

Investigation / Design Services for Town Branch and West Hickman WWTP Disinfection Process Replacement Project

Lexington – Fayette Urban County Government (LFUCG) Division of Water Quality

The Lexington-Fayette Urban County Government is accepting proposals from interested consulting engineering firms for the Investigation / Design Services for Town Branch and West Hickman Wastewater Treatment Plant (WWTP) Disinfection Process Replacement Project.

1. General Project Description

The CONSULTANT shall perform professional services as hereinafter stated which shall include but is not limited to customary civil, geotechnical, structural, mechanical, electrical engineering, and programming services as related to the Investigation / Design for Town Branch and West Hickman WWTP Disinfection Process Replacement Project.

Per the Group One and the Group two Sanitary Sewer System and WWTP Remedial Measures Plan (RMP) (2011 & 2012), the intent of the Town Branch and West Hickman Disinfection Projects were to replace equipment that has surpassed its useful life therefore increasing reliability and lowering operating cost by improving efficiency.

After evaluating the existing equipment and process the Lexington-Fayette Urban County Government (LFUCG) has decided to replace the existing disinfection process, which involves chlorine and sulfur dioxide gas, with Ultraviolet Disinfection at Town Branch (TB) and West Hickman (WH) Wastewater Treatment Plants.

This project is funded 100% by a grant from the Kentucky Cleaner Water Program (CWP). The Kentucky Infrastructure Authority (KIA) approved the grant request through the American Rescue Plan Act 2021. The funds must be obligated by December 31, 2024 and fully expended by December 31, 2026. See APPENDIX A for the KIA grant documents already received by LFUCG. The CONSULTANT will be responsible for completing the technical and administrative tasks necessary to prepare all required grant documentation submittals at the direction of LFUCG's Department of Housing Advocacy and Community Development (Grants), beginning with, the grant obligations described in March 17, 2022 Conditional Commitment Letter and attachments included in Appendix A.

2. Scope of Work: Disinfection Process Replacement Project

The CONSULTANT will review the existing chlorine disinfection systems and related equipment. UV Disinfection Systems/manufacturers will be evaluated to find the best fit for both plants. A complete replacement of the existing chlorine disinfection systems with UV disinfection will be designed. The CONSULTANT will be responsible for evaluating the different UV options; confirming calculations; and evaluating the manufacturers to determine which system is the best fit with the best cost.

The CONSULTANT will be responsible for identifying what is necessary (bulb quantity) to meet KYDOW requirements for average daily treatment and required redundancy.

A generator for the UV system will be designed for each plant for backup power as needed.

The CONSULTANT will determine where a cover system is needed and the type of shelter needed to protect the outdoor UV control cabinets.

From experience and comparison the CONSULTANT will evaluate what will be needed to protect the non-potable plant water systems from things such as snails and algae. These have been reported as problems from other plants.

At Town Branch WWTP the non-potable plant water pumps need to be evaluated and upgraded. For Town Branch and West Hickman WWTP the draw off location for non-potable water will be evaluated and moved if necessary.

The CONSULTANT is also responsible for coordinating some point distribution areas for a chemical that will help with odor control or cleaning. The areas that chlorine is sometimes used for odor control or for bacteria will be identified by plant staff.

In a Preliminary Engineering Report (PER) the CONSULTANT will address and discuss all design recommendations. A well-developed sequence of construction will be defined. The plants must continue to disinfect during construction. Shutdowns will be coordinated with plant staff; limitations will be defined in the design documents. The CONSULTANT will need to consider the sequencing and/or piping modifications to facilitate construction while keeping disinfection in operation.

The CONSULTANT will also be responsible for all electrical, instrumentation, mechanical, structural, and plumbing design for equipment related to the project. This is not intended to be an all-inclusive list of items to be addressed.

The PER will summarize the options with detailed construction estimates.

A. Task 1: Understanding the Existing Disinfection Systems

- (1) Interview Town Branch and West Hickman Wastewater Treatment Plant Operations and Maintenance staff for input regarding the current equipment control and functionality related to the existing Disinfection Systems. How they maintain disinfection and other areas they inject chlorine at different times.
- (2) Collect any operational information needed for design.
- (3) Collect any other supporting data, drawings, or measurements needed for design decisions. Hydraulic Profiles and Chlorine Contact drawings for both plants are included in Appendix B.

