ENGINEERING SERVICES FOR ION EXCHANGE ADDITION TO THE WATER TREATMENT PLANT FOR PFAS REMOVAL

REQUEST FOR QUALIFICATION # PSUT-25-06

Issuance of Solicitation: Wednesday, May 7, 2025

Questions Due Date: Tuesday, May 27, 2025

Bid Submission Deadline: Tuesday, June 10, 2025

THE CITY OF PEMBROKE PINES
PROCUREMENT DEPARTMENT
8300 SOUTH PALM DRIVE
PEMBROKE PINES, FLORIDA 33025
(954) 518-9020

For more information, please visit our online supplier portal, located at
https://procurement.opengov.com/portal/pembrokepines

Table of Contents

SECTION 1 - NOTICE

Notice is hereby given that the City Commission of the City of Pembroke Pines is seeking sealed proposals for:

RFQ # PSUT-25-06

Engineering Services for Ion Exchange Addition to the Water Treatment Plant for PFAS Removal

Solicitations may be found on the City of Pembroke Pines website under the Procurement Department at http://www.ppines.com/index.aspx?NID=667, and may be downloaded directly from the OpenGov platform at https://procurement.opengov.com/portal/pembrokepines.

For Technical Support, proposers can reach the OpenGov Service Desk between 7:00 am to 10:00 pm from Monday through Friday via the following methods:

- Chat (preferred method): Click the button in the lower right-hand corner of the portal.
- E-mail: procurement-support@opengov.com
- Phone: 1 (650) 336-7167

If additional help is needed with downloading the solicitation package please contact the Procurement Department at (954) 518-9020 or by email at purchasing@ppines.com. The Procurement Department hours are between 7:00 am to 6:00 pm on Monday through Thursday and is located at 8300 South Palm Drive, Pembroke Pines, FL 33025.

Bidders shall submit all questions regarding this bid via the City's e-Procurement Portal, located at https://procurement.opengov.com/portal/pembrokepines. Please note the deadline for submitting questions. All answers will be posted on the City's e-Procurement Portal. Bidders may also click "Follow" on this bid to receive an email notification when answers are posted. It is the bidder's responsibility to check the portal for updates. Only written responses issued through the OpenGov platform will be considered official for interpretations or clarifications.

Proposals will be accepted until 2:00 pm on Tuesday, June 10, 2025, electronically at https://procurement.opengov.com/portal/pembrokepines/projects/164682.

Bid Opening: The sealed electronic proposals will be publicly opened at 2:30 pm, on the bid due date, by the City Clerk's Office, in the **City Clerk's Office Conference Room located on the 4th Floor in the Charles F. Dodge City Center/**City Hall Administration Building, located at 601 City Center Way, Pembroke Pines, Florida, 33025.

Virtual Bid Opening: In light of public health concerns and to ensure accessibility for all, the City encourages interested parties, consultants, and the public to participate virtually via live streaming instead of attending the meeting in person. As a result, meetings may be a combination of in-person and virtual, all as provided by law. To virtually attend the bid opening, please use the Cisco Webex Meetings platform.

Virtual Meeting Details:

- WebEx Meeting Link: https://ppines.webex.com/meet/purchasing
- Cisco Webex Meeting Number: 717 019 586
- Join by Phone Number: +1-408-418-9388

The public may download the **Cisco Webex Meetings app** from https://www.webex.com/downloads.html/.

To ensure an efficient meeting process, participants are requested to mute their audio and camera during the meeting. While the public is welcome to attend the virtual bid opening, **please note that active participation and commenting will not be allowed during the proceedings.**

For further information about the bid opening or assistance in accessing the virtual meeting, please contact:

Nicolas Rodriguez or other Procurement Staff in the Procurement Department
City of Pembroke Pines
8300 South Palm Drive,
Pembroke Pines, FL 33025
(954) 518-9020 Ext: 59021 or 954-518-9020
purchasing@ppines.com

SECTION 2 - GENERAL PROJECT INFORMATION & TIMELINE

2.1 Tentative Schedule of Events

Issuance of Solicitation (Posting Date):	May 7, 2025
Pre-Bid Meeting (Non-Mandatory):	May 14, 2025, 10:00am Public Services Conference Room located at 8300 South Palm Drive, Pembroke Pines, FL 33025.
Question Due Date:	May 27, 2025, 11:30pm
Issuance of Final Answers to Questions:	June 2, 2025
Bid Submission Deadline:	June 10, 2025, 2:00pm
Bid Opening:	Will be held at 2:30 pm on the day of bid submissions are due.
Evaluation Committee Meeting:	July 1, 2025
Recommendation of Contractor to City Commission for Award:	August 6, 2025

2.2 Non-Mandatory Pre-Bid Meeting/Site Visit

There will be a non-mandatory scheduled pre-bid meeting on **Wednesday, May 14, 2025 at 10:00 am.** Meeting location will be at the **Public Services Conference Room located at 8300 South Palm Drive, Pembroke Pines, FL 33025.**

A. **Proof of Attendance:** Consultants may be required to sign in at any of the meetings to show proof of attendance. It is the consultant's responsibility to make sure that they sign in at the meeting.

B. **Site Visit:** After the initial pre-bid meeting, interested parties may accompany staff on a site visit to the Water Treatment Plant, located at 7690 Johnson Street, Pembroke Pines, FL 33024.

2.3 Follow-Up Pre-Bid Meeting(s)

Follow-Up Meetings: In the event that a consultant cannot attend the scheduled pre-bid meeting, or if a consultant would like a follow up visit to the site, they may request a site visit by contacting **Nicolas Rodriguez** at **(954) 518-9020 Ext: 59021**. We urge all consultants to attend the scheduled

meeting, as a separate or follow-up meeting may not be afforded to the requester due to scheduling and availability of staff to assist with any additional meetings. In addition, if making a request for a separate or follow-up meeting, consultants are urged to make these requests as early as possible.

2.4 Estimated Project Cost

The City has not established a budget for this project or the consultant fees, however staff estimates the construction cost of this project to be approximately $54.5 million, and the professional services are estimated at $5,450,000, which includes design, permitting and bidding services.

2.5 Grant/Federal Funding

Not applicable for this project.

2.6 Proposal Security/Bid Bond

A Proposal Security shall not be required for this project.

2.7 Payment and Performance Bonds

Payment and Performance Bonds shall not be required for this project.

