



DEPARTMENT OF
UTILITIES

Department of Utilities
Wastewater Treatment Plant
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MEMORANDUM

Date: August 22, 2024
To: Chairperson Brad Firkus and Members of the Finance Committee
CC: Ryan Rice, Deputy Director of Utilities
Kelli Rindt, Enterprise Accounting Fund Manager
From: Chris Stempa, Director of Utilities
Subject: **Finance Committee Action: Sole Source Engineering Services Contract to Donohue as part of Phase I AWWTP Anaerobic Digester Engineering Evaluation in the amount of \$49,515 with a 10% contingency of \$5,000 for a total not to exceed \$54,515**

BACKGROUND:

The Appleton Wastewater Treatment Plant (AWWTP) operates two 2.2-million gallon (Mgal) egg-shaped digesters (ESDs) that produce methane and carbon dioxide through the biological conversion of organic material under anaerobic conditions present in the ESDs. The ESDs are the primary treatment process that stabilizes and reduces volume of the following solids waste streams: raw sludge (RS), primary scum (PSC), thickened waste activated sludge (TWAS), and hauled-in, high-strength waste (HSW). These waste streams are co-mingled in the Raw Sludge Blending Tank (RSBT) before being pumped to the ESDs by Digester Feed Pumps (DFP). The ESDs operate in the mesophilic range (85 - 100°F), typically at 95°F. Digester gas (DG) generated by the anaerobic process is collected at the top of the ESDs. Each digester is 113.56-feet tall and 80-feet in diameter at the girth. The nominal liquid height is 105.5 ft. The two ESDs are designed to operate in parallel, providing a total digestion volume of 4.4-Mgal.

The ESDs were originally commissioned in 1993 and were last taken offline in 2010 and 2011 as part of an inspection, maintenance, and improvements project. The interior inspections performed as part of that work found much of the coating system to be largely intact. However, there was evidence where areas of the coal tar epoxy finish had lost thickness or was nearly absent at the lower elevations of the ESDs. Interior coating repairs or wholesale replacement was not recommended at that time because the interior carbon steel did not show signs of substantial corrosion or metal deterioration except for localized shallow pitting at some of the welded seams.

A 2025 digester inspection and maintenance project has been identified given the extent of upstream ductile iron piping deterioration identified as part of recent piping replacement projects coupled with current treatment system operating conditions. The engineering scope of work will establish most the effective method to perform inspections, anticipated maintenance and repairs including planned improvements (e.g. cathodic protection and corrosion instrumentation) with the least downtime and impact to treatment operations. The ESD conditions assessment completed

following the 2025 inspection work could impact future budget years if substantial steel repairs and/or coating system replacement is deemed necessary.

AWWTP staff sought a professional services proposal from Donohue for the purposes of defining a scope of work in 2024 that will subsequently be incorporated in a 2025 public bid project. The future scope will identify strategies capable of effectively addressing operational issues identified by staff in recent years. These strategies must include improvements that would inhibit and monitor corrosion within the ESDs given the evidence of upstream ductile iron corrosion. It will be critical that a well-conceived work sequence and schedule be identified that will minimize the duration each ESD will be taken offline while ensuring continuity of treatment without jeopardizing Wisconsin Pollution Discharge Elimination System (WDPES) permit compliance. Minimizing the window the ESDs are offline for inspection and maintenance activities will also reduce amount of lost treatment revenue associated with the HSW Program because many permitted wastes will not be able to be accepted during that duration.

PROPOSAL

Donohue was asked to provide an engineering service proposal that would deliver the necessary strategies, upgrades, and work sequence to successfully navigate this project. The uncertainty associated with developing a scope of work around a multiple hypothetical inspection finding scenarios is complicated by the necessity to complete tasks during the warm weather season. This is because digester biogas production would be reduced by at least 50%. If work would extend into late fall or winter, building and process heating demands normally satisfied by the biogas boilers would instead be supplemented by the purchase of natural gas. Donohue recognizes these challenges and developed a proposal that is focused on establishing the foundation of 2025 public bid construction project. The initial phase of services (Phase I) of this contract would provide design concepts based on field review walkthroughs, process data review, and staff workshops intended to overview operating, maintenance, and performance issues/concerns. Donohue would subsequently complete an evaluation and produce design concepts based on various recommended strategies. Staff workshops would be hosted to refine evaluations and design concepts from which a draft report would be produced in late November or early December 2024. The total proposed cost for Phase I services totaled \$49,515.

JUSTIFICATION

Donohue was awarded the contract to perform the first conditions assessment on Digester 1 and 2 in 2010 and 2012. This multiyear project revealed the internal condition of each ESD but also led to a number of repairs and improvements involving the following: ESD exterior cover (repairs); ESD draw off selector tubes (modified/improved); Preliminary and Primary Heat Exchangers (repairs); Raw Sludge Blend Tank (replaced); ancillary piping (replaced), and various ancillary components (new). Donohue also recommended improvements which were later implemented as part of subsequent projects (i.e. gas mix compressor glycol coolant system) or would be considered as part of the next ESD inspection (e.g. additional valving for digester isolation, piping additions to facilitate ESD drainage, and improved process instrumentation).

There were many lessons learned as part of the 2010 and 2012 ESD assessment because it was the first time they were taken offline since the 1994 construction. The Donohue team that led the last inspection was instrumental in developing unique approaches that delivered a safe, effective,

and efficient overall project. The same team members would be spearheading the tasks outlined in this Phase I proposal. There was \$75,000 allocated in the 2024 AWWTP budget for a ESD maintenance study which adequately covers the \$49,515 Donohue service fee.

RECOMMENDATION:

I am recommending the approval of a sole source engineering service contract to Donohue as part of Phase I AWWTP Anaerobic Digester Engineering Evaluation in the amount of \$49,515 with a 10% contingency of \$5,000 for a total not to exceed \$54,515.

If you have any questions regarding this project, please contact Chris Stempa at 920-832-5945.

Encl: Finance Department Sole Source Request Form



SOLE SOURCE REQUEST

The undersigned certifies that the commodity/service shown below qualifies as a sole source request and meets one or more of the following requirements. The department has demonstrated, and the Purchasing Manager concurs that only one source exists, the price is equitable, and/or noncompetitive negotiation is in the best interests of the City.

- Unique, proprietary, or one-of-a-kind:** Specific commodity/service is required and available from only one source, giving the City a superior and necessary benefit that cannot be obtained from other sources.
- Inadequate competition:** Purchasing solicitation (bid, proposal, or quote) did not result in any qualified vendor responses and competition is determined to be inadequate.
- Health or Safety Concern:** When a health or safety concern exists that is *not* an immediate threat but needs to be addressed in a period that does not allow for formal competitive procurement procedures.
- Continuity of design:** Consistency with current commodity or service.
- Emergency procurement:** A risk of human suffering or substantial damage to real or personal property exists requiring immediate attention.
- Cooperative purchase:** Purchase from another governmental unit contract or state approved purchasing association.
- Other:** Description provided below

Donahue successfully and efficiently led the last inspection and recommended improvements that were implemented in subsequent projects. The team responsible for the last inspection would be assigned to Phase I, offering unmatched familiarity and ability to oversee this project.

PROPOSED DETAILS

Requesting dept: Appleton Wastewater Treatment Plant

Product/service: Phase I- AWWTP Anaerobic Digester Engineering Evaluation

Vendor name: Donohue

Total cost: \$49,515 w/ 10% contingency of \$5,000 for a total not to exceed \$54,515

Justification and price quotation provided by the department, for the items to be considered and approved as a sole source purchase attached for review.


Purchasing Manager

8/23/24
Date