



Legislation Details (With Text)

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Title: Proposed Amendment No. 2
Contract No. GLWA-DB-150
Design-Build Repair for Portions of the Pennsylvania, Springwells and Northeast Raw Water Tunnels
CIP#: 116002

Sponsors: Cheryl Porter, Todd King

Indexes: Water Operations

Code sections:

Attachments: 1. Water and Sewer Tunnel Project Status and Conner Freud Pump Stations 11.13.pdf

Date	Ver.	Action By	Action	Result
12/19/2019	1	Board of Directors	Approved	Pass
12/11/2019	1	Operations and Resources Committee	Recommended for Approval	Pass

Proposed Amendment No. 2

Contract No. GLWA-DB-150

Design-Build Repair for Portions of the Pennsylvania, Springwells and Northeast Raw Water Tunnels

CIP#: 116002

Agenda of: December 19, 2019

Item No.: **2019-425**

Amount:	Original Contract	\$10,702,047.28
	Amendment No. 1	0.00
	Proposed Amendment No. 2	83,875,430.00
	Total Contract Amount	\$94,577,477.28

TO: The Honorable
Board of Directors
Great Lakes Water Authority

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

DATE: December 3, 2019

RE: Proposed Amendment No. 2
Contract No. GLWA-DB-150
Design-Build Repair for Portions of the Pennsylvania, Springwells
and Northeast Raw Water Tunnels
Vendor: Ballard Marine Construction, LLC

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-DB-150 Amendment No. 2 “Design-Build Repair for Portions of the Pennsylvania, Springwells and Northeast Raw Water Tunnels” with Ballard Marine Construction, LLC, at an increased cost of \$83,875,430.00 for a total cost not to exceed \$94,577,477.28 and an increased duration of 1,860 days for a total contract duration of 2,501 days;** and authorizes the CEO to take such other action as may be necessary to accomplish the intent of this vote.

BACKGROUND

The inspection work conducted under CS-1623 “Inspection, Condition Assessment and Engineering Evaluation of Raw Water Intake Tunnels and Related Facilities,” indicated that four sections of the Pennsylvania, Springwells and Northeast Tunnels required repairs. The four sections, ranging in length from 60 to 400 lineal feet, require repairs to address cracking that could result in soil infiltration. Left unaddressed, soil infiltration could result in raw water tunnel failure and result in loss of service for extensive portions of the GLWA water service area. The design-build project delivery method was selected over the traditional design-bid-build project delivery to encourage a broader range of approaches (wet versus dry repairs) to be developed for consideration by GLWA that balances risk to operations versus costs.

The scope of this project was to assess the damage to designated sections of the tunnel as identified in the draft CS-1623 report using the available video, inspection and subsequent geotechnical information. From the available information, the Design-Build (DB) Team conducted a gap analysis to identify data needs and developed and conducted the work necessary to complete the design and construction of repairs to the tunnel. In addition, an array of design alternatives were developed that allowed GLWA to select a preferred approach that considered bypass, dry, and wet repair options. The selected alternative provided for a wet repair of the tunnel with stainless steel inserts for the Springwells and Northeast repairs and crack repairs for the Pennsylvania portion of the tunnel.

The original budget for this work, based on the findings of the CS-1623 work was \$30 million. The following table highlights the differences between the original and current scope of work:

<u>Scope Item</u>	<u>Original Scope</u>	<u>Current Scope</u>	<u>Estimated Costs (without allowances)</u>
Springwells Tunnel Repairs	270 lineal feet (2 locations)	755 lineal feet (combined)	
Pennsylvania Tunnel Repairs	225 lineal feet	225 lineal feet	\$44 to 51.4 million
Access Shafts to complete work	Temporary	Permanent	
Northeast Tunnel	400 lineal feet	500 lineal feet	\$21 to 25.5 million

Based on the negotiation of the proposed production dependent guaranteed maximum price (PDGMP), we are recommending approval of Ballard Marine to complete this work. The key economic considerations are as follows:

Base Bid	\$65,000,000.00
Production Contingency	9,000,000.00
Cash Allowance	1,875,430.00
Provisional Allowance	8,000,000.00
Total This Change Order	\$83,875,430.00
Phase I Work Amount	10,702,047.28
Total Contract Upper Limit	\$94,577,477.28

The production contingency is negotiated unit rate work that will provide for the automatic adjustment of authorized work, should the assumptions used in the development of the work productivity rate or cost of materials for the base bid vary prior to the completion of the work. This risk-sharing approach was used to fairly compensate the vendor, and control GLWA costs from a negotiated change order, recognizing the uncontrollable factors associated with underwater construction.

In addition, an early completion incentive is proposed to define cost sharing benefits between GLWA and the vendor should the project be completed earlier than anticipated in the base bid. The incentive is capped at \$6.5 million (10 percent of the base bid) and further structured as follows:

Project completed at...	Incentive paid to Ballard at...
15% or more below Base Bid	40-percent of savings, up to cap
10% to 15% below Base Bid	30-percent of savings
5% to 10% below Base Bid	15-percent of savings
5% below Base Bid or less	No incentive paid to Ballard

The incentive structure will ensure that the vendor and GLWA appropriately share in the savings that will be realized if the work is completed ahead of the budgeted costs.

JUSTIFICATION

The Pennsylvania, Springwells, and Northeast tunnels convey over half of the raw water supply treated and supplied to the GLWA system. Due to the size and depth of these tunnels, a failure at any of the identified, stressed locations could result in severe disruption to the overall capacity of the GLWA water system. The distress and cracking observed in all three tunnels warrants an accelerated design-build project delivery to combine the investigation, engineering and construction services to define, design and implement the repairs. These repairs are necessary to assure the structural integrity of the tunnels and minimize the potential for collapse. These tunnels are the sole supply of raw water to two GLWA water treatment plants. A failure of the Pennsylvania tunnel would cause major disruption of water service to most

of GLWA's service area. Similarly, a failure of the Springwells and Northeast tunnels would cause major disruptions of water service to member partner communities along with associated institutions, medical facilities, and industries that depend on reliable water supply. Therefore, the repair of these tunnels is necessary to mitigate known issues and assure the integrity of these assets.

PROJECT MANAGEMENT STATUS

Original Contract Time	365 Days
Amendment No. 1	276 Days
Proposed Amendment No. 2	1,860 Days
New Contract Time	2,501 Days

PROJECT ESTIMATE

Original Contract Price	\$10,702,047.28
Amendment No. 1	0.00
Proposed Amendment No. 2	83,875,430.00
New Contract Total	\$94,577,477.28

FINANCIAL PLAN IMPACT

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

Funding Source: Water Construction Bond

Cost Center: Water Engineering

Expense Type: Construction (5519-882111.000-616900-116002)

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

Fiscal Year	Contractor's Estimating		
	CIP Plan	Projection	Variance
FY 2020 Budget	\$ 5,346,000	\$ 5,000,000	\$ 346,000
FY 2021 Budget	5,346,000	5,500,000	(154,000)
FY 2022 Budget	5,346,000	14,000,000	(8,654,000)
FY 2023 Budget	3,878,000	24,000,000	(20,122,000)

FY 2025 Budget	-0-	27,000,000	(27,000,000)
FY 2024 Budget	<u>-0-</u>	<u>8,375,430</u>	<u>(8,375,430)</u>
Total	\$19,916,000	\$83,875,430	\$(63,959,430)

The Board approved 2020-2024 CIP Plan provides sufficient planned spend for the current fiscal year. Draft version of the 2021-2025 CIP Plan provides an increased plan spend in the amount of \$30,619,000 for the construction phase, bringing the life-to-date construction phase total for the project to \$60,689,000. Future CIP Plan iterations will address the remaining estimating variance of \$33,840,000.

COMMITTEE REVIEW

This item was presented to the Operations and Resources Committee at its meeting on December 11, 2019. 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.