2.8 Project Timeline

Construction must be completed by **April 26, 2029**, to ensure compliance with the new regulatory requirements established by the U.S. Environmental Protection Agency (US EPA) for public water systems. Given that construction is anticipated to take approximately **twenty-four (24) months**, it is critical that design development begins promptly after the Notice to Proceed (NTP) and is completed within **twelve (12) months** of NTP. The selected consultant must adhere to these time constraints to ensure the project is completed by the mandated deadline.

SECTION 3 - PURPOSE AND BACKGROUND

3.1 Purpose

The City of Pembroke Pines is seeking statements of qualifications from qualified Professional Engineering Firms, hereinafter referred to as the Consultant, to provide Professional Engineering Services for the addition of ion exchange treatment for PFAS removal to the City Water Treatment Plant located at 7960 Johnson Street, Pembroke Pines, FL 33025, in accordance with the terms, conditions, and specifications contained in this solicitation; Chapter 471, Florida Statutes (F.S.); and the Consultant's Competitive Negotiation Act (CCNA), as set forth in Florida Statute 287.055.

Services may include, but are not limited to, the following:

- Site Visits
- Data Collection
- Testing
- Water Treatment Process Design
- Electrical Engineering Design Services
- Instrumentation and Control Engineering Design Services
- Structural Engineering Design Services
- Geotechnical Engineering Design Services
- Sub-surface Utility Locations
- Cost Estimating
- Permitting
- Bidding Support
- Engineering Services during Construction
- Final Certification

3.2 Background

Pembroke Pines, Florida, ranked as the eleventh largest city among the state's four hundred plus municipalities and the second largest in Broward County, maintains a welcoming small-town ambiance that resonates with its residents. Located conveniently in southwest Broward County, the city provides seamless access to major highways, employment centers, entertainment venues, parks, golf courses, and a diverse array of dining and shopping options.

With a population of approximately 170,000 residents spread across 32.68 square miles, Pembroke Pines is renowned as one of the best cities to live in America. The city boasts 28 superior parks, lush landscaping, and a distinctive South Florida charm that contributes to its natural beauty. Notably recognized as 2024's Best Place to Raise a Family in Florida, and 2024's Best City of Hispanic Entrepreneurs by WalletHub, Pembroke Pines also earned a place as the on Money Magazine's esteemed Best Places to Live list in 2014, as the sole Florida representative, ranking in at #32 in the nation.

Incorporated in 1960, Pembroke Pines is celebrated as a safe and desirable community, having received accolades such as the All-America City designation. The city's commitment to arts and culture, exceptional schools, diverse population, numerous parks, and forward-thinking approach in an ever-evolving world make it a standout destination.

Pembroke Pines is also the home to the largest municipal-run charter school system in the nation, serving over 6,000 students across five separate campuses. The City’s award-winning charter school system is located in the Broward County School District, which is the sixth largest school district in the nation.

SECTION 4 - SCOPE OF WORK

4.1 Scope of Work

The Professional Engineering Firm (CONSULTANT) shall provide testing, engineering, design, and related services using the traditional Design-Bid-Build format. Design-Build format proposals will not be accepted.

The selected process for PFAS removal shall be through the use of non-regenerable ion exchange pressure vessels. This project design shall include expansion of the existing regenerable ion exchange pressure vessels and other plant modifications as deemed necessary by the City. Reference is made to a report commissioned by the City and performed by Carollo Engineers entitled "PFAS Treatment Feasibility Evaluation", revised March 20, 2025, which has been provided in this solicitation for reference.

The CONSULTANT shall act as the Engineer of Record (EOR) for design and construction. The CONSULTANT shall prepare and obtain all necessary permits associated with this project, provide bidding assistance, and engineering services during the construction phase.

The CONSULTANT will be expected to coordinate all design work with other design and construction work in progress at the facility. Consultant will be required to attend coordination meetings with the City and other Consultants throughout the course of this project including the planning, design and construction phases.

This project may include, but not limited to, the following Scope of Work:

- Meetings/Workshops with the City to determine project scope details and design kick-off.
- Design Memorandums for each of the proposed improvement processes.
- Testing necessary to confirm the removal efficacy of the proposed ion exchange resin. Including, but not limited to, on-site skid testing.
- Design development and submission of Schematic Level/30% complete design drawings.
- Design development and submission of 60% and/or permit submittal drawings and specifications.
- Apply for, and obtain, all required permits and licenses.
- Design development and submission of 90% complete drawings and specifications.
- Submittal of 100% complete Construction Documents.
- Assistance during the public bidding process which may include:

  A. Answering questions and issuing addendums.

  B. Reviewing bid results and making award recommendations.

- Post-Design and Construction Engineering & Inspection (CEI) Services which may include:

  A. Conducting project pre-construction kick-off meeting.

  B. Reviewing and coordinating the contractor's Critical Path Method (CPM) construction schedules and monthly schedule updates.

  C. Conducting and recording monthly Project Construction meetings.

  D. Maintaining records of all meetings, including follow-up task lists with responsible parties.

  E. Managing and maintaining all construction logs.

  F. Reviewing and managing all shop drawings, samples, mock-ups, and similar submittals.

  G. Coordinating and observing all required testing during construction.

  H. Reviewing and managing all requests for payment.

  I. Reviewing and managing all interim as-built documents.

  J. Coordinating and answering Requests for Information (RFIs).

  K. Issuing revisions to the contract documents.

  L. Conducting and recording daily construction observations of construction activities.

  M. Providing final certifications.

  N. Reviewing and transmitting to the City all final as-built documents and operation/maintenance manuals

SECTION 5 - SUBMITTAL DOCUMENTS

Bids must be submitted electronically at https://procurement.opengov.com/portal/pembrokepines on or before **2:00 pm on Tuesday, June 10, 2025.** Please note consultants should be registered on OpenGov under the name of the organization that they are operating as and it should match the organization name on the documents that they are submitting and utilizing when responding to the solicitation. In addition, the consultants must complete the required documents in this section and provide any additional information requested throughout this solicitation. Any additional information requested in the solicitation should be scanned and uploaded. The City recommends for proposers to submit their proposals as soon as they are ready to do so. Please allow ample time to submit your proposals on the https://procurement.opengov.com/portal/pembrokepines website. Proposals may be modified or withdrawn prior to the deadline for submitting Proposals.

