THE CITY OF KEY WEST
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EXECUTIVE SUMMARY

Date: August 17, 2021

To: Patti McLauchlin, City Manager

CC: John Paul Castro, Utilities Director

From: Ian McDowell, Assistant Engineer

Subject: Approving purchase order of four elliptical control valves for the aeration system at Richard A. Heyman Environmental Protection Facility from Binder Engineering GmbH

Action Statement

This resolution would approve the purchase of four elliptical control valves, including actuators and flow meters, pursuant to code of ordinances 2-797(1), sole source procurement, from Binder Engineering GmbH in the amount of $79,980.00.

Background

The City of Key West has decided to improve their existing aeration system at the Richard A. Heyman Environmental Protection Facility (RAHEPF) based on findings reported in the 2018 Energy Master Plan, produced by Jacobs Engineering Group Inc. The existing aeration system is comprised of two multistage centrifugal blowers with associated mechanical piping, electrical, instrumentation, and controls components. Currently, 34% of the energy consumption at RAHEPF is attributed to the aeration system. The City desires to increase air control and energy efficiency at the facility by introducing improved control valves.

Purpose and Justification

In 2018, Jacobs Engineering Group Inc. produced an energy efficiency master plan that reported on various plant processes and equipment to identify, analyze, and prioritize energy-efficiency opportunities and develop an implementation plan to assist the city in meeting its energy reduction goals. As the aeration system was identified as one of the largest consumers of energy, various aspects of the system were evaluated for power consumption reduction. Replacement of the butterfly flow control valves with an improved design was considered, with an estimated annual kWh reduction of 143,700 kWh if replaced in conjunction with new blowers. This reduction

considered jet control valves, which increase efficiency by reducing pressure losses and by improving precision of control.

Elliptical diaphragm control valves were also considered, which offer reduced complexity and cost while operating with a smaller range of control and increased backpressure compared to jet control valves. Elliptical control valves were selected to replace existing butterfly control valves, as the cost of jet control valves is 173% higher while only offering a 18% reduction in energy consumption over elliptical control valves. The replacement of the four butterfly control valves with elliptical control valves was included in the aeration basin blower alternatives report prepared by Black & Veatch and the increased efficiency and degree of control is considered an integral part of implementation of the new blower system.

Binder Engineering GmbH is the only manufacturer of elliptical style control valves with the precision required for this application, which was included in the blower evaluation. Other products require more expensive jet valves to accomplish the level of control desired.

Financial

Funding will come from Sewer/Treatment Plant/CIP account 401-3804-535-6500 (SE35042002). Staff have reviewed the evaluation report provided by Jacobs Engineering Group Inc., Black & Veatch, and Binder Engineering GmbH and believe this purchase presents the best cost-to-benefit for the city.

Recommendation

Staff recommends approving the purchase from Binder Engineering GmbH for four elliptical control valves with actuators and flowmeters in the amount of $79,980 pursuant code of ordinances 2-797(1) and authorizing the City Manager to execute this agreement and any necessary budget transfer/amendments.