



DEPARTMENT OF
UTILITIES

Department of Utilities
Wastewater Treatment Plant
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MEMORANDUM

Date: November 6, 2024
To: Chairperson Brad Firkus and Members of the Finance Committee
CC: Chris Stempa, Director of Utilities
Colin Stoffel, Wastewater Operations Supervisor
Kelli Rindt, Enterprise Accounting Fund Manager
From: Ryan Rice, Deputy Director of Utilities
Subject: **Award purchase of sludge density meters to Allied Instrument in the amount of \$53,342, along with the following budget amendment. Primary Clarifier Rebuild CIP -\$54,000 and Density Detector Replacement CIP +\$54,000**

BACKGROUND:

The Appleton Wastewater Treatment Plant (AWWTP) utilizes two nuclear (Cesium 137) sources that measure density of sludge removed from the primary clarifier process. One density meter is located for primary clarifiers #1 through #4 and another for primary clarifiers #5 & #6. The two density meters and associated equipment were installed in the 1990s plant upgrade. The readings from these inline devices are used to automatically control the pumping cycles of the primary sludge pumps based on the density of the sludge being pumped.

Recently, the density meter that supports the operation of primary clarifiers #1 through #4 failed. The other density meter comprised of slightly older vintage electronics that support primary clarifiers #5 & #6, also experienced a similar fate shortly thereafter. Without functional density meters, Wastewater Plant Operators must conduct manual measurements of sludge in the primary clarifiers. This manual means of obtaining density results to control sludge management operations is inefficient and contributes to potential error. The primary clarifier operation was designed based on density data being obtained in real-time to automatically regulate the operation of the sludge pumps. This in turn mitigates the potential for excess sludge being conveyed to the primary anaerobic digesters which unnecessarily requires additional heating, decreases digester treatment effectiveness (less detention time), and generates more solids that must be dewatered in downstream processes and then ultimately land applied.

More importantly, if sludge removal from the primary clarifiers is insufficient, a cascading failure of the primary clarification process could occur due to high torque on the rotating equipment. This circumstance would require a bypass of the primary treatment processes into the Fox River and violate the AWWTP Wisconsin Pollution Discharge Elimination System permit.

QUOTATION

Few companies are licensed to provide nuclear source instruments for this application, due to the requirements of the United States Nuclear Regulatory Commission. Quotes were solicited from companies with the license and ability to provide replacement density meters and properly dispose of the existing sources. Two companies provided a quote for this work which are listed below:

| Vendor | Quote |
|------------------------|-------------|
| Allied Instrumentation | \$53,342.00 |
| VEGA | \$64,993.55 |

JUSTIFICATION

The service personnel from Allied Instrument are licensed to complete the replacement and disposal of the sources and have previous experience at the WWTP. Purchasing from Allied Instrument return's reliability and consistency to the primary clarification process.

RECOMMENDATION:

I recommend the purchase of sludge density meters from Allied Instrument in the amount of \$53,342.

The following budget amendment will be required to fund the project:

Primary Clarifier Rebuild -\$54,000

Density Detector Replacement +\$54,000

The Primary Clarifier Rebuild project was put on hold earlier this year due to construction bids over budget.

If you have any questions regarding this request, please contact Ryan Rice at 920-832-5945.