TASK ORDER NO. 2

NORMAN UTILITIES AUTHORITY
OWNER

AND

CAROLLO ENGINEERS, INC.

This Task Order is issued by the OWNER and accepted by ENGINEER pursuant to the mutual promises, covenants and conditions contained in the Agreement between the above named parties dated the 14th day of June, 2016, in connection with:

Norman Utilities Authority Well Field Development Project
(Project)

PURPOSE

The purpose of this Task Order is to:

Authorize ENGINEER's Basic Services as described in Exhibit A to this Task Order No. 2 for Phase II of the aforementioned project including:

- Test Well Development Services
- Land Acquisition Assistance
- Design Services
- Bidding Services
- Construction Administration Services
- Inspection Services

These basic services are associated with the design and construction of six (6) vertical wells and associated discharge piping to the property line.

Authorize assignment of ENGINEER's Additional Services as described in Exhibit A to this Task Order No. 2 to this contract. These additional services may only be authorized in writing by OWNER with payment on a unit price basis or fee schedule (not to exceed) as established in Exhibit B to this Task Order No. 2.

ENGINEER'S SERVICES

Engineers Basic and Additional Services are described in Exhibit A to this Task Order No. 2.

TIME OF PERFORMANCE

Time of performance for ENGINEER's Basic Services are described in Exhibit A to this Task Order No. 2.

Time of performance for ENGINEER's additional services will be determined at the time when written authorization of these additional services is obtained.

PAYMENT

Basic Services: Total payment for the Basic Services described in Exhibit A shall not exceed $594,240 inclusive of all labor, overhead and profit, subconsultant expenses, and other direct costs unless Task Order No. 1 is modified in writing and approved by OWNER and ENGINEER. Payment for these Basic Services shall be made on a lump sum basis, based upon monthly invoices submitted by ENGINEER indicating percent complete of each major task in the Scope of Services as described in Exhibit A to this Task Order No. 2.

Additional Services-Unit Prices: Total payment for the Additional Services described in Exhibit A as Additional Services – Unit Prices shall not exceed $449,250 inclusive of all labor, overhead and profit, subconsultant expenses, and other direct costs. OWNER must authorize in advance the additional services in writing and the amount of the authorization shall be calculated based upon the unit price schedule established in Exhibit B to this Task Order No. 2. Payment made for additional services authorized by OWNER shall be made on a lump sum basis, based upon monthly invoices submitted by ENGINEER indicating percent complete of each unit price item in the Scope of Services as described in Exhibit A to this Task Order No. 2.

Additional Services –Not to Exceed Fee Schedule: Total payment for Additional Services described in Exhibit A as Additional Services – Not to Exceed Fee Schedule shall not exceed $173,690 based upon the fee schedule provided in Attachment 1 to Exhibit B. OWNER must authorize in advance the additional services not to exceed amount established herein in writing. Payment made for additional services authorized by OWNER shall be made on an hourly rate basis established by the fee schedule provided in Attachment 1 to Exhibit B.

EFFECTIVE DATE

This Task Order No. 02 is effective as of the 13th day of February, 2018.

IN WITNESS WHEREOF, duly authorized representatives of the OWNER and of the ENGINEER have executed this Task Order No. 02 evidencing its issuance by OWNER and acceptance by ENGINEER.

CAROLLO ENGINEERS, INC.	OWNER
Accepted this 31st day of January, 2018	Accepted this _____ day of _____, 20___
By: _____	By: _____
Vice President	Chairman
Thomas O. Crowley	
By: _____	By: _____
Vice President	Attorney
Brian Clow	

Engineers...Working Wonders With Water®

CERTIFICATION

This is to certify that the undersigned, Michael W. Barnes, as Corporate Secretary and General Counsel for **Carollo Engineers, Inc.**, is authorized to state and certify: That by corporate policy approved by the Board of Directors on 02/07/2011, Thomas Crowley, Vice President, and Brian Clow, Vice President, are authorized to execute engineering service agreements for the usual and customary engineering business of the company.

Dated: January 31, 2018

Michael W. Barnes
Corporate Secretary & General Counsel

2700 Ygnacio Valley Road, Suite 300, Walnut Creek, California 94598
P. 925.932.1710 F. 925.930.0208
carollo.com

NORMAN UTILITIES AUTHORITY
CONTRACT K-1516-139 GROUNDWATER WELL FIELD DEVELOPMENT

TASK ORDER NO. 2 TO CONTRACT K-1516-139
PHASE 2: TEST WELL SUPPORT, LAND ACQUISITION, AND PRODUCTION WELL DESIGN

EXHIBIT A SCOPE OF WORK

FINAL
February 2018

NORMAN UTILITIES AUTHORITY
CONTRACT K-1516-139 - GROUNDWATER WELL FIELD DEVELOPMENT
TASK ORDER NO. 2
PHASE 2: TEST WELL SUPPORT, LAND ACQUISITION, AND PRODUCTION WELL DESIGN

EXHIBIT A SCOPE OF WORK

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CONTRACT K-1516-139 - AMENDMENT 1
PHASE 2: TEST WELL SUPPORT,
LAND ACQUISITION, AND PRODUCTION WELL DESIGN

EXHIBIT A SCOPE OF WORK

BACKGROUND

Phase 1 of the project (Tasks 1 through 5) consisted of the following:

1. An assessment of the existing wells to determine if any could be restored to service through blending at the WTP, blending at a centralized facility, or other means.
2. Conduct a hydrogeological investigation of the existing aquifer to identify potential new well sites, screen these sites to optimize locations for anticipated yield, water quality, and near-term and long-term infrastructure implications.
3. Prepare prequalification procurement documents for the pre-selection of qualified well drillers to conduct test wells and develop production wells in Phase 2 of this project.

Phase 2 of the project (Tasks 6 through 10) will generally consist of the following (see individual task descriptions for more details):

1. Evaluate potential well sites for either fee simple purchase of entire property (if less than 2 acres) or purchase 2 acres of land of a with a permanent easement for access/pipeline right-of-way within a larger property (if property is above 10 acres)..
2. Assist City's consultant with transfer of existing water rights to the proposed new wells.
3. Assist the Norman Utilities Authority (NUA) to secure right-of entry from landowner for a minimum of 6 and up to 20 test well sites with option to purchase. .
4. Develop test well procurement and sampling documents, inspect test well development, evaluate test well results, and provide recommendations regarding permanent well locations and estimated well yields. Services include test wells for up to six (6) permanent production well facilities (minimum of 9). Services to design, bid, provide support during testing, and update the well production report for sufficient test wells (up to 11 test wells) for additional six (6) production wells will be conducted based upon a unit price schedule.
5. Assist the NUA with the negotiations for fee simple purchase (if less than 10 acres) or purchase of permanent easements and access/pipeline right of way for identified well sites for a minimum of 6 and up to 12 new well sites.

6. Provide interim and final bid set contract documents for the construction of a minimum of 6 and up to 12 new permanent wells. Design services for up to six (6) additional wells will be conducted based upon a unit price schedule.

7. Provide Bidding support services for the contract documents associated with well field construction. Bid award for at least one well site will be before October 1, 2018 to satisfy bond obligations. Bidding services for up to six (6) additional wells will be conducted based upon a unit price schedule.

8. Provide construction administration and construction inspection services during the construction of a minimum of 6 and up to 12 permanent wells. Construction administration and inspection services for up to six (6) additional wells will be conducted based upon a unit price schedule.

