



Memo

To: Clay Pearson, City Manager

From: Cara Davis, Sr Project Manager –

CC: Trent Epperson, Assistant City Manager
Robert D Upton, P.E., Director of Engineering & Projects
Skipper Jones, Assistant Director of Capital Projects
John McCarter, Interim Director of Finance
Clarence Wittwer, Director of Public Works
David Van Riper, Assistant Director of Public Works

Date: October 1, 2020

Re: John Hargrove Environmental Center (JHEC) Wastewater Treatment Plant Expansion – **TWDB Funding Application**

1 October 2020
To: Mayor and City Council members
Much background, but basically, a revision to the TWDB loan amount is needed to cover the project cost potential, secure incredibly low long-term interest rates through TWDB. The actual borrowed amount can be adjusted down to what's needed. Clay

Purpose

This memo provides information about progress on the John Hargrove Environmental Center (JHEC) Wastewater Treatment Plant Expansion project and the proposed request to **revise Resolution 2020-28 previously approved January 27, 2020 increasing the authorized loan amount from \$64 million to \$75 million for the Texas Water Development Board (TWDB) funding application for the project.**

Background

The JHEC Water Reclamation Facility (JHWRF) currently has a current capacity of 4 million gallons per day (MGD). Ardurra Group provided the engineering services for a Preliminary Engineering Report (PER) submitted in January 2017, assessing development/population driven capacity requirements for the plant and originally recommending a capacity expansion of 5 MGD to meet ultimate building out requirements assuming annexation of areas south of existing city limits located in the ETJ.

A Project Information Form (PIF) was submitted to Texas Water Development Board (TWDB) in March 2017 requesting \$75 million based on the PER cost estimate, for the proposed 5 MGD expansion, that identified probable construction costs and a total project cost, including design, construction, testing and construction management. When annexations laws were changed later in 2017 a Technical Memorandum amending the original findings of the PER was submitted in September 2018 recommending a 2 MGD expansion for a total of 6 MGD plant capacity. The PIF document and its cost estimates were based on original capacity requirements developed in the Preliminary Engineering Report for a 5 MGD expansion. The reduced recommendation contained in the September 2018 PER Amendments reduced the anticipated construction cost of the project to \$56.4 and with final design, construction, testing and construction management the total project

cost was estimated to be \$64 million. At that time Staff requested Council authorize an application for TWDB Clean Water State Revolving Funds, in January 2020, of \$64 million (total project cost).

The project included planning and design for the expansion of the Sequential Batch Reactors (SBR) treatment basins adding two new basins, significant rehabilitation and modifications to both influent lift stations, modifications to the multiple sub-systems including the headworks structure and screens, adding a grit removal system, tertiary treatment and adding a second channel of UV filters to allow future expansion, if required, to be done without plant shutdown.

As final design began, the site was also identified for storage of Emergency Operations equipment, such as rescue vehicles and generators, and to house a limited number of emergency operations personnel for staging, briefings and deploying during such events. The Operations building was scheduled to be expanded in the initial project due to the lack of separation of clean space for office and record storage as well as food preparation and consumption. This expansion offered the opportunity to provide dual use space.

- Emergency vehicle and generator storage was added to the site plan
- Operations building was expanded to be capable of performing as a Staff shelter, staging and briefing center for EOC operations.

Additionally, Staff sought to ensure the plant expansion would leave the facility capable for future expansion, estimated at an additional 2MGD due to growth within the existing City limits projected out after 10 years, without the need to schedule plant shutdowns, a situation that greatly increases the construction costs due to risks assumed by the contractor. Several process modifications were added to the original scope to cover this contingency, including:

- Replacement of Ultra Violet disinfection equipment to replace end of life system
- Upgrades were added to the tertiary treatment equipment (Aqua Aerobics fabric filters)
- Headworks size was increased to prevent modifications in any future expansion
- Replacement of pipe headers at Influent Lift Stations, added gates
- Added Odor Control at the influent lift station
- Modified the design of the planned splitter box (replacing with yard piping)
- Added Sludge Transfer Station to provide operational flexibility
- Added Pre-Rotation Pump in Influent Lift Station-1
- Include SCADA under CMAR project

In March 2020, the CMAR provided its 30% Opinion of Probable Construction Cost (OPCC) incorporating the above additions beyond what had been included in the original PER and the amending Technical Memorandum estimate from the Engineer. The revised construction estimate came in at \$64.5 million. Early indications were that this cost could go down as the design evolved and matured.

