



July 25, 2023

Nicholas Dezelan
Wastewater Utility Manager
City of Greenfield
809 South State Street
Greenfield, IN 46140

**RE: Wastewater Treatment Plant Improvements Project
Construction Engineering and Inspection Amendment Request**

Dear Mr. Dezelan:

Commonwealth has been tracking burn rates for construction engineering and inspection services on the City of Greenfield's Wastewater Treatment Plant Improvements Project since the start of these phases of work. Construction phase burn rates are always greater at the start of a project and will typically exceed a straight-line projection. Several reasons for this include:

1. The shop drawing submittal and review process is "front-end" loaded, typically occurring in the first quarter to half of the construction project.
2. The lion's share of Contractor Requests for Information (RFIs) also occur at the beginning of the job – though the load also tends to increase toward the end of the project.
3. Identification and evaluation / pricing for Contractor and Owner proposed / desired design modifications are also typically "front-end" loaded.
4. Differing site conditions identification and corresponding efforts occur in the beginning months of a project when excavation (the typical source of unforeseen conditions) occurs.

Also, in this current bid and supply chain environment there is another burn rate driver – additional efforts associated with availability of equipment and materials.

This project has followed a similar, front-heavy pattern with respect to efforts. We discussed this at the start of the project and agreed to track these efforts until such time that it appears they stabilize whereby we can better assess the need (or lack thereof) for a contractual amendment. My team tells me that the rate of shop drawings, RFIs, and contractor/owner requested changes has greatly diminished. Therefore, I believe we can now accurately assess our position and corresponding needs.

Given the attached, it is the Engineers recommendation that a contractual change order be issued as follows:

1. Construction Engineering: \$ 60,000 Hourly as incurred
 - a. Note, these funds are to be allocated to Commonwealth's Structural and Architectural sub-consultants. No adjustment to Commonwealth's budgeted Construction Engineering efforts is required at this time.

2. Resident Project Representation: \$215,000 Hourly as incurred

- a. Note, this is due to project staffing needs identified over the course of the project.

To provide specifics for your reference on cause for the overrun from the budgeted funds I will expand upon the above general categories of efforts below.

Shop Drawing Submittal and Review Process

The shop drawing submission and review process for this project has been rigorous. The Engineer's proposal was based on effort experienced on like projects scaled to size. In the Engineer's proposal fifty (50) comprehensive shop drawing reviews performed at 8-hours each and sixty (60) general shop drawing reviews performed at 4-hour each for a total of 640hrs of shop drawing review efforts was budgeted.

To date, 412 shop drawings have been reviewed including 71 resubmittals. This represents a 4 to 5-fold increase in what was anticipated at the time of budget assembly.

Contractor Requests for Information (RFIs)

The contractor RFIs on this project have been excessive. Sixty (60) RFIs were anticipated on this project based on past similar projects scaled to size. Two-hundred and eleven (211) RFIs have been received and processed to date.

Design Modifications / Change Orders

Just recently we processed a net \$348,035 cost-saving change order. This change order included \$727,093 in cost savings opportunities and \$379,058 in cost events. Final Work Change Directive No. 1 (the SBR changes) was one line item in this change order. It alone quantified \$539,803 in cost savings and a corresponding \$459,603 in cost events - resulting in a net contract savings of \$80,200.

Change orders and work change directives are a normal part of any construction project. This is why we carry a 5% construction contingency. Industry standards for these types of projects typically result in a 3-4% change in contract price contractual change order. None-the-less, the changes and contractor cost proposals on this project have taken a significant amount of construction engineering time and effort.

To date, we have eighteen (18) work change directives and twenty-eight (28) cost proposals. So far, the net change in contract price has been to the Owners benefit. That said, much evaluation and negotiation with the Contractor is required to obtain the pricing reflected in the Change Orders brought to the City for their review and approval. Without these extensive efforts, change in contract price change orders to the detriment of the Owner would likely result.

Differing Site Conditions

Prior to commencing work, bulk excavation of the closed open dump occurred. In an effort to save money, it was identified that full excavation to virgin materials beneath slab on grade structures (such as the administration building and sludge processing building) did not need to occur. Rather, excavation to 5-foot below the footings could occur and if visual inspection identified the excavation was devoid of trash, then backfill with compacted 53s for the foundation base would suffice.

