies described above. Collect pump throat velocity distribution and point velocity fluctuations for one test.
  - f. Prepare a draft and final report including a summary of model scaling theory, a description of the models, color photographs and graphics representing key aspects of the modeling program, test procedures, test results, and drawings detailing recommended design modifications. Lightly edited video clips collected during the study that offer good future reference on the model may also be provided.
  - g. Review Workshops and Meetings:
    - i. Witness Testing: FNI will attend up to two (2) days of witness testing with the Owner to witness the physical hydraulic model testing to assist in understanding of the hydraulic conditions, limitations, and recommend modifications. It is assumed that the Owner will arrange and pay for travel and accommodations needed for the Owner's staff that will be attending the site visits.
    - ii. Pump Station Physical Model Report Review Workshop with Owner: Prepare meeting agenda and notes and attend one (1) pump station physical model report review workshop with the Owner.
  - h. Deliverables:
    - i. Pump Station Physical Model Report: Submit one (1) electronic PDF draft copy to Owner for review and one (1) electronic PDF final copy to Owner upon incorporation of review comments.
7. Additional Services Per Owner Direction
- a. With the direction and written authorization of the Owner, FNI will provide additional services. FNI will prepare the requested additional services scope and effort for review by the Owner. Upon review and approval of the additional services scope and authorization by the Owner, FNI will execute the additional services as outlined in the furnished scope and effort documentation.

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- b. The Owner reserves the right to authorize portions of this additional services allowance up to the maximum limit or none at all. The effort ceiling for additional services is limited to \$203,000, unless adjusted through an executed amendment between the Owner and FNI.

**ARTICLE III - ADDITIONAL SERVICES:** Additional Services to be performed by FNI, if authorized by Owner, which are not included in the above-described Basic or Special Services, are described as follows:

- A. Field layouts or the furnishing of construction line and grade surveys.
- B. GIS mapping services or assistance with these services.
- C. Providing services to investigate existing conditions or facilities, or to make measured drawings thereof, or to verify the accuracy of drawings or other information furnished by Owner.
- D. Providing renderings, models, and mock-ups requested by the Owner.
- E. Revising drawings, specifications, or other documents when such revisions are 1) not consistent with approvals or instructions previously given by Owner or 2) due to other causes not solely within the control of FNI.
- F. Providing consultation concerning the replacement of any work damaged by fire or other cause during the construction and providing services as may be required regarding the replacement of such work.
- G. Investigations involving consideration of operation, maintenance and overhead expenses, and the preparation of rate schedules, earnings and expense statements, feasibility studies, appraisals, evaluations, assessment schedules, and material audits or inventories required for certification of force account construction performed by Owner.
- H. Providing shop, mill, field or laboratory inspection of materials and equipment.
- I. Preparing data and reports for assistance to Owner in preparation for hearings before regulatory agencies, courts, arbitration panels or any mediator, giving testimony, personally or by deposition, and preparations therefore before any regulatory agency, court, arbitration panel or mediator.
- J. Furnishing Special Inspections required under the International Building Code. These Special Inspections are often continuous, requiring an inspector dedicated to inspection of the individual work item, and they are in addition to General Representation and Resident Representation services noted elsewhere in the contract.
- K. Assisting Owner in preparing for, or appearing at litigation, mediation, arbitration, dispute review boards, or other legal and/or administrative proceedings in the defense or prosecution of claims disputes with CMAR and/or Contractor(s).
- L. Performing investigations, studies and analyses of substitutions of equipment and/or materials or deviations from the drawings and specifications.
- M. Assisting Owner in the defense or prosecution of litigation in connection with or in addition to those services contemplated by this Agreement. Such services, if any, shall be furnished by FNI on a fee basis negotiated by the respective parties outside of and in addition to this Agreement.
- N. Providing environmental support services including the design and implementation of ecological baseline studies, environmental monitoring, impact assessment and analyses, permitting assistance, and other assistance required to address environmental issues.
- O. Performing investigations, studies, and analyses of work proposed by construction CMAR and/or Contractors to correct defective work.
- P. Design, contract modifications, studies or analyses required to comply with local, State, Federal

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- or other regulatory agencies that become effective after the date of this Agreement.
- Q. Services required to resolve bid protests or to rebid the Projects for any reason.
- R. Visits to the site more than the number of trips included in Basic Services or Special Services for periodic site visits, coordination meetings, or contract completion activities.
- S. Any services required because of default of the CMAR or the failure, for any reason, of the CMAR to complete the work within the contract time.
- T. Providing services after the completion of the construction phase not specifically listed in Basic Services or Special Services.
- U. Providing Basic or Special Services on an accelerated time schedule. The scope of this service includes cost for overtime wages of employees and consultants, inefficiencies in work sequence and plotting or reproduction costs directly attributable to an accelerated time schedule directed by the Owner.
- V. Providing services made necessary because of unforeseen, concealed, or differing site conditions or due to the presence of hazardous substances in any form.
- W. Providing services to review or evaluate CMAR's claim(s), provided said claims are supported by causes not within the control of FNI.
- X. Preparing statements for invoicing or other documentation for billing other than for the standard invoice for services attached to this Professional Services Agreement.
- Y. Providing data, reports or briefings to City Councils or governing boards on the status of the Project outside of what is described in the Basic or Special Services.
- Z. Designing additional facilities beyond those identified in Basic Services.
- AA. Preparation of a Stormwater Pollution Prevention Plan (SWPPP) for the Project.
- BB. Providing services for pre-qualification of prospective bidders and issuing a list of eligible bidders prior to bid opening.
- CC. Construction services (general, construction management, resident project representative, etc.) beyond the project duration or in excess of the estimated hours identified in this Scope.
- DD. Management and review of excessive re-submittals by the CMAR (excessive is defined as more than three revisions).
- EE. Quality control testing including but not limited to construction materials testing, verification testing, and other testing requirements specified in the Construction Contract Documents that are the responsibility of the CMAR.
- FF. Preparation of a Pre-Construction Notification or Individual Section 404 permit application for submittal to the USACE.
- GG. Preparation of a Jurisdictional Determination (JD) Evaluation Report.
- HH. Conducting a conditional assessment (i.e., TXRAM) on waters of the U.S. potentially impacted by the proposed project.
- II. Presence/absence surveys for federally listed threatened/endangered species.
- JJ. Application for Texas Parks & Wildlife Department Sand and Gravel Permit.
- KK. Application for General Land Office Easement.
- LL. Phase I/II Environmental Site Assessment.
- MM. Conducting an Archeological or Historic Resources Survey.
- NN. Other environmental services not specifically defined in this scope of services.
- OO. Preparing a traffic impact analysis (TIA) for the Project.
- PP. Provide multiple power distributions system configurations for evaluation. It is understood that the plant expansion will include a dedicated distribution system separate from the existing distribution system.
- QQ. Design paralleling the existing and new generators.

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**ARTICLE IV - TIME OF COMPLETION:** FNI is authorized to commence work on the Project upon execution of this Agreement and agrees to complete the services in accordance with the following schedule:

|                                       |                             |
|---------------------------------------|-----------------------------|
| Phase 1 - Preliminary Design          | 6 months from NTP           |
| Phase 2 - Final Design Services       | 16 months from approved PDR |
| Phase 4 - Construction Phase Services | 38 months from CMAR NTP     |

If FNI's services are delayed through no fault of FNI, FNI shall be entitled to adjust the contract schedule consistent with the number of days of delay. These delays may include, but are not limited to, delays in Owner or regulatory reviews, delays in the flow of information to be provided to FNI, governmental approvals, etc. These delays may result in an adjustment to compensation as outlined on the face of this Agreement and in Attachment CO.

**ARTICLE V - RESPONSIBILITIES OF OWNER:** OWNER shall perform the following in a timely manner so as not to delay the services of FNI:

- A. Owner recognizes and expects that certain Change Orders may be required. FNI recommends that the Owner budget a minimum of 5% of the estimated project cost for construction change orders.

