



Memo

8/8/2019

To: Mayor and City Council members
Background to consider Surface Water
Treatment Plant Package 1 final design
services. Trent

To: Clay Pearson, City Manager

From: Skipper Jones, Assistant Director Capital Projects

CC: Trent Epperson, Assistant City Manager
Robert D. Upton, P.E., Director Engineering and Capital Projects
Clarence Wittwer, Director Public Works
David Van Riper, Assistant Director Public Works

Date: August 8, 2019

Re: Surface Water Treatment Plant – Pre-Award Notification for
Package 1, Final Design

Purpose

This memo provides information about progress on the Surface Water Treatment Plant project and Pre-Award information for a Contract for Final Design Services to Freese & Nichols (FNI) for Package 1 incorporating both on-site components of the project as detailed below. This award is scheduled for the August 26th, 2019 Agenda.

Background

Package 1 consists of Site work for the design of the Raw Water Intake Structure and Pumping Station as well as the Site Detention. In April 2017, Council awarded Preliminary Design contracts to Freese and Nichols (FNI) for Package 1; to CDM Smith Package 2 and in April 2018, to Stantec Consulting for Package 3. In March 2019, Council awarded the first contract for Final Design Services for Package 2 to CDM Smith. In March, 2019, Council awarded the Construction Manager at Risk (CMAR) contract to Pepper Lawson Waterworks (PLW). On August 26th Staff will bring the Final Design proposals for Packages 1 & 3 to Council for approval and award.

Current Status

Preliminary design work has been completed on Package 1 and the final report was amended in February this year to address changes to the plan to incorporate a Pre-Sedimentation Basin (PSB) into the plant process. The Preliminary Engineering Report (PER) identified geological conditions that would not cost effectively support any economical design to modify the existing sand pit to utilize the structure for Pre-Sedimentation of raw water. Reported conditions indicated that soil stabilization requirements, bank stability and high ground water levels would necessitate design and construction methodologies too costly to make the use of the existing pit in its current configuration for this purpose. Site constraints prohibited the possibility to relocate a pre-sedimentation basin elsewhere within the plant site. Fortunately pilot plant data, obtained during the nine month operations, demonstrated that raw water turbidity never approached or exceed the capability for the planned processes to produce high quality drinking water without a separate pre-sedimentation basin. With this finding Staff are reviewing uses for this portion of the site that may include off channel stormwater detention in conjunction with Brazoria Drainage District 4 (BDD4) and are evaluating the need for future stored water capacity if the plant is expanded in the future.

The revised design concept will now include a direct raw water feed from the Gulf Coast Water Authority's (GCWA) canal to the plate settlers, omitting the pre-sedimentation process entirely. Additional chemical treatment will be required in this process to ensure adequate flocculation at the plate settlers and this will likely increase plant sludge production and dewatering requirements. While this change results in a significant cost reduction to the construction phase it will require some re-design effort at the preliminary engineering level to fully develop the alternative requirements made necessary by this change. The additional preliminary effort is included in this scope of work along with the Final Design scope.

Staff are ready to move forward with the award of Final Design for Package 1. FNI has modified their delivery schedule to coordinate delivery of 60% and 90% plans with those of Package 3 so that the CMAR can include Package 1 work in early out packages and have all three packages at 90% or better for the issuance of the Guaranteed Maximum Price (GMP).

Contract Scope

The Scope of Work includes a limited preliminary design effort, as explained above, and Final Design services for the Raw Water Intake Pump Station, now to be located just off of the GCWA canal and discharge piping to the plate settlers. This will include a bar screen device, automated controls and electrical within the pump station and chemical injection as well as advanced water analytical systems to allow for adequate chemical pre-treatment. In addition, this contract will now include site drainage, outfalls and detention design incorporating City requirements and accommodating Brazoria Drainage District #4's requirements for additional channel right of way for Mustang Bayou.

