



TECHNICAL MEMORANDUM

TO: Dennis Phinney, Project Manager
FROM: Brian Knoll and Justin Logan
DATE: Aug 11, 2021
SUBJECT: Preliminary Design Memorandum – Meeting Minutes July 28, 2021
PROJECT NO.: WRF1 Centrifuge Phase 2

A review meeting of the Preliminary Design Memorandum was held on July 28, 2021 at WRF1. This memo includes the minutes from this review meeting, memorializing the decisions made during the meeting and including an updated opinion of overall project cost.

MEETING MINUTES

The following items were discussed during the July 28, 2021 meeting:

1. Existing polymer feed line connection is ¾" on the centrifuge. This limits the amount of water that can be diluted in with the polymer. Operations has found that the more water they add for dilution the better the centrifuge operates, resulting in dryer cake and clearer centrate. They would like to see if a 1" connection can be included on the new centrifuge and if the existing unit can be modified. The line feeding this connection is 1.5". WEBB/AQUA will follow up with Alfa Laval (AL) to determine if a larger connection can be included.
2. Struvite is forming in the drain pump station. They are currently adding chemical to reduce this potential but precipitation of struvite can completely clog and blind off the pumps in the drain pump station. The City would like to re-pipe the centrate drain directly to the oxidation ditches in order to eliminate the struvite formation at the pump station and specifically in the drain pumps. A drain line will be added to go to both ditches. This will either go to the influent splitter box or the scum return lines at the effluent side of the ditches. The alignment will be determined and then WEBB/AQUA will work with the City to verify potential crossing conflicts. This will include potholing by the City or C Below.
3. Phasing will be structured so that the existing belt press remains operable until the new, 2nd centrifuge is online. Dewatering redundancy will be maintained during the project.
4. A single belt conveyor is preferred in lieu of the existing 3 screw conveyors that convey dewatered solids to the truck load out facility. Staff also desires that the conveyor be covered. WEBB/AQUA will verify the alignment with staff and add this to the project. The opinion of cost has been updated, including this cost.
5. Solenoids provided with the existing centrifuge are difficult to source when they have to be replaced and have performed poorly. As such it is desired to specify and have AL provide Arco, slow acting, SS solenoid valves.
6. Water solenoids are difficult to maintain and access. They will be moved to the northeast side of the structure and placed in the vertical position to improve access for maintenance.

7. Opinion of probable cost will be updated to include the longer belt conveyor and gravity drain line as part of the project. This is attached to these minutes.
8. This memo will be attached to the preliminary design report, thus finalizing the PDR.

ENGINEERS OPINION OF PROBABLE COST

The total probable cost has been updated as indicated above and is \$2,237,000. This total includes 15% for design engineering and project administrations and 30% for contingency. The detailed estimate is shown on the following pages



