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Department of Utilities
Wastewater Treatment Plant
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TO: Chairperson Joe Martin and Members of the Utilities Committee

CC: Chris Shaw, Utilities Director

FROM: Chris Stempa, Utilities Deputy Director

DATE: August 7, 2014

RE: *Award purchase of Ferrous Chemical Dosing System to Brabazon Pump, Compressor, & Vacuum in the amount of \$35,154 plus a 5% contingency of \$1,758 for a total not to exceed of \$36,912*

BACKGROUND:

In March 2014, the Utility Committee and Common Council approved the purchase of an on-line phosphorus analyzer for the Appleton Wastewater Treatment Plant (AWWTP). The analyzer purchase was a necessary precursor to full scale chemical treatment demonstration testing yet to take place as part of the phosphorus treatment optimization and Total Maximum Daily Load (TMDL) compliance project. The phosphorus analyzer provides instantaneous wastewater effluent phosphorus data to AWWTP operations staff from which manual chemical adjustments are made based on current internal standard operating procedures and Wisconsin Pollution Discharge Elimination System (WPDES) permit limits. Manual chemical adjustments made through the actuation or manipulation of valves are neither efficient from a reaction time standpoint nor chemical optimization use perspective. It has been concluded through work done to date by CH2M HILL that the manual means chemical dosing would not reliably achieve low-level phosphorus limits established by the EPA through the TMDL and WDNR under the Wisconsin Administrative Code NR 217.

JUSTIFICATION:

The current phosphorus chemical feed system does not possess effective turndown capabilities and thus incapable of precision dosing across a range of plant flow and phosphorus loading conditions. Manual chemical adjustments even with the use of the on-line phosphorus analyzer creates a delayed response to effectively and reliably treat variable phosphorus loads and thus placing the Utility at risk of exceeding future low-level compliance limits. Historically, this has not been an issue because the AWWTP has effectively maintained compliance with its WPDES permit limit of 1.0 mg/L effluent phosphorus. However, response time will become critical following WPDES reissuance in September 2015 when phosphorus limits are ratcheted down to as low as 0.1 mg/L

depending upon the compliance path chosen by the City. These low level limits makes it critical that operations react to real-time fluctuations in phosphorous concentrations in order to consistently and cost effectively achieve future permit compliance limits.

QUOTE PROCESS:

Four vendors were selected based upon their ability to provide an engineered “skid” system that meets specific treatment process and functionality requirements. The pump styles selected are capable of proving the dosage accuracy across the anticipated range of phosphorus concentrations and flows experienced at the AWWTP. Furthermore, each pump needed to provide 4-20 mA control capabilities through the AWWTP Supervisory Control and Data Acquisition (SCADA) system that allows automated flow based programming considered essential to maintain consistent compliance under low permit limit conditions.

The skid system quotes below includes pumps, piping, and all associated appurtenance. Brabazon was selected based on the results of the quotation process as shown below.

Vendor	Quote
Brabazon	\$35,154
Crane	\$36,068
Drydon	\$49,623
Marshall Bond	\$47,940

RECOMMENDATION:

It is recommended that the Utilities Committee award a purchase of the ferrous feed system to Brabazon Brabazon Pump, Compressor & Vacuum in the amount of \$35,154 plus a 5% contingency of \$1,758 for a not to exceed total cost of \$36,912. If you have any questions regarding this project please contact Chris Stempa ph: 832-5945