DETAILED SCOPE OF SERVICES – BASIC SERVICES

TASK 6 – PHASE 2 PROJECT COORDINATION AND COMMUNICATION

Task 6 includes the tasks and subtasks associated with the project delivery and communication for the Phase 2 Services.

Task 6.1 – Project Delivery and Communication

General

ENGINEER will provide project delivery services necessary for the administration of Phase 2 of the Project, including efforts required for proper resource allocation, schedule development and monitoring, budget review and control, client correspondence and coordination, internal quality assurance/quality control (QA/QC) activities and other project administrative and customary activities required for timely completion of the work. ENGINEER will prepare and submit invoices in a form that is acceptable to the Norman Utilities Authority (NUA).

Deliverables

Major Deliverables associated with Task 6.1 are as follows:

1) Project Execution Plan for the Engineering Reports associated with Phase 2 of the project.
2) Monthly Progress Reports.
3) Monthly Updates to Action/Decision Logs.
4) Meeting Minutes and Agendas.

Assumptions

Assumptions associated with Task 6.1 are listed below:

1) Project duration of 10 months from notice to proceed to a bid Award.
2) Construction of a minimum of 9 and up to 20 test wells at test well sites.
3) Design and bidding of a minimum of 6 and up to 12 production wells.
4) Project duration of 12 months from Notice to Proceed to Final Completion of Construction project for permanent production wells.

Task 6.1.1 – Prepare Final Project Execution Plan (PEP)

ENGINEER will prepare a written final Project Execution Plan (PEP) for Task 6.1 services. The PEP for the project shall include, at a minimum the following:

1) A summary of dedicated key team members, roles, and responsibilities, including all field crew leaders and contact information.

2) A summary of the projects scope of services.

3) Detailed cost-loaded schedule for performance of all work. The cost-loaded schedule shall indicate the planned value of work to be invoiced on a monthly basis through project completion.

4) Quality Control Plan: ENGINEER will describe how a quality control program will be implemented on all phases of the project to provide an independent review of the work. Quality Control Reviews will include checks with conformance with regulatory agency requirements, project procedures, completeness, and correctness of evaluations, design accuracy, Feasibility of implementing recommendations and adherence to contract requirements.

Task 6.1.2 – Monthly Progress Status Reports

Prepare and submit to NUA monthly project progress status reports with invoices or Task 6.1 services that identify:

1) The work that has been performed in the period.

2) Work activities anticipated in the next month.

3) Action items required of the NUA for an efficient and effective delivery of ENGINEER's services.

4) Potential project scope variances with corrective actions suggested by ENGINEER.

5) A general assessment of ENGINEER's ability to meet project schedule milestones, including identification of any delays beyond its control, and an estimate of the work percent completion for each task series in the Scope of Services based on earned value of the work completed.

Task 6.2 – Project Meetings and Workshops

Task 6.2.1 – Phase 2 Initiation

ENGINEER will conduct a Phase 2 initiation meeting with NUA Staff to review the scope of work and ENGINEER's work plan, the project schedule, budget requirements, and other special project needs to review pertinent available data; and to present the ENGINEER's project team organization and staffing, and define the lines of communication between ENGINEER and NUA Staff .

Task 6.2.2 – Bi-Weekly Progress Status Meetings

ENGINEER will conduct bi-weekly status meetings or conference calls with NUA Staff during the phase 2 work. It is anticipated that bi-weekly coordination will be needed during the project, in addition to the workshops defined in Subtask 7.2.3. The purpose of these meetings will be to:

1) Update the team on project status, progress achieved, budget and schedule status/concerns and potential deviations from the Scope of Services and corrective actions.

2) Discuss project issues, coordinate work activities and review work activities planned for the upcoming period. These progress meetings will be in addition to other work product review meetings or workshops with NUA Staff as identified herein. Action/decision logs will be updated following these meetings and issued by Engineer one week prior to the next bi-weekly meeting along with the agenda and meeting minutes.

Task 6.2.3 – Project Meetings and Workshops

Subtask 6.2.3.1 – Well Property Selection Workshop

Topic: Review Potential Well Sites

ENGINEER will conduct a workshop with NUA Staff to review and discuss the potential test well sites locations. Property ownership records will be reviewed and potential well site locations will be reviewed and discussed with respect to ease of acquisition, potential property liens, and potential costs.

Subtask 6.2.3.2 – Test Well Procurement Document Review

Topic: Review Draft Test Well Procurement Documents

ENGINEER will conduct a workshop to review Draft test well procurement documents for a minmum of 12 and up to twenty (20) test wells with the identified properties.

Subtask 6.2.3.3–Review Draft Test Well Summary Report

Topic: Review Draft Test Well Summary Report

ENGINEER will conduct a workshop to review the results of the test well hydro-geologic results, analyze anticipated well yields, and develop anticipated water quality conditions. The workshop will address the development design parameters for a minimum of 6 and up to 12 permanent well sites including well depths, selection of screening or perforation method and depths, packing design and other parameters for permanent wells. ENGINEER will prioritize well sites for permanent development based upon results of the test wells.

Subtask 6.2.3.4 – Interim Design Review Workshop

Topic: Review Interim Design Submittal Documents

ENGINEER will conduct a workshop to review the interim design documents.

Subtask 6.2.3.5 – Final Design Review Workshop

Topic: Review Final Design Submittal Documents

ENGINEER will conduct a workshop to review the final design submittal documents.

Task 6.2.4 – External Agency Coordination

The ENGINEER will identify which external agencies will require review and approval of the design documents. ENGINEER will arrange to meet with said agencies as necessary to facilitate approval.

It is assumed that the following number of meetings will be held with ODEQ and OWRB. ENGINEER is responsible for preparing construction permit application and incorporation of applicable review comments into the bid documents.

1) Test well procurement document review meeting
2) Test well summary report for a minimum of 9 and up to 20 test well sites and permanent well design document review meeting

The test well summary report will include a summary of the ODEQ regulations concerning the siting and construction of drinking water wells and a summary of potential variances (surface casing depth, surface pollution source, etc.)

ENGINEER will coordinate with Oklahoma Gas and Electric (OG&E), Oklahoma Electric Co-op, Oklahoma Natural Gas (ONG) and Norman Building Code Review and City of Norman Fire Department. ENGINEER is responsible for preparing materials for meeting and for incorporation of applicable review comments into the bid documents.

ENGINEER will submit the draft contract documents to the agencies for review and comment prior to issuance of final contract documents for NUA Staff approval. Following receipt of comments, ENGINEER will generate a tabular response sheet containing each of the Agency comments and the ENGINEER's draft responses for review by the NUA Staff.

Task 6.2.5 – Internal Agency Coordination

ENGINEER and NUA Staff will collaboratively coordinate and invite all internal agencies to review workshops defined within this scope. It is anticipated that the following internal agency coordination meetings will be held:

1) SCADA/IT review
2) Building Code and Fire Department review –

TASK 7 – ACQUISITION OF WATER RIGHT LEASES AND WELL PROPERTIES – SEE ADDITIONAL SERVICES

TASK 8 – TEST WELL DRILLING SERVICES

General

Phase 1 of the project included the preparation of bid documents with Exhibits for the purpose of defining the number of test well sites, type of test well, location of test well sites, access to/from the sites, temporary facilities and utilities, and other parameters necessary to determine:

- Potential well yield
- Well drawdown and recovery
- Well specific capacity
- Water quality parameters of each zone located in anticipated water production depths (i.e. 300 to 750 feet)
- Well screening depth and potential zones for isolation
- Potential well locations

Should NUA select to drill additional production wells, the test well program will be updated to include the additional tests wells (not exceeding the maximum of 20 test wells). Phase 2 of the project includes the bid phase services, services during construction, and the preparation of a test well summary report to summarize the results of the testing and the design parameters for the permanent production wells.

