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Date: September 13, 2024 (Revision No. 1)
Our Ref: 30218665
Subject: Conversion from Chlorine Gas to Sodium Hypochlorite for the
Hollywood Wastewater Treatment Plant

FL Engineering License #7917
FL Geology License #GB564
FL Surveying License #LB7062

Dear Mr, Jiang,

Arcadis U.S., Inc. (CONSULTANT) is pleased to present the City of Hollywood (CITY) with this scope of work and cost proposal for professional engineering services related to design, procurement, and services during construction for the conversion of the CITY's Southern Regional Wastewater Treatment Plant (SRWWTP) from using one-ton chlorine gas cylinders to bulk sodium hypochlorite for disinfection throughout the plant.

This work order shall be executed per the terms and conditions of the Professional Services Agreement for General Engineering Consultant Services: Water Treatment Plant and Wastewater Treatment Plant Projects No. 1324A (Agreement) executed on October 31, 2023, by and between the City and CONSULTANT.

BACKGROUND

The CITY has been using chlorine gas for disinfection since the SRWWTP was commissioned into operation. While chlorine gas has been effective in providing high level disinfection for the facility, the aging equipment and health and safety concerns around its use have prompted the CITY to seek a change to their disinfection system.

The CITY desires that a new sodium hypochlorite disinfection system be designed to meet the current and future needs of the facility including storage tanks, dosing pumps and any ancillary equipment required for the system. The CONSULTANT shall look to use existing areas inside or adjacent to the current chlorine building as a suitable location for the new sodium hypochlorite disinfection system. The design will also include the demolition of the current air scrubber system and equipment associated with the current chlorine gas system.

The project activities will include:

- Review of 2020 through 2024 operating data for the CITY's chlorine usage and dosing at the different locations around the facility.
- Site visit to inspect the SRWWTP building, surrounding area and injection points for chlorine.
- Calculation of storage requirements for 12.5% sodium hypochlorite based on current and future consumption estimates and a minimum of 30 days of storage.
- Development of design documents to support a modification of the Hollywood WWTP NPDES Permit issued by Florida Department of Environmental Protection (FDEP).

- Development of a Basis of Design Report (BODR) Design plans and specifications using applicable agency standards for materials and equipment
- Development of draft permit applications for regulatory approvals of the work
- Assistance during the bidding process
- Design Services During Construction (DSDC) including periodic site visits during construction

SCOPE OF WORK

Task 1. Project Management

All phases of the project (design through construction) are estimated to be completed within 18-months and if possible, will be improved pending duration of agency reviews and permitting activity. CONSULTANT shall provide the following project management services throughout the duration of the project:

- Provide overall project coordination.
- Design coordination between the permanent system and the temporary system being designed by others.
- Manage project schedule and budget.
- Prepare and submit monthly progress reports and invoices.

Deliverables:

Monthly invoices, schedule updates, and progress reports

Task 2. Project Kickoff Meeting and Site Visit

CONSULTANT shall prepare and lead one project kickoff meeting with appropriate CITY staff to review the scope of work, project schedule, data needs and key milestones. Prior to the kickoff meeting, CONSULTANT shall submit a proposed agenda that will include: (1) items to be discussed, (2) specific questions to be answered, and (3) data requests.

Immediately following the project kickoff meeting, CONSULTANT shall conduct a site walkthrough of the facility. CONSULTANT shall prepare and submit a meeting summary documenting discussions and action items from the kickoff meeting and initial facility site visit.

Deliverables:

- Kickoff meeting agenda including data request
- Kickoff meeting and site visit summary

Task 3. Basis of Design Report

CONSULTANT shall prepare a Basis of Design Report (BODR) consisting of the following:

- Summary of data collected and reviewed
- Recommended equipment sizing and location (accompanied by sketch)
- NaClO capacity calculations, dosing pumps sizing based on maximum flowrate for each treatment process

- Preliminary selection of metering pumps, chemical tanks and piping using CITY standards
- Preliminary structural and electrical requirements
- Preliminary control and instrumentation strategy
- Proposed project schedule
- Permitting Requirements
- Phasing and implementation plan
- Engineer's opinion of probable construction cost (EOPCC) – AACE Class 3

CONSULTANT shall coordinate the design of the permanent system with temporary system being designed by others. The coordination will be reflected as part of the BODR and design stages.

CONSULTANT shall submit the BODR in draft format for the CITY's review and comment. A in-person meeting will be held to review comments by the CITY. Following receipt of CITY's comments, the CONSULTANT shall incorporate comments and issue the final BODR.

