CITY OF WASHINGTON, ILLINOIS
City Council Agenda Communication

Meeting Date: May 17, 2021

Prepared By: Dennis Carr, P.E. – City Engineer

Agenda Item: Water Quality Study

Explanation: The City of Washington currently operates two (2) water treatment plants. Water Treatment Plant No.1 produces a chloramine (Chlorine + Ammonia) as the disinfection method for the distribution system (low pressure zone). Water Treatment Plant 2 produces a free chlorine as the disinfection method for the distribution system (high pressure zone). The two-different disinfection methods mix at three connection points between the two zones. This mix of the two disinfection methods create a potential for unstable chlorine residual. Unstable residual may not provide for enough disinfection and may also be a reason for potential taste complaints.

The Illinois Administrative Code requires that any community water supply distributing water without a free chlorine residual must create a Nitrification Action Plan.

This study would look at the water system as a whole as well as each plant individually. The consultant would look at the possibility of adjusting each plant to match the disinfection process of the other plant as well as reviewing the chlorine residuals around the entire system to develop a strategy to meet the minimum residual requirements put forth by the state.

Crawford, Murphy, and Tilly (CMT) has been the consultant overseeing the updates at our Water Treatment Plants and throughout our system for years now. Their familiarity with staff and the system makes them the ideal candidate for this study.

Fiscal Impact: Staff budgeted $85,000 in Acct number 500-000-800-3100 to perform this study.

Recommendation Summary: Staff recommends approval of the Engineering Services Agreement with CMT for a cost not to exceed $85,000.

Action Requested: Approval

2021 STANDARD AGREEMENT FOR PROFESSIONAL SERVICES

THIS AGREEMENT made between City of Washington, whose address is 301 Walnut Street, Washington, IL 61571, hereinafter called the **CLIENT** and Crawford, Murphy & Tilly, Inc., Consulting Engineers, 203 Harrison Street, Peoria, Illinois 61602, hereinafter called the **ENGINEER**.

WITNESSETH, that whereas the **CLIENT** desires the following described professional engineering, land surveying or architectural services:

Potable Water System – Water Quality Study in accordance with the Scope of Services described in Exhibit A. Attached to and incorporated with this Agreement is a Standard Schedule of Hourly Charges (Exhibit B).

NOW THEREFORE, the **ENGINEER** agrees to provide the above described services and the **CLIENT** agrees to compensate the **ENGINEER** for these services in the manner checked below:

☒ On a time and expense basis in accordance with the attached Schedule of Hourly Charges (Exhibit B) which is subject to change at the beginning of each calendar year. Reimbursable direct expenses will be invoiced at cost. Professional or Subconsultant services performed by another firm will be invoiced at cost plus ten percent.

☐ At the lump sum amount of $_____.

IT IS MUTUALLY AGREED THAT, payment for services rendered shall be made monthly in accordance with invoices rendered by the **ENGINEER**.

IT IS FURTHER MUTUALLY AGREED:

ENGINEER shall provide professional engineering services in general conformance with the Scope of Services (**Exhibit A**). The cost for professional engineering services shall not exceed **$85,000.00** without additional authorization from the **CLIENT**.

Engineering Services are anticipated to require a period of 9 months to complete.

The **CLIENT** and the **ENGINEER** each binds himself, his partners, successors, executors, administrators and assignees to each other party hereto in respect to all the covenants and agreements herein and, except as above, neither the **CLIENT** nor the **ENGINEER** shall assign, sublet or transfer any part of his interest in this **AGREEMENT** without the written consent of the other party hereto. This **AGREEMENT**, and its construction, validity and performance, shall be governed and construed in accordance with the laws of the State of Illinois. This **AGREEMENT** is subject to the General Conditions attached hereto.

IN WITNESS WHEREOF, the parties hereto have affixed their hands and seals this _____ day of _____, 2021.

CLIENT:	**ENGINEER:**
	CRAWFORD, MURPHY & TILLY, INC.
_____	_____
(Client Name)	
_____	_____
(Signature)	(Signature)
_____	Ty, Besalke, PE - Water Group Manager
(Name and Title)	(Name and Title)
_____	5/12/2021
Date	Date

CMT Job No. _____

STANDARD GENERAL CONDITIONS
Crawford, Murphy & Tilly, Inc.

1. Standard of Care

In performing its professional services hereunder, the **ENGINEER** will use that degree of care and skill ordinarily exercised, under similar circumstances, by members of its profession practicing in the same or similar locality. No other warranty, express or implied, is made or intended by the **ENGINEER'S** undertaking herein or its performance of services hereunder.