During construction, the Contractor encountered excessive trash. Additional effort was required to coordinate the remedy. Further, since costs associated with trash removal and disposal was estimated to be in the 7-figures, evaluation of alternate foundation support criteria - including a pile support option for the sludge building - was performed. This alternate design was assembled and a price for same requested of the Contractor. Though it was ultimately rejected in lieu of the re removal/disposal option.

Supply Chain Prompted Activities

Supply chain issues continue to manifest post Covid-19 era. That, coupled with the “Buy-American” funding criteria has manifested challenges including the need to split the specified generator system into a two generator system design, alternate blower manufacturer/supplier requirement from that identified during bidding (and corresponding resultant changes), and resultant alternate piping materials (and corresponding coating requirements) for fittings to assure timely project startup capabilities.

Change in Contract Price Methodology and Recommendations

When the original Work Change Directive No. 1 assembly commenced, Commonwealth started tracking time/effort specific to this endeavor should a change in contract price be required. As the project commenced the magnitude of issues eligible for “out of scope” and/or “excessive” consideration necessitated an alternate approach.

Construction engineering and inspection efforts are hourly as incurred since they are highly dependent upon the Contractor performing the work. To simplify the process, I performed monthly tracking and reporting on burn rates with the intent upon stabilization of efforts to assess impact to budget and corresponding needs for contractual adjustments.

Structural and Architectural CE Services (Attachment 1)

Attached to this letter you will find our structural and architectural subconsultants quantification of efforts outside of the originally anticipated project as well as their “open book” summary of costs incurred. I reviewed their request letter and eliminated items I felt should have been covered during design and/or were not eligible (in my opinion) for additional compensation from the Owner. I also compared this to their “Actual Incurred” costs and identified a recommended adjustment to their contract to address (1) additional efforts to date associated with construction engineering on the part of these

subconsultants, and (2) anticipated future out of scope efforts on the part of the architect to address requested additional services.

Based on this evaluation, it is my recommendation that a \$60,000 adjustment be made to this budgetary line item.

Commonwealth CE Services (Attachment 2)

Much of the efforts associated with change order assembly and evaluation were delegated to the inspection team. This was the most cost-effective approach (in the Engineers Assessment). Although the Engineer experienced an excessive burn rate over the first four to six months of the construction project, it appears that these efforts have stabilized. Currently, although there is an approximate \$32,500 deficit in the construction engineering budget for Commonwealth (based on a straight-line projection), it appears that our base construction engineering efforts will in all likelihood slow and be accommodated within the existing budget.

Based on this evaluation, it is my recommendation that NO adjustment is required to this budgetary line item. We should continue to monitor burn rate and reassess in 6-months' time.

Commonwealth RPR Services (Attachment 3)

RPR services (often referred to as "inspection") are estimated using a rule of thumb of \$20,000 per month for the duration of the construction project. For this WWTP Improvements Project the budget established for the 24-month long project was \$480,000.

Commonwealth employes a wide range of experienced RPRs. The RPR assigned to the Greenfield Project is an RPR IV (our most experienced) and has a corresponding burn rate of \$25,000 per month. Often, on construction projects, the RPR is not required on-site for the full duration of work and/or a lesser experienced RPR can be assigned over a set duration of work activities to most efficiently utilize budgeted funds. However, on this project, not only is the RPR IV anticipated required on site thru substantial completion, but additional support staff was required to aid in addressing preliminary matters - including the previously mentioned extensive Work Change Directive evaluation and assembly associated with a massive Contractor proposed SBR structure redesign for a cost credit to the Owner.

As illustrated on the attached burn-rate chart, RPR services commenced on a part-time basis 2-months prior to the Notice to Proceed of September 26th, 2022. This preliminary work was in support of the above denoted work change directive proposed by Contractor. Further, supplemental RPR support efforts were required on-site from October 2022 through May 2023 which is reflected in the "per month" spent amounts (exceeding \$25,000).

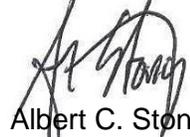
It appears RPR burn rate has stabilized over the last 3-months and resultant remaining budget and corresponding recommended need can be identified. We have approximately \$160,000 of budget remaining for 15 months of work (to reach Substantial Completion). At a burn rate of an RPR IV, 15-months translates into a budgetary need for \$375,000. With an available budgetary amount of \$160,000 we have a projected shortfall of \$215,000.

