



Memo

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: January 23, 2019

Re: Surface Water Treatment Plant – Early Work Package 1

1/23/2020
To: Mayor and City Council members
Extremely large and important investment for the future -- securing water for all the essentials of life. Moving forward for first construction project elements, and early work package, to come for your consideration. Clay

Purpose

This memo provides information about progress on the Surface Water Treatment Plant project and presents information pertaining to the release of an Early Work Package-1 (EWP1) to the Construction-Manager-at-Risk (CMAR), PLW Waterworks LLC. This proposed award is the first of three progressive Guaranteed Maximum Prices (GMP's) anticipated for the construction of the project and is scheduled for the February 10, 2020 Agenda.

Background

Final Design of the project began in March 2019 with the award of the CDM-Smith contract for Package 2, (the Plant). In April, Council Awarded the Pre-Construction Services Contract for the Construction CMAR to PLW Waterworks (PLW). In August, Council awarded Final Design contracts for Package 1, Raw Water Intake Pump Station and Site Drainage/ Detention to Freese & Nichols and Package 3, High Service Pump Station, Ground Storage Tank and Transmission lines to Stantec. While plans for Package 1 and Package 3 are currently scheduled to reach 60% in mid- January, Package 2 hit the 60% milestone this past October and is scheduled to deliver 90% by the end of February 2020. Staff conducted a two-day review session on the 500+ sheet plan set to return comments to CDM before the end of that month. CDM is currently incorporating those comments and progressing the design towards the 90% milestone.

The current CMAR contract with PLW includes Pre-Construction Services in the amount of \$992,320 and an Owner Allowance of \$100,000 totaling \$1,092,320 covering the current activities conducted during design refinement, constructability reviews and consulting and cost estimating for the entire project.

Working with the CMAR, Staff has determined that the optimal strategy to move the project forward as quickly as possible without disrupting the GMP process is the development of two Early Work Packages (EWP's). EWP1 will focus on site preparation as described in more detail below. EWP2 will focus on the procurement of long lead time equipment and the installation of deep foundations for structures that are below ground to minimize construction conflicts and use of shoring due to site piping installation. EWP2 will be presented and detailed at a later Council meeting later in the 1st quarter of 2020. The cost of both EWPs will be a component of the overall project GMP and not in addition.

Design Package 2 now contains enough site development information to formulate an Early Work Package. Based on completion of the 90% plans for the CMAR to issue the GMP, set for August 2020, this process creates opportunities to begin work as early as March 2020 based on TWDB/ TCEQ review turnaround. The benefit of this approach is two-fold:

1. the reduction of unknowns inherent in a project with construction beginning prior to total and final completion of the design.
2. the early accomplishment of select site and contractor mobilization activities outside of the schedule for construction makes productive use of the time.

Reduction of unknown conditions and early start of field work reduces the chance of major delays to the schedule and the commensurate cost increases, typically understood as “Risks”. EWP1 will reduce risk for future construction phases thereby reducing the risk factor in the bids for the work that comprise the GMP for the balance of plant work. The current schedule for the project calls for the delivery of drinking water to the City’s distribution system by January 2023. Construction time estimates point to approximately 2 years for construction. Early scheduling efforts have set aside approximately 6 months for plant commissioning, scheduled to begin in June 2022. Backing up 2 years from this date places the start date for full construction efforts to begin between June and August 2020 time frame. Initiating Early Work Packages will help meet this work schedule by getting mobilization and preliminary site portions of the work started ahead of the planned schedule.

Current Status

The CMAR has been interacting with all three design packages and has produced two interim cost estimates to provide a budget for the Construction Phase. The latest, presented here, is based on the 60% completion of the Plant portion (Package 2) with slightly less than 30% for Package 1 (Raw Water Intake & Detention) and Package 3 (High Service Pump Station, Ground Storage and Transmission Lines). That preliminary cost budget currently places the total cost of construction at \$130 million dollars including bonds, insurance, fees, contingency and pre-construction costs and general conditions.