Deliverables

1) Test Well Program Final Summary Report:
   a) One (1) electronic copy of comment spreadsheet summarizing all internal and external agency comments, and the ENGINEER's responses to these comments.
   a) One (1) Electronic Copy in searchable, bookmarked, PDF which includes all native files (MS Word and MS PowerPoint) utilized to develop report.
   b) Five (5) bound copies of Summary Report for NUA Staff review distribution.

Workshops

As defined in Task 6.2 – Project Meetings and Workshops.

Assumptions

The following assumptions are utilized in the preparation of this task:

1) Well drillers will be prequalified, as a result specifications will not contain prequalification requirements.

2) Number of test well sites will be limited to no more than Twenty (20) sites...the documents will be prepared as such to bid a minimum of nine (9) test wells for the six (6) permanent production wells and a prioritized unit price schedule for up to eleven (11) additional test well sites for the six (6) additional permanent production wells.

3) Engineer's basic services include the design, bidding, construction and report development services for nine (9) test well sites for the six (6) permanent Production wells part of the basic services.

4) Engineer's basic services include the design and bidding services for up to eleven (11) additional test well sites for the six (6) permanent production wells associated with the basic services. These will be bid as unit prices for contractors as part of the

5) Engineer's additional services include the construction and report development services for up to eleven (11) additional test well sites for the up to six (6) additional permanent production well facilities.

6) Land disturbance at each of the sites will be less than 1 acre and, as a result, a land disturbance permit will not be required.

Task 8.1 – Preparation of Drawings (Plans) for Test Well Development (included in Phase 1 Services)

ENGINEER will prepare site development drawings for a minimum of nine (9) and up to twenty (20) test well sites including:

- Coordinate location of test well
- Location of potential boundaries for property or easement to be purchased for well site.
- Location of potential right of way for access to well site
- Location of landowners property
- Location of test well spoils disposal
- Location of test well water discharge
- Other site features, topography, location of utilities (if any), location of electrical power lines and power poles (if any) and ownership.
- Location of drawdown monitoring wells and section indicating design of monitoring wells.

- Section of test well indicating well depth, packing, zoning requirements, pump depth requirements, and screening or perforation requirements.
- Standard details for construction of best management practice items for storm water control including silt fences, detention areas, and other storm water control devices.
- Standard details for plugging of test and monitoring wells.

Task 8.2 – Preparation of Specification for Test Well Development (included in Phase 1 Services)

ENGINEER will complete the engineering design and prepare specifications to include the following: (1) Division 00 - Bidding Requirements, Contract Forms, General Conditions, and Supplementary Conditions, (2) Division 01 - General Requirements, and (3) Divisions 02 through 17 - Technical Specifications. The specifications will address the following:

- Well logging requirements.
- Well zoning and well design requirements.
- Analytical sampling, testing, transport, and analysis requirements for the duration of testing.
- Well pump testing requirements including capacity measurement, step drawdown measurement, Sand tests, long-term constant rate test, duration of pumping in each zone, number of zones to be tested, and duration of recovery monitoring.
- Monitoring well measurement during testing period (on-site and off-site).
- Requirements for geophysical well logging and reporting.
- Well capping and abandonment.
- Site restoration instructions

ENGINEER will prepare interim and final submittals of the specifications.

Task 8.3 – Bidding Services for Test Well Development

Basic services for bidding of test well development includes a minimum of 9 test wells for development of up to six (6) permanent production wells. Additional services include bidding services for up to 11 test wells for development of up six (6) additional permanent production wells.

Task 8.3.1 – Issue Bid Set Plans and Maintain Plan holders List

ENGINEER will be responsible for issuing bid set plans in electronic form and maintaining a plan holders list from which addenda will be issued.

Task 8.3.2 – Lead Pre-bid Conference

ENGINEER will lead the pre-bid conference meeting and the site visit. The purpose of this meeting is to introduce the project to all prequalified test well drillers. The ENGINEER will develop agenda, provide a narrative of the project, and answer preliminary questions if **necessary**. The engineerr will voice record the meeting and will be responsible for maintaining meeting minutes for record purposes.

Task 8.3.3 – Respond to Bidders Questions

ENGINEER will respond via addenda to written questions by plan holders or others regarding the technical aspects of the work, contract requirements for prospective bidders, subcontractors, and suppliers during the period of advertisement.

Task 8.3.4 – Prepare Project Addenda

ENGINEER will prepare addenda to the contract drawings and/or specifications to clarify and modify project requirements. ENGINEER will be responsible for issuing and acknowledging receipt of all addenda from prospective Bidders.

Task 8.3.5 – Bid Evaluation and Recommendation

Within 2-3 working days following the bid opening, ENGINEER will review the apparent lowest responsible bidder and summarize findings with respect to engineering aspects of the bids to assist the award of the construction contract. The review will include preparation of a bid tabulation, verification of conformance with the technical contract requirements as presented in the bid forms, verification of the low bidder's references and a letter summarizing the results of the engineering evaluation.

Task 8.4 – Construction Services for Test Well Development

ENGINEER will have a representative on site during the test well drilling and development to review drilling procedures, interpret well logs, observe well testing, review water quality sampling procedures, review chain of custody documents, and instruct test driller to adjust drilling, sampling, and testing procedures and frequencies accordingly.

Additional services includes unit prices for construction services during test well development of up to 11 additional test wells for development of up to six (6) additional permanent production wells. Task 8.5 – Prepare Draft and Final Test Well Summary Report

Basic services include the development of a test well report for nine (9) test wells associated with development of six (6) permanent production wells. Additional services include unit prices to amend the well summary reports to incorporate eleven (11) additional test well for the six (6) additional permanent production wells.

Task 8.5.1 – Groundwater Model Upgrade

The ENGINEER will revise the groundwater model developed by USGS for OWRB in the recent Garber-Wellington study which includes the Norman project area to allow the ENGINEER to confirm well spacing for the proposed well sites after completion of the test well program. The spatial and temporal resolution of this model are sufficient to allow its use to accomplish the objectives of the project, but minor modifications to the model will be made to allow for analyses under realistic potential future pumping scenarios. The upgraded model will be used to complete modeling scoped under Phase 1 tasks.

Task 8.5.2 – Prepare Draft Test Well Summary Report

The ENGINEER will analyze well logs and water quality analyses to determine optimum perforation schedule for each well. A matrix describing potential yields, combined water quality, scaling indexes, and pump sizing will be provided. The goal of the test well summary report is to recommend and prioritize the production wells and production well zones that maximize water quality (i.e. minimize arsenic, chromium, radio nucleotides, total dissolved solids, hydrogen sulfide, etc.) and production rates (i.e. production rates above 200 gpm at least 67% of the operating time of the well for an annual average production of 2 mgd , The draft summary report addressing the following:

- Executive summary
- Introduction, Purpose, and Scope of investigations
- Summary of Field Construction and Development:
    - Test Holes
    - Monitoring Wells
    - Test Production Wells
- Well Tests:
    - Sand Tests
    - Step Drawdown Tests
- Aquifer Testing:

- Long Term Constant Rate Test
- Test Analysis
- Flow meter Survey
- Water Quality Results
- Effect of On-site Monitoring Wells
- Effect on Off-Site Monitoring Wells

- Well Field Design:
  - Location(s) with the best combination of high water quality and high production and high recovery rates.
  - Zones with the best water quality
  - Recommended Well Design
  - ODEQ requirements and potential variances from select requirements.