Further, Owner recognizes and expects that certain Change Orders may be required to be issued as the result in whole or part of imprecision, incompleteness, errors, omission, ambiguities, or inconsistencies in the Drawings, Specifications, and other design documentation furnished by FNI or in the other professional services performed or furnished by FNI under this Agreement ("Covered Change Orders"). Accordingly, Owner agrees to pay for Change Orders and otherwise to make no claim directly or indirectly against FNI on the basis of professional negligence, breach of contract, or otherwise with respect to the costs of approved Covered Change Orders unless the aggregate costs of all such approved Covered Change Orders exceed 2% for new construction and 4% for reconstruction. Any responsibility of FNI for the costs of Covered Changed Orders in excess of such percentage will be determined on the basis of applicable contractual obligations and professional liability standards. For purposes of this paragraph, the cost of Covered Change Orders will not include:

- Any costs that Owner would have incurred if the Covered Change Order work had been included originally in the Contract Documents and without any other error or omission of FNI related thereto,
- Any costs that are due to unforeseen site conditions,
- Any costs that are due to changes made by the Owner, or
- Any costs that are due to the CMAR.

Nothing in this provision creates a presumption that, or changes the professional liability standard for determining if, FNI is liable for the cost of Covered Change Orders in excess of the percent of Construction Cost stated above or for any other Change Order.

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- B. Owner will designate in writing a person to act as Owner's representative with respect to the services to be rendered under this Agreement. Such person shall have contract authority to transmit instructions, receive information, interpret, and define Owner's policies and decisions with respect to FNI's services for the Project.
- C. Owner will provide all criteria and full information as to Owner's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and any budgetary limitations; and furnish copies of all design and construction standards which Owner will require to be included in the drawings and specifications.
- D. Owner will assist FNI by placing at FNI's disposal all available information pertinent to the Project including previous reports and any other data relative to design or construction of the Project.
- E. Owner will arrange for access to and make all provisions for FNI to enter upon public and private property as required for FNI to perform services under this Agreement.
- F. Owner will examine all studies, reports, sketches, drawings, specifications, proposals, and other documents presented by FNI, obtain advice of an attorney, insurance counselor and other consultants as Owner deems appropriate for such examination and render in writing decisions pertaining thereto within a reasonable time so as not to delay the services of FNI.
- G. Owner will submit such documents, plans and specifications to appropriate regulating agencies and request the required approvals as expeditiously as is reasonable.
- H. Owner will provide such accounting and independent cost estimating services as may be required for the Project, such legal services as Owner may require, such auditing services as Owner may require to ascertain how or for what purpose the CMAR has used the moneys paid under the construction contract, and such inspection services as Owner may require to ascertain that the CMAR is complying with any law, rule, regulation, ordinance, code or order applicable to their furnishing and performing the work.
- I. If Owner designates a person to serve in the capacity of Resident Project Representative who is not FNI or FNI's agent or employee, the duties, responsibilities and limitations of authority of such Resident Project Representative(s) will be set forth in an Attachment RPR attached to and made a part of this Agreement before the Construction Phase of the Project begins. Said attachment shall also set forth appropriate modifications of the Construction Phase services as defined in Article I, Phase 4, together with such adjustment of compensation as appropriate.
- J. Owner will attend the pre-bid conference, bid opening, preconstruction conferences, construction progress and other job-related meetings and substantial completion inspections and final payment inspections.
- K. Owner will give prompt written notice to FNI whenever Owner observes or otherwise becomes aware of any development that affects the scope or timing of FNI's services, or any defect or nonconformance of the work of the CMAR.

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- L. Owner will assist FNI by placing at FNI's disposal all available information including previous reports and any other data relative to the Project.
- M. Owner will provide support for the daily portion of the pilot sample protocol.
- N. Owner will provide water quality laboratory services for the pilot testing.
- O. Owner shall bear all costs incident to compliance with the requirements of this Article V.

**ARTICLE VI – COMPENSATION:** The following is the breakdown of the proposed fee and in accordance with Attachment CO.

| TASK                                                                | FEE          | COMPENSATION TYPE    |
|---------------------------------------------------------------------|--------------|----------------------|
| BASIC SERVICES                                                      |              |                      |
| A. Project Management, Quality Control, and Quality Assurance       | \$1,314,000  | Lump Sum             |
| C. Phase 1 – Preliminary Design                                     | \$1,579,000  |                      |
| D. Construction Manager-as-Risk (CMAR) Coordination                 | \$306,000    |                      |
| E. Phase 2 – Final Design Services                                  | \$10,273,000 |                      |
| F. Phase 3 – Bid and Procurement Services                           | \$629,000    |                      |
| G. Phase 4 – Construction Contract Administration Services          | \$2,777,000  |                      |
| H. Phase 5 – Post Construction Phase Services                       | \$256,000    |                      |
| Total Basic Services                                                | \$17,134,000 |                      |
| SPECIAL SERVICES                                                    |              |                      |
| SS-C: Phase 1 – Preliminary Design Special Services                 |              |                      |
| SS-C.1: Topographic Survey, LiDAR Survey, and Photogrammetry        | \$92,000     | Cost Plus Multiplier |
| SS-C.2: Easement Support                                            | \$47,000     | Cost Plus Multiplier |
| SS-C.3: Geotechnical Investigation and Geotechnical Engineer Report | \$189,000    | Cost Plus Multiplier |
| SS-E: Phase 2 – Final Design Special Services                       |              |                      |

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| <b>TASK</b>                                                                              | <b>FEE</b>          | <b>COMPENSATION TYPE</b> |
|------------------------------------------------------------------------------------------|---------------------|--------------------------|
| SS-E.1: Council Presentations and Public Meetings                                        | \$6,000             | Cost Plus Multiplier     |
| SS-G: Phase 4 – Construction Contract Administration                                     |                     |                          |
| SS-G.1: Resident Project Representative (RPR)                                            | \$1,360,000         | Cost Plus Multiplier     |
| SS-G.2: Specialty Construction Electrical Inspection                                     | \$334,000           | Cost Plus Multiplier     |
| SS-G.3: Major Equipment Factory Witness Testing                                          | \$162,000           | Cost Plus Multiplier     |
| SS-G.4: Startup and Commissioning Services                                               | \$457,000           | Cost Plus Multiplier     |
| <b>Total Special Services</b>                                                            | <b>\$2,647,000</b>  |                          |
| <b>OTHER SERVICES RECOMMENDED OUTSIDE OF A TRADITIONAL CMAR TYPE PROJECT</b>             |                     |                          |
| SS-I.1: Treatment Process Laboratory – Jar Testing                                       | \$16,000            | Cost Plus Multiplier     |
| SS-I.2: Inclined Plate Settler and Low-Pressure Membrane Pilot                           | \$622,000           | Cost Plus Multiplier     |
| SS-I.3: SWIFT Funding Assistance and Regulatory Requirements                             | \$56,000            | Lump Sum                 |
| SS-I.4: SWIFT Funding Assistance and SWIFT Regulatory Assistance Environmental Data Form | \$53,000            | Cost Plus Multiplier     |
| SS-I.5: High Service Pump Station System Curve Development                               | \$49,000            | Cost Plus Multiplier     |
| SS-I.6: Pump Station Physical Model <sup>1</sup>                                         | \$220,000           | Cost Plus Multiplier     |
| SS-I.7: Additional Services Per Owner Direction <sup>2</sup>                             | \$203,000           | Cost Plus Multiplier     |
| <b>Total Other Special Services</b>                                                      | <b>\$1,219,000</b>  |                          |
| <b>TOTAL FEE</b>                                                                         |                     |                          |
| <b>TOTAL FEE</b>                                                                         | <b>\$21,000,000</b> |                          |

- Notes: (1)** The physical model is recommended by the hydraulic institute (HI) for water pumping facilities of this size. If the owner prefers to not proceed with the physical model, FNI will take an alternative approach of using HI guidelines for the design. There are risks associated with this approach; however, it is an alternative that some water systems have accepted.
- (2)** Use of the funds associated with this task require written approval of the requested scope and authorization by the Owner. The Owner reserves the right to use none, a portion, or all of the funds associated with this contingency fund.