The CMAR process capitalizes on the contractor’s expertise to guide and inform project cost savings, constructability and schedule efficiencies. Working with the 60% design from Package 2 and developing designs from Packages 1 and 3 the CMAR has identified a Scope of Work for EWP1 that can be executed immediately. Current site conditions reflect an undeveloped area bearing the tail-tell marks of its former status as a sand and soil mining facility and former home of a utility contractor. Existing soil and subsurface geological conditions resulted in early changes to the facility planning and the postponement or abandonment of the use of the former sand pit as the pre-sedimentation basin at this time. This decision resulted in reducing the current project costs by approximately \$40 million dollars attributed to the conversion of the former sand pit site to the pre-sedimentation basin. The use of the sand pit is being reevaluated to determine the most cost-effective way to add a pre-sedimentation basin in future plant phases.

The majority of the work in EWP 1 is site dirt work, focused on removal of surface soils unsuitable for construction, preliminary grading and drainage of the site and installation of access for follow-on work forces and materials to the site.

Temporary facilities for construction management will be required for the duration of the project. Due to the project location, typical water and sewer utilities are not available and will need to be developed

by drilling water wells (or rehabilitating existing wells) and using temporary holding tanks for sewer, in preparation for major construction activities to begin. This will allow the CMAR to bring in the temporary construction offices required for project personnel during the major work. While Package 2 is primarily focused on the plant process piping, equipment and facilities, the plans establish both vertical and horizontal requirements for the majority of the site layout. Plans for this package include location, configuration and sizing for drainage, utilities, buildings and roadways within the plant process area.

Compliance with TWDB Requirements

This project meets Texas Water Development Board (TWDB) requirements pertaining to procurement and the procedures to meet the Minority Owned Enterprise and Women Owned Enterprise goals established by TWDB. PLW Waterworks has worked with TWDB to create a plan to address all procurement procedures to ensure full compliance with these requirements. Consequently, PLW has successfully met the projects legal advertisement obligations

In October, PLW posted a solicitation in various media venues including the Houston Chronicle, El Perico, Facebook and Civcast as part of the required outreach program to make vendors/ contractors aware of the project. This advertisement effort resulted in a broad list of pre-qualified firms that will bid all major sub contract work packages. The process was submitted to TWDB and approved as meeting all funding requirements.

Per the contract, this work will be authorized by Amendment #1, titled “Early Work Package-1” to the CMAR contract to authorize a Guaranteed Maximum Price for the work contained in EWP1. This process will follow the same procedures and operate under the same Terms and Conditions as set out in the original contract.


PLW will validate the budgets presented in the EWP1 Amendment with the results from bid packages obtained through their transparent (Owner observed) bid processes per the agreement for all work. In the case of EWP1 this will include:

- Major Earthwork
- Major Demolition
- SWPPP
- Storm Sewer

Guaranteed Maximum Price for EWP#1

The cost proposal for EWP1 is based on PLW’s current cost estimates for the identified Scope of Work and is based on the level of detail included in the 60% design documents for all three design packages or that can reasonably be anticipated at this point in the design process. This work will be bid in January and the CMAR will prepare a Recommendation for each component. The City will review those bids and the CMAR’s recommendations and make final decisions on selected contractors and prices. The ultimate cost of EWP1 will be based on those bid results and any savings will be returned to the project. EWP 1 covers Divisions 01, General Requirements and Division 02, Sitework only at this point. This proposal is based on a GMP for these services and is an advanced component of the final GMP that will be provided at 90% design and will be rolled into the final GMP. Details of the scope and proposal are in the attached **Exhibit to the Memo**.