PLEASE DO NOT SUBMIT ANY PROPOSALS VIA MAIL, E-MAIL OR FAX.

Prospective proposers interested in responding to this solicitation are requested to provide all of the applicable information listed in this section. Submittals that do not respond completely to all of the requirements specified herein may be considered non-responsive and eliminated from the process. Brevity and clarity are encouraged.

1 CONFIRMATION TO BIND

1.1 I certify that I have read, understood and agree to the terms in this solicitation, and that I am authorized to submit this response on behalf of my company.*

☐ Please confirm

*Response required

2 PRIMARY LOCATION & SINGLE POINT OF CONTACT

2.1 Identify the firm's, single point of contact that is a professionally licensed Engineer for this project. *

*Response required

2.2 Identify the primary location of firm in which the work will be completed in.*

*Response required

3 EXPERIENCE AND CAPABILITIES

The relative experience and qualifications of each applicant's proposed team, with respect to the project scope, will be judged and a relative rating assigned. This parameter expresses the general and specific project-related capability of the team and indicates the adequate depth and abilities of the organization which it can draw upon as needed. This will include management, technical, and support staff.

3.1 Explain your firm's interest in working on this project, a positive commitment to perform the required work and a description of the firm.*

*Response required

3.2 Describe the size of your firm.*
*Response required

3.3 Describe your firm's financial history, strength and stability.*
*Response required

3.4 Describe your firm's range of activities.*
*Response required

3.5 Describe the specialized experience and technical competence of the firm or persons with respect to working on similar projects.*
*Response required

3.6 How many years of experience do you have? Please provide proof of such experience.*
*Response required

3.7 The firm must provide information on their proximity to and familiarity with the area in which the project is located.*
*Response required

3.8 Explain the availability and access to the firm's top level management personnel.*
*Response required

3.9 List any applicable qualifications, including education, experience, honors and awards received, and professional associations of which the firm and/or its personnel are members, which are not already listed on Standard Form 330.*
*Response required

3.10 What similar or related projects have you worked on within the past three years and what challenges did you face and how did you overcome them?*
*Response required

3.11 Provide evidence of knowledge and experience with similar projects in a water and/or wastewater utility environment.*
*Response required

3.12 What is your reputation compared to your peers in the market?*
*Response required

3.13 What is your reputation like among customers and how have you developed it?*
*Response required

3.14 How does your service differ from similar competitors? How do you win and retain business?*
*Response required

3.15 A brief statement must be included which explains why your proposal would be the most effective and beneficial to the City of Pembroke Pines.*
*Response required

4 FIRM'S UNDERSTANDING AND APPROACH TO THE WORK

The understanding that the applicant and consultants demonstrate as to the requirements and needs of the project, including an evaluation of the thoroughness demonstrated in analyzing and investigating the scope of the project.

4.1 Provide a narrative statement demonstrating an understanding of the overall intent of this solicitation, as well as the methods used to complete assigned tasks.*
*Response required

4.2 Please address your familiarity and understanding of the needs of the current compliance with City Standards, Codes and Engineering Standards.*
*Response required

4.3 Please address your familiarity with Engineering Permitting and Preparing Studies and Miscellaneous Designs in regard to similar projects.*
*Response required

4.4 Please clearly describe all aspects of the project proposed.*
*Response required

4.5 Include details of your approach and work plans.*
*Response required

4.6 How would you organize this project in terms of milestones?*
*Response required

4.7 Identify any issues or concerns of significance that may be appropriate.*
*Response required

4.8 Please provide details of your Proposed Design Concept.*
*Response required

4.9 How do you ensure the quality of your services?*
*Response required

4.10 What criteria do you use to measure your quality?*
*Response required

4.11 How often do you find mistakes or errors in your work and what is done to correct these errors, and what is the average correction time?*
*Response required

4.12 Describe the firm's techniques for quality control. At a minimum describe the firm's technique to control design and contract documentation, including record keeping.*
*Response required

5 WILLINGNESS TO MEET TIME AND BUDGET REQUIREMENTS

Please note that during this portion of the process, the City is NOT asking for the firms to submit pricing. After the evaluation committee has selected the firms in order of preference, the City shall negotiate a contract with the most qualified firm for professional services at compensation which the agency determines is fair, competitive, and reasonable. Should the agency be unable to negotiate a

satisfactory contract with the firm considered to be the most qualified at a price the agency determines to be fair, competitive, and reasonable, negotiations with the firm must be formally terminated. The agency shall then undertake negotiations with the next most qualified firm.

Budget: This solicitation is for the award of professional services. The City has not established a budget for this project or the consultant fees, however staff estimates the construction cost of this project to be approximately **$54.5 million**, and the professional services are estimated at **$5,450,000, which includes design, permitting and bidding services.**

Timeline: Construction must be completed by **April 26, 2029**, to ensure compliance with the new regulatory requirements established by the U.S. Environmental Protection Agency (US EPA) for public water systems. Given that construction is anticipated to take approximately **twenty-four (24) months**, it is critical that design development begins promptly after the Notice to Proceed (NTP) and is completed within **twelve (12) months** of NTP. The selected consultant must adhere to these time constraints to ensure the project is completed by the mandated deadline.

5.1 In general, please explain your firm's approach in meeting "project specific" budget requirements and indicate whether Consultant is committed to meet these requirements when identified in this agreement.*
*Response required

5.2 Please advise if your firm is willing to meet the stated budget requirements.*
*Response required

5.3 What percentage of your completed projects have had cost overruns?*
*Response required

5.4 Tell me about a time when you went over budget and how you handled the situation?*
*Response required

5.5 What cost-saving measures do you implement at your firm?*
*Response required

5.6 Who will be in charge of maintaining the budget on projects and how many accounts is this person assigned to at a given time?*
*Response required

5.7 In general, please explain your firm's approach in meeting "project specific" time requirements and indicate whether Consultant is committed to meet these requirements when identified in this agreement.*
*Response required

5.8 Please advise if your firm is willing to meet the stated time requirements.*
*Response required

5.9 What is your average on-time completion rate?*
*Response required

5.10 How many projects does your firm typically take on at a given time?*
*Response required

5.11 Tell me about a time when the project timeline was delayed and how did you handle the situation?*
*Response required

5.12 Describe the firm's design and construction management methods and techniques. Include details on firm's ability to make decisions and facilitate resolution of disputes.*
*Response required

5.13 Describe the firm's knowledge and experience with scheduling.*
*Response required

5.14 Please provide details of your proposed project schedule required to meet the regulatory timeframe.*
*Response required

6 RECENT, CURRENT, AND PROJECTED WORKLOADS OF THE FIRMS

Please provide any information regarding your firm's recent, current, and projected workloads for the Evaluation Committee to review.