- Appendices:
  - Test well geophysical logs
  - Water Quality Data
  - Zonal Isolation data
  - Summary of Variance Request and Justification

Task 8.5.3 – Prepare Final Test Well Summary Report

ENGINEER shall collect comments from NUA staff regarding the test well summary report and provide a final report for submission to ODEQ. Following submission of this final report, ENGINEER will conduct a meeting with ODEQ to review test well summary report and plans for development of drinking water wells in the existing aquifer.

TASK 9 – DESIGN OF PERMANENT PRODUCTION WELL FACILITIES

Deliverables

Specific deliverables and workshops associated with the design drawings and specifications include the following.

1) Final Construction Documents (engineering plans and specifications) ready for advertisement and bid.
   a) Three (3) Full Size Set of Drawings and Specifications
   b) Three (3) ½ Size set of Drawings and Specifications
   c) One (1) Electronic Copy PDF
   d) Final Estimate on Bid Form
2) Agency Review:
   a) Three (3) full size copies of Final Construction Documents (engineering plans and specifications) ready for ODEQ and OWRB review and approval.
   b) Three (3) Full size copies of Final Construction Documents ready for City of Norman Building Code Department Review and Approval.
   c) Spreadsheet containing all comments received by external agency review, ENGINEER's responses to these comments and location comments were addressed in the final documents issued for bid.

Assumptions

The following assumptions are utilized in the preparation of Final plan services.

3) It is assumed that the NUA will pay for all permitting fees associated with the project.
4) It is assumed that a minimum of six (6) permanent well sites will be designed and the first well construction package (containing up to 6 wells) will be bid and awarded prior to October 1, 2018. Up to six (6) additional well sites may be designed either by bid or by unit price change order for a total of twelve (12) production well sites. Engineer's tasks associated with the additional design services are provided in Section A9.3, A9.4 and A9.5.
5) It is assumed that the six (6) permanent well sites will be bid as a single bid package and additional wells will be bid in packages of (two) wells either by bid or by unit price change order.
6) Specifications: ENGINEER's Front end specifications will be utilized with supplemental documentation from NUA for Contract, Certificate of Non-Discrimination, Non-Collusion affidavit, etc.
7) Water Rights permitting with OWRB for the existing water rights assigned to the new wells will be conducted by others.
8) Well Site Civil/Yard Piping
   a) No exiting utilities or septic tanks/lateral fields will be required to be relocated. Minimum separation of 150 required with 300 feet or more desired.
   b) Access Road to well houses will be In accordance with City standards.

c) Concrete Parking areas sufficient for up to three vehicles will be provided. American with Disabilities ActCompliance will not be required.

d) Storm water drainage away from the well house will be conducted by surface drainage only to on site or off site storm water detention with no need for storm water collection area drains, piping, box culverts, etc.

e) Blowoff for well cleaning to a below grade structure will be provided to dissipate prior to entering surface water discharge..

f) The landscaping will not include specific Xeriscaping features, permanent irrigation systems, or porous pavement. Landscaping will be in accordance with City of Norman ordinances.

g) No sanitary sewer system will be provided.

h) Six (6) foot security fence with 16 foot manual and 4' pedestrian entry gates will be provided. Automation of gate with security card readers shall be by others. Design will include coordination with security firm to place conduit from well house to gate for future security features and security cameras.

i) Well site security cameras, door switches, cyber locks or other active securing devices will be by others.

9) Architectural:

a) Well houses will contain the following:

- Piping Room withpiping, valves, and space for storage of chemicals (Liquid Ammonium Sulfate, Sodium Hypochlorite)
- Electrical/Control room with service entrance, power panel, transformer, lighting panel, RTU panel, communications equipment, and VFD for well pump Motor.
- Storage room to accommodate future storage of chlorine and ammonia.

b) Well houses will contain a Pitched standing seam metal roof with a hatch for

c) Well houses will be designed to meet current adopted building and energy code requirements.

10) Structural

a) Foundation for well houses will be either spread footing, continuous footing, or matt foundation, no deep foundation system will be required.

11) Mechanical

a) Pumps/wells will be either outside the well house or within the well house with a removable hatch/roof for well development and cleaning.

b) Aboveground piping will be ductile iron with flanged fittings.

c) Buried piping will be PVC with restrained mechanical joints and double layer of EPP. Piping will be stationed and terminated at the property line with an isolation gate valve. Design of piping from well house property line to the distribution system will be by others.

d) Pump discharge will be designed with a tilted disc check valve, flow meter, and isolation valve. Chemical feed injection diffusers will be provided for future injection of hypochlorite and liquid ammonium sulfate. Location of the diffusion points will be as such to provide 4-log virus removal at all anticipated well flows.

e) Engineer will specify the number of monitoring wells at each site. At a minimum 2 sets of three monitoring wells will be provided. ..

f) No surge equipment will be required for the well houses..

12) HVAC

a) No natural gas will be required at any of the well houses, all heating will be done using electric heat.

b) HVAC may include cooling of the electrical/control room with prepackaged cooling units with 150% redundancy. If not, independent panel coolers will be provided for the control panels.

c) Cooling of pump/piping room will be provided by ventilation with supply fans and louvers.

d) No fire sprinkling system will be required.

e) Potable water connection will be stopped at the property line, connection of potable water to distribution system will be by others.

13) Electrical:

a) It is assumed that well site property will be located adjacent to existing power lines and that negotiations with utility company will not include the extension of existing power lines.

b) ENGINEER will negotiate with Power Company to provide primary transformer and metering station at the well site. ENGINEER will design power feeder from the secondary side of the transformer to the power distribution panel. Anticipated voltage is 480V, 3 phase, 4W, 60 Hz. Service from well house to transformer will be below grade in an electrical duct bank.

c) Lighting will be LED

d) No exterior pole lighting will be provided, well site lighting will be limited to wall packs at the building

e) Lighting protection and grounding grid design will be responsibility of the contractor.

f) No permanent emergency generator will be provided at the well site. The facility will be equipped with a connection point for a portable generator if desired by the NUA.

14) Instrumentation and Controls

a) The existing radio license is for 219;50 MHz. Communication system will match existing well house communication system but will operate under a separate frequency than the existing well houses. Contractor will be required to purchase license for the new frequency and transfer all rights to the license to the NUA.

b) No line of sight studies will be conducted by ENGINEER, ENGINEER will develop a performance based specification requiring Contractor to perform line of sight studies for the communication of the wells with the SCADA system at the Norman WTP.

c) The existing telemetry uses Graymatter GE MDS SD2 radios. Actual Model number to order would be “SD02-MDAESNNDNN”. It is assumed that the new telemetry system would utilize the same or next generation model. The radio receivers will be configured to communicate through the serial port to the plant MAIN PLC.

d) A remote terminal unit (RTU) will be provided for local control and for interface via telemetry with the Plant SCADA system.

e) Instrumentation will be provided to monitor:

a.

b. Pump flow rate

c. Well Drawdown

d. Monitoring well drawdown level

e. Check valve status

f. Pump on/off Status

g. other signals as determined by NUA

Task 9.1 – Project Delivery and Communication

Task 9.1.1 – External Design Project Meetings (see Task 6.2.3.)