Current Proposed CMAR Construction Budget, based on 60% design

 City of Pearland Surface Water Treatment Plant CMAR 60% BUDGET					
Description	Budget	EWP1	EWP2	Balance of Plant	GMP
Specifications Sections					
Specification 01 - General	10,927,000	2,985,160	-	7,941,840	10,927,000
Specification 02 - Sitework	16,078,726	3,985,000	-	12,093,726	16,078,726
Specification 03 - Concrete	12,866,709	-	-	12,866,709	12,866,709
Specification 04 - Masonry	183,351	-	-	183,351	183,351
Specification 05 - Metals	3,997,041	-	-	3,997,041	3,997,041
Specification 06 - Wood and Plastics	77,593	-	-	77,593	77,593
Specification 07 - Thermal and Moisture Protection	1,833,321	-	-	1,833,321	1,833,321
Specification 08 - Openings	1,433,558	-	-	1,433,558	1,433,558
Specification 09 - Finishes	2,153,278	-	-	2,153,278	2,153,278
Specification 10 - Specialties	123,105	-	-	123,105	123,105
Specification 11 - Equipment	11,114,000	-	-	11,114,000	11,114,000
Specification 12 - Furnishings	400,766	-	-	400,766	400,766
Specification 13 - Special Construction	2,059,975	-	-	2,059,975	2,059,975
Specification 14 - Overhead Bridge Crane	103,360	-	-	103,360	103,360
Specification 15 - Mechanical	28,804,349	-	-	28,804,349	28,804,349
Specification 16 - Electrical	22,588,000	-	-	22,588,000	22,588,000
COST OF WORK TOTAL	114,744,000	6,970,160	-	107,773,973	114,744,133
CMAR Fee - 4.85%	5,817,000	338,052	-	5,478,948	5,817,000
CMAR Fee on Owner Procured Equipment - 2.75%	82,500	-	-	82,500	82,500
Project Contingency	5,191,000	-	-	5,191,000	5,191,000
Bonds and Insurance	2,999,000	171,044	-	2,827,956	2,999,000
Construction Planning Services	1,092,320	-	-	1,092,320	1,092,320
TOTAL	129,925,820	7,479,256	-	122,446,697	129,925,953

The above chart shows currently identified costs for each of the budgetary line items. Cost shown in the EWP1 column will have additional expenditures in future awards as part of the overall GMP. Those additional costs will be added when the balance of that work is bid and full costs of work is known.

Next Steps:

Initial Site Grading and Drainage plans have been sent to Brazoria Drainage District #4 and received partial approval for preliminary grading and drainage work. Simultaneously the plans will go through the City's permitting process for a grading permit.

Upon Council approval of Amendment #1 "Early Work Package 1", the CMAR will begin preparations to mobilize on site. Mobilization is planned for March 2020. Once on site, the work for Early Work Package 1 will proceed seamlessly into the work of the final GMP anticipated for July or August 2020.

Package 1 designers are currently in discussion with the Corps of Engineers and will be filing a letter of No Permit Required for the work contained in this package. Later phases may require Nationwide permits yet to be determined.

An Early Work Package 2 is planned to be assembled in February 2020. This package will contain major plant equipment purchases that have long lead times associated with the fabrication and delivery of items such as the membranes and racks and possibly deep foundations as they are identified during the development of this package.

Recommendation

On February 10, 2020 Staff plans to submit Amendment #1 (EWP1) to the Construction Manager at Risk contract with PLW Waterworks LLC for Council approval and authorization and will recommend Council approval of the first step towards a final GMP to implement initial work on site.

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	9,376,810		9,376,810
Land		1,900,000	1,900,000
Design	12,368,006		12,368,006
Construction (Pre-Construction)	1,093,320		1,093,320
Construction (Early Work Package 1)		7,479,256	7,479,256
Construction (Early Work Package 2)		24,000,000	24,000,000
Construction		114,750,000	114,750,000
Construction Management/Inspection		2,000,000	2,000,000
Construction Materials Testing		350,000	350,000
FF&E		1,000,000	1,000,000
Total Expenditures	22,838,136	151,479,256	174,317,392

Project Balance/Contingency	4,085,608
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Schedule:

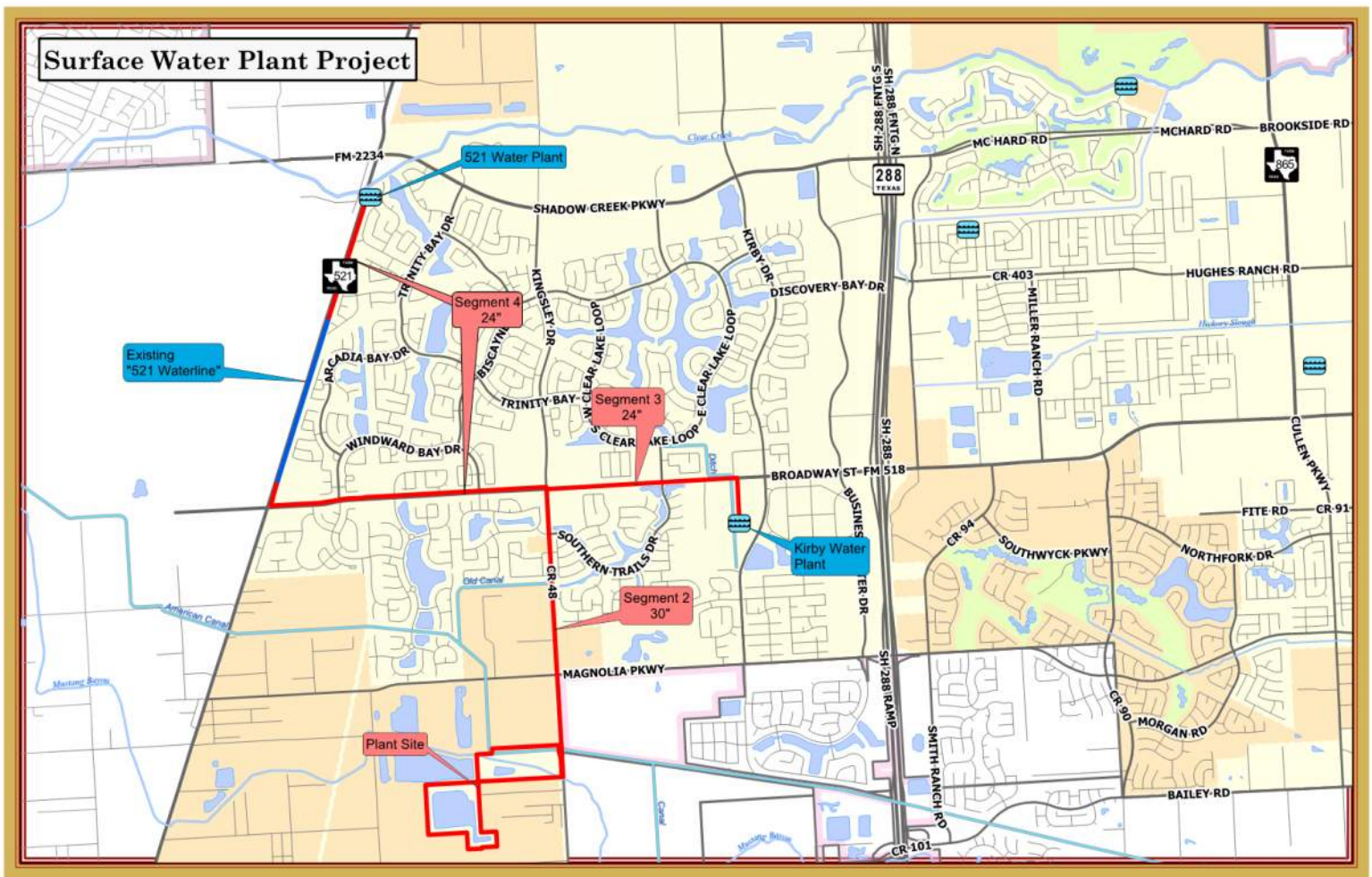
	Base Line	Current
Design Start - Package 1	August-19	September-19

