City of Washington Est. 1825

Memo

TO: Mayor Manier and City Council

FROM: Ed Andrews, PE - Public Works Director

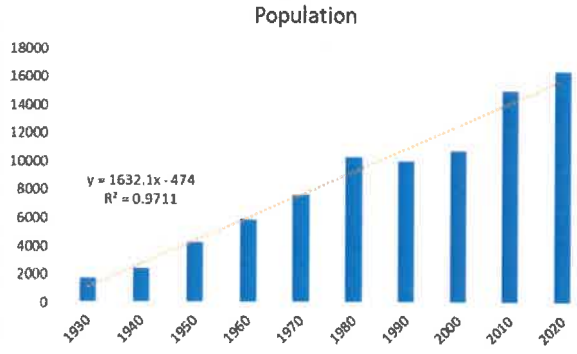
DATE: May 17, 2019

SUBJECT: Water Tower #3 Design Contract
w/ CMT (Crawford, Murphy & Tilly) Engineering

At both the May Public Works Committee and the Committee of the Whole meetings the requirements for a third water were presented and discussed. This consideration is in follow up to a comprehensive evaluation of the City's water and sewer system in support of rate structure both as a sustainability of its existing system and its ability to support continued growth.

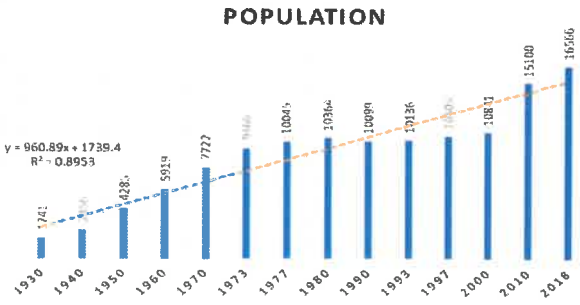
Questions arose at the Committee of the Whole Meeting regarding our population. As part of the rate study, Census Bureau data had already been complied and is presented below:

Year	Population	% Incr
1930	1741	3%
1940	2456	41%
1950	4285	74%
1960	5919	38%
1970	7722	30%
1980	10364	34%
1990	10099	-3%
2000	10841	7%
2010	15100	39%
2020	16500 est	9%



The general trend has continued upward, with additional Special Census data shown below.

Census	1970	7722
Spl Cen	1973	9466
Spl Cen	1977	10045
Census	1980	10364
Census	1990	10099
Spl Cen	1993	10136
Spl Cen	1997	10505
Census	2000	10841
Census	2010	15100
Spl Cen	2018	16566



As previously mentioned, IEPA's past references to Ten States Standards as a guideline are being adopted as formal regulatory requirements under Title 35 that would have us make this consideration under:

Section 604.1300 General Storage Requirements

a) Storage facilities shall have sufficient capacity to meet domestic demands, and where fire protection is provided, fire flow demands.

Section 604.1340 Elevated Storage

a) The minimum storage capacity shall:
   1) be equal to the average daily usage or be based on an engineering study of the distribution system hydraulic conditions, anticipated domestic water demands of the system, and where fire protection is provided, fire flow demands; and
   2) be capable of maintaining adequate pressures as described in Section 604.1415(a);

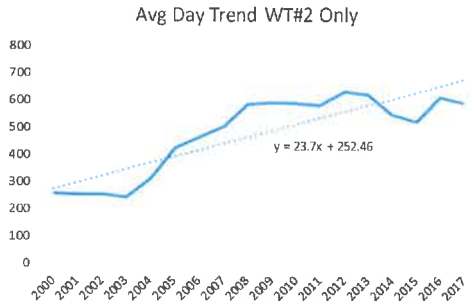
Since the City of Washington's water system operates as two largely separate (but interconnected zones) a review of average day from the combined system and water treatment plant, WTP#2 was conducted.

WTP#2 w/ WT#2 and future #3

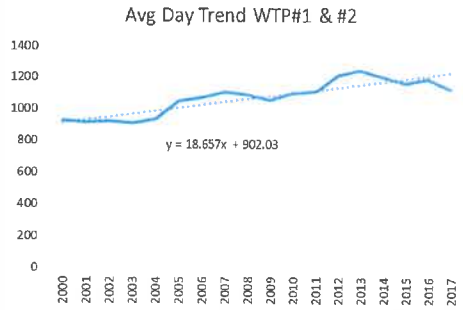
Year	Avg Day WTP#2	Forecast Avg Day	Capc WT#2	Avg Day as % of WT#2	% Use of WT#3
2000	259	252	500	52%	
2001	255	276	500	51%	
2002	254	300	500	51%	
2003	246	324	500	49%	
2004	311	347	500	62%	
2005	424	371	500	85%	
2006	464	395	500	93%	
2007	504	418	500	101%	1%
2008	586	442	500	117%	17%
2009	593	466	500	119%	19%
2010	589	489	500	118%	18%
2011	581	513	500	116%	16%
2012	632	537	500	126%	26%
2013	621	561	500	124%	24%
2014	550	584	500	110%	10%
2015	523	608	500	105%	5%
2016	613	632	500	123%	23%
2017	592	655	500	118%	18%