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**ARTICLE VII - DESIGNATED REPRESENTATIVES:** FNI and OWNER designate the following representatives:

Owner's Designated Representative –

Stephen Gay, Water Utilities Director  
901-B Texas Street  
Denton, Texas 76206  
(940) 349-8086  
Stephen.Gay@cityofdenton.com

FNI's Designated Representative –

James Naylor, PE, BCEE  
101 South Locust Street, Suite 202  
Denton, Texas 76201  
(214) 217-2223 [office]  
(817) 874-4187 [mobile]  
James.Naylor@freese.com

FNI's Accounting Representative –

Lisa Broussard  
12770 Merit Drive, Suite 900  
Dallas, Texas 75251  
(972) 331-6021  
Lisa.Broussard@freese.com

# MEMORANDUM OF UNDERSTANDING

ATTACHMENT A



Innovative approaches  
Practical results  
Outstanding service  
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|                 |                                                                  |
|-----------------|------------------------------------------------------------------|
| <b>TO:</b>      | Kyle Pedigo<br>David Brown<br>Katherine Koch                     |
| <b>FROM:</b>    | James Naylor, PE, BCEE<br>Kristen Cope, PE                       |
| <b>SUBJECT:</b> | Memorandum of Understanding to Support Exhibit A of the Contract |
| <b>PROJECT:</b> | Ray Roberts WTP Expansion to 40 MGD                              |
| <b>DATE:</b>    | April 4, 2024                                                    |
| <b>CC:</b>      | Erin Flanagan, PE, BCEE                                          |

## GENERAL

The City of Denton (City) owns and operates the Ray Roberts Water Treatment Plant (WTP) with a current capacity of approximately 20 MGD. The current Ray Roberts WTP is a conventional surface water treatment plant. The City desires to expand the capacity of the Ray Roberts WTP to approximately 40 MGD through the design and construction of a parallel membrane process train. The anticipated initial capacity of the membrane process train will be 20 MGD with space reserved for an additional 30 MGD in the future for a total of 50 MGD at full build-out of the membrane building designed for this Project. A future expansion of an additional membrane building will provide another 40 MGD for a total membrane capacity of 90 MGD. This will provide the City with an ultimate treatment capacity of approximately 110 MGD from both process trains. The existing Ray Roberts Conventional WTP will continue to operate with its current configuration. The proposed Ray Roberts Membrane WTP will operate independently of the Ray Roberts Conventional WTP.

The Ray Roberts Membrane WTP process will generally utilize the following process elements:

- Existing Lake Ray Roberts (raw water source).
- Existing Raw Water Pump Station (shared with the Ray Roberts Conventional WTP).
- New, Parallel Raw Water Pipeline.
- New Pre-Ozone Contactor.
- New Pumped Diffusion Vault/Rapid Mix with aluminum chlorohydrate (ACH) or polyaluminum chloride (PACl).
- New Flow Split Structure.
- New Flocculation/Sedimentation with inclined plate settlers and differential head clarifier solids removal mechanism.
- New Membrane Feed Pump Station.
- New Low-Pressure Membrane Units with support systems.
- New Intermediate Ozone Contactor.
- New Biologically Active Filters.

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- New Transfer Pump Station.
- New Clearwell (shared with the Ray Roberts Conventional WTP).
- Existing High Service Pump Station (shared with the Ray Roberts Conventional WTP).
- Solids Handling utilizing a solids holding tank/thickener and centrifuge dewatering process.

### **CONSTRUCTION MANAGER AT RISK (CMAR) COORDINATION**

**Engineer and CMAR Coordination:** FNI will conduct coordination meetings with the CMAR throughout the project.

**City, Engineer, and CMAR Coordination:** FNI will conduct coordination meetings with the City and CMAR throughout the project.

### **INCLINED PLATE SETTLER AND LOW-PRESSURE MEMBRANE PILOT**

#### **Pilot Procurement Package:**

**Coordinate with the City for Pilot Procurement Package:** FNI will coordinate with the City Department of Water Utilities and Purchasing Department to develop a procurement package for the inclined plate settler pilot and low-pressure membrane pilot. These pilots will not be purchased by the City, but instead they will be rented. As part of the rental agreement, the vendors will provide the necessary data and reports to support the pilot study and submittals to the Texas Commission on Environmental Quality (TCEQ).

**Coordinate with Inclined Plate Settler Vendors:** Based on the total flow needs of the low-pressure membrane pilots, engage with up to two (2) inclined plate settler vendors to provide pilot units.

**Coordinate with Low-Pressure Membrane Vendors:** Based on discussions with the City, coordinate with up to two (2) low-pressure (microfiltration/ultrafiltration) membrane vendors.

**Advertisement/Proposal Phase Services for the Pilot Units:** FNI will support the City and CMAR through the advertisement and proposal phase services for the selection of inclined plate settler and low-pressure membrane equipment.

**Develop the Inclined Plate Settler and Low-Pressure Membrane Pilot Protocol:** FNI will prepare a pilot protocol that will include the necessary operational goals, sampling and testing plan, schedule, and aspects required by the TCEQ. As part of the development of the pilot protocol, FNI will coordinate with the TCEQ and pilot vendors to verify that the pilot protocol meets the project requirements and goals. FNI will review the pilot protocol with the City and submit the protocol to the TCEQ for approval.

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**Pilot Support Facilities:**

Design Pilot Facilities: FNI will provide detailed design to support the inclined plate settler and low-pressure membrane pilots. Based on discussions with the City, the proposed Ray Roberts Membrane WTP will include pre-ozonation; therefore, the water source for the pilot will be from downstream of the existing Pre-Ozone Contactor, but before any additional chemical feed. Low-pressure membranes are not commonly operated with ferric sulfate; therefore, the pilot facilities will include either an aluminum chlorohydrate (ACH) or polyaluminum chloride (PACl) storage (tote) and feed system. This approach will provide the necessary chemical flexibility for the pilot. In addition to the raw water supply and coagulant systems, a temporary facility will be designed for the pilot units. The inclined plate settler pilot(s) will be located outdoors; however, the low-pressure membrane pilot units must be protected from extreme weather (i.e., direct sun and freezing conditions). Temporary power and piping systems will be provided. The membrane filtrate, backwash, and chemical cleaning system streams will be returned to the existing Washwater Recovery Basin and recycled to the head of the Ray Roberts Conventional WTP. The low-pressure membrane pilot will require that low-pressure vendors seek alternatives to citric acid, which is commonly used in low-pressure membrane clean-in-place systems. Recycling the citric acid waste will significantly impact the coagulation process.

Advertisement/Proposal Phase Services for the Pilot Facilities: FNI will support the City and CMAR through the advertisement and proposal phase for the construction of the pilot facilities.

Construction Phase (General Representation) Services for the Pilot Facilities: FNI will support the City and CMAR through the construction phase for the construction of the pilot facilities.

**Execute Pilot:**

Coordinate with Pilot Vendors: FNI will coordinate with the inclined plate settler and low-pressure membrane vendors for the delivery and installation of the pilots. The vendors will be responsible for setting up their respective pilot units. The general contractor selected for the construction of the pilot facilities will be responsible for offloading and loading the pilots.

Execute the Pilot Protocol: FNI will coordinate with the pilot vendors to execute the pilot per the TCEQ approved pilot protocol. Should adjustments be needed to the protocol over the course of the pilot, FNI will coordinate with the vendors and TCEQ.

Field Support during the Pilot: FNI will make trips as identified in Exhibit A to review the status of the pilot.

Water Quality and Sampling Support: FNI will coordinate with the City of Denton water quality testing laboratory and will execute the weekly and monthly portion of the sample protocol of the approved pilot protocol. The City will provide support for the daily portion of the sample protocol. The water quality testing laboratory is assumed to be the City of Denton laboratory.

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Inclined Plate Settler and Low-Pressure Membrane Pilot Report: FNI will prepare a pilot report based on the data collected from the pilot. FNI will coordinate with the City for review of the report prior to submission to the TCEQ. This report will provide the design parameters for the full-scale project.

**BASIS OF DESIGN AND PRELIMINARY DESIGN REPORT (LEVEL I/20-30%)**

Basis of Design and Preliminary Design Report: FNI will prepare a basis of design and preliminary design report for the Project. This report will identify the necessary improvements for the expansion, design criteria used for the design, and prepare preliminary process and instrumentation diagrams (P&IDs), relevant one-line diagrams, process layouts, and a 3D model overview.