(4) Observe the operations and trends for Disinfection.
B. Task 2: Develop Disinfection Process Replacement Concepts and Schedules

- (1) Evaluate all UV Disinfection options and related equipment. Address all electrical, SCADA controls, ventilation, lighting, PLC replacement, and building improvements. Meet with plant staff and engineering group to discuss the options.
- (2) Prepare a conceptual layout and construction sequence for evaluated options along with design calculations.
- (3) Conduct a 20-year life cycle and present worth analysis for each conceptual design evaluated.
- (4) Prepare preliminary cost estimates and implementation schedules for all conceptual designs.
- (5) Present Preliminary Engineering Report to Treatment Plant Staff and Engineering Group for a review of all conceptual designs and receive guidance for progress towards the final design.
- (6) LFUCG will respond in writing to the Preliminary Engineering Report, providing authorization for work under Task 3.
- (7) Preliminary Engineering Report will be finalized to document final decisions.

C. Task 3: Detailed Design

- (1) Conduct detailed design progress meetings at 25%, 50%, and 90% completion. The dates for these progress meetings will be decided on during the first pre-design meeting. Progress reports and drawings will be submitted one week before the Lexington-Fayette Urban County Government review and comment. (3 copies)
- (2) Conduct and present any related design calculations to support the new equipment/process.
- (3) Review with KYDOW before Final Design is complete.
- (4) Furnish detailed cost estimates for probable cost and revise the 20-year life cycle and present worth analysis for the 50% review and the final design.
- (5) Update project schedules at 25%, 50% and 90%.

D. Task 4: Bidding Services

- (1) Prepare final plans and specifications ready for bidding. Plans and specifications are to be provided in both hard copy and standard electronic format compatible with Lexington-Fayette Urban County Government equipment. The most recent plans and specifications have been submitted in PDF format. A minimum of 7 copies will be required.
- (2) Coordinate and submit plans, specifications, and permit application to the Kentucky Division of Water for the purposes of receiving a construction permit.
- (3) Provide customary bidding services including preparation of advertisement, conducting pre-bid meeting, issuing required addenda, evaluating bids and providing a recommendation of award.

E. Task 5: Construction Administration Services

- (1) Track, review, and approve all shop drawings.
- (2) Track change orders, review requests, recommendation comments, and prepare the paper work to be submitted to council.
- (3) Track and answer all Request for Information (RFIs)
- (4) Coordinate and lead monthly construction progress meetings.
- (5) Conduct construction inspections and submit weekly reports once construction begins. Please submit estimated hours per week, total hours included for inspections and the hourly rate with your detailed cost estimate
- (6) Take before and after photos of all stages of construction.
- (7) Review and approve contractor's monthly payment applications.
- (8) Attend and maintain test reports for all equipment start-up for the project.
- (9) Coordinate final inspection of completed work and prepare the final punch list.
- (10) Transfer field notes from the contractor's drawings and submit final as-built drawings to the owner.

NOTE: This outline is not intended to be all-inclusive but is intended to be a guide for prospective firms as to the general expectations of the Owner. The Lexington-Fayette Urban County Government will not compensate firms for the cost of proposal preparation.

3. Detailed Cost Estimates

The CONSULTANT shall prepare a detailed cost estimate for this proposal based on the Tasks defined in this Request for Proposal. The estimate shall show a preliminary schedule estimating the time necessary to complete the Tasks outlined with a unit price associated. The intent of this proposal is to show the number of hours associated with a lump sum fee for the Disinfection Process Replacement Project. If your firm has additional Tasks that would be recommended show the new Tasks as separate line items with the scope well defined.

The CONSULTANT must include, in their proposal, a worksheet clearly demonstrating and certifying that their fee is within the fee amount limitation as determined by the most recent USDA Rural Development Utility Program Fee Guide. (See Condition 6, March 17, 2022 Conditional Commitment Letter).