Based on this evaluation, it is my recommendation that a \$215,000 adjustment be made to this budgetary line item.

Should you have any questions, comments, or concerns regarding the above, please don't hesitate to contact me and we can review.

Sincerely,

COMMONWEALTH ENGINEERS, INC.



Albert C. Stong, P.E.
President, Project Manager

ACS/asc

Enclosures:

- Attachment 1 – Structural and Architectural CE Budgetary Adjustment Support Material
- Attachment 2 – Commonwealth CE Budgetary Summary / Burn Rate
- Attachment 3 – Commonwealth RPR Budgetary Summary / Burn Rate

Attachment 1
Structural and Architectural CE Budgetary Adjustment Support Material

~~June 23, 2023~~ July 19, 2021 [JDT]

Mr. Al Stong, PE
President/ Sr. Project Manager
Commonwealth Engineers, Inc.
7256 Company Drive
Indianapolis, IN 46237

Re: Scope/Fee Adjustment Request No. 4
Wastewater Treatment Improvements Project
Greenfield, IN

CE Solutions Project No: 20-126

Dear Al,

CE Solutions respectfully submits the following Scope/Fee Adjustment Request (SFAR) for additional services on the captioned project:

Our SFAR is based on the following information:

- May 5, 2023 email from Al Stong (CEI) to the design team.
- Professional Services Agreement between the Commonwealth Engineers and CE Solutions, Inc. dated August 16, 2012.
- Unanticipated Construction Administration required by CE Solutions due to:
 - Additional structural scope items not included in the original agreement.
 - Unprecedented construction challenges faced during this project atypical from what CE Solutions has experienced in previous Wastewater Plant projects like this one.

SCOPE ADJUSTMENT

- The following ADDITIONAL SERVICES to the Agreement between the Commonwealth Engineers, Inc. and CE Solutions, Inc. have been performed in good faith:
 1. Review of shop drawings and other Contractor submittals, as well as, respond to Contractor Requests for Information (RFI's) associated with the construction of the following additional structural items not included in the scope of basic services:

S1 – General Items:

- a. Stair Assemblies
- b. Handrail Assemblies
- c. Grating Supports
- d. Pipe Concrete Saddles
- e. Bollards

**Eliminated additional
services request [JDT]**

S2 – Pump Station:

- a. Access Building – masonry walls and roof framing
- b. Lower Valve – platform grating and grating steel supports
- c. Lower Valve – concrete reinforcement
- d. Electrical Building – masonry walls and roof framing
- e. Vac Truck Screening Bed – concrete reinforcement

Reduced amount of the additional services request. [JDT]

S3 – Headworks Facility:

- a. Concrete Walls and stair assembly extension – concrete reinforcement and structural steel (associated with grade elevation changes made at the end of the design phase)

S4 – UV Structure:

- a. Roof Canopy – steel structure and foundations
- b. Site Retaining Wall – concrete reinforcement

S5 – Sludge Dewatering Facility:

- a. Trench System – grating and grating steel supports
- b. Centrifuge Pilars – concrete reinforcement
- c. Centrifuge Mezzanine Crane – grating and structural steel framing

S8 – SBR + SHT + Blower Pad:

- a. Pipe Gallery Platform – grating and grating steel supports
- b. Pipe Gallery 42" diameter Pipe steel supports

Eliminated additional services request [JDT]

2. WCD-1 SBR Tank
 - Addressed changes to the tanks per Owner's request.
3. WCD-13 Admin Building
 - Addressed changes to the building per Owner's request.
4. S5 – Sludge Dewatering Facility – Site Prep Challenges
 - Micropile foundation design was provided to FAW in order to produce pricing information aid the Owner select the site preparation approach for this building given the soil conditions found during excavation at the building site.
5. 20-126.1 SBR PG Top Slab Construction Changes
 - Addressed change estimate concerns associated with waterproofing system specified for the precast hollowcore plank and topping slab framing system at the SBR Pipe Gallery top slab to be installed in lieu of the original 18-INCH cast-in-place slab per Contractor's and Owner's request.
6. Review of Change Estimates
 - A total of (5) Change Estimates have been reviewed and discussed thoroughly with the Contractor on behalf of the Owner's best interests.
7. Louver Issue Review
 - Address impact of the installation of a large louver opening at SBR Pipe Gallery end wall (north) that was missed at its original location by the Contractor.
8. Architectural Scope Fee Adjustment Request prepared by The Etica Group.
 - Changes associated with the laboratory re-design / revisions.