In April, with the results of the sewer basin model and new operational concerns, new additions were made to the scope. These additions included:

- Pre-Rotation pump equipment was added to Influent Lift Station 2 to ensure uptake of solids to reduce contracted solids removal costs and prevent cavitation of the pumps

- Fine screen channels were added to the Headworks to provide future process flexibility
- Control Building/Lab rehab and expansion was added to meet ADA compliance
- Increase width of fire lane from 20' to 24' to meet Fire Department access requirements
- SCADA Allowance increased from \$300k to \$600k to ensure adequate budgeting
- Non-Potable Water System Yard Pipe system was expanded to capture sufficient water for process use

In July, at the 60% Design Review meeting, the CMAR presented updated cost estimates reflecting the full scope as modified by the above additions. The 60% OPCC was estimated to be \$69,744,336.

Upon the receipt of the 60% OPPC, Staff determined that a major value engineering (VE) exercise was necessary to verify the need and value of these additions to the design and to attempt to get the project back into the original budget range. Multiple items were identified for reduction, removal or alteration that would reduce costs. Over the course of three weeks a very successful series of VE meetings were conducted with the CMAR removing, reducing or altering system components, including:

- SBR Foundations - Vibratory Piles in Lieu of Auger Cast Pile Design, geotechnical agreed
- Sludge Building Structural - First floor will be precast concrete with CMU block infill. Second floor will be pre-engineered metal building (PEMB) (insulated metal panels) with partial walls (open to atmosphere)
- Reduce Demo of existing Surge Basin Slab to holes - vs - full slab removal
- Sludge Building polymer Mono Rail Hoist removal;
- Open Canopy structure for Vehicle & Equipment Storage Area (Delete)
- Pre-Cast Lone-Star Building or E-Building, Electrical BB-1
- A Risk Reduction change was made at the corner of the Electrical and Blower Building No. 2 Electrical Room Modifications to omit the need for a deep excavation at that location
- Operations Building changed to pre-engineered metal structure retaining EOC space
- Reduce Site Paving and Existing Demo (less Paving)
- Bid Packages Strategy & Early Works Packages
- Eliminate channels at Headworks for future fine screens
- Add Splitter box to reduce 24" screened Raw Sewage Pipe
- Eliminate one Belt Filter Press (not conveyor)
- Use HDPE for Raw Sewage & Screened Raw Sewage Pipe instead of Ductile Iron Pipe
- Remove Odor Control – Due to the location of the site and lack of residential or commercial development in close proximity, this component could be removed without issue. New technology to include mixers in the lift station will minimize solids and assist with odors.
- Remove Pump Pit at Aerated Sludge Holding Tanks Nos. 1 and 2

The review exercise for the VE items produced an estimated savings of \$(5,322,681). However, there are related design costs to make the revisions to existing designs in the amount of \$367,100 and equipment allowances estimated at \$108,424, which provides a net savings of \$(4,847,158). Although not final at this point, the revised estimate is now trending at \$64,897,178.

Costs already encumbered on the project that are slated for reimbursement with loan funds include the design contract for Ardurra, \$3,775,000 and the CMAR contract for PLW, \$828,960. Estimated costs for construction, construction management/inspection, and construction materials testing are \$64,897,178, \$3,612,000 and \$450,000 respectively. **The total estimated project costs currently stand at \$73,563,138.** For that reason, Staff are requesting that Council revise the authorized TWDB loan request amount from \$64 million to \$75 million to cover all anticipated costs as currently estimated including design, construction, testing and construction management. The requested loan amount can be decreased if market conditions reduce costs but, it cannot be increased without a new loan application.

