Legislation Text

File #: 2021-274, **Version:** 1

Contract No. 2004549

Lake Huron Water Treatment Plant - Flocculation Improvements

CIP# 111012 / BCE Score: 72.0

Agenda of: July 28, 2021
Item No.: **2021-274**
Amount: $ 7,869,811.00

TO: The Honorable
Board of Directors
Great Lakes Water Authority

FROM: Sue F. McCormick
Chief Executive Officer
Great Lakes Water Authority

DATE: July 7, 2021

RE: **Contract No. 2004549**
Lake Huron Water Treatment Plant - Flocculation Improvements
Vendor: CDM Smith Michigan, Inc.

MOTION

Upon recommendation of Cheryl Porter, Chief Operating Officer - Water and Field Services, the Board of Directors (Board) of the Great Lakes Water Authority (GLWA), authorizes the Chief Executive Officer (CEO) to **enter into Contract No. 2004549 "Lake Huron Water Treatment Plant - Flocculation Improvements" with CDM Smith, Inc., at a cost not to exceed $7,869,811.00 for a duration of 2,300 days;** and authorizes the CEO to take such other action as may be necessary to accomplish the intent of this vote.

BACKGROUND

GLWA's Lake Huron Water Treatment Plant (LHWTP) is located in Fort Gratiot, Michigan. The principle water treatment processes at the LHWTP involve rapid mix, flocculation, sedimentation, filtration, and disinfection. The existing flocculation process at the LHWTP uses turbine-style mechanical flocculation technology. This technology has been used since the plant's original startup on September 11, 1974, and was replaced largely in kind about 20 years ago. The existing horizontal

turbine flocculators have a demonstrated history of high-breakage rates, and significant maintenance and repair requirements. This is mainly due to the flocculator's 200-feet long shafts, which are unusually long for flocculation basins. Replacement parts for the existing flocculators carry high costs. For example, it would cost more than $2 million just to purchase shaft bearings, which are a high-wear item and break frequently. Moreover, an entire flocculation chamber has to be taken out of service when repairs are needed, and with only two flocculation chambers at LHWTP, this can be operationally challenging, especially in summer months. Consequently, the main objective of this project is to replace the existing flocculation system with one that provides the necessary flocculation performance reliably without abnormally high maintenance and repair requirements. Additional capital improvements that are part of this project include: (1) replacing rapid mixing equipment, (2) upgrading the raw water conveyance conduits to provide redundancy, (3) restoring the surface drainage system on top of the flocculation and sedimentation basins, and (4) removing abandoned propane tank concrete pads. These additional improvement items were not included in the 2021 CIP project plan when developed in 2020. As the project team developed the detailed request for proposals for this project, it determined that these additional improvements would be best completed with the flocculation system improvements. The scope of work for this proposed engineering services contract involves the study, design, bid, and construction phase services to implement the above-mentioned capital improvements. Study phase services will include a detailed evaluation of flocculation alternatives to select the preferred alternative based on decision-making criteria such as flocculation treatment performance, regulatory acceptance, constructability, operability, maintainability, flexibility, and life-cycle cost. The design phase services include 30%, 60%, 90%, and 100% design deliverables while the bid phase services involve technical assistance to GLWA during public bidding of the construction contract. Finally, the construction phase services generally include construction contract administration, resident project representation and updating the operation and maintenance manuals.

JUSTIFICATION

The existing flocculation system equipment at LHWTP has high breakage rates, is very costly to repair and maintain its service, and has reliability concerns. Moreover, its poor condition has been noted by the Michigan Department of Environment, Great Lakes and Energy (EGLE) in its 2019 sanitary survey update for LHWTP. In short, it is important for GLWA to move this capital improvement project forward to provide a new flocculation system that is reliable, redundant, cost effective, and that addresses EGLE's concerns with the current state of flocculation at LHWTP.

FINANCIAL PLAN IMPACT

Summary: Sufficient funds are provided in the financial plan for this project.

Funding Source: Water Construction Fund

Cost Center: Water Engineering

Expense Type: Construction (5519-882111.000-617950-111012)

Estimated Cost by Year and Related Estimating Variance: See table below.

Fiscal Year	
FY 2022 Planned Spend	$ 500,000.00
FY 2023 Planned Spend	431,000.00
FY 2024 Planned Spend	431,000.00
FY 2025 Planned Spend	400,000.00
FY 2026 Planned Spend	400,000.00
FY 2027 Planned Spend	50,000.00
Financial Plan Estimate	$ 2,212,000.00
Proposed Contract Award	7,869,811.00
Negative Estimating Variance	$ (5,657,811.00)

The negative estimating variance is due to the following factors: Proposed contract is a QBS award and not lowest bid, Increased scope such as the inclusion of the mixers not in the original CIP project, and the original CIP planned spend had limited information available in determining design phase costs.

FY 2022 Plan Spend per CIP	$ 500,000.00
FY 2022 Plan Spend adjusted for award value	1,473,000.00
FY 2022 Negative Estimating Variance	$ (973,000.00)

A budget amendment will be made to fund the negative estimating variance for FY 2022 of $973,000.00 and funded from Capital Reserves. The balance of the negative estimating variance will be adjusted for in the future 2023-2026 CIP Plan document.

SAVINGS, COST OPTIMIZATION, AND REVENUE ENHANCEMENT IMPACT

The award of this is for the design of improvements to the flocculation system at LHWTP. Cost savings are not determinable at time of award.

COMMITTEE REVIEW

This item was presented to the Operations and Resources Committee at its meeting on July 14,

2021. The Operations and Resources Committee unanimously recommended that the GLWA Board adopt the resolution as presented.

SHARED SERVICES IMPACT

This item does not impact the shared services agreement between GLWA and DWSD.