Raw Water Pump Station:

The raw water pump station (RWPS) is currently equipped with three vertical turbine pumps. Based on the nameplate data, the pumps have a capacity of 20.0 MGD (P-RW-1 and P-RW-2, 200 HP) and 12.25 MGD (P-RW-3, 125 HP). The current firm capacity of the raw water pump station is approximately 32.25 MGD. With an anticipated total treatment raw water need of 40 to 50 MGD, the existing RWPS does not have the necessary pumping capacity for the expansion. Based on a preliminary desktop evaluation of the existing RWPS and pump cans using the current Hydraulic Institute standards, the existing cans are limited to supporting a pump with a capacity of approximately 20 MGD. At the ultimate capacity buildout, the RWPS will be expanded to support up to an additional three vertical pumps, for a total of six pumps. As part of the Project, P-RW-1 and P-RW-2 will be re-built, and P-RW-3 will be replaced with a larger capacity pump. The RWPS building will be expanded to accommodate the ultimate capacity, but only one additional pump (P-RW-4) will be designed as a means to provide the City with the necessary firm capacity to deliver the expanded raw water capacity to the RRWTP. FNI will include provisions in the contract drawings for the pump cans to be cleaned of accumulated materials.

The existing butterfly valves and electric motor operators at the raw water pump station will be replaced. The electric motor operators will match those specified on the Ray Roberts Water Treatment Plant (RRWTP) Capacity Re-Rate and Performance Improvements project, including the use of a centralized control and processing unit for the electric motor operators.

The instrumentation associated with the RWPS (turbidity, pH, wet well level, and raw water flow) will be replaced.

The fiber optic communication connection between the Ray Roberts WTP and the RWPS will be replaced.

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The existing unit heaters and fans and louvers at the RWPS will be replaced.

The existing RWPS easement from the USACE will be modified as part of these improvements.

Raw Water Pump Station Electrical Building:

The switchgear, motor control center, and adjustable frequency drives within the existing electrical building will be replaced with new equipment. FNI will design an expansion to the existing Raw Water Pump Station Electrical Building to support the expanded RWPS and for future RWPS electrical equipment. The materials of construction and approach to the Raw Water Pump Station Electrical Building Extension will be similar to the existing Raw Water Pump Station Electrical Building. Improvements to accommodate a new, separate Electrical Building will be considered an Additional Service.

The existing underground electrical service will be upgraded to support the RWPS expansion.

In addition to replacing the electrical gear, the air conditioning system for the building will be replaced.

The PLC at the RWPS will be expanded to handle the additional I/O for the new VFDs.

The existing RWPS easement from the USACE will be modified as part of these improvements.

Raw Water Pipeline:

FNI will design a parallel raw water pipeline from near/at the Raw Water Pump Station to the Ray Roberts Membrane WTP. The design will include a dedicated raw water flow meter and flow control valve.

The existing raw water pipeline will be modified to include a flow control valve and new raw water flow meter dedicated for the Ray Roberts Conventional WTP.

Additional easements may be required. Procurement of these easements will be considered an Additional Service.

Pre-Ozone Contactor:

FNI will design a Pre-Ozone Contactor dedicated to the Ray Roberts Membrane WTP. The Pre-Ozone Contactor will be designed to accommodate future expansion needs. The Pre-Ozone Contactor configuration will be similar to the existing contactors; however, ozone will be delivered through the use of a side-stream injection process

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instead of diffusers. Ozone destruct units and vacuum relief valves will be designed for the Pre-Ozone Contactor.

The instrumentation for the Pre-Ozone Contactor will include a closed-loop ozone residual analyzer system to monitor the ozone residual throughout the Pre-Ozone Contactor, and ambient-ozone analyzers will be included within the gallery for personnel safety.

A PLC or remote I/O PLC will also be provided in the Pre-Ozone Contactor.

The Pre-Ozone Contactor gallery will be heated and ventilated.

### Pumped Diffusion Vault/Rapid Mix:

A Pumped Diffusion Vault/Rapid Mix system dedicated to the Ray Roberts Membrane WTP will be designed. The rapid mix arrangement will be based on a side-stream pump and nozzle arrangement to introduce significant mixing energy in the raw water pipeline near the coagulant injection location. The pumped diffusion/rapid mix system will be designed to accommodate flows from approximately 2 MGD to approximately 90 MGD.

Raw water instruments such as pressure and turbidity will be included.

The Pumped Diffusion Vault will be heated and ventilated.

### Flow Split Structure:

The Flow Split Structure will be designed to support expansions up to 90 MGD and this Project will include the initial portion of the structure to accommodate the Ray Roberts Membrane WTP.

The intent is for this structure to be open top with removable grating to facilitate access for future maintenance and cleaning.

The Flow Split Structure will utilize adjustable weir gates (electrically motor operated).

A level element will be provided at the Flow Split Structure to measure the head over the weirs. A flow meter will be provided for each train for process control and flow pacing.

### Flocculation/Sedimentation Basins:

The Flocculation/Sedimentation Basins will be designed for a capacity of approximately 10 MGD per basin.

The flocculation system will utilize vertical shaft flocculator mechanisms.

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The sedimentation basins will utilize inclined plate settlers operating at a higher surface overflow rate (SOR) than allowed by TCEQ for sedimentation basins. As a result of this design approach, data from the inclined plate settler pilot will be submitted to TCEQ for review and approval. The TCEQ may require a full-scale demonstration pilot to verify the inclined plate settler performance. A full-scale demonstration study will be provided as a Special Service.

The sedimentation basins solids removal system will be based on a differential head clarifier mechanism.

Sedimentation Basin Solids Pump Station:

The Project will include a Sedimentation Basin Solids Pump Station designed for the current Project but will be readily expandable for future needs. This pump station will transfer solids to the solids handling facilities.

The pump station will be based on the use of submersible centrifugal pumps designed to handle water treatment solids and utilize adjustable frequency drives.

Membrane Feed Pump Station:

The Membrane Feed Pump Station will be based on the use of vertical turbine/propeller pumps in an open pump station configuration. These pumps will be sized based on input from the selected low-pressure membrane manufacturer. This pump station will be designed to be expandable with slots for additional pumps to account for future expansion needs.

The Membrane Feed Pump Station will be designed with a pressure relief system to protect the low-pressure membranes from pressure surges.

The wetwell level will be monitored by a level instrument. The pumps will be operated by adjustable frequency drives.

Administration/Operation/Low-Pressure Membrane Building:

The Administration/Operation/Low-Pressure Membrane Building will include multiple process areas and occupied spaces. The Administration/Operation/Low-Pressure Membrane Building will be designed to accommodate the low-pressure membrane system components for up to 50 MGD of membrane treatment capacity. The initial low-pressure membrane system will have a 20 MGD capacity with subsequent expansions of modular membrane units phased in to reach a total capacity of 50 MGD; however, the full building will be constructed as part of this Project with space reserved for the future membrane units. A future expansion of an additional membrane building will provide another approximately 40 MGD membrane system for a total membrane capacity of 90 MGD in the future.

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The building will be a two-story structure to provide the areas identified below. The primary building construction will be concrete masonry units (CMU) with a veneer and metal roof.

To provide accessibility, the building will be equipped with an elevator.

The building will be equipped with a fire alarm system and fire suppression systems (dry and wet types), as required by the City Building Code.

**Membrane Process Area:**

The Membrane Process Area will house the pre-membrane strainers in an N+1 configuration to meet the current Project needs while being readily expandable to 50 MGD in a future phased membrane expansion.

The low-pressure membrane units will be designed in an N+1 configuration to meet the current Project needs while being readily expandable to 50 MGD in the future.

The low-pressure membrane clean-in-place (CIP) system will be designed to support up to 50 MGD of membrane capacity. The CIP system will utilize sodium hydroxide (caustic), sodium hypochlorite, and an acid. The caustic storage system will be based on the use of a small storage tank and a transfer pump at the Ray Roberts WTP caustic bulk storage. The sodium hypochlorite system will be based on the use of a small storage tank and a transfer pump at the Ray Roberts WTP Disinfection Building. Acid storage will be based on the use of totes. A dechlorination agent will be included with the CIP system to neutralize the chlorine residual in the spent CIP solution. In addition to these chemical systems, this process area will include an automatic spent CIP solution neutralization system, recirculation system, and a water softener to support the caustic CIP process.

A bridge crane will be designed for the Membrane Process Area to support maintenance and operational needs in the area.

Grating and pipe racks will be designed to provide ease of maintenance at the strainers.

Grating and pipe racks will be designed for the low-pressure membrane system piping and access.

The Main Process Area will be heated and ventilated. Air conditioning systems are not included as part of the Basic Services and the design of those systems is considered an Additional Service.

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Emergency eyewash/showers will be provided. The emergency plumbing fixtures will include a tepid water system.

**Air Compressor/Blower Room:**

The Air Compressor/Blower Room will house the air compressors and blowers in an N+1 configuration to meet the current Project needs while being readily expandable to 50 MGD in the future.