WTP#1&#2 w/ WT#1&#2 and future #3

Year	Avg Day WTP#1 & WTP#2	Forecast Avg Day	Capc WT#1 & WT#2	Avg Day as % of WT#1 & #2	Capc WT#1, #2 & #3	Avg Day as % of all 3 WTwrs
2000	931	902	1000	93%	1,500	62%
2001	922	921	1000	92%	1,500	61%
2002	926	939	1000	93%	1,500	62%
2003	915	958	1000	92%	1,500	61%
2004	941	977	1000	94%	1,500	63%
2005	1051	995	1000	105%	1,500	70%
2006	1078	1014	1000	108%	1,500	72%
2007	1111	1033	1000	111%	1,500	74%
2008	1093	1051	1000	109%	1,500	73%
2009	1058	1070	1000	106%	1,500	71%
2010	1103	1089	1000	110%	1,500	74%
2011	1120	1107	1000	112%	1,500	75%
2012	1220	1126	1000	122%	1,500	81%
2013	1248	1145	1000	125%	1,500	83%
2014	1209	1163	1000	121%	1,500	81%
2015	1170	1182	1000	117%	1,500	78%
2016	1197	1201	1000	120%	1,500	80%
2017	1134	1219	1000	113%	1,500	76%



2032 1011 (need for Tower #4)



2033 1518 (need for Tower #4)

Average day exceeding elevated storage capacity first occurred between 2005 and 2007 and shows a forecasted need of fourth tower in 2033.

The current budget anticipates this effort and it is the recommendation of staff to undertake the design of tower to help ensure that we demonstrate good faith effort to meet Agency requirements.

The City has a master services agreement with CMT (Crawford Murphy & Tilly) for engineering support for the water system and they have prepared work order price for their services supporting this effort.

As such it is my recommendation that the City Council approve Work Order 19-1 under a time and materials basis in the amount of **$125,0000** with CMT.

This matter has been placed on the City Council meeting agenda of Monday, May 20th, 2019 for review and approval.

cc: File

City of Washington
Engineering Services Work Order

WORK ORDER 19-1 under the Standard Agreement Dated August 2015

Project Description

Water Tower No. 3 Project

Services to be Provided

Refer to the attached Exhibit A

Schedule

Work will begin upon receipt of this executed Engineering Services Work Order and will be completed within 9 months and submitted for appropriate review and approval.

Compensation

Compensation for the services provided under this Engineering Services Work Order will be in accordance with the manner selected below.

☒ On a time and expense basis in accordance with the current year's Schedule of Hourly Charges 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. It is estimated that the compensation for the above services, including reimbursable expenses, will not exceed $125,000.

☐ At the lump sum amount of $_____.

The compensation for the above services, including reimbursable expenses, will be invoiced as the work is performed. (See Exhibit A for additional information.)

Approval & Notice to Proceed

Issued By: City of Washington

Signed: _____

Name: _____

Title: _____

Accepted By: Crawford, Murphy & Tilly, Inc.

Signed: _____

Name: _____

Title: _____

Date: _____

EXHIBIT A
City of Washington, Illinois
Water Tower No. 3

SCOPE OF SERVICES

The **Scope of the Improvements** for the **Water Tower No. 3 Project** includes the following items:

- The construction of a new 500,000-gallon water tower on 223 Property.
- Site improvements to provide access and fencing around the proposed water tower.
- The construction of approximately 1,500 lineal feet of 12" Watermain along Cummings Lane to improve transfer capacity from Water Treatment Plant No. 2 to Proposed Water Tower No. 3.

The **Scope of Services** for **Design Phase** shall consist of the following tasks:

1. Field Survey of Water Tower Site and the watermain alignment along Cummings Lane.
2. Download field survey data and develop topographic drawings
3. Begin Utility coordination to determine locations of existing utilities along Cummings Lane and along the Water Tower site.
4. Geotechnical Investigation (Anticipate 1 soil boring)
5. Coordinate with Tank Manufacturers to determine the recommended tank for this location.
6. Complete Hydraulic Model Extended Period Simulation
    a. Update model with new demand information from AMR data
    b. Review and update existing model with well and pump controls
    c. Obtain and input tank gauging information in to model
    d. Analyze new tank under average daily flow and max daily flow
    e. Review results and develop tank recommendations
    f. Prepare letter report outlining the results of the modeling and recommendations
7. Complete site layout and site piping for the Water Tower.
8. Develop preliminary alignment for the watermain along Cummings Lane.
9. Complete utility coordination for watermain alignment
10. Meet with the City of Washington to review preliminary layouts, alignments and hydraulic model recommendations
11. Complete updates to the preliminary layouts, alignments and model per City of Washington review.
12. Electrical/Instrumentation design and SCADA coordination – CMT will coordinate Ameren to obtain electric service to the Water Tower site. CMT will also coordinate with the City's system's integrator (Britton Electronics) to develop the needed improvements for the

proposed water tower to communicate with the existing SCADA system. Finally, CMT will complete the electrical design for lighting and other associated items.

