



# City of Norman, OK

Municipal Building  
Council Chambers  
201 West Gray  
Norman, OK 73069

## Master

**File Number: K-1617-94 AMD#1**

**File ID:** K-1617-94 AMD#1      **Type:** Contract      **Status:** Consent Item

**Version:** 1      **Reference:** Item 21      **In Control:** City Council

**Department:** Utilities Department      **Cost:** \$306,970.00      **File Created:** 01/31/2018

**File Name:** Amendment to Contract with Garver - Horizontal Wells      **Final Action:**

**Title:** AMENDMENT NO. ONE TO CONTRACT K-1617-94: BY AND BETWEEN THE NORMAN UTILITIES AUTHORITY AND GARVER ENGINEERS, INC. INCREASING THE CONTRACT AMOUNT BY \$306,790 FOR A REVISED CONTRACT AMOUNT OF \$381,590 FOR THE HORIZONTAL WELL FEASIBILITY FIELD ASSESSMENT IN ASSOCIATION WITH THE FYE15 WATER WELLS AND SUPPLY LINES PROJECT AND BUDGET APPROPRIATION FROM THE WATER FUND BALANCE.

**Notes:** ACTION NEEDED: Acting a the Norman Utilities Authority, motion to approve or reject Amendment No. One to Contract K-1617-94 with Garver Engineers, Inc., increasing the contract amount by \$306,790 for a revised contract amount of \$381,590; and, if approved, authorize the execution thereof and appropriate \$310,000 from the Water Fund Balance (031-0000-253.20-00) to Project WA0212, Water Wells and Supply Lines, Design (031-9345-462.62-01).

ACTION TAKEN: \_\_\_\_\_

**Agenda Date:** 02/13/2018

**Agenda Number:** 21

**Attachments:** Amendment 1 K-1617-94, Norman - Horizontal Well  
Water Quality Parameters.pdf, K-1617-94, Garver PO

**Project Manager:** Chris Mattingly, Capital Projects Engineer

**Entered by:** chris.mattingly@normanok.gov

**Effective Date:**

### History of Legislative File

Ver- sion:	Acting Body:	Date:	Action:	Sent To:	Due Date:	Return Date:	Result:

### Text of Legislative File K-1617-94 AMD#1

Body

**BACKGROUND:** In March 2012, the Norman Utilities Authority (NUA) approved Contract K-1112-114 with Carollo Engineers, Inc. for preparation of the 2060 Strategic Water Supply Plan (the 2060 SWSP). The plan update was needed because the NUA was unable to supply sufficient potable water to meet peak demands during summer months and was concerned about probable regulatory changes affecting both our surface water and groundwater supplies.

The goal of the 2060 SWSP is to strengthen our knowledge of potential short and long-term water supply source(s) for our community and begin implementation of a robust, water supply solution acceptable to the

citizens of Norman. The 2060 SWSP Ad-Hoc Committee was appointed to ensure open and two-way dialogue with the community, to ensure the suggestions of the public are addressed, and to be able to communicate the objectives and conclusions of the 2060 SWSP to the public.

Eight meetings were held with the 2060 SWSP Ad-hoc Committee and five public meetings were held for public participation and input. Fourteen different portfolios were developed, investigated and evaluated at these meetings. Each portfolio was developed to provide an annual average supply of 29 million gallons per day (MGD) in 2060 and a peak daily supply of 55.4 MGD in 2060. Ultimately, Resolution R-1314-146 was approved by the NUA on June 24, 2014 recommending Portfolio 14 for implementation; this portfolio included the following recommendations:

- Continued use of Lake Thunderbird as a raw water supply source with treatment at an improved water treatment facility at the existing site (but with the current allocation reduced from 8.4 to 6.1 MGD based on a pending Bureau of Reclamation yield study);
- Expanded water conservation practices ultimately resulting in additional water supply of 1 MGD in 2060 through reduced water consumption;
- Additional non-potable reuse ultimately resulting in additional potable water supply of 0.8 MGD in 2060 (and reduced peak summertime demand of about 4.6 MGD by 2060);
- Continued use of our current groundwater supply system of 36 wells and expanding our groundwater supply system by 2 MGD in the short term for a total of 8 MGD;
- The addition of treatment for arsenic and chromium 6 at a centralized facility increasing the groundwater capacity from 8.0 to 10.1 MGD by bringing 12 inactive wells back on-line; and
- Implementation of indirect potable reuse (IPR) over time by adding additional treatment at the Water Reclamation Facility (WRF) and discharging the highly treated effluent into Lake Thunderbird; raw water conveyance and water treatment expansions would be required.

The Fiscal Year Ending 2016 (FYE16) budget included a capital improvement project known as the FYE15 Water Wells and Supply Lines (project WA0212). As noted in Item 4 above, this project was recommended as a part of the NUA approved 2060 Strategic Water Supply Plan and was approved by Norman voters in 2015 as the first phase of system capacity improvements to increase the City of Norman water supply. Staff distributed Request for Proposal (RFP) 1516-6 on August 8, 2015 and fourteen (14) proposals were received on September 14, 2015.