2. Reuse of Document

All documents including Drawings and Specifications prepared by **ENGINEER** pursuant to this Agreement are instruments of service. They are not intended or represented to be suitable for reuse by **CLIENT** or others on extensions of the Project or on any other project. Any reuse without written verification or adaptation by **ENGINEER** for the specific purpose intended will be at **CLIENT'S** sole risk and without liability or legal exposure to **ENGINEER**; and **CLIENT** shall indemnify and hold harmless **ENGINEER** from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom.

3. Termination

This Agreement may be terminated by either party upon seven days prior written notice. In the event of termination, the **ENGINEER** shall be compensated by the client for all services performed up to and including the termination date, including reimbursable expenses, and for the completion of such services and records as are necessary to place the **ENGINEER'S** files in order and/or to protect its professional reputation.

4. Parties to the Agreement

The services to be performed by the **ENGINEER** under this Agreement are intended solely for the benefit of the **CLIENT**. Nothing contained herein shall confer any rights upon or create any duties on the part of the **ENGINEER** toward any person or persons not a party to this Agreement including, but not limited to any contractor, subcontractor, supplier, or the agents, officers, employees, insurers, or sureties of any of them.

5. Construction and Safety

The **ENGINEER** shall not be responsible for the means, methods, procedures, techniques, or sequences of construction, nor for safety on the job site, nor shall the **ENGINEER** be responsible for the contractor's failure to carry out the work in accordance with the contract documents.

6. Payment

Payment for services rendered shall be made monthly in accordance with invoices rendered by the **ENGINEER**. If payment is to be on a lump sum basis, monthly payments will be based on the portion of total services completed during the month. Invoices, or any part thereof, which are not paid within 30 days after the date of issue shall bear interest at the rate of 1-1/2% for each month or fraction thereof from the date 30 days after issue to time of payment. **CLIENT** will pay on demand all collection costs, legal expenses and attorneys' fees incurred or paid by **ENGINEER** in collecting payment, including interest, for services rendered.

7. Indemnification for Release of Pollutants

If this project does not involve pollutants, this provision will not apply. This provision may not be deleted if the project involves pollutants.

If, due to the nature of the service covered under this Agreement including the potential for damages arising out of the release of pollutants, **CLIENT** agrees that in the event of one or more suits or judgments against **ENGINEER** in favor of any person or persons, or any entity, for death or bodily injury or loss of or damage to property or for any other claimed injury or damages arising from services performed by **ENGINEER**, **CLIENT** will indemnify and hold harmless **ENGINEER** from and against liability to **CLIENT** or to any other persons or entities irrespective of Engineer's compensation and without limitation. It is understood that the total aggregate liability of **ENGINEER** arising from services performed by **ENGINEER** shall in no event exceed $50,000 or the total compensation received under this agreement whichever is greater, irrespective of the number of or amount of such claims, suits, or judgments.

8. Risk Allocation ☐ Check box if this does not apply

The total liability, in the aggregate, of the **ENGINEER** and **ENGINEER'S** officers, directors, employees, agents and consultants, and any of them, to **CLIENT** and anyone claiming by, through or under **CLIENT**, for any and all injuries, claims, losses, expenses or damages arising out of the **ENGINEER'S** services, the project or this agreement, including but not limited to the negligence, errors, omissions, strict liability or breach of contract of **ENGINEER** or **ENGINEER'S** officers, directors, employees, agents or consultants, or any of them, shall not exceed the total compensation received by **ENGINEER** under this agreement, or the total amount of $50,000, whichever is greater.

9. Project Schedule and Scope

Based on the schedule objectives provided by **CLIENT, ENGINEER** will develop a schedule of important milestones as necessary for the project for **CLIENT'S** review and approval. **ENGINEER** will monitor performance of services for conformance with the schedule and will notify **CLIENT** of any necessary changes to or deviations from the schedule. Where required by approved project schedule, **ENGINEER** will present the required deliverables and complete the required tasks at the appropriate intervals for **CLIENT'S** review and approval prior to payment.

EXHIBIT A
City of Washington, Illinois
Water Quality Study

SCOPE OF SERVICES

The City of Washington operates two (2) water treatment plants. Water Treatment Plant No. 1 produces a chloramine (Chlorine + Ammonia) as the disinfection method for the distribution system (low pressure zone). Water Treatment Plant No. 2 produces a free chlorine as the disinfection method for the distribution system (high pressure zone). The two different disinfection methods mix at the three connection points between the low-pressure distribution system and high-pressure distribution system. The mix of the two disinfection methods create an unstable chlorine residual. The unstable chlorine residual may not provide a sufficient disinfection for the area along with potential taste and order complaints. The study would review options to eliminate the mix of the different disinfection methods.