13. Coordinate with Tank Manufacturer's to obtain their design, drawings and specifications of the Water Tower and Foundations.

14. Complete structural review of the Tank Manufacturer's design

15. Develop Pre-Final Construction Drawings
    a. Cover Sheet
    b. General Notes, Legend, and Location Map
    c. Site Plan
    d. Site Piping/Utility Plan
    e. Site Grading Plan
    f. Watermain Alignment Plans (Anticipate 3 plan sheets)
    g. Misc. Construction Details
    h. Tower Structural Plans
    i. Electrical Plans

16. Develop Pre-Final Construction Documents (Bidding, Contracting, & Technical Specifications)

17. Develop Opinion of Probable Construction Costs

18. Meet with the City to review pre-final documents

19. Update pre-final documents per City comments

20. IEPA permit application

21. QA/QC Review

22. 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 One Hundred and twenty five Thousand Dollars and No Cents ($125,000.00).

Additional Services not included in the Upper Limit of Compensation

- Subdivision and Platting of the Water Tower Site
- Bidding phase services
- Construction phase services
- Easements Documents

EXHIBIT B - MASTER AGREEMENT

STANDARD AGREEMENT FOR PROFESSIONAL SERVICES

THIS AGREEMENT made between the City of Washington, Illinois whose address 301 Walnut Street, Washington, Illinois 61571, hereinafter called the **CLIENT** and Crawford, Murphy & Tilly, Inc., Consulting Engineers, 401 SW Water Street, Suite 209, Peoria, Illinois 61602, hereinafter called the **ENGINEER.**

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

The **ENGINEER** and **CLIENT** shall establish a scope of services, budget and schedule for capital improvement projects, professional opinions, and/or reviews of specific public works facilities. An *Engineering Services Work Order* (template is attached hereto) shall be signed by authorized representatives of both parties.

NOW THEREFORE, the **ENGINEER** agrees to provide the above described services and the **CLIENT** agrees to compensate the **ENGINEER** for these services in one of two ways. One of the following compensation methods shall be identified in the *Work Order.*

☐ On a time and expense basis in accordance with the attached Schedule of Hourly Charges 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:

The **ENGINEER** shall submit an estimate of the cost of engineering services for each *Engineering Services Work Order* and the **ENGINEER** shall notify the **CLIENT** when the engineering fee is approaching the estimate. The **ENGINEER** shall not invoice costs that exceed the estimate without additional authorization from the **CLIENT.** If the **ENGINEER** recognizes a change in the project scope or is directed by the **CLIENT** to modify the scope of services, the **ENGINEER** shall request an amendment to the *Engineering Services Work Order* from the **CLIENT.**

The **ENGINEER** shall proceed with the work assignment once authorized by the **CLIENT.** Each *Work Order* will be tracked with a unique project number and an itemized invoice will be submitted for each *Work Order.*

Should the **CLIENT** request General Engineering services not connected to a specific project, the **ENGINEER** shall submit an itemized breakdown of general engineering services rendered to the **CLIENT** with each monthly invoice.

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 August, 2015.

CLIENT:

City of Washington
(Client Name)

Gary W. Manier
(Signature)

Mayor Gary W. Manier
(Name and Title)

ENGINEER:

CRAWFORD, MURPHY & TILLY, INC.

(Signature)

Eric J. Hansen, PE – Peoria Office Manager
(Name and Title)

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, no matter the number of or amount of such claims, suits, or judgments.

8. Risk Allocation – Check box ☐ if this provision 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.

EXHIBIT C
CRAWFORD, MURPHY & TILLY, INC.
STANDARD SCHEDULE OF HOURLY CHARGES
JANUARY 1, 2019

Classification	Regular Rate
Principal	$ 220
Project Engineer II Project Architect II Project Manager II Project Environmental Specialist II	$ 210
Project Engineer I Project Architect I Project Manager I Project Environmental Specialist I Project Structural Engineer I	$ 185
Sr. Structural Engineer II	$ 170
Sr. Technician II	$ 155
Aerial Mapping Specialist	$ 150
Sr. Engineer I Sr. Architect I Sr. Structural Engineer I Land Surveyor	$ 145
Technical Manager II Environmental Specialist III	$ 135
Sr. Technician I	$ 130
Sr. Planner I GIS Specialist Engineer I Architect I Structural Engineer I	$ 125
Environmental Specialist II Technician II	$ 110
Planner I Technical Manager I Environmental Specialist I Technician I Project Administrative Assistant	$ 90
Administrative/Accounting Assistant	$ 50

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, 2020.

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.