



Legislation Details (With Text)

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Orion Pumping Station Improvements
Sponsors: Cheryl Porter
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Date	Ver.	Action By	Action	Result
3/28/2018	1	Board of Directors	Approved	Pass
3/14/2018	1	Operations and Resources Committee	Recommended for Approval	Pass

GLWA-CON-225

Orion Pumping Station Improvements

Agenda of: March 28, 2018
Item No.: **2018-636**
Amount: \$1,747,000.00

TO: The Honorable
Board of Directors
Great Lakes Water Authority

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

DATE: **March 7, 2018**

RE: **Contract No.: GLWA-CON-225**
Orion Pumping Station Improvements
Vendor: Detroit Contracting, 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. GLWA-CON-225, "Orion Pumping Station Improvements" with Detroit Contracting, Inc., at a cost not to exceed \$1,747,000.00 for a duration of fifteen (15) months**, and authorizes the CEO to take such other action as may be necessary to accomplish the intent of this vote.

BACKGROUND

GLWA's Orion Pumping Station is a water booster pumping station located in Auburn Hills, Michigan. The Orion Pumping Station was constructed in 1961 and at that time was equipped with three line pumping units. A fourth line pumping unit was installed at the station in the 1990s. The Orion Pumping Station boosts pressure through a 30-inch diameter transmission main to maintain contract pressures at master meters OT-01 and AH-05 for the Charter Township of Orion and the City of Auburn Hills, respectively (see Figure 1 below).

Figure 1: Orion Pumping Station Service Map



The current capacities of the four line pumping units at the Orion Pumping Station are provided in Table 1 below.

Table 1: Existing Pumping Unit Capacities - Orion Pumping Station

Line Pump	Flow (MGD)	Total Head (FT)	Motor Size (HP)
1	2.0	85	40
2	4.0	85	75
3	4.0	85	75
4	4.0	85	75

Abbreviations: MGD (million gallons per day), FT (feet), HP (electrical horsepower)

The total installed pumping capacity of the Orion Pumping Station is 14 MGD at 85 feet of total head

while the firm pumping capacity is 10 MGD at 85 feet of total head. Total head is the height that water is to be pumped/transferred. Firm pumping capacity is defined as the capacity of the station with its largest pumping unit out of service. The peak hour demand of the area served by the station is 10.9 MGD. If one of the existing large pumping units is out of service during peak demand conditions, the station will not be able to meet minimum contract pressures. Furthermore, peak hour demands are projected to increase to about 12.3 MGD over the next 20 years, whereas, capacity improvements are needed at the Orion Pumping Station to meet both current and future peak hour demands.

All four existing pumping units will be replaced with new pumping units sized to meet current and projected peak hour demands. The new pumping units to be installed under this contract at the Orion Pumping Station will have the capacities presented in Table 2 below.

Table 2: New Pumping Unit Capacities - Orion Pumping Station

Line Pump	Flow (MGD)	Total Head (FT)	Motor Size (HP)
1	4.0	85	75
2	4.0	85	75
3	4.6	85	100
4	4.6	85	100

The firm pumping capacity of the Orion Pumping Station after the station improvements are made will be 12.6 MGD at 85 feet of total head. Other station improvements to be provided under this contract include installation of a new monorail and crane, backup power generator, station flow meter, and two variable frequency drives (VFDs) for two of the pumping units. The station does not currently have a monorail, crane, backup power generator or VFDs. The monorail and crane will improve accessibility to the pumping units for maintenance work; the backup power generator will provide power to the station to drive pumping units to meet average day demands during power failures at the station; and the VFDs and flow meter will provide flow control improvements for operations. Ancillary improvements include mechanical ventilation for the pump room, electrical, instrumentation, and control work. Also, the existing pump motors are equipped with electric motors of average efficiency. The new pumps to be installed under GLWA-CON-225 will be equipped with premium efficient motors that will use less energy than the existing pump motors.

JUSTIFICATION

The capacity of the existing pumping units does not meet firm pumping capacity requirements. If the largest pumping unit is out of service or otherwise breaks down during peak hour seasonal conditions, then the station will not be able to meet minimum contract pressures in its service area. Moreover, minimum contract pressures are difficult to meet in the event of a power failure at Orion Pumping Station because there is no backup power generator at the station. Removal of pumping units without a permanent monorail and crane is time-consuming and inefficient for maintenance staff. Lastly, the lack of VFDs and no station flow meter make operation of the station more challenging in terms of meeting system demands and pressures using only constant speed pumping units. The improvements that will be made to the Orion Pumping Station under this contract will

alleviate these conditions.

BUDGET IMPACT

The proposed Orion Pumping Station Improvements project is included as a carve out of the CIP 170100 Water Treatment / Pump Station Allowance in the Board approved 2018-2022 Capital Improvement Plan. The proposed construction phase contract award of \$1,747,000.00 is within the estimated construction budget of \$2,065,000.00, creating a positive estimate variance of \$318,000.00. The proposed contract award has no impact on actual budget.

COMMITTEE REVIEW

This matter was reviewed by the Operations and Resources Committee at its March 14, 2018 meeting. 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.