Additional Services are provided as Hourly, Not to Exceed, and include: CMAR coordination, environmental permitting of drainage modifications to existing channels, electrical design services, additional topographic surveying, additional geotechnical investigation/ engineering, hydrologic and hydraulic analyses. Total cost for the additional preliminary efforts, Final Design services, and Additional Services is \$1,299,183.

On August 26, Staff will recommend Council award the contract for Final Design services for Package 1 to FNI.

Next Steps:

Design efforts will begin immediately upon award with a short preliminary phase to establish the basis of final design and obtain Staff approval. The Design schedule anticipates 60% plans complete by November of 2019 and 90% plans complete by the end of February, 2020. During this time the CMAR (Pepper Lawson Waterworks) will be interfacing with CDM, Stantec and FNI on cost estimating, perfecting construction cost control/efficiency, ensuring constructability. Because the CMAR has control of all on-site and off-site work as these packages near completion the CMAR/Owner Team will be making decisions on early-out bid and construction packages. The packages could include complete segments or portions of the three transmission lines, the GST, portions of site security and access or other work items that are largely independent of the activities surrounding the Plant. The use of early out packages will accelerate the construction schedule at no additional cost.

Budget Info:

Funding Sources	Series	To Date	Future	Total Budget
W/S Revenue Bonds	2017B	6,012,500		6,012,500
Impact Fee - Debt	2017B	6,012,500		6,012,500
W/S Revenue Bonds	2018A	4,325,000		4,325,000
Impact Fee - Debt	2018A	4,325,000		4,325,000

W/S Revenue Bonds	2019A	10,500,000		10,500,000
Impact Fee - Debt	2019A	10,500,000		10,500,000
W/S Revenue Bonds	Future		68,362,500	68,362,500
Impact Fee - Debt	Future		68,362,500	68,362,500
Cash				-
Other Funding Sources				-
Total Funding Sources		41,675,000	136,725,000	178,400,000

Expenditures	To Date	Future	Total
PER	9,378,750		9,378,750
Land		915,000	915,000
Design	5,207,827	6,960,434	12,168,262
Construction Contract		145,351,000	145,351,000
Construction Management/Inspection			-
Construction Materials Testing		350,000	350,000
FF&E			-
Total Expenditures	14,586,577	153,576,434	168,163,012