Design Start - Package 2	February-19	March-19
Design Start - Package 3	August-19	September-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



January 23, 2020 Memo
Surface Water Treatment Plant Early Work Package 1

Exhibit to the Memo

Contract Scope for Early Work Package 1 (EWP1) and Proposed Pricing

Sitework: \$3,985,000

- **Survey and Control: \$ inclusive**
 - establish vertical and horizontal controls on site.
- **Storm Water Pollution Prevention Plan: \$37,500**
 - permit and installation of the filter fabric fencing for package 1, 2 and 3
- **Earthwork: \$3,557,500**
 - Including the removal of all overburden from the project site excavation of the detention pond moving these soils to the North Side of Mustang Bayou to raise the site elevations above the flood plain. The project site will be graded to improve site drainage from North to South draining to the Swales being installed improvement of temporary roads and laydown areas.
- **Site Demolition: \$100,000**

Funds have been budgeted for the demolition and removal of all known structures on site, inclusive of the pre-engineered metal building that housed the Pilot Plant, miscellaneous concrete foundations, structures, electrical, piping, roads, and septic system tanks and lateral drain field systems. Existing water well to be demolished and concrete filled per TCEQ rules (Chapter 76.104).
- **Storm Sewer: \$140,000**

Swales along the South property line to three permanent storm structures with outfalls to the bayou have been included within this EWP. Also included is the main outfall structure that connects to the site storm sewer system. All other storm sewer piping will be included in a future package. With this work and the site graded for positive drainage to these structures, the site can be maintained during the construction phase.
- **Street Curb Cuts and Turn Lanes: \$150,000**

Allowances have been established for work associated with the installation of curb cuts and turn lanes required at FM48. The work is needed for safe site access in both directions along CR48.