6.1 Recent Workload: Describe your recent workload.*
*Response required

6.2 Current Workload: Describe your current workload.*
*Response required

6.3 Projected Workload: Describe your projected workload.*
*Response required

7 REFERENCE # 1

The minimum experience for this project is **ten (10) years**. Provide specific examples of similar experience conducting licensed work of equal or similar scope of work, preferably delivered by the proposed team members. A **minimum of 3** references should be from the last **ten years** and should be capable of explaining and confirming your firm's capacity to successfully complete the scope of work outlined herein. As part of the proposal evaluation process, the City may conduct an investigation of references, including a record check or consumer affairs complaints. Proposers' submission of a proposal constitutes acknowledgment of the process and consent to investigate. The City is the sole judge in determining Proposers qualifications. In this section you will have the ability to enter information for 5 different references including their contact details and specific project information.

Please note that the City prefers references who are not current employees of the City of Pembroke Pines, as we generally do not contact our own employees for reference checks.

Proposers are advised to confirm that:

A. Each reference provided by the Respondent has up to date contact persons and contact information;

B. The contact person provided for each reference is someone who has personal knowledge of the Proposer's performance during the referenced project; and

C. The contact person for each reference has been contacted by the Proposer regarding this specific bid submittal and such person confirmed their willingness to serve as a reference.

The projects listed in this section shall be the firm's best examples of previous projects that are similar in size and scope. These projects and additional projects may also be listed on Standard Form 330.

7.1 Reference Contact Information - Name of Firm, City, County or Agency*
*Response required

7.2 Reference Contact Information - Reference's Business Address*
*Response required

7.3 Reference Contact Information - Reference's Contact Name & Title*
*Response required

7.4 Reference Contact Information - Reference's E-mail Address*
*Response required

7.5 Reference Contact Information - Reference's Phone Number*
*Response required

7.6 Project Information - Was your firm the prime contractor for the listed project?*
☐ Yes
☐ No

*Response required

7.7 Project Information - Name of Contactor Performing the Work*
*Response required

7.8 Project Information - Name and location of the project*
*Response required

7.9 Project Information - Nature of the firm's responsibility on the project and work for which staff was responsible for*
*Response required

7.10 Project Information - Project Duration*
*Response required

7.11 Project Information - Completion (Anticipated) Date*
*Response required

7.12 Project Information - Size of Project*
*Response required

7.13 Project Information - Cost of Project*
*Response required

8 REFERENCE # 2

8.1 Reference Contact Information - Name of Firm, City, County or Agency*
*Response required

8.2 Reference Contact Information - Reference's Business Address*
*Response required

8.3 Reference Contact Information - Reference's Contact Name & Title*
*Response required

8.4 Reference Contact Information - Reference's E-mail Address*
*Response required

8.5 Reference Contact Information - Reference's Phone Number*
*Response required

8.6 Project Information - Was your firm the prime contractor for the listed project?*
☐ Yes
☐ No

*Response required

8.7 Project Information - Name of Contactor Performing the Work*
*Response required

8.8 Project Information - Name and location of the project*
*Response required

8.9 Project Information - Nature of the firm's responsibility on the project and work for which staff was responsible for*
*Response required

8.10 Project Information - Project Duration*
*Response required

8.11 Project Information - Completion (Anticipated) Date*
*Response required

8.12 Project Information - Size of Project*
*Response required

8.13 Project Information - Cost of Project*
*Response required

9 REFERENCE # 3

9.1 Reference Contact Information - Name of Firm, City, County or Agency*
*Response required

9.2 Reference Contact Information - Reference's Business Address*
*Response required

9.3 Reference Contact Information - Reference's Contact Name & Title*
*Response required

9.4 Reference Contact Information - Reference's E-mail Address*
*Response required

9.5 Reference Contact Information - Reference's Phone Number*
*Response required

9.6 Project Information - Was your firm the prime contractor for the listed project?*
☐ Yes
☐ No

*Response required

9.7 Project Information - Name of Contactor Performing the Work*
*Response required

9.8 Project Information - Name and location of the project*
*Response required

9.9 Project Information - Nature of the firm's responsibility on the project and work for which staff was responsible for*
*Response required

9.10 Project Information - Project Duration*
*Response required

9.11 Project Information - Completion (Anticipated) Date*
*Response required

9.12 Project Information - Size of Project*
*Response required

9.13 Project Information - Cost of Project*
*Response required

10 REFERENCE # 4

10.1 Reference Contact Information - Name of Firm, City, County or Agency
10.2 Reference Contact Information - Reference's Business Address
10.3 Reference Contact Information - Reference's Contact Name & Title
10.4 Reference Contact Information - Reference's E-mail Address
10.5 Reference Contact Information - Reference's Phone Number
10.6 Project Information - Was your firm the prime contractor for the listed project?
☐ Yes
☐ No

10.7 Project Information - Name of Contactor Performing the Work
10.8 Project Information - Name and location of the project
10.9 Project Information - Nature of the firm's responsibility on the project and work for which staff was responsible for
10.10 Project Information - Project Duration
10.11 Project Information - Completion (Anticipated) Date
10.12 Project Information - Size of Project
10.13 Project Information - Cost of Project

11 REFERENCE # 5

11.1 Reference Contact Information - Name of Firm, City, County or Agency
11.2 Reference Contact Information - Reference's Business Address
11.3 Reference Contact Information - Reference's Contact Name & Title
11.4 Reference Contact Information - Reference's E-mail Address
11.5 Reference Contact Information - Reference's Phone Number
11.6 Project Information - Was your firm the prime contractor for the listed project?
☐ Yes
☐ No

11.7 Project Information - Name of Contactor Performing the Work
11.8 Project Information - Name and location of the project
11.9 Project Information - Nature of the firm's responsibility on the project and work for which staff was responsible for
11.10 Project Information - Project Duration
11.11 Project Information - Completion (Anticipated) Date
11.12 Project Information - Size of Project
11.13 Project Information - Cost of Project

12 PROJECT DOCUMENTS

12.1 STANDARD FORM 330 (PARTS I and II)*

- Firms shall complete both Part I and II of the Standard Form 330 so that the City can obtain adequate information for this RFQ.