Deliverables:

- Draft BODR (in electronic pdf format only)
- BODR Review meeting presentation and summary minutes
- Final BODR (one electronic copy in PDF digitally signed and sealed)

Task 4. Detailed Design

Following submittal of the Final BODR, CONSULTANT shall proceed with Detailed Design and prepare Contract Documents which includes Drawings, Technical Specifications, and an updated EOPCC. The Documents will be submitted as two interim deliverables for CITY's review, consisting of a 60% and 90% Completion Submittal. An in-person meeting will be held to review comments by the CITY after each submittal. CONSULTANT will then proceed to prepare 100% Completion Documents.

Deliverables:

- 60% Submittal (Drawings, Technical Specifications and updated EOPCC)
- 90% Submittal (Drawings, Technical Specifications and updated EOPCC)

Task 5. Final Design

Following submittal of the 90%, CONSULTANT shall proceed with signed and sealed 100% Final Design/Bid Documents and prepare Contract Documents which includes Contract Drawings, Technical Specifications, and an updated EOPCC.

Deliverables:

- 100% Bid Documents Submittal

Task 6. Permitting

Permit applications required for this project shall be prepared and submitted by the CONSULTANT to the corresponding regulatory agencies. The anticipated permit applications are listed below:

- Florida Department of Environmental Protection (FDEP) / Application for a Minor Revision to a Wastewater Treatment Facility (Form 62-620.910(9))
- Broward County Permit
- Since no building modifications, drainage alterations or changes to impervious area are in the project scope, it is anticipated that an FDEP Environmental Resource Permit (ERP) will not be required and therefore is not included in this scope of services; however, a variance letter may be required to the FDEP and/or South Florida Water Management District.
- Update Facility Risk Management Plan to remove Chlorine Gas

The CITY will pay all permit fees and will sign as Utility Owner on the permit applications. CONSULTANT shall respond to up to two requests for additional information from each permitting agency.

Deliverables:

- Permit applications and corresponding exhibits
- Responses to agency requests of additional information (up to two)

Task 7. Bidding Support Services

CONSULTANT shall provide bidding support services to the CITY. The anticipated subtasks are the following:

Task 7.1 – Pre-Bid Meeting

It is anticipated that one construction contract with one Bid document will be used to implement this project. CONSULTANT shall coordinate one (1) Pre-bid meeting in conjunction with CITY staff. The CITY's purchasing department will lead the Pre-bid meeting and coordinate one (1) site visit. CONSULTANT shall lead all technical aspects of this meeting.

Task 7.2 - Bid Clarification/Addenda

CONSULTANT shall respond to technical questions and Request for Information (RFIs) received from potential bidders by preparing addendum documents to be issued by the CITY. A maximum of three (3) addenda requiring a technical response covering the RFIs received during the bid phase will be provided.

Task 7.3 - Contract Awards

The CITY shall open bids, prepare bid tabulation, and provide CONSULTANT with the bid tabulation and bid responses received. CONSULTANT shall assist the CITY in evaluating bids, conduct reference checks, and prepare a written award recommendation.

Task 7.4 - Conformed Documents

CONSULTANT shall prepare conformed drawings and specifications that incorporate revisions made via addenda during the bid phase.

Deliverables

- Up to three (3) addenda requiring a technical response covering the RFIs received during the bid phase submitted electronically to the CITY.
- Bid evaluation and written award recommendation submitted electronically to the CITY.
- A maximum of three (3) hard copies of the conformed (24" x 36" size format) design drawings and two (2) bounded technical specifications. Electronic files including AutoCAD files, pdfs and Word documents to be provided to the CITY.

Task 8. Design Services During Construction

The following design services during construction are based upon one construction contract with an estimated 9-month construction duration. CONSULTANT will not provide full-time resident inspection nor construction management services (i.e., review of contractor payment applications, management of change orders, or schedule management).

- Participate in one, two-hour pre-construction meeting (one staff member).
- Participate in up to nine (9) construction progress meetings/site visits (one staff member for each meeting at two hours per meeting)
- Review shop drawings, product data and samples, alternate material and product submittals submitted by the Contractor for conformance with the design concept of the project and with the information provided in the contract documents. CONSULTANT's fee is based upon responses of up to 30 shop drawings at two hours each (resubmittals will count as a separate/individual shop drawing review).
- Respond to Contractor's written RFIs or requests for clarifications (RFCs). CONSULTANT's fee is based upon response to five RFIs/RFCs at two hours each.
- Closeout active permits, including providing certificates of completion and/or deviations.
- Prepare record drawings in AutoCAD based on Contractor-furnished electronic as-built drawings. CONSULTANT shall deliver the record drawings to the CITY in both AutoCAD and PDF. AutoCAD files shall be generated using AutoCAD Civil 3D in conformance with CITY CAD standards. CONSULTANT shall prepare one final signed and sealed record drawing sets in pdf format.