General Conditions: \$2,985,160

- **Personnel \$1,607,600**

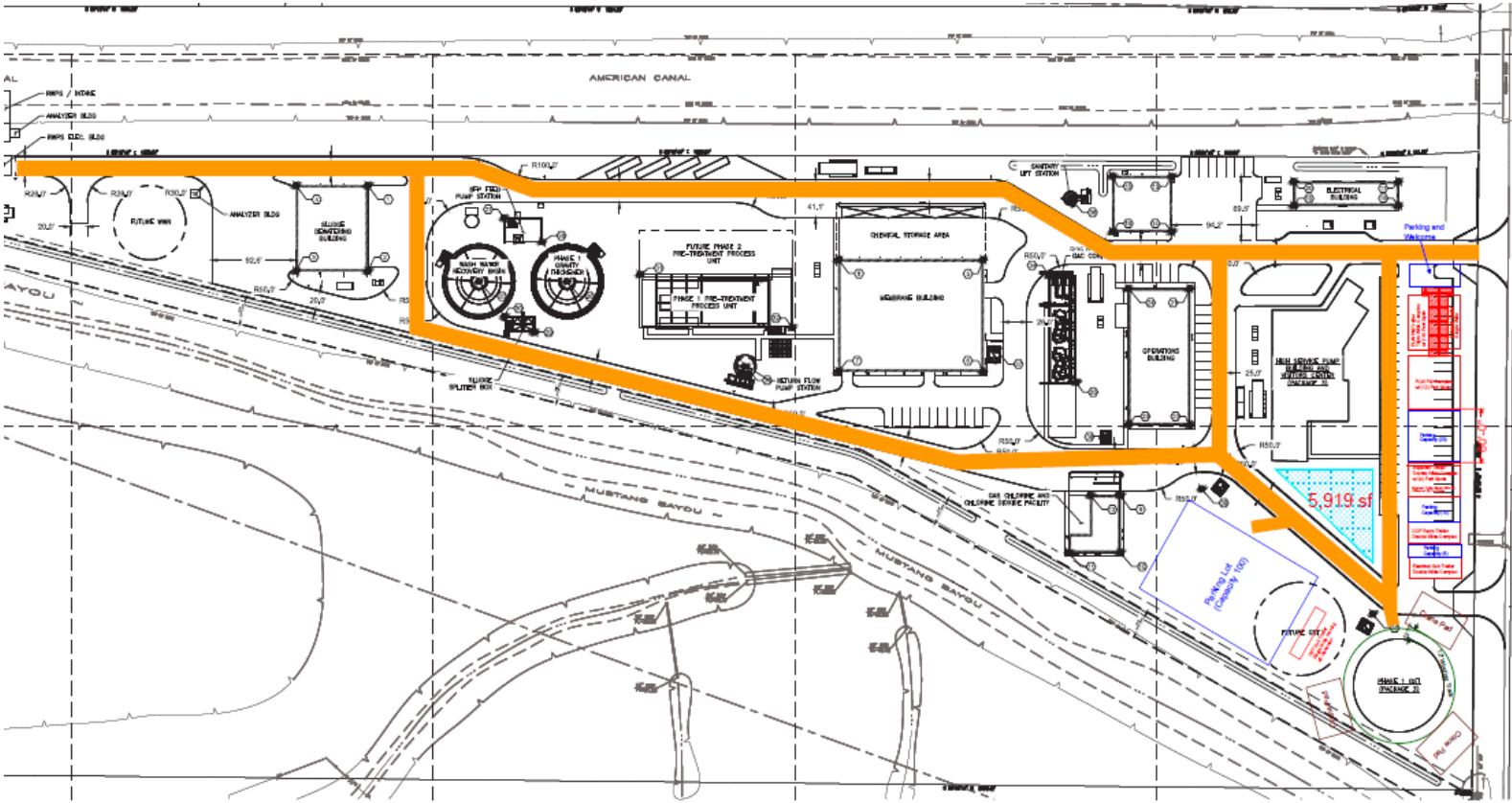
Management Personnel for the first eight months of the project have been included within this early works package. It is anticipated that personnel will be added throughout the first 6 months as the project reaches full production staffing. Effort and activities would begin upon council approval and NTP and extend through August 2020.
- **Construction Support Crew:**
 - Labor A crew has been included to perform duties associated with the maintenance of the SWPPP, flagging, loading, off-loading, general site cleaning, trailer complex cleaning and housekeeping, temporary fence maintenance, surface water pumping, etc'.
 - Tools and material budgets have been established and included for the crew's use in performing their duties.
 - Equipment

Off-road forklift, street sweeper as well as additional miscellaneous equipment rentals required to maintain the site has been included.

- **Site Logistics: - \$1,377,560**
- Installation of the Trailer Complex in accordance with Specification Section 01520, Additionally, spaces and storage areas will be installed as the project progresses. All required necessities for an operational complex inclusive of furniture, copiers, office supplies, dumpsters, etc. are included for a period of eight months.
- Temporary Fencing
Temporary site fencing will be installed around the perimeter of the site located North of the bayou under this EWP.
- Temporary Utilities
Utilities will be brought to the project inclusive of power, water, sanitary sewer and internet service. Two, 4-inch Water wells at the front and back of the site will be installed to provide water throughout the duration of construction. Permanent fire stand pipes will be installed to the GCWA canal to provide temporary fire water during construction and provide an alternative source for fire prevention. Internet service capable of providing service to all trailers on site will be established with cabling run at each trailer and Wi-Fi established

TOTAL OF COST OF EWP1 Site Work & General Conditions -	\$ 6,970,160
- TOTAL FEE (4.85%) – per terms of CMAR contract	\$ 338,052
- <u>BONDS and INSURANCE –</u>	<u>\$ 171,044</u>
- TOTAL Amendment 1 “Early Work Package 1” -	\$ 7,479,256

Plant Site Plan showing work performed in EWP1



- Temporary Road
- Trailer Complex
- Parking Lot
- Storage Area / GST Precast Area

Conceptual of completed plant site