- Standard_Form_330.pdf

*Response required

12.2 PROPOSERS BACKGROUND INFORMATION FORM*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Proposers_Background_Inform...

*Response required

13 STANDARD DOCUMENTS

The following documents are standard documents that the City generally requires for every solicitation. As a result, we recommend vendors to keep these documents updated and readily available so that they can be easily uploaded for each project that the vendor would like to participate in. In the event that the City does not have one of the forms or documents listed below for your company, the City may reach out to your company after the bid has closed to obtain the document(s).

13.1 NON-COLLUSIVE AFFIDAVIT*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Non-Collusive_Affidavit.pdf

*Response required

13.2 SWORN STATEMENT ON PUBLIC ENTITY CRIMES FORM*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Sworn_Statement_on_Public_E...

*Response required

13.3 EQUAL BENEFITS CERTIFICATION FORM*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Equal_Benefits_Certificatio...

*Response required

13.4 VENDOR DRUG FREE WORKPLACE CERTIFICATION*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Vendor_Drug-Free_Workplace_...

*Response required

13.5 SCRUTINIZED COMPANY CERTIFICATION*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Scrutinized_Company_Certifi...

*Response required

13.6 E-VERIFY SYSTEM CERTIFICATION*

a. Please download the attached document, complete all required fields, and upload the completed form here.

b. Effective January 1, 2021, pursuant to Section 448.095. Florida Statues, the City may not enter into a contract with a vendor/contractor/subcontractor unless that vendor/contractor/subcontractor is registered with and uses the E- Verify system administered by the U.S. Department of Homeland Security ("DHS").

c. Contractor shall also require all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the contract.

- E-Verify_System_Certificati...

*Response required

13.7 HUMAN TRAFFICKING AFFIDAVIT*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Human_Trafficking_Affidavit...

*Response required

13.8 VENDOR INFORMATION FORM*

a. Please download the attached document, complete all required fields, and upload the completed form here.

- Vendor_Information_Form.pdf

*Response required

13.9 FORM W-9 (REVISED MARCH 2024)*

a. Please download the attached document, complete all required fields, and upload the completed form here.

b. Note - Please use the March 2024 version of the form as previously dated versions of this form may delay the processing of any payments to the selected vendor.

- Form_W-9_(Rev_March_2024).pdf

*Response required

14 OPTIONAL DOCUMENTATION

14.1 TRADE SECRETS

a. The Proposer's response to this solicitation is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this solicitation and the Contract to be executed for this solicitation, subject to the provisions of Chapter 119.07 of the Florida Statutes.

b. Any language contained in the Proposer's response to the solicitation purporting to require confidentiality of any portion of the Proposer's response to the solicitation, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer's response to the solicitation constitutes a Trade Secret.

c. EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED. ALL DOCUMENTS THAT THE FIRM PURPORTS TO BE CONFIDENTIAL, PROPRIETARY OR A TRADE SECRET SHALL BE UPLOADED TO THE OPENGOV WEBSITE AS A SEPARATE ATTACHMENT, IN THIS SECTION, CLEARLY IDENTIFYING THE EXEMPTION BEING CLAIMED UNDER FLORIDA STATUTES 119.07.

d. The city's determination of whether an exemption applies shall be final, and the proposer agrees to defend, indemnify, and hold harmless the city and the city's officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the city's treatment of records as public records.

14.2 FINANCIAL STATEMENTS

a. The City is **NOT** requesting the vendor to submit any financial statements for this project and prefers if the vendor does not submit financial statements. In addition, if the City needs a copy of the vendor's financial statements, the City can contact the vendor after the bid due date to request those documents. However, if the vendor does submit the financial statements, they should be uploaded in this section.

b. Any claim of confidentiality on financial statements must be asserted at the time of submittal. The firm must identify the specific statute that authorizes the exemption from the Public Records Law. Please note that the financial statement exemption provided for in Section 119.071(1)c, Florida Statutes only applies to submittals in response to a solicitation for a "public works" project.

14.3 ADDITIONAL INFORMATION

a. Please provide any additional information that you deem necessary to complete your proposal in this section, if it has not been requested in another section.

15 VENDOR CLASSIFICATION

15.1 Is your firm a Local Pembroke Pines Vendor (LPPV) and Local Broward County Vendor (LBCV)?*

a. The evaluation of competitive bids is subject to section 35.36 of the City's Procurement Procedures which, except where contrary to federal and state law, or any other funding source requirements, provides that preference be given to local businesses. To satisfy this requirement, the vendor shall affirm in writing its compliance with either of the following objective criteria as of the bid or proposal submission date stated in the solicitation. A local business shall be defined as:

1. **"Local Pembroke Pines Vendor"** shall mean a business entity which has maintained a permanent place of business with full-time employees within the City limits for a minimum of one (1) year prior to the date of issuance of a bid or proposal solicitation. The permanent place of business may not be a post office box. The business location must actually distribute goods or services from that location. In addition, the business must have a current business tax receipt from the City of Pembroke Pines, **OR;**

2. **"Local Broward County Vendor"** shall mean or business entity which has maintained a permanent place of business with full-time employees within the Broward County limits for a minimum of one (1) year prior to the date of issuance of a bid or proposal solicitation. The permanent place of business may not be a post office box. The business location must actually distribute goods or services from that location. In addition, the business must have a current business tax

receipt from the Broward County or the city within Broward County where the business resides.

b. A preference of five percent (5%) of the total evaluation point, or five percent (5%) of the total price, shall be given to the Local Pembroke Pines Vendor(s); A preference of two and a half percent (2.5%) of the total evaluation point for local, or two and a half percent (2.5%) of the total price, shall be given to the Local Broward County Vendor(s).

☐ Yes
☐ No

*Response required

When equals "Yes"

15.1.1 Please indicate your Local Vendor Status*

☐ Local Pembroke Pines Vendor (LPPV)
☐ Local Broward County Vendor (LBCV)

*Response required

When equals "Yes"

15.1.2 Local Vendor Preference Certification*

1. Please download the attached document, complete all required fields, and upload the completed form here.

- Local_Vendor_Preference_Cer...

