

**REQUEST FOR QUALIFICATIONS (RFQ)
 FACILITIES MASTER PLAN**

July 1, 2024

KEY SUBMISSION INFORMATION

Date	Item
July 1, 2024	RFQ advertised by FRWRD
July 10, 2024	Mandatory pre-bid meeting (onsite and virtual offerings) and plant tours
July 17, 2024	Last day to submit questions to Tim Gualandri (tgualandri@frwr.com)
August 1, 2024	Qualifications packages due
August 1 – 16, 2024	Qualifications review by FRWRD staff
August 13 - 14, 2024	Firm interviews for top submissions
August 16, 2024	Firm selection and communication of award
August 16 – September 10, 2024	Scope and fee negotiation
September 18, 2024	Presentation of firm and fee recommendation to Board

Consultants shall prepare a Qualifications Proposal for addressing the following Facilities Master Plan Scope of Services encompassing the Fox River Water Reclamation District's (FRWRD) three Water Reclamation Facilities (WRFs) as defined in the subject Request for Qualifications (RFQ):

- Need for expansion(s) to accommodate growth
- Evaluate current and future regulatory considerations (Phosphorus Limits / PFAS)
- Wet stream hydraulic and treatment process capacities
- Biosolids process capacities
- Equipment and other infrastructure repairs and replacement
- Structural and overall assessments of buildings and tankage
- Electrical and Supervisory Control and Data Acquisition (SCADA) systems
- Support systems (non-potable water, chemical feed, backup power generation, etc.)
- Develop a plant hydraulic model and a process model
- Review existing records and perform survey to develop an as-built record of the facilities
- Evaluate regionalization opportunities for future growth
- Evaluate utility of the future goals
- Evaluate digital twin opportunities
- Develop a Five (5) Year Capital Improvements Plan (CIP)
- Develop a Twenty (20) Year Capital Improvements Plan (CIP)

The Facilities Master Plan should include a comprehensive evaluation of the facilities related to both capacity and

condition through an Asset Management lens. It should also include a determination of design flows and loadings and prioritized recommendations for improvements and life cycle costs.

Communication with FRWRD throughout the project is imperative. Progress meetings shall be held with FRWRD throughout the project, along with site visits and workshops as required. The selected firm should be readily available for consultation regarding related wastewater issues throughout the project.

The findings and recommendations will be summarized in a Facilities Master Plan report and presented to FRWRD in a workshop format. The draft report will be submitted to FRWRD for review and comment. The Consultant will address FRWRD's comments and submit a final version of the Facilities Master Plan. This process may include multiple sessions to ensure all plans are in the best interest of FRWRD.

After completion of the Facilities Master Plan, the final improvements will be incorporated into FRWRD's capital improvement program. Recommendations for creating or integrating an interactive project tracking tool into FRWRD's current project management infrastructure should be explored. Design and construction of the improvements will be completed over the subsequent years.

All Qualification Proposals shall be scored/ranked based on the following Criteria, which are listed according to priority of importance:

- **Project Manager and Task Leads Experience/Credentials** – The Proposal shall demonstrate that the Project Team have relevant experience with this type of work.
- **Project Experience (Project Description) and References** – The Proposal shall provide at a minimum three (3) project descriptions demonstrating that the proposed team has completed work for Clients with similar size and treatment process. A total of three (3) references shall be provided *within EPA Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin and Tribal Nations)*, with a minimum of one (1) reference located within the state of Illinois.
- **Available Capacity of Key Personnel (PM and Task Leads)** – The Proposal shall provide a breakdown of the capacity and how key project personnel will be used for this project.
- **Experience with FRWRD Facilities and / or other Local Presence** – The Proposal shall identify the Project Team's experience with FRWRD and / or other local Communities surrounding FRWRD's Service Area.
- **Overall Proposal Quality** – The Proposal should be prepared and presented in a clear and precise manner, easy to read and understand, demonstrate qualifications based on the Scope of Services, address all of the criteria listed above, and be no more than 20 pages (double sided) in length in a size 10 font.

A mandatory pre-bid meeting will be held on **Wednesday, July 10 from 10:00 – 11:00a CDT**. The meeting can be attended either in-person at 1957 N LaFox St. South Elgin, IL 60177, or virtually through the below Teams link. The pre-bid meeting will include a presentation given by FRWRD staff and a general question and answer period. Those who attend in-person have the option of attending plant walk-throughs with FRWRD staff of each of the 3 WRFs at the conclusion of the presentation.