The scope of RFP 1516-6 was generally to:

1. Study geologic conditions within the Garber Wellington aquifer, evaluate and propose the most cost effective well field development plan for Norman,
2. Recommend, permit and acquire sites and water rights for test wells and production wells,
3. Recommend test well drilling and testing procedures to maximize water quantity and enhance water quality,
4. Consider the implications of pending (and potentially new) U.S. Environmental Protection Agency (EPA) rules concerning drinking water quality, and evaluate and recommend the optimum location of a future ground water treatment facility or facilities, including blending;
5. Provide design documents and construction assistance for the installation of test wells, production wells, well houses and transmission system improvements to convey potable water to customers.

October 2015, the following consultants were selected to perform the tasks identified below:

1. Carollo Engineers, Inc. (Carollo) of Oklahoma City, Oklahoma: Study geologic conditions within the Garber Wellington aquifer; recommend a well field development plan considering the likely location of a future groundwater treatment facility while optimizing future water transmission and distribution lines; water right acquisition; test well and production well design with associated construction administration.
2. Cowan Group Engineering, LLC (Cowan) of Oklahoma City, Oklahoma: water rights permitting through the OWRB.
3. Alan Plummer Associates, Inc. (APAI) of Oklahoma City, Oklahoma: update our city wide water distribution system model originally prepared in 2003 to include all waterlines, model calibration and recommendations for future improvements to enhance performance.

4. APAI, Garver and Cardinal were tentatively selected to perform work associated with water transmission improvements once water well were finalized.

Staff recommended that a portion of Task 1 work above be separated from the Carollo contract to examine the feasibility for utilizing horizontal well technology for one or more of our proposed water wells. On February 14, 2017, the NUA approved Contract K-1617-94 in the amount of \$74,800 with Garver Engineers, Inc. (Garver) to perform Phase 1 of this feasibility study.

Garver completed the Phase 1 technical memorandum and presented the findings to the NUA on December 19, 2017. The study appears to indicate favorable results when comparing a horizontal well to a typical vertical well. Garver estimates that while the horizontal well will be approximately 3-times more expensive than the cost of a vertical well, the yield from the well could be from 3 to 8 times greater than that of a typical vertical well.

**Discussion:** The work scope of proposed Amendment No. 1 to Contract K-1617-94 will include Phase 2, Field Assessment. Phase 2 will identify one to four test well sites and drill test wells to further analyze the concept of a horizontal well. Garver will conduct full geophysical logging of the test hole(s) and based on the results, will proceed with groundwater sample collection and water quality testing from selected groundwater zones. Water quality data for multiple parameters, identified in Section 1.2 of Attachment B of the amendment, will be collected. Garver will then identify target zone(s) for the horizontal well based on collected data, estimate a production yield and update the cost analysis. Additionally, Garver will locate oil and gas wells within a 1-mile radius of the proposed well and evaluate any potential impact. Once complete with all aforementioned tasks, Garver will prepare Technical Memorandum No. 2 with findings. Remaining work, which may be included in future contract amendments, include Phase 3, Detailed Hydraulic Modeling and Phase 4, Well Design.

The proposed amendment in the amount of \$306,790 was negotiated by staff and Garver. The amendment includes an allowance of \$165,300 (or \$55,100 each) for up to 3 additional test wells; Garver is hopeful only one test well will be needed which will reduce the final cost of the amendment by \$165,300. The amended Phase 2 project scope is detailed in Attachment B, Scope of Services of the amendment and the breakdown of the amended contract price is in Attachment C, Compensation. The time of completion for Phase 2 is 180 calendar days from the time access is granted for the test well site as detailed in Attachment A, Schedule. Staff currently estimates completion of Phase 2 by November, 2018; staff is working to obtain access to well sites by May 2018. A decision to proceed with Phase 3 of the work scope, Hydraulic Modeling, will be determined based on the findings of Phase 2.

The Fiscal Year Ending 2018 (FYE18) budget includes funding for design and inspection for our vertical well project; these funds are being encumbered to Carollo under a separate agenda item. Therefore, it is necessary to appropriate \$310,000 from the Water Fund Balance (031-0000-253.20-00) into design account 031-9345-462.62-01 for FYE15 Wells and Supply Lines (WA0212) to fund design of the horizontal well project.

**RECOMMENDATION:** Staff recommends approval of Amendment No. 1 to Contract K-1617-94 with Garver Engineers, Inc. of Norman, Oklahoma, in the amount of \$306,790. Staff also recommends an appropriation of \$310,000 from the Water Fund Balance (031-0000-253.20-00) into Water Wells, Design (account 031-9345-462.62-01) for FYE15 Wells and Supply Lines (project WA0212).