The Air Compressor/Blower Room will be air conditioned for heat load mitigation.

**Electrical/Programmable Logic Controller (PLC) Room:**

The Electrical/PLC Room will house the electrical switchgear and motor control center for the Project.

A dedicated low-pressure membrane PLC and a Ray Roberts Membrane WTP PLC will be designed for this room.

The room will be sized to support up to 50 MGD in future expansions.

The Electrical/PLC Room will be air conditioned for heat load mitigation.

A dry type fire suppression system will be installed in this room.

**Occupied Space:**

**Operations/Control Room (2<sup>nd</sup> Floor):**

Provide one (1) Operations/Control Room that will be located on the second floor and overlook the Membrane Process Area. Windows and doorways to be provided to view and access the Membrane Process area.

**Server Room (2<sup>nd</sup> Floor):**

Provide one (1) dedicated and secured server room as part of the Project to house the necessary network switches and servers. A dry type fire suppression system will be installed in this room.

The server and network switches housed within the Server Room will support the Ray Roberts Membrane WTP and will be connected to the server and network for the Ray Roberts Conventional WTP. The existing server and workstations for the Ray Roberts Conventional WTP will remain at the existing Administration/Operations Building.

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**Operations Laboratory (2<sup>nd</sup> Floor):**

An Operations Laboratory will be provided as part of the Project.

A fume hood will be designed as part of the Operations Laboratory to allow for chemical storage and analysis. Lab wastes will be collected and passed through an acid neutralization system prior to onsite disposal.

**Male Restroom (2<sup>nd</sup> Floor):**

Plumbed for water closets and sinks. Sanitary waste will be collected and pumped to an on-site sewage facility.

**Female Restroom (2<sup>nd</sup> Floor):**

Plumbed for water closets and sinks. Sanitary waste will be collected and pumped to an on-site sewage facility.

**Records Room (2<sup>nd</sup> Floor):**

A Records Room will be provided as part of the Project.

**Offices and Cubicles (2<sup>nd</sup> Floor):**

Provide space for up to four (4) offices.

Provide space for up to four (4) cubicles.

**Male Restroom, Lockers, and Showers (1<sup>st</sup> Floor):**

Plumbed for water closets, sinks, and showers. Sanitary waste will be collected and pumped to an on-site sewage facility.

**Female Restroom, Lockers, and Showers (1<sup>st</sup> Floor):**

Plumbed for water closets, sinks, and showers. Sanitary waste will be collected and pumped to an on-site sewage facility.

**Meeting/Training Room (1<sup>st</sup> Floor):**

The Administration/Membrane Building will include a multi-purpose Meeting/Training Room. The Meeting/Training Room will be equipped with an ice maker and coffee maker.

**Small Conference Room:**

A smaller staff conference room will be included in the occupied space area.

**Offices (1<sup>st</sup> Floor):**

The Project will include up to four (4) offices.

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### **Break Room (1<sup>st</sup> Floor):**

A break room will be designed to include plumbing for a sink, ice maker, dishwasher, freezer/refrigerator.

The breakroom will also include an oven/range with externally exhausted hood.

### **Intermediate Ozone Contactor:**

FNI will design an Intermediate Ozone Contactor dedicated to the Ray Roberts Membrane WTP. The Intermediate Ozone Contactor will be designed to accommodate future expansion needs. The Intermediate Ozone Contactor configuration will be similar to the existing contactors; however, ozone will be delivered through the use of a side-stream injection process instead of diffusers. Ozone destruct units and vacuum relief valves will be designed for the Intermediate Ozone Contactor.

The instrumentation for the Intermediate Ozone Contactor will include a closed-loop ozone residual analyzer system to monitor the ozone residual throughout the Intermediate Ozone Contactor and ambient-ozone analyzers within the gallery for personnel safety.

A PLC or remote I/O PLC will also be provided in the Intermediate Ozone Contactor.

The Intermediate Ozone Contactor gallery will be heated and ventilated.

### **Biologically Active Filters:**

The Project will include Biologically Active Filters to allow the City to remove the assimilable organic carbon formed as a result of the ozonation process. An overall strategy will be developed for the site to accommodate up to 90 MGD of Biologically Active Filter treatment capacity for the membrane process train; however, the Project will only include the necessary components for this Project's design capacity.

The Biologically Active Filters will be located downstream of the low-pressure membrane system; therefore, they will be designed as enclosed filters (not open to the atmosphere).

A Membrane Train Filter Control Kiosk will be installed above the filter structure. The kiosk will include multiple filter control consoles to operate the SCADA system. The kiosk will be air conditioned.

Each filter will be equipped with a level indicator, flow meter, differential pressure indicator, and online turbidity analyzer.

The pipe gallery will be heated and ventilated.

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### Biologically Active Filters Electrical Building:

The project will include a new electrical building to house the electrical switchboard, panelboards and PLCs for the new Biologically Active Filters and Filter blowers.

Multiple PLCs will be provided for the Filters located in the Electrical Building.

This building will be air conditioned for heat load mitigation.

### Biologically Active Filters Blower Building:

A new Biologically Active Filter Blower Building will be designed to house two blowers. These blowers will be dedicated to the Ray Roberts Membrane WTP Biologically Active Filters.

The building will be air conditioned to mitigate heat load.

### Transfer and Biologically Active Filters Backwash Pump Station:

The proposed Transfer and Biologically Active Filter Backwash Pump Station will provide the means to lift the Biologically Active Filter filtrate to the clearwells. The design will accommodate up to approximately 90 MGD of transfer capacity; however, it will only be equipped with pumps for this Project with slots available for future expansions.

In addition to the transfer pumps, backwash pumps will be included at the pump station. These backwash pumps will be dedicated to the Biologically Active Filters for the Ray Roberts Membrane WTP.

This pump station will be an open configuration with no building.

The pump station wet well level will be monitored with a level indicator and the pumps will be controlled by adjustable frequency drives.

### Existing Transfer Pump Station:

No work will be performed at the existing transfer pump station.

### Transfer Pump Station Electrical Building:

The project will include a new electrical building to house the electrical switchboard and adjustable frequency drives for the new transfer pump station and filter backwash pumps. A PLC will be provided in the electrical building as well.

This building will be air conditioned for heat load mitigation.

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Clearwell:

The Ray Roberts WTP is currently equipped with one (1) 6-million-gallon (MG) ground storage tank (clearwell). The Project will include the design of an additional pre-stressed concrete 6-MG clearwell.

High Service Pump Station:

The Project will include the design of two (2) high service pumps in the open pump cans along with valve and piping improvements to support the installation of the pumps. FNI will include provisions in the contract drawings for the existing pump cans to be cleaned of accumulated materials.

The existing two (2) 1000 HP high service pump motors are non-inverter duty rated and will be replaced with inverter duty rated motors.

Hydraulic control valves are utilized for the four (4) existing pumps, and new hydraulic control valves will be utilized for the two (2) new high service pumps. There is an existing hydraulic oil accumulator that serves the existing pump control valve with piping installed for connection to the new high service pump control valves. It is assumed based on the age of the existing accumulator that the unit will need to be reconditioned as part of the Project. The hydraulic oil accumulator can be replaced as an Additional Service.

The heating and ventilation system of the High Service Pump Station will be replaced to mitigate heat accumulation in the building.

High Service Pump Station Electrical Building:

The High Service Pump Station Electrical Building will be expanded to accommodate the adjustable frequency drives for the additional high service pumps.

The PLC will be expanded to handle the additional I/O for the new adjustable frequency drives.

The air conditioning system for the High Service Pump Station Electrical Building will be expanded to continue to mitigate the heat load associated with the electrical gear and adjustable frequency drives.

Membrane WTP Main Drain Sump Pump Station:

The Project will include a Main Drain Sump Pump Station designed for the current Project but will be readily expandable for future needs. This pump station will transfer process drain water to the Backwash Equalization and Recycle Systems or the Solids Handling Systems.

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The pump station will be based on the use submersible centrifugal pumps designed to handle water treatment solids and utilize adjustable frequency drives.

Spent Backwash Equalization and Recycle Pump Station:

A second spent backwash equalization basin will be designed to operate in parallel with the existing Spent Backwash Equalization Basin (Washwater Reclamation Basin).

