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Department of Utilities  
Wastewater Treatment Plant  
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**To:** Chairperson Meltzer and Members of the Utilities Committee

**From:** Utilities Deputy Director, Chris Stempa

**Date:** February 27, 2020

**Re:** *Award AWWTP Filtrate Tank Piping Repair and Modifications Contract to Great Lakes Mechanical in the amount of \$39,969 plus a 7.5% contingency of \$3,000 for a total cost not to exceed \$42,969*

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#### **BACKGROUND:**

The Appleton Wastewater Treatment Plant (AWWTP) utilizes three (3) Belt Filter Presses (BFP's) to dewater anaerobically digested biosolids. The filtrate (a byproduct) from the belt presses travels through a network of 10-inch and 12-inch Ductile Iron (DI) pipe to a 688,160 gallon capacity concrete storage tank. Filtrate is conveyed from this tank in a controlled manner by gravity through 10-inch DI piping to the lower section of the facility where it is reintroduced in the aeration process for biological treatment.

The filtrate tank was originally constructed as a sludge digester in 1935 (original wastewater plant construction) then repurposed as a filtrate storage during 1992 AWWTP Improvements Project. Over that period, scale formation within the filtrate piping and along the filtrate storage tank sidewalls has occurred. This hard scale is described as "struvite" (Magnesium Ammonium Phosphate) and/or Calcium Carbonate (Calcite). Scale formation is a common occurrence with treatment facilities that dewater anaerobically digested sludge. A consequence of scale formation within the piping is that it eventually decreases capacity. Contractors with high-pressure water blasting equipment (10,000 PSI) are hired to remove this scale formation from piping every two to three years to prevent flow obstruction. To facilitate this work, filtrate flow is temporarily redirected to the head of the wastewater treatment plant through the use of bypass piping. Staff also remove a number of large DI fittings at strategic locations that allow the contractor access into the pipe to water blast and remove hard scale build-up.

Observations during 2019 scale removal activities, which include subsequent inspections, confirmed that piping inside the filtrate storage tank was nearly 100% obstructed. Attempts to remove these blockages by high pressure blasting proved to be ineffective. These obstructions prohibited filtrate flow and reintroduction as designed. Staff have utilized existing bypass

piping to redirect filtrate to the front of the wastewater plant during this time. However, this option is considered a temporary measure because the treatment of filtrate is high in ammonia. The impact of which has the potential of jeopardizing compliance with the AWWTP Wisconsin Pollution Discharge Elimination System (WPDES) permit. Furthermore, inspection of the existing filtrate tank pipe penetrations have revealed that the original 1935 pipes placed within poured concrete are severely deteriorated and require replacement. Evidence that the surrounding pipe sealing material is also compromised requiring rehabilitation or replacement.

As part of the 2019 AWWTP Improvements Project, McMahon developed plans and specifications as part of a Request for Quotation (RFQ) to address the aforementioned items. This includes replacement of piping within the tank with an improved design that will provide greater versatility to operations, treatment, and future maintenance activities.

**QUOTES:**

On Thursday, February 27, 2020 McMahon reviewed the contractor quotations and verified that each met submittal requirements. Great Lakes Mechanical submitted the least cost quote. and has successfully completed project work for the City of Appleton in the past. A summary of quote results is found below.

Company	Base Bid
August Winter & Sons	\$44,900
Great Lakes Mechanical	\$39,969
JF Ahern	NR
Staab Construction	\$49,900
Suez	NR

Note: NR – No response, did not provide a quote

**RECOMMENDATION:**

I am requesting an award of the Filtrate Tank Piping Repair and Modifications contract to Great Lakes Mechanical in the amount of in the amount of \$39,969 plus a 7.5% contingency of \$3,000 for a total cost not to exceed \$42,969. If you have any questions or require additional information regarding this project please contact Chris Stempa at 920-832-5945.