Task 9.2 – Internal Design Project Meetings and Workshops

Internal discipline coordination meetings will be conducted every 2 weeks during the 4 month design of the construction contract.

Task 9.2 – Field Investigations

Task 9.2.1 – Geotechnical Investigations at Well Sites

The ENGINEER will be responsible for the development of the scope of the investigations for the geotechnical firm, determining the depth and locations for additional borings, and review and commenting on the draft geotechnical report. It is assumed that no more than one (1) boring will be conducted at each permanent well site.

Task 9.2.2 – Site Topographical Surveying

Surveying will be completed for the project as necessary to establish horizontal and vertical control tied to the State Coordinate System. A minimum of two survey control monuments will be placed at judiciously selected locations at the well site. In addition, ENGINEER will conduct survey of subsequent geotechnical investigations to determine ground surface elevation of any additional borings. Survey tolerance will be within 0.01 feet in vertical elevation. Survey will note all potential source of contamination, any old wells, water quality protection zones for the wellheads, and the 100 and 500 year floodplain locations within the well sites.

Task 9.3 – Well Screening and Perforation Analysis

The ENGINEER will analyze well logs and water quality analyses to determine optimum perforation schedule for each well. A matrix describing potential yields, combined water quality, scaling indexes, and pump sizing will be provided. Task includes costs for the top 6 well sites identified in the test summary report. Unit prices for up to 6 additional wells (12 total) will be provided.

Task 9.4 – Preparation of Drawings (Plans) for Project Construction.

Drawings will be prepared using Micro Station XM software using ENGINEER's standard format. ENGINEER will prepare construction documents (plans, specifications, and related information) to allow bidding and subsequent construction of a minimum of six (6) permanent production wells and up to six (6) additional permanent production wells. The major elements of work upon which the Fee Estimate provide in Exhibit B to this contract is based upon this scope of work.

Task 9.5 – Preparation of Specifications for Project Construction

ENGINEER will complete the engineering design and prepare specifications to include the following: (1) Division 00 - Bidding Requirements, Contract Forms, General Conditions, and Supplementary Conditions, (2) Division 01 - General Requirements, and (3) Divisions 02 through 17 - Technical Specifications. Included in these specifications will be a description of known constraints on the Contractor's construction sequencing plan that identifies the requirements of the contractor to tie into distribution system. Specifications will include incorporation of SRF documentation (if necessary) into the Division 00 sections.

Task 9.6 – Prepare Estimates of Probable Construction Costs.

ENGINEER will prepare an interim estimate of probable construction costs at the Intermediate Design Submittal stage of completion and a final estimate prior to bidding the project.

Task 9.7 – Prepare Bid Set Submittal

ENGINEER will prepare bid ready plans and specifications for upload to the ENGINEER's electronic storage site for the project including an excel spreadsheet of the bid form.

TASK 10 BIDDING SERVICES

Task 10.1 – Issue Bid Set Plans and Maintain Plan holders List

ENGINEER will be responsible for issuing bid set plans in electronic form to the prequalified contractors and maintaining a plan holders list from which addenda will be issued.

Task 10.2 – Lead Pre-bid Conference

ENGINEER will lead the pre-bid conference meeting and the site visit. The purposed of this meeting is to introduce the project to all prospective contractors. The ENGINEER will develop agenda, provide a narrative of the project, and answer preliminary questions if **necessary**. The engineer will voice record the meeting and will be responsible for maintaining meeting minutes for record purposes.

Task 10.3 – Respond to Bidders Questions

ENGINEER will respond via addenda to written questions by plan holders or others regarding the technical aspects of the work, contract requirements for prospective bidders, subcontractors, and suppliers during the period of advertisement.

Task 10.4 – Prepare Project Addenda

ENGINEER will prepare addenda to the contract drawings and/or specifications to clarify and modify project requirements. After an addendum has been approved/signed by the NUA the ENGINEER will issue all addenda electronically to each plan holder.

Task 10.5 – Bid Evaluation and Recommendation

Within 2-3 working days following bid opening, ENGINEER will review the apparent lowest responsible bidder and summarize findings with respect to engineering aspects of the bids to assist the award of the construction contract. The review will include preparation of a bid tabulation, verification of conformance with the technical contract requirements as presented in the bid forms, verification of the low bidder’s references and a letter summarizing the results of the engineering evaluation.

TASK 11 – CONSTRUCTION PHASE SERVICES

Deliverables

The following are the major deliverables associated with Task 11:

1) Conformed Documents: Engineer will provide conformed drawings and specifications incorporating all addenda issued during the bidding process as to present a unified set of documents (plans and specifications) during the construction contract. The following sets will be provided:
   a) Two (2) Full size set of plans and specifications for As Built Documentation for Contractor use.
   b) One (1) Electronic copy of Civil CAD Files for Contractor Use.
   c) Two (2) Full size Set of Plans for NUA's use
   d) Two (2) ½ size set of plans for NUA's use.
   e) One (1) electronic copy (searchable PDF)
2) Preconstruction Conference Agenda and meeting minutes
   a) One (1) Electronic copy

Assumptions:

The following assumptions were utilized in preparing this scope of services:

1) Construction package will consist of construction of a minimum of six (6) and up to twelve (12) permanent wells at sites to be determined. If construction of additional wells are not included with this construction contract, then additional compensation will be required for the management of separate construction contracts in the Additional services tasks. If the additional wells are included in the singular construction contract, then additional compensation will not be required should the construction duration not exceed the duration established in the scope of services.
2) Construction duration of no more than twelve (12) months
3) Engineer will utilize electronic based repository provided by Engineer to Contractor for construction document control including processing of RFI's, submittals, design clarification memorandum, and potential change orders. When approved, electronic copies of approved submittals will be provided by Contractor.

Task 11.1 - Preconstruction Activities:

Task 11.1.1 - Contract Administration

Engineer shall complete Contract Administration tasks to include 1) budget and schedule monitoring; 2) workshop planning and development; 3) overall internal project coordination; 4) overall project coordination between NUA and Engineer, Contractor and Engineer, and between Engineer and Engineer's Sub consultants.

Task 11.1.2 - Pre-Work Conference

Engineer shall conduct a pre-work conference and prepare addenda and project meeting notes to review with the Contractor the requirements for the work. Engineer will distribute conformed documents to all parties at pre-work conference.

Task 11.1.3 - Establish Project Control Points

Engineer will conduct field survey to establish control points within the work area.

Task 11.1.4 - Prepare Conformed Documents

Task 11.1.5 - Project Logs during Construction

ENGINEER shall maintain and update the following logs during construction. Logs will be maintained using Engineer's web-based, construction Delivery document system.

1) Change Order (CO) Log
2) Potential Change Order (PCO) Log
3) Design Clarification Memo (DCM) Log
4) Request for Information (RFI) Log

Task 11.2 - Construction Phase Activities

Task 11.2.1 - Attend Monthly Construction Progress Meetings

Engineer shall plan and facilitate monthly progress meetings with NUA staff and representatives from the Contractor to discuss the progress of the work and resolve issues. Contractor shall prepare meeting notes and provide updated submittal logs, RFI logs, and change order logs to Trust.