Project Balance/Contingency			10,236,988
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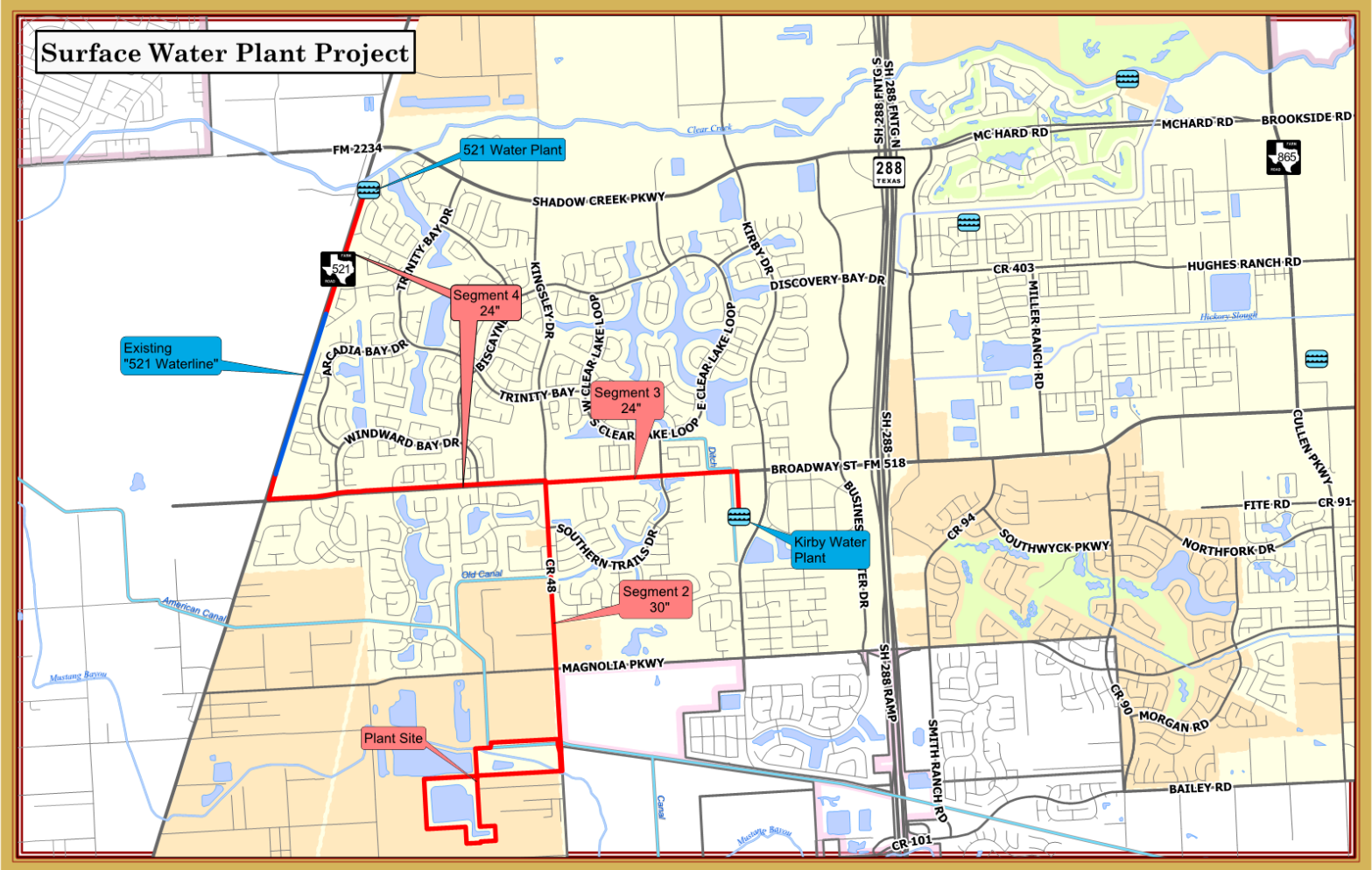
Schedule Info:

	Base Line	Current
Design Start - Package 1	August-19	
Design Start - Package 2	February-19	March-19
Design Start - Package 3	August-19	
Bid Start	March-20	January-19
Construction Start	May-20	October-20
Proposed Construction Completion	December-22	

