



ATTACHMENT A
SCOPE OF SERVICES
for the
Racine Wastewater Utility
WWTP UV Disinfection Replacement Project

Project Understanding

The Racine Wastewater Utility (Utility) plans to replace the existing Trojan UV4000 ultraviolet (UV) disinfection system at its Wastewater Treatment Plant (WWTP) due to aging infrastructure. The proposed new low-pressure, high-output (LPHO) system will be capable of disinfection of secondary effluent at average flows of 23.9 million gallon per day (MGD) and peak flows of 108 MGD. The UV system will be installed in a new UV Disinfection Building within the footprint of the existing effluent metering vault. The existing UV systems will be demolished and the existing UV buildings will be modified to serve as electrical buildings for the new UV equipment. The project also includes replacement of the existing flow meters and construction of a new effluent weir area covered with a canopy.

Carollo has prepared final drawings and specifications for this project. Carollo will provide construction phase services including construction management, resident engineering, and office services including RFI, submittal, and change order review. It is anticipated that this scope of work will proceed beginning February 2023 and be completed by October 2024 – twenty (20) months.

Project Approach

The scope of work is divided into the following phases, tasks, and subtasks, summarized below.

PHASE I - CONCEPTUAL AND PRELIMINARY DESIGN - COMPLETE

PHASE II - FINAL DESIGN AND BIDDING/AWARD - COMPLETE

PHASE III - CONSTRUCTION PHASE SERVICES

Task 1 - Project Coordination

Task 1.1 – Preconstruction Meeting

Carollo will prepare for and attend a preconstruction meeting to facilitate understanding of the contract requirements by the parties involved in the construction process. Carollo will conduct the meeting and provide meeting minutes.

Task 1.2 – Weekly Coordination Meetings

Carollo will attend weekly coordination meetings for the duration of active construction (assumes 83 meetings) to coordinate construction activities, provide updates, and resolve ongoing construction issues. Includes in-person Project Manager attendance at 19 meetings. Remaining meetings to be attended by resident and support engineers.

Task 1.3 – Progress Reporting

Invoices will be submitted monthly in accordance with the Utility's payment protocols. Each invoice will be submitted with a progress report detailing the work executed during the invoice period and work remaining.

Deliverables and Meetings

- Meetings
 - Preconstruction Meeting
 - Weekly Coordination Meetings (83 total)
- Deliverables
 - Meeting/Workshop Agendas and Minutes (electronic)

Task 2 - Engineering Services During Construction

It is assumed that all construction phase documents (shop drawings, RFIs, change orders, electronic O&Ms, etc., will be managed in EADOC, and will be submitted by the Contractor in accordance with the Project Specifications.

Task 2.1 – Shop Drawing Review

Carollo assumes reviews of up to one hundred eight (108) shop drawings with fifty-four (54) resubmittals.

Task 2.2 – RFI Review

Carollo assumes review of up to thirty (30) RFIs.

Task 2.3 – Change Order Review

Carollo assumes review of up to five (5) change orders.

Task 2.4 – Facility O&M Update

In accordance with WDNR requirements, Carollo will provide language and documentation regarding the new UV System operations, controls, and maintenance to be included in the existing facility O&M manual update.

Task 2.5 – Factory Acceptance Testing (FAT)

Carollo's UV Technology Specialist and project manager will attend and participate in factory testing of the UV Equipment along with selected Utility staff.

Task 3 – Resident Engineering, Site Visits, and Final Inspection

Task 3.1 – Resident Engineering

Carollo will provide resident engineering services for the duration of the project. Carollo's resident engineer will be onsite three days per week for eighteen months of active construction. Resident engineering services will include performing inspections, filling out inspector's logs with progress reports, quantity documentation, and providing field guidance and coordination with the Contractor. Carollo's resident engineer will review and recommend approval of pay applications to the Utility, review and manage contract changes for approval by the Utility and monitor overall project costs.

Task 3.2 – Site Visits

Discipline engineers will conduct site visits during construction to discuss and assist in resolving construction issues and perform special inspections. It is estimated that four (4) site visits will be performed.

Task 3.3 – Final Inspection

Carollo's resident engineer will prepare a final punch list following final inspection. The final inspection will be attended by the resident engineer, project manager, and Utility staff.