The Illinois Administrative Code (Title 35; Subtitle F; Chapter I; Section 604.140 Nitrification Action Plan) requires that any community water supply distributing water without a free chlorine residual must create a Nitrification Action Plan (NAP). The City's WTP #1 does not create a free chlorine and will need a NAP. The study would review the need for a NAP and assist the City with the development of a NAP.

The Illinois Administrative Code (Title 35; Subtitle F; Chapter I; Section 604.725 Residual Chlorine) requires a minimum free chlorine residual of 0.5 mg/L or a minimum combined chlorine residual of 1.0 mg/L in all active parts of the distribution system. The City struggles to meet this requirement in some areas of the distribution system. The study would review these areas and work with the City to develop a strategy to meet the minimum chlorine residual requirements.

The **Scope of Services** for **Water Quality Study Phase** shall consist of the following tasks:

1. Kickoff Meeting and Data Collection
2. Assist the City with the following Testing
    a. Develop a chlorine profile through both Water Treatment Plants
    b. Develop an ammonia profile through both Water Treatment Plants
    c. Chlorine Residual testing in the Distribution System
    d. Complete Nitrification Testing in the Distribution System
    e. Develop a chlorine decay curve for both Water Treatment Plants
    f. Determine the amount of chlorine necessary to complete breakpoint chlorination at Water Treatment Plant No. 1.
3. Utilize the Hydraulic Model to determine the following:
    a. The extent of the disinfection method mixing around the pressure zone interconnections.
    b. The impacts to the treatment plants if the settings of the pressure reducing valves are adjusted to eliminate mixing of the disinfection methods.
    c. Compare the chlorine decay curve to the water age predicted by the extended period simulation model.
4. Review the following alternatives to eliminate the mix of the two disinfection methods:
    a. Determine the improvements necessary to develop a free chlorine residual at Water Treatment Plant No. 1.
    b. Determine the improvements necessary to develop a chloramine residual at Water Treatment Plant No. 2.

c. Determine the improvements necessary to eliminate the mix of the different chlorination methods with the adjustment of the pressure reducing valves.

5. Assist the City with the Development of a Nitrification Action Plan
6. Review alternatives to maintain minimum chlorine residuals throughout the distribution systems:
   a. Increase the chlorine feed at the Water Treatment Plant No. 1.
   b. Add a post chlorination feed at the Water Treatment Plant No. 1.
   c. Add automated flushers to the existing distribution system.
7. Develop a draft report including recommendations and preliminary opinions of improvement costs.
8. Submit and meeting with City Staff to review the draft report
9. QA/QC Review
10. Develop final report including recommendations and opinions of probable project costs
11. Project Management

Budgeted Cost and Estimated Schedule

The estimated completion for the construction plans and specifications is approximately 9 months after receipt of a signed Agreement for Engineering Services authorizing CMT to proceed on a time and expense basis for an amount not to exceed Eighty-Five Thousand Dollars and No Cents ($85,000.00).

Additional Services not included in the Upper Limit of Compensation

- Construction Plans or Bidding Documents
- Lab Analysis Fees
- Bidding phase services
- Construction phase services
- Easements Documents

EXHIBIT B
CRAWFORD, MURPHY & TILLY, INC.
STANDARD SCHEDULE OF HOURLY CHARGES
JANUARY 1, 2021

Classification	Regular Rate
Principal	$ 230
Project Engineer II Project Architect II Project Manager II Project Environmental Scientist II	$ 220
Project Engineer I Project Architect I Project Manager I Project Environmental Scientist I Project Structural Engineer I	$ 190
Sr. Structural Engineer II	$ 175
Sr. Technician II	$ 160
Aerial Mapping Specialist	$ 155
Sr. Engineer I Sr. Architect I Sr. Structural Engineer I Land Surveyor	$ 150
Technical Manager II Environmental Scientist III	$ 140
Sr. Technician I	$ 135
Sr. Planner I GIS Specialist Engineer I Architect I Structural Engineer I	$ 130
Environmental Scientist II Technician II	$ 115
Planner I Technical Manager I Environmental Scientist I Technician I Project Administrative Assistant	$ 95
Administrative/Accounting Assistant	$ 60

If the completion of services on the project assignment requires work to be performed on an overtime basis, labor charges above are subject to a 15% premium. These rates are subject to change upon reasonable and proper notice. In any event this schedule will be superseded by a new schedule effective January 1, 2022.

Out of pocket direct costs will be added at actual cost for blueprints, supplies, transportation and subsistence and other miscellaneous job-related expenses directly attributable to the performance of services. A usage charge may be made when specialized equipment is used directly on the project.

Subconsultant services furnished to CMT by another company will be invoiced at actual cost, plus ten percent.