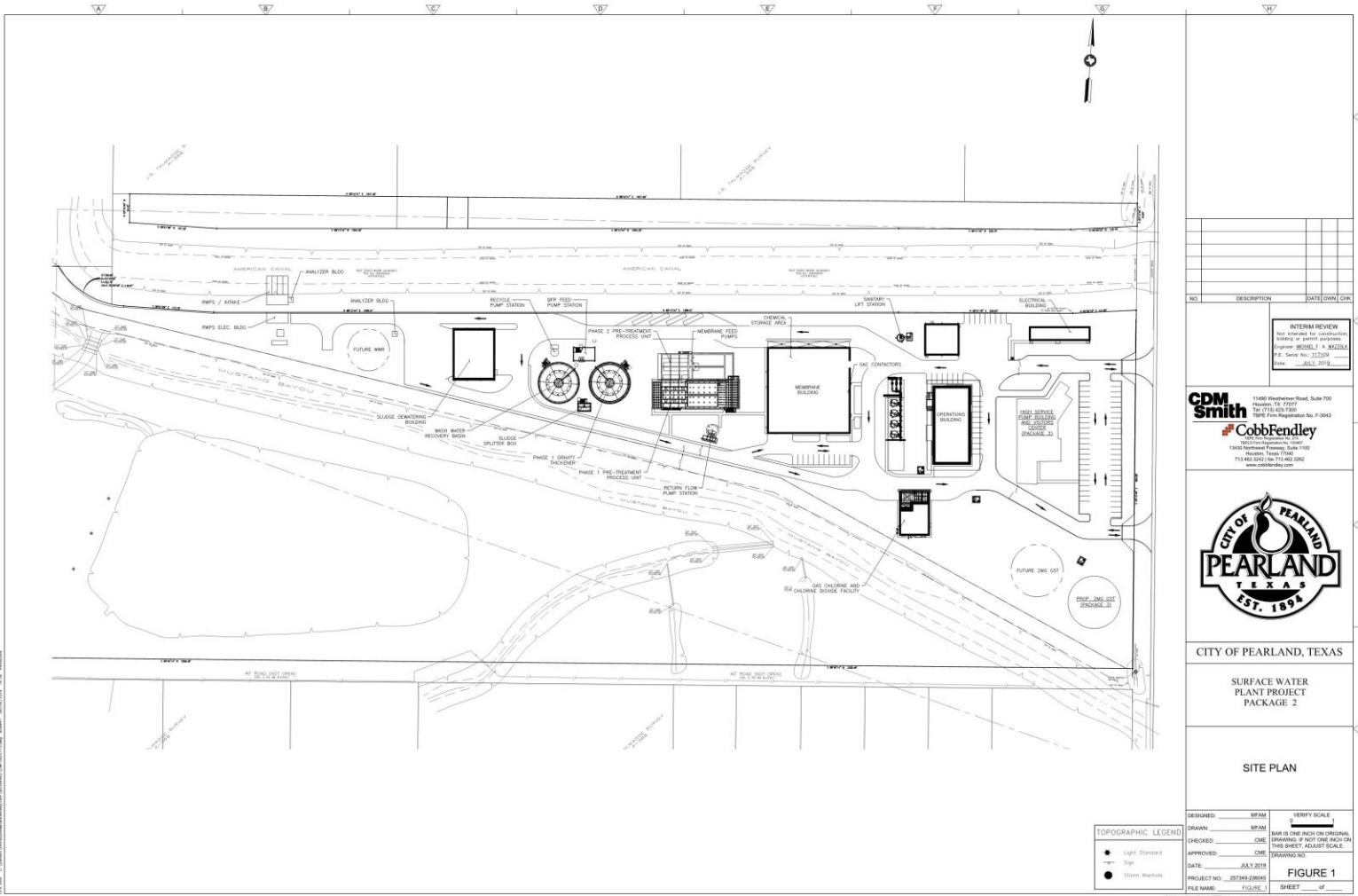
Rain Days: N/A

*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. In January 2019 the City advertised for a CMAR contractor.

Project Location Map



Current Plant Site Plan



NO.	DESCRIPTION	DATE OWN. CHG.
INTERIM REVIEW		
Not intended for construction building or utility purposes.		
Engineer: BRIDGEMAN & COBBFENDLEY		
P.E. State No. 22329		
Date: JULY 2015		

CDM Smith
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Houston, TX 77070
Tel: (713) 433-7300
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13450 Northwest Freeway, Suite 1100
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CITY OF PEARLAND, TEXAS

SURFACE WATER
PLANT PROJECT
PACKAGE 2

SITE PLAN

DESIGNED	BY	VERIFY SCALE
_____	MFJM	_____
DRAWN	BY <td>_____</td>	_____
_____	MFJM	_____
CHECKED	BY <td>_____</td>	_____
_____	CM	_____
APPROVED	BY <td>_____</td>	_____
_____	CM	_____
DATE	JULY 2015	
PROJECT NO.	257343-20085	
FILE NAME	FIGURE 1	
	SHEET	1 of 1

TOPOGRAPHIC LEGEND

- Light Standard
- Sign
- Storm Manhole

60% SUBMITTAL - NOT FOR CONSTRUCTION