Task 4 – Commissioning

Task 4.1 – Startup and Commissioning Assistance

Carollo's UV Technology Specialist will be onsite for two (2) weeklong visits during the startup and testing of each



half of the new UV Disinfection System (North building and South Building) to assist the contractor and manufacturer's representative in commissioning of the new UV Disinfection System.

Task 4.2 – Record Drawings

Carollo will prepare Record Drawings based on field mark-ups by the Contractor. Carollo will provide electronic PDF files to the Utility.

**Racine Wastewater Utility
UV Disinfection System Replacement Project
Engineering Services During Construction Fee
Estimate**

		Billing Rate																			
Task 1 - Project Coordination		\$ 240.00	\$ 765.00	\$ 295.00	\$ 155.00	\$ 190.00	\$ 190.00	\$ 165.00	\$ 240.00	\$ 165.00	\$ 250.00	\$ 250.00	Total	Total	Total	PECE	Other	TOTAL			
Preconstruction Meeting	Assumes 1 meeting 2 hours long and time to prepare PPT/Plans	90	107	4	26	0	0	0	0	0	0	0	229	229	\$ 46,675.00	\$ 3,206.00	\$ 4,000.00	\$ 54,081.00			
Weekly Coordination Meetings (83 weeks)	Weekly Meeting, 1 hour long	76	83	0	20	0	0	0	0	0	0	0	20	20	\$ 4,080.00	\$ 280.00	\$ 200.00	\$ 4,560.00			
Progress Reporting	Monthly Progress Reports (20 month construction duration)	10	20	0	0	0	0	0	0	0	0	0	30	30	\$ 36,096.00	\$ 2,506.00	\$ 3,800.00	\$ 43,001.00			
Task 2 - Engineering Services During Construction																					
Shop Drawing Review	Assumes 108 submittals, 64 residentials	120	197	122	265	193	357	126	156	0	540	1546	2076	2076	\$ 439,820.00	\$ 21,504.00	\$ -	\$ 460,324.00			
RFI Review	Assumes 30 RFIs	30	129	60	190	165	309	102	132	0	489	1117	1565	1565	\$ 333,185.00	\$ 16,538.00	\$ -	\$ 348,823.00			
Change Order Review	Assumes 5 Change Orders	40	40	20	30	20	40	16	8	0	40	214	254	254	\$ 53,310.00	\$ 2,958.00	\$ -	\$ 56,306.00			
Facility O&M Update		10	20	8	5	8	8	8	8	0	16	75	91	91	\$ 19,435.00	\$ 1,050.00	\$ -	\$ 20,485.00			
Factory Acceptance Testing (FAT)		8	8	2	40	0	0	0	8	0	16	66	82	82	\$ 16,090.00	\$ 924.00	\$ -	\$ 17,014.00			
Task 3 - Resident Engineering, Site Visits, and Final Inspection																					
Resident Engineering	Assumes 3 days per week for 18 months of construction	16	944	16	944	0	12	0	0	0	0	32	1932	1964	\$ 339,840.00	\$ 27,048.00	\$ 27,000.00	\$ 384,288.00			
Site Visits During Construction	Assumes 4 discipline site visits during construction	0	936	0	936	0	0	0	0	0	0	0	1872	1872	\$ 318,240.00	\$ 26,208.00	\$ 26,000.00	\$ 370,448.00			
Final Inspection	Assumes 1 full day site visits	8	8	8	8	0	0	0	0	0	0	32	28	60	\$ 14,880.00	\$ 392.00	\$ 1,400.00	\$ 18,272.00			
Task 4 - Commissioning																					
Startup and Commissioning Assistance	Assumes 2 weeks onsite	20	8	80	40	0	0	0	0	0	120	0	268	268	\$ 55,080.00	\$ 3,752.00	\$ 6,280.00	\$ 64,082.00			
Record Drawings		16	0	80	0	0	0	0	0	0	0	0	96	96	\$ 26,640.00	\$ 1,344.00	\$ 4,250.00	\$ 32,234.00			
TOTAL		4	8	0	40	0	0	0	0	0	120	0	172	172	\$ 28,440.00	\$ 2,408.00	\$ 1,000.00	\$ 31,848.00			
		246	1256	222	1277	193	369	126	156	120	572	3965	4537	4537	\$ 880,415.00	\$ 55,510.00	\$ 36,890.00	\$ 972,775.00			

PROJECT COSTS