The Recycle Pump Station will be designed to accommodate the Project and be readily expandable to accommodate future growth. The pump station will be based on the use of submersible centrifugal pumps designed to handle water treatment solids and utilize adjustable frequency drives.

A parallel recycle pipeline will be designed from the proposed Recycle Pump Station to the raw water pipeline serving the Ray Roberts Conventional WTP.

Solids Handling – Solids Equalization/Thickener and Thickened Solids Pump Station:

A solids equalization/thickener will be designed to accommodate the solids from the Sedimentation Basin Solids Pump Station at the Ray Roberts Membrane WTP. Solids associated with the Ray Roberts Conventional WTP will not be incorporated into the design of the Project.

The feed pump system from the Equalization/Thickener to the dewatering equipment will be based on the use of constant speed submersible centrifugal pumps designed to handle water treatment solids. This feed pump system will be an open configuration with no building. Design of a different type of pump system will be considered an Additional Service.

Solids Handling – Dewatering Building:

The design will determine the needs for the current Project and to accommodate a membrane process buildout capacity of approximately 90 MGD. The design will include building and equipment components to support the Ray Roberts Membrane WTP solids. Solids associated with the Ray Roberts Conventional WTP will not be incorporated into the design of the Project.

Dewatering and Polymer Storage/Feed Area:

The dewatering process area of the Dewatering Building will house the centrifuges and solids conveying equipment.

The polymer totes and dosing system will be located in a designated area of the Dewatering Building.

The area will be ventilated and heated.

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**Electrical and PLC Room:**

The electrical and PLC room will house the electrical gear and PLC for the dewatering and support systems.

This room will be air conditioned for heat load mitigation.

**Dewatered Solids Area:**

The dewatered solids area will be based on the use of roll-off dumpsters that the City solids waste vendor utilizes. Conveyors will be designed to transport solids from the dewatering equipment to the roll-off dumpsters.

This area will be open to the outdoors; however, it will be shielded from precipitation and significant weather events.

**Chemical Systems – Ozone Generation Building:**

The existing ozone generation equipment will be replaced to support the existing Ray Roberts Conventional WTP and the Ray Roberts Membrane WTP. A strategy will be developed to allow for modular expansion of the generation facility through the addition of ozone generators.

The existing motor control center and electrical gear associated with the Ozone Generation Building will be replaced.

The existing air conditioning systems for the Ozone Generation Building will be replaced.

**Chemical Systems – Liquid Oxygen Storage and Vaporizers:**

The liquid oxygen storage and vaporizer system will be expanded to account for the additional treatment capacity of this Project. It is assumed that the existing liquid oxygen storage and vaporizer system are in good condition and will remain in place. Replacement of the existing liquid oxygen storage and vaporizer system will be considered an Additional Service.

**Chemical Systems – Existing Bulk Storage Containment:**

No work will be performed in the existing chemical bulk storage containment area.

**Chemical Systems – Existing Chemical Feed Room:**

No work will be performed in the existing chemical feed room.

**Chemical Systems – New Bulk Storage Containment:**

The Project will include the design for new chemical storage and containment for the Membrane WTP.

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FNI will design a new coagulant storage and cast-in-place concrete containment structure.

FNI will design a new caustic storage and cast-in-place concrete containment structure.

Emergency eyewash/showers will be provided. The emergency plumbing fixtures will include a tepid water system.

### Chemical Systems – New Chemical Feed Building:

#### Chemical Feed Area:

The Project will include the design for a coagulant feed system for the Membrane WTP.

The Project will include the design for a caustic feed system for the Membrane WTP. In addition, a caustic transfer pump will be designed to pump caustic from the Membrane WTP caustic storage area to the Administration/Membrane Building CIP Area.

Emergency eyewash/showers will be provided. The emergency plumbing fixtures will include a tepid water system.

The area will be ventilated and heated.

#### Electrical/PLC Room:

The electrical equipment and PLC for this area will be located in this dedicated room.

The room will be air conditioned.

### Chemical Systems – Existing Disinfection Building:

Two bulk sodium hypochlorite storage tanks will be added to the existing Disinfection Building.

The sodium hypochlorite feed system will be expanded to support the Project.

The liquid ammonium sulfate feed system will be expanded to support the Project.

The PLC will be expanded to handle the additional I/O.

### Chemical Systems – Liquid Ammonium Sulfate Containment:

No work will be performed at the liquid ammonium sulfate containment.

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Existing Main Electrical Building No. 1:

Expand and modify the existing main switchgear based on the Main Power Distribution and Emergency Power Generation evaluation.

Replace existing air conditioning systems.

New Main Electrical Building No. 2 and Generators:

Design a new Main Electrical Building to support the current and future expansions. The Main Electrical Building No. 2 will be designed to back feed the existing Main Electrical Building to support the future replacement of the existing electrical gear. New generator(s) will be designed to power the facilities associated with the plant expansion.

A dedicated PLC and low-voltage electrical room will be provided within the Main Electrical Building No. 2.

Both rooms of the Main Electrical Building No. 2 will be air conditioned.

Maintenance and Electrical Shop:

A new Maintenance and Electrical Shop will be designed as part of the Project.

Process Mechanical Maintenance Area:

The process mechanical maintenance area will be an area for spare parts storage, rebuilding of pumps and process equipment, and other activities associated with the maintenance of the WTP.

The process mechanical maintenance area will be ventilated and heated. Ventilation will be designed to accommodate welding.

Process Mechanical Maintenance Office Area:

The process mechanical maintenance office area will include one (1) office and an arrangement for up to four (4) cubicles.

This area will be air conditioned.

Electrical and Instrumentation Maintenance Area:

The electrical and instrumentation maintenance area will be an area for spare parts storage, rebuilding of motors, and other activities associated with the maintenance of the WTP.

The electrical and instrumentation area will be ventilated and heated.

**ATTACHMENT A**

April 4, 2024  
Page 18 of 20

**Electrical and Instrumentation Spare Part Storage Room:**

The electrical and instrumentation spare part storage room will be a space dedicated for electrical and instrumentation components that require climate-controlled storage.

This area will be air conditioned.

**Electrical and Instrumentation Office Area:**

The electrical and instrumentation office area will include one (1) office and an arrangement for up to four (4) cubicles.

This area will be air conditioned.

**Unisex Restroom:**

A single unisex restroom will be included as part of the Maintenance and Electrical Shop. Sanitary waste will be collected and pumped to an on-site sewage facility.

**Miscellaneous Electrical:**

The site electrical distribution transformers and feeders will be designed for all expansion facilities.

FNI will coordinate with the power utility about closed transition ("make before break") generators and main electrical gear serving the facilities associated with the expansion. The design will include items on the City's side to accommodate the closed transition approach.

**Miscellaneous Instrumentation and Control:**

The fiber network will be expanded to accommodate the Project components. Where possible, the fiber network will be designed as a loop utilizing the existing fiber and switches where possible.

FNI will coordinate with the City's security contractor regarding door access controls and camera systems.

The City has requested remote human-machine interface (HMI) clients at each major process location to allow operators to control all plant operations as needed. This will allow an operator to conduct their rounds to respond to plant alarms and make changes immediately versus returning to the operator control room to mitigate any critical issues. These clients will require operator-specific logins with automatic logout for security.

## **ATTACHMENT A**

April 4, 2024  
Page 19 of 20

The following PLC will be replaced as part of the Project:

- HSPS Electrical Room PLC (PLC-04)

### Miscellaneous Yard Piping and Civil:

The following vaults are anticipated as part of the yard piping improvements:

- Conventional WTP Flow Meter Vault
- Conventional WTP Flow Control Valve Vault
- Membrane WTP Flow Meter Vault
- Membrane WTP Flow Control Valve Vault
- Membrane WTP Transfer Pump Station Ammonia Injection Vault

### **DETAILED DESIGN (LEVEL II/50-60%, LEVEL III/80-90%, and Issued for Bid/100%)**

FNI will provide detailed design services for the items outlined above.

### **ADVERTISEMENT AND PROPOSAL PHASE**

FNI will support the City and CMAR through the advertisement and proposal phase of the Project, including early out packages identified in the Scope of Services.

### **CONSTRUCTION SERVICES – GENERAL REPRESENTATION**

FNI will provide general construction representation throughout the construction phase. FNI will utilize the City's PMIS software, Procore.