Virtual pre-bid meeting link is [HERE](#) and can be provided via email upon request.

Meeting ID: 278 039 269 390

Passcode: LLoCHK

FRWRD 
FOX RIVER WATER RECLAMATION DISTRICT
1957 N. LAFOX (RTE 31), SOUTH ELGIN, IL 60177 / P.O. BOX 328, ELGIN, IL 60121 / PH. (847) 742-2068

All questions should be directed to Tim Gualandri (tgualandri@frwr.com) and will be answered to all firms. The question period will close on Wednesday, July 17, 2024.

All Proposals shall be delivered to the FRWRD Administration Building at 1957 N. La Fox Street, South Elgin, IL 60177 ATTN: Timothy Gualandri, P.E. on August 1, 2024, by 4:00 PM CST. One hard copy of the Proposal with a flash drive containing an electronic copy shall be included with the submission. All Proposers will be notified of the results by no later than August 16, 2024.

The following pages further describes the Scope of Services that will be requested for this Facilities Master Plan and should be referenced when preparing the subject Qualifications Proposal.

For any additional questions please email tgualandri@frwr.com. Any questions received will be responded to via email to all notified firms.

Sincerely,



Timothy Gualandri, P.E.
Capital Improvement Program Manager

FACILITIES MASTER PLAN SCOPE OF SERVICES

TASK 1 - PROJECT MANAGEMENT AND ADMINISTRATION

TASK 1.1 - KICKOFF MEETING

The Consultant shall conduct and facilitate a project kick-off meeting that includes the Consultant's key project personnel and FRWRD staff to define lines of communication, protocol, and discuss goals and objectives of the project, provide expectations for FRWRD staff, and review the scope and schedule for the project. The Consultant shall prepare and supply the meeting agenda and meeting notes.

TASK 1.2 - DATA REVIEW

The Consultant shall review relevant information, existing reports, model data, work order data and other related documents supplied by FRWRD, including flow, operating data, operations and maintenance logs, GIS data, and Computerized Maintenance Management System (CMMS) data, relevant sections of existing reports and other related documents supplied by FRWRD, including water quality, geotechnical soil borings and other relevant site information.

Specific information the Consultant may review and evaluate includes flow, process data and load trends, laboratory analysis, an existing Emergency Operations Manual, WRRF Electronic O&M Manual, established asset hierarchy, data collection forms, and existing GIS. The Consultant shall prepare a Data Review Report summarizing the existing data, any significant findings, and recommendations regarding additional data collection needs. The memorandum shall summarize flow and load trends.

TASK 1.3 - SET TARGET LEVELS OF SERVICE

The Consultant shall lead the development of a Level of Service (LOS) Statement. The Level of Service Statement defines the way in which FRWRD staff, managers, and operators desire the system to perform over the long term. Levels of service will be established in every performance area of the plant including Pumping, Preliminary Treatment, Liquid Stream, Solid Stream, Electrical, I&C, Odor Control, and support systems.

The Consultant shall conduct a workshop to draft Level of Service Statement for review and comment by FRWRD. In addition, the Consultant shall conduct a management workshop to discuss the draft Level of Service Statement and FRWRD comments.

TASK 1.4 - FACILITY SITE VISIT

As part of this task, the Consultant shall include a site visit to each of the three Water Reclamation Facilities (WRF) to prepare an inventory list and capture initial thoughts from FRWRD Staff. The Site Visits are designed to bring the FMP Team up to speed on some of the onsite issues that the FRWRD Staff face and familiarize the FMP Team to each of the Plants' facility layout and treatment processes.

TASK 1.5 - FACILITIES MASTER PLAN GOALS AND OBJECTIVES

The Consultant shall develop functional requirements and planning criteria for the FMP against which the alternatives and scenarios will be measured. References to specific criteria should be annotated as well as

assumptions used for anticipated future regulations. The Consultant shall prepare a technical memorandum summarizing the functional requirements developed and the anticipated future regulations and present the technical memorandum to FRWRD for review and comment. This document is expected to include:

- Project background and introduction
- Facility function description
- Flow and load projections
- Project scope, objectives, and operational philosophy
- Technical criteria (with justifications)
- Human factors criteria (workspaces/working conditions)
- Special criteria (if any)
- Regulatory requirements
- Financial constraints

The Consultant shall revise and resubmit the final technical memorandum after the resolution of all FRWRD comments. The Consultant shall prepare and supply the meeting agenda and meeting notes.