The budgeted amount for this task is based on attending one (1) meeting per month of anticipated construction period at the construction site.

Task 11.2.2 - Attend Bi-Monthly Progress Meetings via Telephone

No Bi-monthly project meetings are anticipated.

Task 11.2.3 - Attend Special On-Site Meetings

Engineer shall attend special on-site meetings (not conducted on the same day as the regularly scheduled meetings) at the request of the NUA Staff to discuss and assist in resolving construction issues. The intent of these meetings is to expedite the submittal review process and resolve contract change orders and requests for information.

No additional site visits are assumed for this task.

Task 11.2.4 - Prepare Responses to Request for Information (RFI's)

Engineer will prepare written responses to the Contractor's written questions and concerns that arise during construction through the Request for Information (RFI) process. Engineer shall provide clarification or direction to the contractor through written responses to these request for information.

Task 11.2.5 - Prepare Design Change Memoranda:

Design Change Memoranda (DCM's) shall be initiated by the Engineer when questions and concerns arise that cannot be resolved through a close and thorough examination of the Contract Document, or for which an interpretation may result in a material change in the design or operational intent of the facility. DCM's shall include sketches and drawing/specification revisions.

Task 11.2.6 - Review Shop Drawings and Other Submittals

Subtask 11.2.6.1 Initial Submittal Review:

Engineer shall review the shop drawings, material samples, O&M manuals, laboratory tests, mill tests results, and related information and provide responses within twenty-eight (28) calendar days to the contractor regarding the suitability of the proposed equipment and materials to be incorporated into the project. Items reviewed, actions taken (including allowed substitutions), and recommendations made will be maintained in a log that, along with the accepted shop drawings and related information will be turned over to the NUA following project construction.

Subtask 11.2.6.2 - Resubmittal Review:

The Contract Documents permit the Contractor to submit up to one resubmittal to attain approval from the Engineer for a particular submission. The cost of submittal review beginning with the second resubmittal shall be borne by the Contractor. Reimbursement by NUA will be made by deducting such costs from subsequent payments to Contractor.

Subtask 11.2.6.3 Special Submittal Review Meetings:

As part of the efforts to expedite the approval of certain submittals, the Contract Documents include a one-day review meeting at the jobsite following the review period. The purpose of this meeting will be to review the Engineers comments with the contractor and supplier for materials and equipment requiring expedited approval to meet the contractor's schedule.

No special submittal review meetings are included in this task.

Task 11.2.7 - Evaluate Contractor Change Order Requests

Engineer shall review Potential Change Order (PCO's) submissions by the contractor and make recommendations to NUA staff regarding the acceptance or rejection of the proposed change. This includes requests for additional time, and additional money. Engineer's services related to resolution of claims (over and above reviewing the claim and making recommendation to NUA staff) are beyond the scope of services.

Task 11.2.8 - Prepare Change Order Request and Change Orders

Engineer shall prepare change order requests to the contractor for proposed changes in the contract for construction. Change orders, including modified and/or additional drawings, specifications, and other exhibits shall be prepared to define the scope and extent of the change and solicit a price from the contractor to perform the work.

Task 11.2.9 - Review Monthly Payment Requests

Engineer shall review monthly progress payment requests from the contractor and make recommendations to the NUA for payment. This review shall include assessment of materials and/or equipment stored on-site or off-site in an approved and bonded warehouse and for which the contractor is requesting payment for stored materials.

Task 11.2.10 - Compliance Testing

The contract documents will require the Contractor to arrange and pay for the following testing:

1) Concrete cylinder testing, air, testing and slump testing.
2) Compaction and density testing of soil testing

Engineer will arrange and pay for on-site quality control testing for the concrete (air and slump testing. Engineer will arrange for additional quality control testing of soil compaction (if necessary) any additional tests conducted in such a manner will be paid for by NUA.

Task 11.2.11 Final Walkthrough and Recommendation of Final Completion

Following completion of construction, Engineer shall perform a final inspection of the work completed by the Contractor and make recommendations as appropriate for partial or final acceptance of the work. Following Contractor's completion of punch list items on Certificate of Final Completion, Engineer will conduct final walkthrough to verify correction of punch list items and process final payment application

ADDITIONAL SERVICES – UNIT PRICE SCHEDULE:

Additional Services in this contract require written NUA Authorization in Advance.

If authorized in writing by NUA Staff, Engineer shall furnish or obtain from others Additional Services of the types listed below. The following services will be paid for by Owner on a lump sum basis with the total authorized lump sum amount based upon the authorized units and the unit price schedule presented in Exhibit B.

TASK A8 – TEST WELL DRILLING SERVICES

Task A8.4 – Construction Services for Test Well Development

ENGINEER will have a representative on site during the test well drilling and development to review drilling procedures, interpret well logs, observe well testing, review water quality sampling procedures, review chain of custody documents, and instruct test driller to adjust drilling, sampling, and testing procedures and frequencies accordingly.

Additional services includes unit prices for construction services during test well development of up to 11 additional test wells for development of up to six (6) additional permanent production wells.

Task 8.5 – Prepare Draft and Final Test Well Summary Report

Basic services include the development of a test well report for nine (9) test wells associated with development of six (6) permanent production wells. Additional services include unit prices to amend the well summary reports to incorporate eleven (11) additional test well for the six (6) additional permanent production wells.

Task A9.3 Additional Production Well Design Drawings (up to 6 wells)

For up to six (6) additional wells, ENGINEER will prepare design drawings for these well sites for bidding under a separate contract or for addition to construction contract as described in the Basic Services.

Task A9.4 Additional Production Well Design Specifications (2 well packages)

For up to three (3) additional well construction contract packages, ENGINEER will prepare a separate set of specifications describing the work and including the relevant technical specifications.

Task A10 Additional Bidding Services (2 well packages)

For up to three (3) additional well construction contract packages, ENGINEER will provide bidding services for each of these packages as described in Task 10.

ADDITIONAL SERVICES – FEE SCHEDULE:

Additional Services in the contract require written NUA Authorization in Advance.

If authorized in writing by NUA Staff, Engineer shall furnish or obtain from others Additional Services of the types listed below. The following services will be paid for by Owner utilizing the not to exceed fee presented in Exhibit B based upon the hourly rate schedule established in Attachment 1 to Exhibit B.

TASK A7 – ACQUISITION OF WATER RIGHT LEASES AND WELL PROPERTIES

General

ENGINEER will conduct investigations as defined herein to determine the available properties for fee simple purchase or easement purchase with right-of-way acquisition for access/pipelines for a minimum of six (6) and up to twelve (12) permanent well facilities.

ENGINEER will assist the NUA Staff in the negotiations for acquisition of right-of-entry with the option to purchase property or permanent easements and right of way for the required test well sites.

Deliverables

1) Final Summary Report:

   b) One (1) electronic copy of comment spreadsheet summarizing all internal and external agency comments, and the ENGINEER's responses to these comments.

   c) One (1) Electronic Copy in searchable, bookmarked, PDF which includes all native files (MS Word and MS PowerPoint) utilized to develop report.

   d) Five (5) bound copies of Summary Report for NUA Staff review distribution.