*Response required

When equals "Yes"

15.1.3 Local Business Tax Receipts*

1. If claiming Local Vendor Preference, please upload any previous business tax receipts to indicate that the business entity has maintained a permanent place of business for a minimum of one (1) year.

*Response required

15.2 Is your firm a Veteran Owned Small Business (VOSB)?*

a. The evaluation of competitive bids is subject to section 35.37 of the City's Procurement Procedures which, except where contrary to federal and state law, or any other funding source requirements, provides that preference be given to veteran owned small businesses. To satisfy this requirement, the vendor shall affirm in writing its compliance with the following objective criteria as of the bid or proposal

submission date stated in the solicitation. A veteran owned small business shall be defined as:

1. **"Veteran Owned Small Business"** shall mean a business entity which has received a "Determination Letter" from the United States Department of Veteran Affairs Center for Verification and Evaluation notifying the business that they have been approved as a Veteran Owned Small Business (VOSB).

b. A preference of two and a half percent (2.5%) of the total evaluation point, or two and a half percent (2.5%) of the total price, shall be given to the Veteran Owned Small Business (VOSB).

☐ Yes
☐ No

*Response required

When equals "Yes"

15.2.1 Determination Letter from the United States Department of Veteran Affairs Center*

1. If claiming Veteran Owned Small Business Preference Certification, business must attach the "Determination Letter" from the United States Department of Veteran Affairs Center for Verification and Evaluation notifying the business that they have been approved as a Veteran Owned Small Business (VOSB).

*Response required

15.3 Is your firm a Minority-Owned Business Enterprise (MBE)?*

☐ Yes
☐ No

*Response required

When equals "Yes"

15.3.1 Please indicate the classification of your Minority-Owned Business Enterprise (MBE)*

Select all that apply

☐ African-American MBE
☐ Asian-American MBE
☐ Hispanic-American MBE
☐ Native-American MBE
☐ Other option not listed above

*Response required

When equals "Yes"

15.3.2 MBE Certification Documentation*

1. Upload your MBE Certification Documentation here, preferably with the State of Florida's Office of Supplier Diversity. If you have multiple MBE certifications, please combine them into one (1) document and upload.

2. Note for CCNA Projects: Pursuant to the Consultants' Competitive Negotiation Act ("CCNA"), a certified minority business enterprise is defined in accordance with the Florida Small and Minority Business Assistance Act. Pursuant to the Florida Small and Minority Business Assistance Act, a certified minority business enterprise is an entity that has been certified by the Florida Department of Management Services, Office of Supplier Diversity ("OSD"). Please provide proof of your certification by the Florida Department of Management Services, Office of Supplier Diversity ("OSD").

*Response required

15.4 Is your firm a Woman-Owned Business Enterprise (WBE)?*

☐ Yes

☐ No

*Response required

When equals "Yes"

15.4.1 WMBE Certification Documentation*

1. Upload your WMBE Certification Documentation here, preferably with the State of Florida's Office of Supplier Diversity. If you have multiple WMBE certifications, please combine them into one (1) document and upload.

*Response required

15.5 Is your firm a HubZone Business / Labor Surplus Area Firm?*

☐ Yes

☐ No

*Response required

When equals "Yes"

15.5.1 HubZone Business / Labor Surplus Area Firm Certification Documentation*

1. Upload your HubZone Business / Labor Surplus Area Firm Certification Documentation, preferably with the U.S. Small Business Administration (SBA). If you have multiple certifications, please combine them into one (1) document and upload.

*Response required

15.6 Is your firm a Broward County Small Business Enterprise (SBE)?*

☐ Yes

☐ No

*Response required

When equals "Yes"

15.6.1 SBE Cerification Documentation*

1. Upload your SBE Certification Documentation from Broward County's Office of Economic and Small Business Development (OESBD). If you have multiple certifications, please combine them into one (1) document and upload.

*Response required

15.7 Is your firm a Broward County Business Enterprise (CBE)?*

☐ Yes

☐ No

*Response required

When equals "Yes"

15.7.1 CBE Certification Documentation*

1. Upload your CBE Certification Documentation from Broward County's Office of Economic and Small Business Development (OESBD). If you have multiple certifications, please combine them into one (1) document and upload.

*Response required

15.8 Is your firm a Broward County Disadvantaged Business Enterprise (DBE)?*

☐ Yes

☐ No

*Response required

When equals "Yes"

15.8.1 DBE Certification Documentation*

1. Upload your DBE Certification Documentation from Broward County's Office of Economic and Small Business Development (OESBD). If you have multiple certifications, please combine them into one (1) document and upload.

*Response required

15.9 Does your firm have a Vendor Classification that was not listed above?*

☐ Yes

☐ No

*Response required

When equals "Yes"

15.9.1 Other Vendor Classification Certification Documentation*

1. Upload your other Certification Documentation here. If you have multiple certifications, please combine them into one (1) document and upload.

*Response required

SECTION 6 - EVALUATION OF PROPOSALS & PROCESS OF SELECTION

A. **Phase 1 - Qualifying Firms**

1. Staff will evaluate all responsive qualification statements received from proposers who meet or exceed the bid requirements contained in the solicitation. Evaluations shall be based upon the information and references contained in the proposals as submitted. As such, the submittals should be as comprehensive as possible; clearly describing the details of services that the Proposer intends to provide.
2. The City will convene an Evaluation Committee and brief its members on the scope of the project and the services required. The Evaluation Committee will evaluate submittals based on the criteria outlined in this solicitation.
3. The Evaluation Committee shall have the option to short-list the qualified firms to **no less than three firms**. In addition, the Evaluation Committee **shall conduct discussions** and may require presentations from each of the short-listed firms regarding their:
   a. **Qualifications;**
   b. **Approach to the project; and**
   c. **Ability to furnish the required services; and**
   d. **Proposed Design Concept in detail; and**
   e. **Proposed Timeline in detail.**
4. As part of this process, each firm shall have representatives present who are of an appropriate management level to speak on behalf of the firm. The Consultant's proposed Licensed Professional Engineer, who will be acting as the Project Manager, must be present at this time. The firm shall be prepared to present an overall briefing regarding on how it intends to fulfill the contractual obligations, and to discuss in detail its design concept and proposed project schedule to meet the required regulatory timeframe.

B. **Phase 2 - Selecting the Most Highly Qualified Firms**

1. The Evaluation Committee shall select in order of preference **no fewer than three firms** deemed to be the most highly qualified to perform the required services based on the criteria outlined in this solicitation.