Eliminated additional services request [JDT]

9. The following ADDITIONAL SERVICES to the Agreement between the Commonwealth Engineers, Inc. and CE Solutions, Inc. are requested in anticipation of Construction Administration efforts estimated through the completion of the construction phase of this project:
1. Review of shop drawings and other Contractor submittals, as required by the Structural Contract Documents, for the project elements designed by CE Solutions. Such review will be to determine general conformance with the project's structural design concept and general compliance with the Structural Contract Documents.
 - We anticipate spending approximately 4–6 hours per week for the next 8 weeks.
 2. Respond to Contractor Requests for Information (RFI's) associated with the portion of the project designed by CE Solutions and to clarify the structural design intent.
 - We anticipate spending approximately 4 hours per week for the next 20 weeks.
 3. Miscellaneous CA tasks and unanticipated efforts (CE Review, Site visits, etc.)
 - We have budgeted approximately 38 hours for unforeseen tasks.

10. Construction was anticipated to take place between 2020 and 2022. The Construction Administration phase was delayed; it began during the last quarter of 2022 and is expected to be substantially completed by 2024. The fee adjustment requested below includes modifications of the present CE Solutions staff hourly based upon current market fluctuations.

11. Architectural Scope Fee Adjustment Request prepared by The Etica Group.

1. Furniture procurement assistance

Reduced requested additional services amount. [JDT]

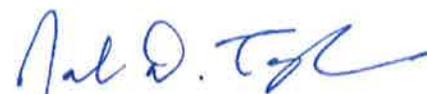
FEE ADJUSTMENT

CE Solutions intends to perform the ADJUSTED SCOPE OF SERVICES for the Construction Administration phase on an hourly basis in accordance with the attached fee schedules and with an estimated not to exceed amount of \$74,500:

Original Basic Services Contract Amount:	\$49,600	
Fee Adjustment Request No. 4:	-\$79,500	\$50,000
Adjusted Basic Services Contract Fee:	\$129,100	\$99,600

Al, we value very much our relationship with you and Commonwealth Engineers. Thank you again for selecting CE Solutions for your structural engineering needs. Should you have any questions or wish to discuss this matter further, please don't hesitate to contact the undersigned.

Very truly yours,



John D. Taylor, PE
 President | Principal

cc: Jessica Barrios (electronically)