### **CONSTRUCTION CONTRACT ADMINISTRATION – RESIDENT PROJECT REPRESENTATION AND SPECIALTY CONSTRUCTION ELECTRICAL INSPECTIONS**

FNI will provide a resident project representative and a specialty construction electrical inspector to support the City's project manager and field inspection team.

### **FACILITY STARTUP AND COMMISSIONING**

The CMAR will prepare a startup and commissioning plan for review by the City and FNI prior to the startup phase. Based on input from the City and FNI, the startup and commissioning plan will be revised and used as a guide to verify that the processes are successfully started and commissioned.

### **OPERATION AND MAINTENANCE MANUAL**

FNI will prepare an operation and maintenance manual based on the equipment operation and maintenance manuals and the design intent of the Membrane WTP.

**ATTACHMENT A**

April 4, 2024  
Page 20 of 20

**GEOTECHNICAL ENGINEERING SERVICES**

FNI will conduct geotechnical engineering services as outlined in the Scope of Services to support the design of the project.

**SURVEY**

FNI will conduct topographic and surface survey of the Ray Roberts WTP to support the Project design.

In addition, LiDAR and Matterport may be utilized when coordinating and designing improvements to existing facilities.

**UNITED STATES ARMY CORPS OF ENGINEERS COORDINATION**

FNI will coordinate with the United States Army Corps of Engineers (USACE) regarding the Raw Water Pump Station and raw water pipeline improvements. It is assumed that an easement modification will be required to accommodate the Project components.

**ENVIRONMENTAL SERVICES**

FNI will provide environmental services necessary to support the USACE coordination and funding applications.

**FUNDING SUPPORT SERVICES**

FNI will support the City with the SWIFT application and post application SWIFT program compliance as well as compliance with the TWDB's rules on using a CMAR delivery.

//

COMPENSATION

| Position                      | Hourly Rate |     |
|-------------------------------|-------------|-----|
|                               | Min         | Max |
| Professional 1                | 94          | 188 |
| Professional 2                | 126         | 206 |
| Professional 3                | 144         | 314 |
| Professional 4                | 166         | 342 |
| Professional 5                | 245         | 371 |
| Professional 6                | 249         | 461 |
| Construction Manager 1        | 123         | 173 |
| Construction Manager 2        | 126         | 213 |
| Construction Manager 3        | 159         | 213 |
| Construction Manager 4        | 184         | 278 |
| Construction Manager 5        | 220         | 324 |
| Construction Manager 6        | 292         | 386 |
| Construction Representative 1 | 83          | 98  |
| Construction Representative 2 | 98          | 126 |
| Construction Representative 3 | 134         | 202 |
| Construction Representative 4 | 134         | 202 |
| CAD Technician/Designer 1     | 90          | 130 |
| CAD Technician/Designer 2     | 108         | 213 |
| CAD Technician/Designer 3     | 141         | 270 |
| Corporate Project Support 1   | 76          | 170 |
| Corporate Project Support 2   | 87          | 249 |
| Corporate Project Support 3   | 108         | 360 |
| Intern / Coop                 | 58          | 101 |

Rates for In-House Services and Equipment

| <u>Mileage</u>           | <u>Bulk Printing and Reproduction</u> |                |              | <u>Equipment</u>                     |                     |                 |
|--------------------------|---------------------------------------|----------------|--------------|--------------------------------------|---------------------|-----------------|
| Standard IRS Rates       |                                       | <u>B&amp;W</u> | <u>Color</u> | Valve Crew Vehicle (hour)            | \$75                |                 |
|                          | Small Format (per copy)               | \$0.10         | \$0.25       | Pressure Data Logger (each)          | \$200               |                 |
|                          | Large Format (per sq. ft.)            |                |              | Water Quality Meter (per day)        | \$100               |                 |
|                          | Bond                                  | \$0.25         | \$0.75       | Microscope (each)                    | \$150               |                 |
|                          | Glossy / Mylar                        | \$0.75         | \$1.25       | Pressure Recorder (per day)          | \$100               |                 |
| <u>Technology Charge</u> | Vinyl / Adhesive                      | \$1.50         | \$2.00       | Ultrasonic Thickness Guage (per day) | \$275               |                 |
|                          |                                       |                |              | Coating Inspection Kit (per day)     | \$275               |                 |
|                          | Mounting (per sq. ft.)                | \$2.00         |              | Flushing / Cfactor (each)            | \$500               |                 |
|                          | Binding (per binding)                 | \$0.25         |              | Backpack Electrofisher (each)        | \$1,000             |                 |
|                          |                                       |                |              |                                      |                     |                 |
|                          |                                       |                |              |                                      | <u>Survey Grade</u> | <u>Standard</u> |
|                          |                                       |                |              | Drone (per day)                      | \$200               | \$100           |
|                          |                                       |                |              | GPS (per day)                        | \$150               | \$50            |

OTHER DIRECT EXPENSES:

Other direct expenses are reimbursed at actual cost times a multiplier of 1.15. They include outside printing and reproduction expense, communication expense, travel, transportation and subsistence away from the FNI office. For other miscellaneous expenses directly related to the work, including costs of laboratory analysis, test, and other work required to be done by independent persons other than staff members, these services will be billed at a cost times a multiplier of 1.15. For Resident Representative services performed by non-FNI employees and CAD services performed In-house by non-FNI employees where FNI provides workspace and equipment to perform such services, these services will be billed at cost times a multiplier of 2.0. This markup approximates the cost to FNI if an FNI employee was performing the same or similar services.

These ranges and/or rates will be adjusted annually in February. Last updated 2024.

**CONFLICT OF INTEREST QUESTIONNAIRE -****FORM CIQ****For vendor or other person doing business with local governmental entity****This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.**

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a) and by City of Denton Ethics Code, Ordinance 18-757.

By law this questionnaire must be filed with the records administrator of the local government entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

**1 Name of vendor who has a business relationship with local governmental entity.**

Freese and Nichols, Inc.

**2 ☐ Check this box if you are filing an update to a previously filed questionnaire.**☐

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7<sup>th</sup> business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

**3 Name of local government officer about whom the information in this section is being disclosed.**

\_\_\_\_\_  
Name of Officer

Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. This section, (item 3 including subparts A, B, C & D), must be completed for each officer with whom the vendor has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the vendor?

☐

Yes

☐

No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

☐

Yes

☐

No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of one percent or more?

☐

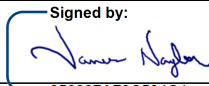
Yes

☐

No

D. Describe each employment or business and family relationship with the local government officer named in this section.

**4 ☒ I have no Conflict of Interest to disclose.****5 Signed by:**



9/30/2024

Signature of Vendor doing business with the governmental entity

Date

## **CONFLICT OF INTEREST QUESTIONNAIRE**

### **For vendor doing business with local governmental entity**

A complete copy of Chapter 176 of the Local Government Code may be found at [http://www.statutes.legis.state.tx.us/ Docs/LG/htm/LG.176.htm](http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm). For easy reference, below are some of the sections cited on this form.

**Local Government Code § 176.001(1-a):** "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

- (A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;
- (B) a transaction conducted at a price and subject to terms available to the public; or
- (C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

**Local Government Code § 176.003(a)(2)(A) and (B):**

- (A) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:
  - (2) the vendor:
    - (A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that
    - (i) a contract between the local governmental entity and vendor has been executed; or
    - (ii) the local governmental entity is considering entering into a contract with the vendor;
  - (B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:
    - (i) a contract between the local governmental entity and vendor has been executed; or
    - (ii) the local governmental entity is considering entering into a contract with the vendor.

**Local Government Code § 176.006(a) and (a-1)**

- (a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:
  - (1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);
  - (2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or
  - (3) has a family relationship with a local government officer of that local governmental entity.
- (a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:
  - (1) the date that the vendor:
    - (A) begins discussions or negotiations to enter into a contract with the local governmental entity; or
    - (B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or
  - (2) the date the vendor becomes aware:
    - (A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);
    - (B) that the vendor has given one or more gifts described by Subsection (a); or
    - (C) of a family relationship with a local government officer.

### **City of Denton Ethics Code Ordinance Number 18-757**

**Definitions:**

**Relative:** a family member related to a City Official within the third 3<sup>rd</sup> degree of affinity (marriage) or consanguinity (blood or adoption)

**City Official:** for purpose of this article, the term consists of the Council Members, Department Heads, or member of the Board of Ethics, Planning and zoning Commission Members, Board of Adjustment, Historic Landmark Commission, or Public Utilities Board

**Vendor:** a person who provides or seeks to provide goods, services, and/or real property to the City in exchange for compensation. This definition does not include those property owners from whom the City acquires public right-of-way or other real property interests for public use.