C. **Tie-Breaker for the Aggregate Score Sheets**

1. **Volume of Work Previously Awarded** - In the event a score results in a tie, the ranking for the tied consultants will be broken based on the volume of work previously awarded

to each firm by the City , with the object of effecting an equitable distribution of contracts among qualified firms, provided such distribution does not violate the principle of selection of the most highly qualified firms, as outlined in Florida Statute 287.055(4)(b).

2. **Drug-Free Workplace** - In the event the score still results in a tie, the ranking for the tied consultants will be broken by giving preference to a business that certifies that it has implemented a drug-free workplace program on the Vendor Drug-Free Workplace Certification Form, as outlined in Florida Statute 287.087.

3. **Drawing Lots** - In the event the score still results in a tie, the ranking for the tied consultants will be broken by publicly drawing lots, as outlined in Chapter 35 of the City's Code of Ordinances.

D. **Recommendation for Award**

1. The Evaluation Committee will make a recommendation to the City Commission for award of contract and approval for the City Manager to negotiate a contract with the most qualified firm. The contract shall be awarded to the most responsive/responsible proposer whose proposal is determined to be the most advantageous to the City taking into consideration the evaluation criteria.

2. The City may request, accept and consider proposals for the compensation to be paid under the contract **only** during competitive negotiations.

E. **Competitive Negotiation**

1. In accordance with Florida Statute 287.055(5) "Competitive Negotiation," the City's Administrative Staff shall negotiate a contract with the most qualified firm for professional services at compensation which the agency determines is fair, competitive and reasonable. In making such determination, the City's Administrative Staff shall conduct a detailed analysis of the cost of the professional services required in addition to considering their scope and complexity. For any lump-sum or cost-plus-a-fixed-fee professional service contract **over $195,000** *(the threshold amount provided in s. 287.017 for CATEGORY FOUR),* the City shall require the firm receiving the award to execute a truth-in-negotiation certificate stating that wage rates and other factual unit costs supporting the compensation are accurate, complete, and current at the time of contracting. Any professional service contract under which such a certificate is required must contain a provision that the original contract price and any additions thereto will be adjusted to exclude any significant sums by which the City determines the contract price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual

unit costs. All such contract adjustments must be made within 1 year following the end of the contract.

2. Should the City's Administrative Staff be unable to negotiate a satisfactory contract with the firm considered to be the most qualified at a price the City's Administrative Staff determines to be fair, competitive, and reasonable, negotiations with that firm must be formally terminated. The City's Administrative Staff shall then undertake negotiations with the second most qualified firm. Failing accord with the second most qualified firm, the City's Administrative Staff must terminate negotiations. The City's Administrative Staff shall then undertake negotiations with the third most qualified firm.

3. Should the City's Administrative Staff be unable to negotiate a satisfactory contract with any of the selected firms, the City's Administrative Staff shall select additional firms in the order of their competence and qualification and continue negotiations in accordance with this subsection until an agreement is reached.

F. **Prohibition Against Contingent Fees**

1. In accordance with Florida Statute 287.055(6) "Prohibition against Contingent Fees," each contract entered into by the City for professional services must contain a prohibition against contingent fees as follows:

   a. "The architect (or registered surveyor and mapper or professional engineer, as applicable) warrants that he or she has not employed or retained any company or person, other than a bona fide employee working solely for the architect (or registered surveyor and mapper, or professional engineer, as applicable) to solicit or secure this agreement and that he or she has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for the architect (or registered surveyor and mapper or professional engineer, as applicable) any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the award or making of this agreement."

2. For the breach or violation of this provision, the City shall have the right to terminate the agreement without liability and, at its discretion, to deduct from the contract price, or otherwise recover, the full amount of such fee, commission, percentage, gift, or consideration.

Evaluation Committee - Phase 1

No.	Evaluation Criteria	Scoring Method	Weight (Points)

<table>
<tr>
<td>1.</td>
<td>Adequacy of Personnel / Ability of Professional Personnel

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>25
(25% of Total)</td>
</tr>
<tr>
<td>2.</td>
<td>Past Record / Past Performance

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>25
(25% of Total)</td>
</tr>
<tr>
<td>3.</td>
<td>Capabilities

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>25
(25% of Total)</td>
</tr>
<tr>
<td>4.</td>
<td>Experience (of the firm or individual)

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>25
(25% of Total)</td>
</tr>
</table>

Evaluation Committee - Phase 2

No.	Evaluation Criteria	Scoring Method	Weight (Points)

<table>
<tr>
<td>1.</td>
<td>Adequacy of Personnel / Ability of Professional Personnel

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>25
(25% of Total)</td>
</tr>
<tr>
<td>2.</td>
<td>Past Record / Past Performance

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>25
(25% of Total)</td>
</tr>
<tr>
<td>3.</td>
<td>Firm’s Understanding and Approach to the Work

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>32.5
(32.5% of Total)</td>
</tr>
<tr>
<td>4.</td>
<td>Willingness to meet time and budget requirements

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>5
(5% of Total)</td>
</tr>
<tr>
<td>5.</td>
<td>Recent, current, and projected workloads of the firms

The Evaluation Committee will utilize the following scale for scoring the "Quality Level" for the weighted criteria:

<table>
<tr><td>Quality Level:</td><td>Deficient</td><td>Poor</td><td>Fair</td><td>Good</td><td>Very Good</td><td>Excellent</td></tr>
<tr><td>Quality Score:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
</table>
</td>
<td>0-5 Points</td>
<td>5
(5% of Total)</td>
</tr>
</table>

<table>
<tr>
<td>6.</td>
<td>
Location

The Evaluation Committee will utilize the following when calculating the weighted score of each vendor related to the Location criteria.

The Location submitted by each proposer will be entered into Google Maps and the shortest distance, in miles (not minutes), shown on Google Maps from the proposer's location to the City's address of City Hall, 601 City Center Way, Pembroke Pines, FL 33025 will be used to determine the Shortest Distance from of the proposer's location.

Then the Shortest Overall Distance will be divided by Proposer "X" Shortest Distance times the Maximum Available Points for the Pricing Criteria = Proposer "X" Location Score.