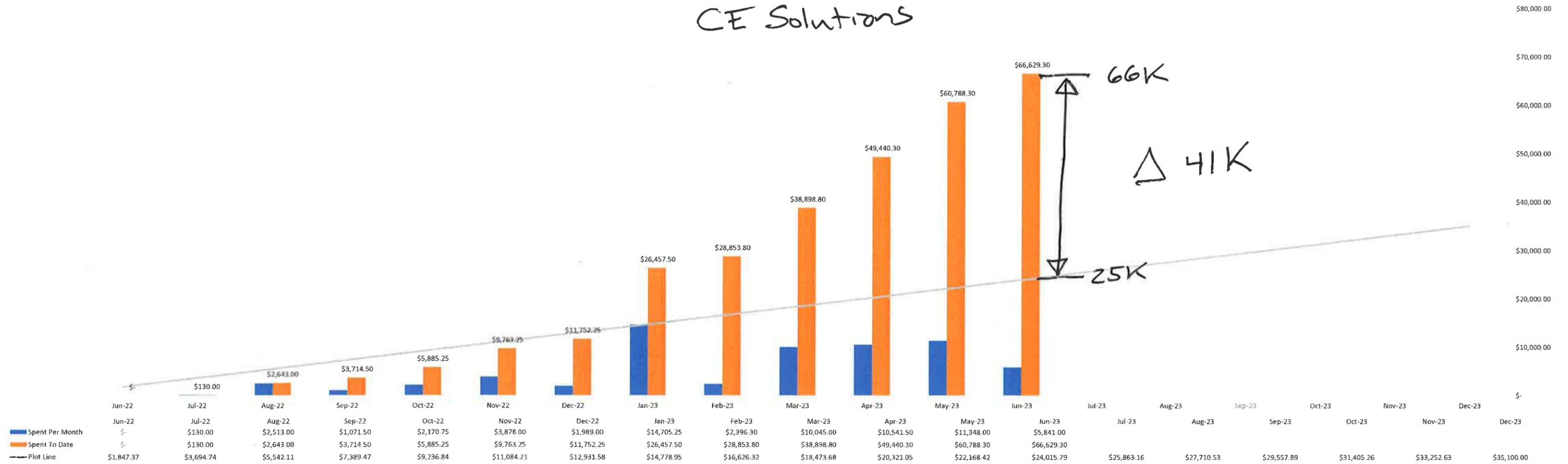
Attachments

Task Description	Principal I	Proj Mgr	Sr Proj Engr	Proj Engr	BIM/CAD	Task Fee
CONSTRUCTION ADMINISTRATION						
CE Solutions Additional CA Efforts Invested						
1. Work associated with additional Scope Items	2.0	8.0	2.0	120.0		\$17,728.00
2. WCD-1 SBR Tank Changes (per Owner's Request)	2.0	40.0	4.0		8.0	\$8,288.00
3. WCD-13 Lab Building Changes (per Owner's Request)	12.0	2.0				\$3,884.00
4. S5 - Sludge Dewatering Facility - Site Prep Challenges - Micropile Design	8.0	12.0				\$4,104.00
5. 20-126.1 SBR PG Top Slab Construction Changes	8.0	2.0		2.0		\$2,942.00
6. Review of Change Estimates	8.0	8.0				\$3,536.00
7. Louver Issue Review	4.0	8.0				\$2,336.00
SUBTOTAL HRS of Additional CA Effort Invested	44.0	80.0	6.0	122.0	8.0	\$42,818.00
CE Solutions Anticipated CA Efforts Remaining thru Project Completion						
1. Review of Shop Drawings		40.0				\$5,680.00
2. Review of Requests For Information (RFIs)		80.0				\$11,360.00
3. Micellaneous Task / Unanticipated Effort	12.0	16.0				\$5,872.00
SUBTOTAL HRS oh Anticipated Constr Administration Remaining	12.0	136.0	0.0	0.0	0.0	\$22,912.00
TOTAL CES SFAR FEE (excluding premiums)	56.0	216.0	6.0	122.0	8.0	\$65,730.00
Schedule Delay 2020-2023						\$5,375.00
CES FEE SUBTOTAL						\$71,105.00
CONSULTANTS						
Architect's Fee - Lab Room Revisions						\$3,100.00
Architect's Fee - Furniture Procurement						\$4,500.00
Site / Civil / Land Surveyor's Fee						\$0.00
Geotechnical Engineer's Fee						\$0.00
Environmental Engineer's Fee						\$0.00
Code Consultant's Fee						\$0.00
Cost Consultant's Fee						\$0.00
Physical Testing Consultant's Fee						\$0.00
CONSULTANT FEE SUBTOTAL						\$7,600.00
10% consultant fee mark-up						\$760.00
GRAND TOTAL FEE						\$79,465.00