TASK 2 - DEVELOP SITE AS-BUILT

TASK 2.1 - UPDATE SITE AS-BUILT

The Consultant shall update the baseline survey to which future projects and all geometrics will be referenced. This includes:

- Reviewing existing construction as-built and record drawings for site utilities and buildings
- Assimilating overall facility site as-built in AutoCAD format, coordinating with FRWRD the number of printed and electronic copies that need to be made available,
- Locating and verify critical elevations and establish a reference benchmark circuit for all construction,
- Locating and verify existing utilities, yard piping, surface improvements, structure corners and pertinent property corners,
- Field locating and identifying topographic details within an agreed upon boundary for the project site

Varying levels of Subsurface Utility Engineering may be employed to accomplish this task. All buried features larger than 20-inches will be marked on each outside edge to appear as a double-line on the drawings. Utilities shall be located at all plant street intersections and two additional congested areas designated by FRWRD Staff. Building corners and FF elevations should be located in order to link construction drawings to one NAV Datum. Reference points shall be established for future use. Areas of question after initial non-destructive locating efforts shall be presented to FRWRD staff and use of alternative methods may be considered for location confirmation as part of the updated Site As-Built.

TASK 3 – MODELING

TASK 3.1 - DEVELOP PLANT HYDRAULIC MODEL

The Consultant shall collect data and develop a calibrated plant hydraulic model. The model shall include hydraulic profiles at various flow conditions. Hydraulic restrictions shall be identified, and solutions considered as part of the FMP. The hydraulic model will be delivered to FRWRD at completion of the project. A dynamic model shall be used

to develop the Plant Hydraulic Model. Additional Computational Fluid Dynamic (CFD) modeling on specific unit processes where potential mixing issues or dead zones are a concern may be requested.

TASK 3.2 - DEVELOP PLANT PROCESS MODEL

Calibrate and provide updates to the current plant process model (BioWin) for use in identification of treatment bottlenecks, development and comparison of alternatives. The model will be developed and calibrated to Level 2 standards, per Methods for Wastewater Characterization in Activated Sludge – Water Environment Research Foundation (WERF) 2003 and used to simulate the existing facilities and then project performance under future design conditions. These simulations will assist in evaluation of process modifications to meet the anticipated future regulatory limits. In order for the Consultant to calibrate the model to Level 2 standards, a two-week sampling campaign is required.

Consultant will conduct a one-day site visit to each of the plants during review of the existing information. The purpose of the visit will be to review current operations, develop understanding of treatment processes at the plant, and to identify potential issues that need additional clarification or sampling. Locations for process sampling will also be verified during the site visit.

The Consultant will design a two-week intensive sampling effort to more accurately characterize the raw influent and primary effluent. The Consultant will meet with FRWRD to discuss the extents of sampling prior to moving forward. The Consultant will work with FRWRD to implement the intensive sampling. The Consultant will take the lead in collecting samples and determining if FRWRD's in-house laboratory or an external lab is sufficient for analysis. The Consultant shall recommend additional daily sampling that FRWRD may start collecting to support the model development. Meetings will be held to review the sampling results, model development, model calibration, and model report.

TASK 3.3 – DIGITAL TWIN ROADMAP

The Consultant will evaluate the current plant data being collected, its data platforms and SCADA system infrastructure for accomplishing converting both the process and hydraulic modeling efforts into a Digital Twin of our Facilities. The Consultant would provide recommendations as to if additional data is necessary, software improvements, and or SCADA Infrastructure improvements are required for moving towards process optimization in real-time.

TASK 4 - DEVELOP ASSET MANAGEMENT PLAN

TASK 4.1 - DEVELOP ASSET REGISTRY

The Consultant will be provided with a plant asset list, and its accuracy and level of completeness should be assessed and addressed to create a complete plant asset list. The Consultant shall collect and collate asset information required to complete an Asset Management Plan (AMP).

TASK 4.2 - PERFORM CONDITION ASSESSMENT

The objective of this task is to collect asset information and obtain a current assessment of both the physical and performance condition of assets through a combination of site visits and data review. Condition assessment shall support risk-based capital planning and provide long-term value for FRWRD. Condition scores shall be established for the assets based on the physical condition and performance condition. Building assets, workspaces/working conditions, and facility I & C gear are to be included in the assessment (site work, structural, architectural,

HVAC/plumbing, instrumentation) as well. FRWRD staff will accompany Consultant staff during the assessment. The tasks included in this objective are as follows:

TASK 4.2.1 - DEVELOP ASSESSMENT PLAN

Consultant shall propose assessment guidelines for approval by FRWRD staff, and develop an assessment plan by asset class, including inspection requirements, testing to be conducted, scoring procedures, and forms. The condition scoring and life reduction factors shall be standardized for all asset categories following the established guidelines.