Workshops

As defined in Task 6.2 – Project Meetings and Workshops.

Assumptions

The following assumptions are utilized in the preparation of this task:

1) This project is not subject to the Uniform Relocation Assistance and Real Property Acquisition Polices Act of 1970, as amended ("Uniform Act").

1) No appraisals will be required from ENGINEER.

2) There will be no displacements requiring relocation assistance under the Uniform Act or any other law or regulation.

3) NUA shall be responsible for making the determination as to whether the project is subject to the Uniform Act.

4) Offers may be presented by ENGINEER in person, by mail, email, or telephone, at the discretion of NUA Staff. Contacts may be made by ENGINEER in person, by mail, email, or telephone, at the discretion of NUA Staff.

5) NUA will provide ENGINEER with the amount to be offered each landowner. NUA shall supply all necessary document and forms including but not limited to, right-of-entry agreements, option contracts, offer letters, deeds, easements, water rights leases, and tenant releases.

6) Costs or fees required by a property lienholder to consider a lien waiver for the purchase of the property shall be the responsibility of the City (including but not limited to application fees, new appraisals, surveys, etc.).

7) A minimum of six (6) fee simple purchase or easement purchase and right-of-way agreements will be executed between the NUA and well site landowners.

Task A7.1 – Parcel/Landownership Analysis and Alternatives Assessment for Identified Test Well Sites

Based upon the potential well sites identified as part of Phase 1, ENGINEER will conduct an informal and preliminary title investigation to determine the ownership of each potential site by reviewing available county land records (County Assessor, County Clerk, etc.). ENGINEER will then attempt to contact the owner of each site by telephone, mail, or other means in order to determine whether or not each owner is interested in discussing acquisition of a well site or water rights with NUA Staff.

Prior to entering into any binding agreement to purchase a well site, ENGINEER will conduct a more formal title investigation to confirm or refute preliminary findings, and to identify any outstanding mortgages or other liens of record, or shall engage a bonded abstractor or other qualified subcontractor to do so. In addition, without conducting a formal on-site sanitary survey, ENGINEER will attempt to gather the following information from each landowner:

1. Presence and location of abandoned wells.

2. Presence and location of sanitary sewers, septic tanks, springs, or other features that pertain to a potential item of concern as a result of a well sanitary survey.

Additional title searches will be based on a unit price fee schedule.

Task A7.2 – Land Valuation Assessment/Water Rights Valuation Assessment

It is assumed that the NUA will provide ENGINEER with the amount to be offered each owner for easements, well sites, and water rights. No land valuation assessments are included with this contract.

Task A7.3 – Acquire & Negotiate Land Purchases for Well Sites

Based upon the prioritized list of potential well sites identified in Phase 1, ENGINEER will provide to the property owner a right-of-entry agreement to allow the NUA and its contractors to enter the property to conduct sanitary surveys, tests, and investigations in order to determine the property's suitability for a well site. The request for a right-of-entry agreement will include an option to purchase the well site. Acquisitions of well sites may be in fee simple purchase (for properties less than 10 acres) or by easement with right-of-way for access and pipeline/utilities, as may be requested by the NUA or required by the property owner.

ENGINEER will follow up with an offer letter to the landowner(s) which provides details regarding the City's offer, including the following:

1. Legal description of the site to be acquired,
2. Drawing or exhibit graphically depicting the site,
3. The offer amount,
4. Other relevant documents, details, and instructions.

Following submission of the offer letter, ENGINEER will follow-up with the owner(s) and attempt to secure the parcel on behalf of the NUA.

Task A7.4 – Request Lien Waivers / Sub-ordination Agreements

For each well property, in the event that there are mortgages or other liens, the decision regarding whether or not to seek lien waivers, releases, consents to easements, or subordination agreements from lien holders shall be made by the NUA.

If the NUA desires to seek lien waivers, releases, consents to easements, or subordination agreements from lien holders, ENGINEER will contact the lienholder and make the request.

If a tenant release is required, ENGINEER will request the release on the behalf of the NUA. If ancillary easements for pipe lines (e.g., from a well site to another pipeline) are

needed, ENGINEER would attempt to acquire those easements in the same manner. It is assumed that no-lien waiver requests are associated with this task.

Task A7.5 – Recommendations and Summary Report

ENGINEER will prepare a Draft and Final Recommendation and summary report consisting of the following:

1. Executive Summary
2. Introduction:
    a) Purpose
    b) Scope
3. Assessment of Potential Well Sites:
    a) Initial property research and prioritization of well sites.
    b) Methodology utilized in prioritization of well sites.
    c) Right of Entry documentation
    d) Fee Simple purchase or Easement purchase documentation of well sites.
4. Assessment of Water Rights Leases:
    a) Initial property research and prioritization of properties for water rights leasing.
    b) Methodology utilized in selecting sites for water rights leasing.
    c) Water rights documentation for selected sites.
5. Attachments and Record Documentation

Task A11.3 Construction Inspection Activities

Deliverables:

The following are the major deliverables associated with Task A11.3:

1) Inspection reports summarizing the weather, number of persons on-site, work completed, issues and resolutions, and conformance with the contract documents for each day inspector is on site.

2) Construction progress photographs and assistance with field record documents associated with the project for each day the inspector is on-site.

Assumptions:

The following assumptions were utilized in preparing this scope of services:

1) Construction duration of no more than nine (9) months with no weekend days,

2) Inspection staff will be considered part time and will be provided on an "on call" basis with a minimum on-call of two consecutive, 8-hour days per week.

3) Number of total on-site "resident" inspection hours will not exceed 1,378 hours and shall be divided among the potential well construction projects.

4) Number of electrical special inspection hours will not exceed 50 hours.

5) Once inspection staff is called on-site, a minimum consecutive work hours of 8 hours will be performed.

6) Construction documents will contain penalty clauses for Contractor to pay for a portion of inspection services if Contractor fails to adequately notify engineer when conditions do not permit work activities to be performed.

7) On-site inspection staff will utilize electronic based repository provided by Engineer to Contractor for submission of daily reports electronically.

8) On-site Inspection staff will be dedicated to this construction project. Additional inspection for other projects conducted simultaneously is outside the scope of these services.

9) Special testing or compliance testing required by the contract documents will be arranged and paid for by others.

Task A11.3.1 Part-Time Inspection Services:

ENGINEER will provide qualified on-site inspection staff to assist the ENGINEER in observing and inspecting performance of the CONTRACTOR as described below.

The on-site inspection staff will be the ENGINEER's agent at the site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding inspection team's actions. The on-site inspection staff's dealing in matters pertaining to the on-site work shall in general be with ENGINEER and CONTRACTOR keeping TRUST advised as necessary. The on-site inspection staff's dealing with subcontractor shall only be through or with full knowledge and approval of CONTRACTOR. The on-site inspection staff shall generally communicate with TRUST with the knowledge of and under the direction of ENGINEER. Duties and responsibilities of the on-site inspection team are defined at the head of this section.

Task A11.3.2 Corrosion Control/Cathodic Protection Special Inspections:

Not Applicable

Task A11.3.3 Structural Special Inspection:

Not Applicable

Task A11.3.4 Electrical Special Inspection

ENGINEER will support electrical inspection activities and provide inspection services for each of the following:

1) Electrical wiring inspection, duct bank inspection, electrical equipment installation inspection and witness of loop checks that will be performed by the Contractor.