↓ GOK

20-126 Greenfield WWTP Improvements
Construction Administration Burn Rate

CE Solutions

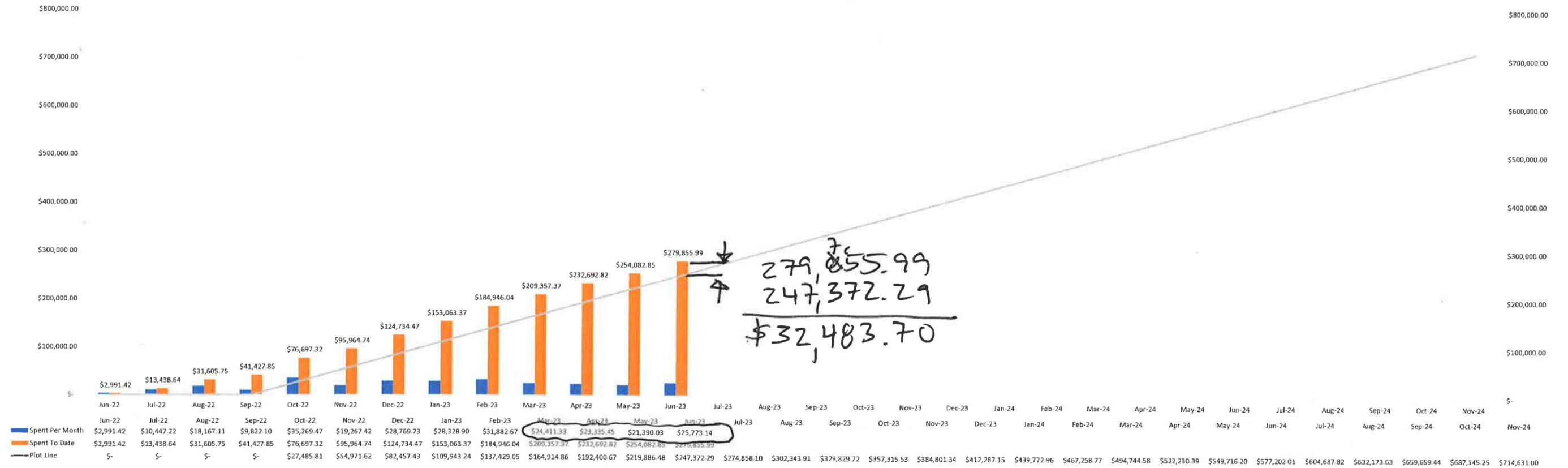


41K actual average
 8.8K Architect Fee
 Lab Room Renos
 Furniture Procurement

50K
 x 1.15 multiplier
57.5K
 ~ 60K

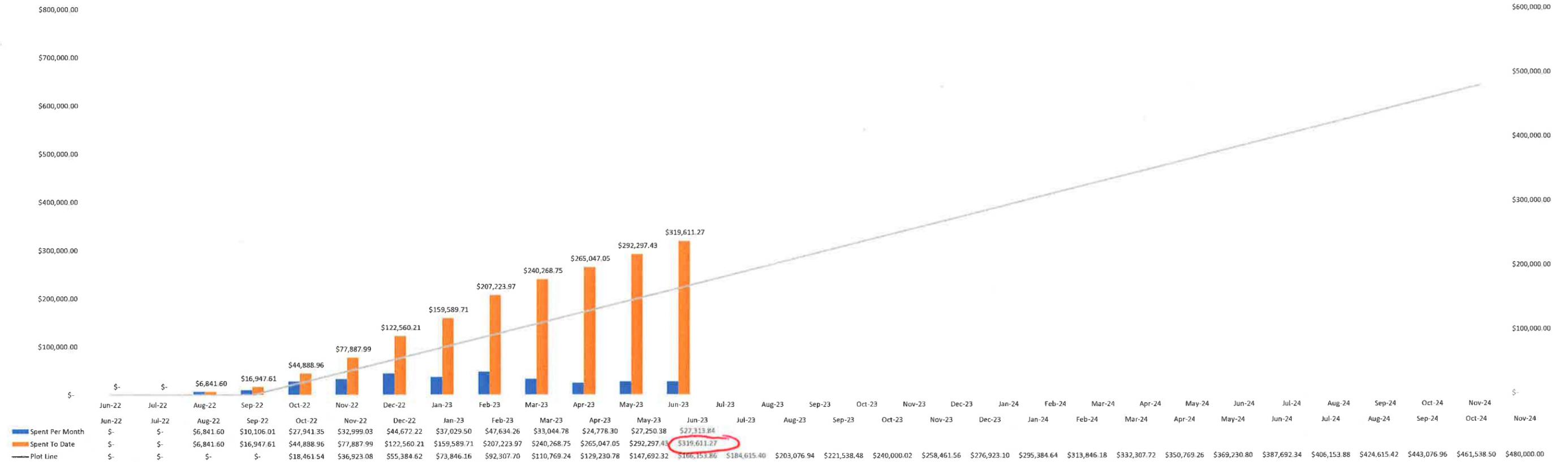
Attachment 2
Commonwealth CE Budgetary Summary / Burn Rate

Greenfield S20046 - WWTP Improvements
Construction Engineering Burn Rate



Attachment 3
Commonwealth RPR Budgetary Summary / Burn Rate

Greenfield S20046 - WWTP Improvements
Resident Project Representative Burn Rate



480K contract (20K/mo x 24 mo)

320K spent

160K remaining

July 2023 thru Sept 2024
Time remaining to substantial completion

15 months

25K/mo burn rate x 15 mo = 375,000

375,000
160,000
→ 215,000