4. Proposal Content

The proposal will contain the following components.

- A. Cover Letter
- B. Scope/fee (Detailed Cost Estimate) – No more than 8 pages. ***The attached Fee Schedule completed with your estimated cost will be the last page in this section. ALONG WITH THE COMPLETED SCHEDULE, attach proof that your cost falls within the range required by the most recent USDA Rural Development Utility Program Fee Guide.***
- C. Estimated Schedule – No more than 4 pages.
- D. Project Team with **One-Page** Resumes (Do not submit resumes for individuals contributing less than 10% of total man hours allocated)
- E. A list of 5 similar projects with owner contact information. This section shall be no more than 5 pages total.

5. Schedule and Completion

The proposed timeline for completion of the Scope of Services outlined in the proposal is as follows:

Disinfection Process Replacement Project

Award Design Contract	July	2022
Final PER	December	2022
Meeting to Review Final Design – 90% Completion	May	2023
Bid Opening	August	2023

Award of GC Contract
RMP Construction Completion

September 2023
October 2025

The CONSULTANT shall coordinate the exact time and location of all meetings with the Plant Engineering Manager, Division of Water Quality.

NOTE: Schedule may be adjusted based on final negotiations. When submitting the schedule with your proposals please indicate if your firm could complete this project any sooner than the estimated time above. If your experience indicates a shorter construction period based on shorter equipment lead times, the design period can be adjusted.

6. Method of Invoice and Payment

The CONSULTANT shall submit monthly for basic services or work rendered, based upon the CONSULTANT'S estimate of the portion of the total services actually completed during the billing cycle. Each invoice shall be accompanied by a breakdown of hours attributed to each task for both the billing cycle and the cumulative project period. Also include the percent Disadvantaged Business Enterprise (DBE) cost with each monthly invoice.

The Director of Water Quality or his designee shall respond to the invoice within thirty days of receipt, either denying or approving payment. Specific project time sheets and other payroll information may be subject to reviews and audits by the Lexington-Fayette Urban County Government.

7. Miscellaneous

All plans, specifications and accompanying documents are subject to review by the Lexington-Fayette Urban County Government's Division of Water Quality, Division of Engineering, Division of Risk Management and Division of Building Inspection. The CONSULTANT shall be responsible for incorporating the comments and requirements of the divisions into all documents.

**Investigation/Design Services for Town Branch and West Hickman WWTP
Disinfection Improvements Project**

Fee Schedule

(For a description of task refer to Section 2 of the RFP)

Section 2

Scope of Work: Disinfection Improvements Project

TOWN BRANCH WWTP

- A. Task 1: Existing Process Performance Review
Cost Task 1: _____

- B. Task 2: Develop Equipment/Process Replacement Concepts
Cost Task 2: _____

- C. Task 3: Detailed Design
Cost Task 3: _____

- D. Task 4: Bidding Services
Cost Task 4: _____

- E. Task 5: Construction Administration Services
Cost Task 5: _____

Details for Task 5.5 - The total cost should be included in Cost Task 5. Please provide the following breakdown. Estimated Weekly Inspection Hrs/Estimated Total Inspection Hrs/Hourly Rate.

_____ / _____ / _____

Town Branch Total Cost:

WEST HICKMAN WWTP

- A. Task 1: Existing Process Performance Review
Cost Task 1: _____

- B. Task 2: Develop Equipment/Process Replacement Concepts
Cost Task 2: _____

- C. Task 3: Detailed Design
Cost Task 3: _____

- D. Task 4: Bidding Services
Cost Task 4: _____

- E. Task 5: Construction Administration Services
Cost Task 5: _____

Details for Task 5.5 - The total cost should be included in Cost Task 5. Please provide the following breakdown. Estimated Weekly Inspection Hrs/Estimated Total Inspection Hrs/Hourly Rate.

_____ / _____ / _____

West Hickman Total Cost:

TOTAL FEE:

APPENDIX A

KIA Grant Package

APPENDIX B

Town Branch Hydraulic Profile

Town Branch Chlorine Contact Tank Layout

West Hickman Hydraulic Profile

West Hickman Chlorine Contact Tank Layout