2) Review of Third Party electrical test reports

TIME OF COMPLETION

Time of Completion (Project Schedule) of the project is presented in Attachment 1 to this Exhibit A.

END OF EXHIBIT A - SCOPE OF SERVICES.

Exhibit A Scope of Work

ATTACHMENT 1 – PROJECT SCHEDULE

Attachment 1 to Exhibit A – Project Schedule
Task Order No. 2 to Contract K-1516-139
Phase 2 Test Well Support, Land Acquisition, and Production Well Design

				2017		2018											
Task	Description	Start	Finish	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Task 7	Acquisition of Water Rights Leases and Well Properties																
	7.1 Parcel/Landowner Analysis	11/1/17	11/15/17														
	7.2 Land Valuation Assessment	11/15/17	12/15/17														
	7.3/7.4 Well Site Acquisition	12/15/17	3/15/18														
	7.5 Summary Report	3/15/18	5/1/18														
Task 8	Test Well Drilling Services																
	8.1 Prepare Interim Plan Review Set & Specs	11/1/17	12/31/17														
	8.2 Prepare Final Plan Review Set	1/1/18	2/1/18														
	City of Norman Review	2/1/18	2/15/18														
	Preparation of Bid Set and Advertisement	2/15/18	3/1/18														
	8.3 Bidding Services	3/1/18	4/1/18														
	8.4 Construction Services	4/1/18	5/1/18														
	8.5 Test Well Summary Report	5/1/18	6/1/18														
Task 9	Design of Permanent Well Facilities																
	Prepare Interim Plan Review Set	3/1/18	5/1/18														
	Prepare Final Plan Review Set	5/1/18	7/1/18														
	City of Norman and Agency Review	7/1/18	8/1/18														
	Prepare of Bid Set and Advertisement	8/1/18	8/15/18														
Task 10	Bidding Services	8/15/18	10/1/18														
	Award and contractor Notice to Proceed	9/15/18	10/1/18														

Exhibit B to Task Order No. 2
Estimated Work Effort
Norman Utilities Authority

Groundwater Well Field Development
Phase 2 Test Well Support, Land Acquisition, and Production Well Design

BASIC SERVICES

Task		Description	Estimated Hour		Estimated Fee	
6		TASK 6 Phase 2 Project Coordination and Communication	290	$	50,000	
8	8.1	Preparation of Drawings (plans) for Test Well Development (included phase 1)	-	$	-	
8	8.2	Preparation of Specifications for Test well Development (included in Phase 1)	-	$	-	
8	8.3	Bidding Services for Test Well	92	$	17,470	
8	8.4	Construction Services for Test Well	185	$	29,230	
8	8.5	Prepare Draft and Final Test Well Summary Report	283	$	50,920	
		8.5.1 Modeling Update	60	$	11,760	
9	9.1	Project Delivery and Communications	112	$	20,320	
9	9.2	Field Investigations	583	$	61,260	
9	9.3	Well Perforation and Screening Analysis	93	$	17,970	
9	9.4	Preparation of Drawings (plans) for Production Wells (6 wells)	1,000	$	160,000	
9	9.5	Preparation of Specifications for Production Wells (6 wells)	190	$	30,000	
9	9.6	Prepare Estimates of Construction Cost	82	$	16,140	
10	10	Bidding Services for Production Wells	79	$	15,000	
11	11.1	Preconstruction Activities	135	$	15,000	
11	11.2	Construction Phase Activities	674	$	95,000	
		Phase II Basic Services (this Task Order No. 2)		**$**	**590,070**	
		Phase I Basic Services (Previous Task Order No. 1)		$	228,384	
		TOTAL BASIC SERVICES (All task orders)		$	818,454	
		Estimated Construction Costs		$	4,500,000	18.2%

Exhibit B to Task Order No. 2
Estimated Work Effort
Norman Utilities Authority

Groundwater Well Field Development
Phase 2 Test Well Support, Land Acquisition, and Production Well Design

ADDITIONAL SERVICES - Unit Price Schedule

Task		Description	Units	Not to Exceed Quantity	Unit Price	Not to Exceed Fee	
8.4		Construction Services for Additional Test Well (Up to 9 Additional)	EA	9	$1,100	$9,900	Unit Prices/Lump Sum
8.5		Integrate additional test wells into Draft and Final Test Well Summary Report (up to 9 additonal)	EA	9	$2,150	$19,350	Unit Prices/Lump Sum
9.3		Additional Production Well Design (up to 6 additional)	EA	6	$45,000	$270,000	Unit Prices/Lump Sum
9.4		Additional Well Site Specification Packages (packages of 2 wells each)	EA	3	$5,000	$15,000	Unit Prices/Lump Sum
10		Additional Well Site Bidding Services (Packages of 2 wells each)	EA	3	$10,000	$30,000	Unit Prices/Lump Sum
11	11.2	Additional Well Site Construction Services (Packages of 2 wells each)	EA	3	$35,000	$105,000	Unit Prices/Lump Sum
		Total Phase II Additional Services Unit Price Lump Sum (this Task Order No. 2)				**$449,250**	**Unit Prices/Lump Sum**

ADDITIONAL SERVICES - Fee Schedule (See Attachment 1 to this Exhibit B) Not to			Rate	Hours		Total		
7		TASK 7 - ACQUISITION OF WATER RIGHTS LEASES AND PROPERTY	(See Schedule)	301	$	49,800	Hourly Rate Schedule - See Attachment No. 1
	11.3	Construction Inspection					Hourly Rate Schedule - See Attachment 1
		Resident Inspector	85	1,378	$	117,130	
		Electrical Inspector - Special Inspections	125	50	$	6,250	
		Subtotal Construction Inspection		1,428	$	123,380	
		Total Phase II Additional Services Allowance Not to Exceed (This Task Order No. 2)			**$**	**173,180**	
		TOTAL Phase II ADDITIONAL SERVICES			**$**	**622,430**	
		Total Additional Construction Cost				$4,500,000	13.8%
		TOTAL Phase I and Phase II Services (Basic and Additional)			**$**	**1,440,884**	**16.01%**

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Attachment 1 to Exhibit B
Fee Schedule through Dec 31, 2018
Additional Services Fee Schedule

Groundwater Well Field Development
Phase 2 Test Well Support, Land Acquisition, and Production Well Design
Norman Utilities Authority

Category		Hourly Rate
Inspection Staff		
Engineer I-II (EIT)	$	155.00
Engineer III-IV (Staff Professional)	$	196.00
Engineer V-VI (Professional)	$	231.00
Lead Project Professional	$	250.00
Project Manager/Senior Professional	$	265.00
Project Director/ Quality Control Manager	$	274.00
Technicians		
Technicians	$	117.00
Senior Technicians	$	171.00
Support Staff		
Document Processing / Clerical	$	110.00
Part Time Resident Inspector (RI)	$	85.00
Special Inspector - Electrical	$	125.00
Project Equipment and Communication Expenses (PECE) Charge Per Direct Labor Hour	$	-
Other Direct Expenses		
Travel and Subsistence		at cost
Mileage Charge Per Mile	$	0.535
Subconsultant (with exception of RI)		Cost +10%
Other Direct Costs		at Cost
Expert Witness		Rate x 2.0

This fee schedule is revised in January and July of every year.
Invoice for each month will be prepared based on the fee schedule in effect during the month.