Consultant shall include a minimum of two (2) meetings with FRWRD to develop, review, and finalize the assessment plan.

TASK 4.2.2 - CONDITION ASSESSMENT OF PLANT ASSETS

The process and hydraulic capacity of the plant assets will be established through previous scope items. In addition, work order information is available. The Consultant will use the information to make recommendations on additional testing, assess and score the process, and determine the asset performance (process and hydraulic). Each major process shall have failure modes (e.g. mortality, capacity, level of service, efficiency, etc.) and process and/or redundancy limitations identified. The asset information shall be collected using the process developed by the Consultant with FRWRD input.

Consultant shall conduct a separate technical memorandums and meetings for process mechanical, structural, and instrumentation assets upon completion of entire task to review results, potential failure modes by process, and redundancy limitations.

TASK 4.2.3 - DETERMINE ASSET RESIDUAL LIFE:

The Consultant shall establish an estimated remaining service life for each asset based on install date, manufacturer's published literature (where available), industry standards and reference material, engineering judgment, operator input and experience with the system, service history and condition assessment.

TASK 4.2.4 - SUMMARIZE FINDINGS

The Consultant shall provide a technical memorandum summarizing condition assessment findings. The memorandum shall include analysis by asset class. In addition, the Consultant shall indicate the top priorities based on findings and determine reassessment schedules for each asset class based on risk scoring. The findings shall be presented and reviewed in a meeting. The Consultant is to include the data collected by FRWRD staff.

Consultant shall provide a technical memo that captures all data updates, including follow-on data collection by FRWRD staff, and any revisions to the assessment methodology based on lessons learned. The results shall provide a solid foundation for the CIP development in future tasks.

TASK 4.3 - OPERATION AND MAINTENANCE REVIEW

The Consultant shall review current FRWRD maintenance and operation plans based on the proposed level of service and recommend modifications. In addition to reviewing O&M plans, job shadowing of operations staff is recommended to understand the nuances of the WRFs.

The Consultant shall present recommendations in a meeting and summarize in a technical memorandum.

TASK 4.4 - DETERMINE LIFE CYCLE AND REPLACEMENT COSTS

Prepare an opinion of probable cost to repair or replace each asset. The opinions of cost will be planning level. Using the “top down” approach, opinions of cost will be developed for each asset block and will include all work assumed for full replacement of the asset.

TASK 4.5 - OPTIMIZE INVESTMENTS

Consultant shall develop a detailed plan and schedule for the rehabilitation and replacement of assets including an estimate of money needed each year for 5 years into the future. The plan shall detail the capital requirements and O&M requirements by asset class by year. In addition, the Consultant shall develop a high-level plan and schedule for the rehabilitation and replacement of assets including an estimate of money needed in 5-yr increments for 20 years into the future. The plan shall detail the capital requirements and O&M requirements by asset class by year and then compare the plan to the current capital plan.

TASK 5 - ELECTRONIC OPERATIONS AND MAINTENANCE GUIDE

The consultant will develop a web-based, interactive Operations and Maintenance Guide for the facility. The Operations Guide will include visual aids (graphs, tables, charts, photographs, drawings, etc.) to be used to the maximum extent practical. The Guide will be web-browser enabled for ease of navigation and use. Software used will be commercially available, allowing the plant staff to make edits, if required, in the future. The Guide shall consist of a process overview and introduction section including design criteria, regulatory considerations, record drawing index, sampling overview, symbols and abbreviations and resource summary guide. For each unit process, the following information will be provided in table format:

- Process overview
- Process equipment
- Instrumentation and control description
- Standard operating procedures
- Process and equipment troubleshooting
- Maintenance summary guide
- Safety information

Each unit process will include an enhanced overview graphic and simplified P&ID diagrams for the control functions. Graphical interface with unit processes shall mirror those used in the Plant Control System.