Current Status

The TWDB loan application is in place but the amount must be adjusted before the end of October in order to be scheduled for the November TWDB Board meeting where it will be considered. The CMAR's GMP, based on 90% plans and specifications is due in late February 2021. The CMAR is planning to begin his bidding process leading to the creation of his GMP in November. The schedule for loan closing is set for February. The total loan funding request can be adjusted down at any time before loan closing, based on more accurate pricing after the GMP is received and accepted. **The current approved FY21 CIP budget has been revised to account for all current costs anticipated for construction and the current wastewater rates account for this cost.** Increasing the authorized loan amount to \$75 million will allow the City to benefit from the historically low interest rates versus supplementing with higher interest rate revenue bonds.

The loan application is for Clean Water State Revolving Fund Non-Equivalency funds that are currently trending at 1.3 basis points below market rates given City of Pearland's AA rating. Current interest rates indicate that the loan would be funded with an interest rate in the area of 0.29%. Rates are locked in 45 days prior to loan closing. The loan requirements include a 1.75% loan origination fee, the adoption of Water Conservation and Drought Contingency Plans (which are already in place), the preparation of an Environmental Assessment (completed with the Expansion design), and construction requirements such as Davis-Bacon wage rates, and compliance with the EPA's American Iron and Steel provisions that are not required for the City's normal bond funding.

Budget Information

Current budget information reflects early construction costs estimated during the CMAR process. This estimate was developed during the 30% design phase and contains a significant contingency to cover unknowns. As with other CMAR led projects cost estimating and refinement of cost-effective design and construction methodologies are primary scope components for the CMAR. These figures will change as the project progresses and ultimately produces the CMAR's GMP at which time the City may accept that price and issue a contract for construction.

Funding Sources	Series	To Date	Future	Total Budget
General Revenue - Cash				-
W/S Revenue Bonds	2016A	752,500		752,500

W/S Revenue Bonds	2018B	2,111,526		2,111,526
W/S Revenue Bonds			34,765,000	34,765,000
Impact Fee – Cash		2,111,525		2,111,525
Impact Fee – Debt	2016A	752,500		752,500
Impact Fee – Debt			34,765,000	34,765,000
Other Funding Sources		386,949		386,949
Total Funding Sources		6,115,000	69,530,000	75,645,000

Expenditures	To Date	Future	Total
PER	475,000		475,000
Land			-
Design	3,775,000	710,000	4,485,000
Construction	828,960	64,897,178	65,726,138
Construction Management/Inspection		3,612,000	3,612,000
Construction Materials Testing		450,000	450,000
FF&E		500,000	500,000
Total Expenditures	5,078,960	70,169,178	75,248,138

Project Balance/Contingency	396,862
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Schedule Info:

	Base Line	Current
Design Start	March-19	April-19
Bid Start	November-20	September-19
Construction Start	November-20	April-21
Proposed Construction Completion	October-23	

This project was procured through the Construction Manager at Risk (CMAR) process. The original base line schedule was projected using the design-bid-build process.

Recommendation

At the October 12, 2020 City Council meeting, Staff will recommend that Council authorize a revision to the previous resolution to authorize the submittal of an application for TWDB funding in the amount of \$75 million. Following this authorization, the application will be updated and forwarded immediately to TWDB to be included in the November Board agenda for approval. Council will have an additional opportunity to approve the final loan application and amount when the loan is scheduled for closing in early 2021.

JOHN HARGROVE WATER RECLAMATION FACILITY



Legend/Notes

WTP Wastewater Treatment Plant

1:7,715

1 inch = 640 feet



This product is for informational purposes only and may not be prepared or prepared pursuant to any engineering or other professional standards.

DATE PREPARED: JANUARY 24, 2018