PROJECT ASSUMPTIONS

The following provides a summary of the assumptions made in the creation of this scope of services and the estimated engineering services fee for this project. Assumptions include:

1. Deliverables will be submitted in electronic pdf format only. Final deliverables will include AutoCAD files of the Construction Drawings.
2. Project management time depends on the schedule of the work. If the proposed project schedule is extended for reasons other than those caused by the CONSULTANT, extended projected management time may be necessary and these fees may increase.
3. CITY will provide CONSULTANT with electronic copies of requested data where available.
4. CITY will provide comments on deliverables submitted by CONSULTANT for their review within 14 calendar days. Delays in responding may impact schedule.
5. Budget for design and services during construction is based on the scope of work and assumptions presented herein. Should project duration or scope change, or should additional time be expended beyond the assumptions described in this scope of services, CONSULTANT may be owed additional fees.
6. It is understood that a temporary system is being designed by others and is not a part of this scope.

- 7. Execution of this WO constitutes the City’s written approval of Reimbursable Transportation expenses in accordance with Section 2.03 a) of the Agreement to provide for the Consultant’s travel from Tampa to the Project site for our EOR to conduct the site visits and inspections identified in this WO.
- 8. The Consultant reserves the right to move budget between tasks, if necessary as long as it stays within the Not-to-Exceed Fee.

SCHEDULE

CONSULTANT shall commence upon receipt of Authorization to Proceed (ATP). The schedule for performance of this assignment (calendar days from ATP) is summarized below.

Milestone	Calendar Days from ATP
Authorization to Proceed	0
Draft Basis of Design Report	45
Final Basis of Design Report	90
Detailed Design	145
Final Design	210
Bid Support	300
Services During Construction	TBD

BUDGET AND INVOICING

CONSULTANT shall perform the services for a total fee (Time and Material Not-to-Exceed) of **\$494,305** based on the approved hourly rate schedule. The terms of compensation shall be in conformance with the Professional Services Agreement for Water Treatment Plant and Wastewater Treatment Plant Projects executed by and between the CITY and CONSULTANT on October 31, 2023. Attachment A includes anticipated budget allocations for the tasks discussed herein.

Project Task	Fee
Task 1 – Project Management	\$52,395
Task 2 – Kickoff meeting and Site Visit	\$15,310
Task 3 – BODR	\$49,150
Task 4 – Detailed Design	\$185,330

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Task 5 – Final Design	\$48,400
Task 6 - Permitting	\$27,520
Task 7 – Bidding Support Services	\$21,460
Task 8 – Design Services During Construction	\$44,740
Task 9 – Owner’s Contingency	\$50,000
Total	\$494,305

Sincerely,
Arcadis U.S., Inc.



Leah K. Richter, PE
Vice-President

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Enclosures:
Attachment A – Detailed Fee Schedule

EXHIBIT A																	
Work Break Down Fee Schedule																	
Project: Conversion from Chlorine Gas to Sodium Hypochlorite for the Hollywood Wastewater Treatment Plant																	
TASK		CATEGORIES (ARCADIS)															
Task No.	Description	Principal In Charge	Project Manager	Principal Engineer I	Senior Engineer II	Staff Engineer II	Staff Engineer I	Engineer II	Technician II	Technician I	Administrative		Total Hours	Labor Fee	Subconsultants	Travel Reimbursables	ARCADIS Total Labor + Other Service Fees
1	Project Management	8	57	16	72	32			36		40		261	\$50,295		\$2,100	\$52,395
2	Project Kickoff and Site Visit		12	10	22	2	8		12				66	\$13,660		\$1,650	\$15,310
3	Basis of Design	2	16	18	62	12	52	24	24	80			290	\$49,150			\$49,150
4	Detailed Design		48	84	240	100	128	300	56				956	\$177,080	\$8,250		\$185,330
5	Final Design		2	24	50	40	32	100	8	24			280	\$48,400			\$48,400
6	Permitting Services		24	8	24		48		24	32			160	\$27,520			\$27,520
7	Bidding Support		28	8	28		16		12	20			112	\$21,460			\$21,460
8	Design Services During Construction		44	8	36	22	58	24	24	40			256	\$44,740			\$44,740
9	Owner's Contingency													\$0			\$50,000
Totals		10	231	176	534	208	342	448	196	196	40		2,381	\$432,305	\$8,250	\$3,750	\$494,305.00
Approved Billing Rates - 2023 (\$/hr)		\$295	\$235	\$255	\$235	\$170	\$160	\$145	\$125	\$110	\$90						
SUBTOTAL 1																	\$494,305.00