TASK 6 – UTILITY OF THE FUTURE GOALS

The Consultant shall incorporate into the FMP FRWRDs Utility of the Future goals. The Consultant will hold a meeting with FRWRD Staff to establish Utility of the Future goals so future improvements can work towards achieving the goals set forth in the meeting. FRWRD’s Utility of the Future Goals center around the framework established by the National Association of Clean Water Authorities (NACWA) for the Utility of the Future Today award. These pillars include

- Community Partnership & Engagement
- Energy Efficiency
- Energy Generations & Recovery

- Nutrient & Materials Recovery
- Water Reuse
- Watershed Stewardship
- Beneficial Biosolids Reuse

Consultant will prepare a Utility of the Future Technical Memorandum summarizing FRWRDs established goals and recommendations for achieving those goals. A minimum of two (2) meetings to review the draft Utility of the Future Technical Memorandum with FRWRD and receive comments. All recommendations shall be incorporated into the 20-year Capital Improvements Plan prepared for the FMP.

TASK 7 – EXPANSION AND PROCESS IMPROVEMENTS ALTERNATIVES ANALYSIS AND REPORT DEVELOPMENT

TASK 7.1 - ANALYSIS

The Consultant shall develop and conduct an analysis of alternatives for facility expansion and process improvements based upon flow and load projections, current and future regulatory requirements, and any additional information FRWRD may provide. The Consultant shall evaluate schedules, minimize construction and life-cycle cost, incorporate important social and environmental benefits, and/or improve coordination between projects while considering site utilization, risk reduction, reliability, and plant operability.

The Consultant shall lead a meeting with FRWRD to develop the evaluation criteria, including the Triple Bottom Line and sustainability, and weighting factors that will be used to analyze all alternatives. The Consultant shall evaluate five (5) alternatives to accomplish the long-range facility expansion and process improvement goals identified by FRWRD.

Coordination and brainstorming meetings shall be conducted with FRWRD during the analysis of the alternatives. The alternatives shall include input from previous efforts, including modeling, asset management-based recommendations, special considerations, levels of service and goals and objectives. A technical memorandum shall be prepared for each of the five (5) alternatives for FRWRD's review and comment. These technical memoranda shall include estimated construction costs and life cycle costs for each alternative presented. Upon receipt of FRWRD's comments, the Consultant shall lead up to five (5) meetings with FRWRD staff regarding the reconciliation of comments and the upcoming development of scenarios.

Considering the alternatives, the Consultant shall prepare a draft set of scenarios that include recommendations based on potential situations that may occur in the future. The consultant shall finalize scenarios in a meeting with FRWRD.

After the development of the scenarios, the Consultant shall prepare an Alternative Analysis Report summarizing the results of the investigation including an overview of the scenarios considered in sufficient detail so that recommendations can be made. With the submittal of the official deliverable, the Alternative Analysis Report shall include the executive summaries from technical memoranda prepared for the five alternatives and conceptual-level estimated construction costs and life cycle costs for each of the proposed projects within the scenarios of alternatives.

The Consultant shall conduct a meeting to present the draft Alternative Analysis Report to FRWRD for review and comment. The Consultant shall revise and resubmit the final Alternative Analysis Report upon resolution of all comments. The Consultant shall prepare and supply the meeting agenda and meeting notes.

TASK 7.2 - FACILITIES MASTER PLAN

The Consultant shall prepare a written FMP presenting the results of the above tasks. In addition to the above, the plan shall provide condition assessment frequency and implementation schedule. A minimum of one draft FMP shall be submitted for review. Due to the expansive nature of the FMP, more than one draft may be needed to arrive at a final iteration. Revise the FMP in response to all comments from all iterations and submit up to 5 (five) copies of the final plan. Electronic copies of the plan shall also be submitted in both Word (.docx) and Adobe (.pdf) file formats.

Consultant will conduct a minimum of two (2) meetings to review the draft FMP with FRWRD and receive comments.

TASK 8 – 5 and 20-year Capital Improvement Plans (CIP)

The Consultant will utilize information from the asset condition assessment alongside the results of the Facilities Master Plan to establish 5- and 20-year CIP and schedules. The Consultant will develop a detailed plan and schedule for the rehabilitation and replacement of assets, including an estimate of capital needs.

The Consultant will provide a CIP Technical Memorandum, with recommendations for either incorporating into FRWRD's current project tracking mechanism, or implementing a tracking system with the desired functionality, as shared by FRWRD staff.

Consultant will conduct a minimum of one (1) meeting to review the draft CIP with FRWRD and receive comments.