Per the City of Denton Ethics Code, Section 2-273. – Prohibitions

- (3) It shall be a violation of this Article for a Vendor to offer or give a Gift to City Official exceeding fifty dollars (\$50.00) per gift, or multiple gifts cumulatively valued at more than two hundred dollars (\$200.00) per a single fiscal year.

Per the City of Denton Ethics Code, Section 2-282. – Disposition (b), (5) Ineligibility

If the Board of Ethics finds that a Vendor has violated this Article, the Board may recommend to the City Manager that the Vendor be deemed ineligible to enter into a City contract or other arrangement for goods, services, or real property, for a period of one (1) year.

**Certificate Of Completion**

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Status: Completed

Subject: Please DocuSign: City Council Contract 7574-029 RRWTP Expansion

Source Envelope:

Document Pages: 89

Signatures: 6

Envelope Originator:

Certificate Pages: 6

Initials: 1

Erica Garcia

AutoNav: Enabled

901B Texas Street

Enveloped Stamping: Enabled

Denton, TX 76209

Time Zone: (UTC-06:00) Central Time (US &amp; Canada)

erica.garcia@cityofdenton.com

IP Address: 198.49.140.104

**Record Tracking**

Status: Original

Holder: Erica Garcia

Location: DocuSign

9/26/2024 1:54:44 PM

erica.garcia@cityofdenton.com

**Signer Events****Signature****Timestamp**

Erica Garcia

**Completed**

Sent: 9/26/2024 1:59:47 PM

erica.garcia@cityofdenton.com

Viewed: 9/26/2024 1:59:58 PM

Senior Buyer

Signed: 9/26/2024 2:00:32 PM

City of Denton

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Lori Hewell



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lori.hewell@cityofdenton.com

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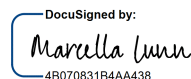
Purchasing Manager

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City of Denton

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Marcella Lunn



Sent: 9/26/2024 2:09:41 PM

marcella.lunn@cityofdenton.com

Viewed: 9/26/2024 4:55:12 PM

Senior Deputy City Attorney

Signed: 9/26/2024 7:17:12 PM

City of Denton

Signature Adoption: Pre-selected Style  
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James Naylor



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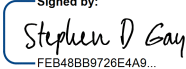
james.naylor@freese.com

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Principal/Vice President

Signed: 9/30/2024 8:19:02 AM

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(None)Signature Adoption: Uploaded Signature Image  
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| Signer Events                                                                                                                                        | Signature                                                                                                                                                                                                                | Timestamp                                                                                  |
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Cheyenne Defee  
cheyenne.defee@cityofdenton.com  
Procurement Administration Supervisor  
City of Denton  
Security Level: Email, Account Authentication (None)

**Electronic Record and Signature Disclosure:**  
Not Offered via DocuSign

Sara Hensley  
sara.hensley@cityofdenton.com  
City Manager  
City of Denton  
Security Level: Email, Account Authentication (None)

**Electronic Record and Signature Disclosure:**  
Not Offered via DocuSign

Lauren Thoden  
lauren.thoden@cityofdenton.com  
City Secretary  
Security Level: Email, Account Authentication (None)

**Electronic Record and Signature Disclosure:**  
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**Completed**

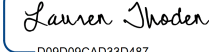
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|------------------------------|-----------|-----------|
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| Agent Delivery Events        | Status    | Timestamp |
| Intermediary Delivery Events | Status    | Timestamp |
| Certified Delivery Events    | Status    | Timestamp |
| Carbon Copy Events           | Status    | Timestamp |

Cheyenne Defee  
cheyenne.defee@cityofdenton.com  
Procurement Administration Supervisor  
City of Denton  
Security Level: Email, Account Authentication (None)

**Electronic Record and Signature Disclosure:**  
Not Offered via DocuSign

**COPIED**

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| Carbon Copy Events                                                                                                                                                                                                                                                         | Status           | Timestamp                                                  |
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| Gretna Jones<br>gretna.jones@cityofdenton.com<br>Legal Secretary<br>City of Denton<br>Security Level: Email, Account Authentication (None)<br><b>Electronic Record and Signature Disclosure:</b><br>Not Offered via DocuSign                                               | COPIED           | Sent: 9/30/2024 8:34:59 AM<br>Viewed: 10/1/2024 9:38:43 AM |
| City Secretary Office<br>citysecretary@cityofdenton.com<br>Security Level: Email, Account Authentication (None)<br><b>Electronic Record and Signature Disclosure:</b><br>Not Offered via DocuSign                                                                          | COPIED           | Sent: 10/23/2024 10:20:56 AM                               |
| David Brown<br>David.Brown@cityofdenton.com<br>Project Manager Water Utilities<br>Security Level: Email, Account Authentication (None)<br><b>Electronic Record and Signature Disclosure:</b><br>Accepted: 10/8/2024 8:53:19 AM<br>ID: 5b3c3699-eb76-469f-97f1-ee962ebffd19 | COPIED           | Sent: 10/23/2024 10:20:57 AM                               |
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| Electronic Record and Signature Disclosure                                                                                                                                                                                                                                 |                  |                                                            |

## **ELECTRONIC RECORD AND SIGNATURE DISCLOSURE**

From time to time, City of Denton (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through your DocuSign, Inc. (DocuSign) Express user account. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to these terms and conditions, please confirm your agreement by clicking the 'I agree' button at the bottom of this document.

### **Getting paper copies**

At any time, you may request from us a paper copy of any record provided or made available electronically to you by us. For such copies, as long as you are an authorized user of the DocuSign system you will have the ability to download and print any documents we send to you through your DocuSign user account for a limited period of time (usually 30 days) after such documents are first sent to you. After such time, if you wish for us to send you paper copies of any such documents from our office to you, you will be charged a \$0.00 per-page fee. You may request delivery of such paper copies from us by following the procedure described below.

### **Withdrawing your consent**

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

### **Consequences of changing your mind**

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. To indicate to us that you are changing your mind, you must withdraw your consent using the DocuSign 'Withdraw Consent' form on the signing page of your DocuSign account. This will indicate to us that you have withdrawn your consent to receive required notices and disclosures electronically from us and you will no longer be able to use your DocuSign Express user account to receive required notices and consents electronically from us or to sign electronically documents from us.

### **All notices and disclosures will be sent to you electronically**

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through your DocuSign user account all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

**How to contact City of Denton:**

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:

To contact us by email send messages to: [purchasing@cityofdenton.com](mailto:purchasing@cityofdenton.com)

**To advise City of Denton of your new e-mail address**

To let us know of a change in your e-mail address where we should send notices and disclosures electronically to you, you must send an email message to us at [melissa.kraft@cityofdenton.com](mailto:melissa.kraft@cityofdenton.com) and in the body of such request you must state: your previous e-mail address, your new e-mail address. We do not require any other information from you to change your email address..

In addition, you must notify DocuSign, Inc to arrange for your new email address to be reflected in your DocuSign account by following the process for changing e-mail in DocuSign.

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To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an e-mail to [purchasing@cityofdenton.com](mailto:purchasing@cityofdenton.com) and in the body of such request you must state your e-mail address, full name, US Postal address, and telephone number. We will bill you for any fees at that time, if any.

**To withdraw your consent with City of Denton**

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- i. decline to sign a document from within your DocuSign account, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;
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**Required hardware and software**

|                            |                                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Systems:         | Windows2000? or WindowsXP?                                                                                                                                                                |
| Browsers (for SENDERS):    | Internet Explorer 6.0? or above                                                                                                                                                           |
| Browsers (for SIGNERS):    | Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)                                                                                                                      |
| Email:                     | Access to a valid email account                                                                                                                                                           |
| Screen Resolution:         | 800 x 600 minimum                                                                                                                                                                         |
| Enabled Security Settings: | <ul style="list-style-type: none"><li>•Allow per session cookies</li><li>•Users accessing the internet behind a Proxy Server must enable HTTP 1.1 settings via proxy connection</li></ul> |

\*\* These minimum requirements are subject to change. If these requirements change, we will provide you with an email message at the email address we have on file for you at that time providing you with the revised hardware and software requirements, at which time you will have the right to withdraw your consent.

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