Budgetary Estimate

Probable Cost Opinion WRF-1 Centrifuge Expansion City of Corona

ENR: 12227		Los Angeles Construction Cost		Jan-22
Section	Size	Description	Unit Cost	Quantity
00 00 00 PROCUREMENT AND CONTRACTING REQUIREMENTS				
00 61 00		Bonds	1.55%	1 LS \$23,900
00 73 16		Builders All Risk Insurance	0.87%	1 LS \$13,400
00 89 01		Permits	0.00%	1 LS \$0
01 00 00 GENERAL REQUIREMENTS				
01 11 00		Summary of Work		
01 32 13		Scheduling of Work	0.50%	1 LS \$7,700
01 93 00		Facility Maintenance	0.50%	1 LS \$7,700
01 21 00		Allowances		
01 21 00		Allowance A3 Other Field Orders	\$0	1 ea \$0
01 22 00		Unit Prices		
01 29 73		Schedule of Values	0.40%	1 LS \$6,200
01 31 19		Project Meetings	0.20%	1 LS \$3,100
01 32 00		Construction Progress Documentation	0.20%	1 LS \$3,100
01 32 33		Construction Photographic and Video Documentation	\$1,250	1 LS \$1,250
01 33 00		Submittal Procedures	0.50%	1 LS \$7,700
01 35 26		Governmental Safety Requirements	0.40%	1 LS \$6,200
01 40 00		Quality Requirements		
01 50 00		Temporary Facilities and Controls		
01 61 00		Common Product Requirements	0.10%	1 LS \$1,500
01 63 00		Product Substitution Procedures	0.05%	1 LS \$800
01 64 00		Installation of Owner Furnished Items	30%	\$648,212 LS \$194,464
01 64 50		System Integrators	1.00%	1 LS \$15,400
01 65 00		Project Delivery Requirements	0.10%	1 LS \$1,500
01 66 00		Project Storage and Handling Requirements	0.10%	1 LS \$1,500
01 71 13		Mobilization and Demobilization	3.45%	1 LS \$53,200
01 73 00		Execution	0.10%	1 LS \$1,500
01 74 00		Cleaning and Waste Management	0.63%	1 LS \$9,700
01 77 00		Closeout Procedures	1.99%	1 LS \$30,700
01 78 23		Operation and Maintenance Data	0.13%	1 LS \$2,000
01 78 36		Product Warranties	0.46%	1 LS \$7,100
01 78 39		Project Record Documents	0.18%	1 LS \$2,800
02 00 00 EXISTING CONDITIONS				
02 41 13		Selective Site Demolition	1.87%	1 LS \$28,800
02 41 16		Mechanical and Electrical Equipment Demolition - Belt Press	\$25,000	1 ea \$25,000
02 41 16		Mechanical and Electrical Equipment Demolition - Conveyors	\$12,000	1 ea \$12,000
05 50 00 METAL FABRICATIONS				
05 50 00		Metal Fabrications	\$6,500	1 LS \$6,500
05 53 00		Gratings	\$45	300 SF \$13,500
09 00 00 FINISHES				
09 80 00		Protective Coatings	\$10,000	1 LS \$10,000
14 00 00 CONVEYING EQUIPMENT				
14 40 00		Sludge Conveyance System	\$2,200	135 LF \$297,000
23 00 00 HEATING, VENTILATION, AND AIR CONDITIONING				
23 31 00		Fiberglass Ductwork and Accessories	\$5,000	1 LS \$5,000
26 00 00 ELECTRICAL				
33 00 00 UTILITIES				
33 05 00 COMMON WORK RESULTS FOR UTILITIES				
33 05 05		Pipeline Testing	\$2,500	1 LS \$2,500
40 00 00 PROCESS INTEGRATION				
40 05 00		Piping General	\$1,000	1 LS \$1,000
40 05 07		Hangers and Support for Process Piping	\$10,000	1 LS \$10,000
40 05 19		Ductile Iron Pipe	\$1,000	10 ea \$10,000
40 05 31		Plastic Process Pipe	\$6,000	1 LS \$6,000
40 05 31		Plastic Process Pipe (Drain Relocate)	\$200	400 LF \$80,000
40 05 53		Identification for Piping and Equipment	\$500	1 LS \$500
40 05 57		Actuators for Process Valves and Gates	\$900	2 ea \$1,800
40 05 62		Plug Valves	\$1,000	1 ea \$1,000

40 05 67	Ball Valves	\$200	3 ea	\$600
40 90 00	Instrumentation and Control for Process Systems	2.00%	1 LS	\$30,900
46 70 00 WATER AND WASTEWATER RESIDUALS HANDLING AND TREATMENT				
46 76 00	Residuals Dewatering Equipment			
46 76 33	75 hp Dewatering Centrifuge	\$351,212	1 ea	\$351,212

OPTIONAL ITEMS

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST **\$1,542,526**

Right of Way and Land Acquisition		not included
Offsite Utilities by Others (Offsite Cable, and Fiber Optic)		not included
Design Engineering and Project Administration	15%	\$231,379
Field Engineering		not included
Contingency	30%	\$462,758
Financing		not included

ENGINEER'S OPINION OF PROBABLE TOTAL COST **\$2,237,000**

These figures have been prepared, at the request of a client, before finalizing Contract Documents. Figures are only an opinion and are provided solely as a guide. Estimator is not responsible for fluctuation in cost of material, labor or components or unforeseen contingencies.