Example: If the Maximum Points Available for the "Location" criteria is 5 points, the scores would be calculated as follows, based on the sample data for the five firms listed below:
<table>
<tr><th>Firm</th><th>Shortest Distance</th><th>Calculation</th><th>Points</th></tr>
<tr><td>A</td><td>11.70 miles</td><td>11.70/11.70 x 5 points</td><td>5.00</td></tr>
<tr><td>B</td><td>12.70 miles</td><td>11.70/12.70 x 5 points</td><td>4.61</td></tr>
<tr><td>C</td><td>14.10 miles</td><td>11.70/14.10 x 5 points</td><td>4.15</td></tr>
<tr><td>D</td><td>18.20 miles</td><td>11.70/18.20 x 5 points</td><td>3.21</td></tr>
<tr><td>E</td><td>21.20 miles</td><td>11.70/21.20 x 5 points</td><td>2.76</td></tr>
</table>
Note - Firm "A" had the shortest overall distance of 11.70 miles when compared to all of the firms.
</td>
<td>Points Based</td>
<td>2.5
(2.5% of Total)</td>
</tr>
</table>

7.	**Local Vendor Preference/Veteran Owned Small Business Preference** Please note that the Local Vendor Preference is used to evaluate the submittals received from proposers and are assigned point totals, a preference of five (5) points of the total evaluation point shall be given to the Local Pembroke Pines Vendor(s); a preference of two and a half (2.5) points of the total evaluation point shall be given to the Local Broward County Vendor(s), all other vendors shall receive zero (0) points. Vendors must submit the attached Local Vendor Preference Certification Form in order to qualify for these evaluation points. Veteran Owned Small Business (VOSB) is also used to evaluate the submittals received from proposers and are assigned point totals, a preference of two and a half (2.5) points of the total evaluation point shall be given to the Veteran Owned Small Businesses. Vendors must submit the attached Veteran Owned Small Business Preference Certification Form in order to qualify for these evaluation points. Please note that if a business qualifies for both Local Vendor Preference and Veteran-Owned Small Business Preference, only the higher point value will be awarded. Combined points for both preferences will not be granted. All other vendors shall receive zero (0) points.	Points Based	5 *(5% of Total)*

SECTION 7 - INSURANCE REQUIREMENTS

7.1 General Indemnification

The CONTRACTOR shall indemnify and hold harmless the CITY and its officers, employees, agents and instrumentalities from any and all liability, losses or damages, including attorneys' fees and costs of defense, which the CITY or its officers, employees, agents or instrumentalities may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature arising out of, relating to or resulting from the performance of this Agreement by the CONTRACTOR or its employees, agents, servants, partners, principals or subcontractors. The CONTRACTOR shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind or nature in the name of the CITY, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorneys' fees which may issue thereon. The CONTRACTOR expressly understands and agrees that any insurance protection required by this Agreement or otherwise provided by the CONTRACTOR shall in no way limit the responsibility to indemnify, keep and save harmless and defend the CITY or its officers, employees, agents and instrumentalities as herein provided.

7.2 Insurance Coverage

A. CONTRACTOR shall not commence work under this Agreement until it has obtained all insurance required under this paragraph and such insurance has been approved by the Risk Manager of the CITY nor shall the CONTRACTOR allow any subcontractor to commence work on any subcontract until all similar such insurance required of the subcontractor has been obtained and similarly approved.

B. Certificates of Insurance, reflecting evidence of the required insurance, shall be filed with the CITY's Risk Manager prior to the commencement of this Agreement. Policies shall be issued by companies authorized to do business under the laws of the State of Florida. The insurance company shall be rated no less than "A" as to management, and no less than "Class VI" as to financial strength according to the latest edition of Best's Insurance Guide published by A.M. Best Company.

C. Certificates of Insurance shall provide for thirty (30) days' prior written notice to the CITY in case of cancellation or material changes in the policy limits or coverage states. If the carrier cannot provide thirty (30) days' notice of cancellation, either the CONTRACTOR or their Insurance Broker must agree to provide notice.

D. Insurance shall be in force until all obligations required to be fulfilled under the terms of the Agreement are satisfactorily completed as evidenced by the formal acceptance by the CITY. In the event the insurance certificate provided indicates that the insurance shall terminate and lapse during the period of this Agreement, the CONTRACTOR shall furnish, at least forty-five (45) days prior to the expiration of the date of such insurance, a renewed certificate of insurance as proof that equal and like coverage for the balance of the period of

the Agreement and extension thereunder is in effect. The CONTRACTOR shall neither commence nor continue to provide any services pursuant to this Agreement unless all required insurance remains in full force and effect. CONTRACTOR shall be liable to CITY for any lapses in service resulting from a gap in insurance coverage.

E. CONTRACTOR shall be required to obtain all applicable insurance coverage, as indicated in the sections below, prior to commencing any work pursuant to this Agreement.

7.3 Comprehensive General Liability Insurance

Comprehensive General Liability Insurance written on an occurrence basis including, but not limited to: coverage for bodily injury and property damage, personal & advertising injury, products & completed operations, and contractual liability. Coverage must be written on an occurrence basis, with limits of liability no less than:

A. Each Occurrence Limit - $1,000,000

B. Fire Damage Limit (Damage to rented premises) - $100,000

C. Personal & Advertising Injury Limit - $1,000,000

D. General Aggregate Limit - $2,000,000

E. Products & Completed Operations Aggregate Limit - $2,000,000

Products & Completed Operations Coverage shall be maintained for the later of three (3) years after the delivery of goods/services or final payment under the Agreement. (*For Construction projects: Increase to ten (10) years and include a Designated Construction Project(s) General Aggregate Limit)*

The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.

7.4 Workers' Compensation and Employers' Liability Insurance

Workers' Compensation and Employers' Liability Insurance covering all employees, and/or volunteers of the CONTRACTOR engaged in the performance of the scope of work associated with this Agreement. In the case any work is sublet, the CONTRACTOR shall require the subcontractors similarly to provide Workers' Compensation Insurance for all the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. Coverage for the CONTRACTOR and all subcontractors shall be in accordance with applicable state and/or federal laws that may apply to Workers' Compensation Insurance with limits of liability no less than:

A. Workers' Compensation: Coverage A – Statutory

B. Employers Liability: Coverage B

$500,000 Each Accident

$500,000 Disease – Policy Limit

$500,000 Disease – Each Employee

If CONTRACTOR claims to be exempt from this requirement, CONTRACTOR shall provide CITY proof of such exemption along with a written request for CITY to exempt CONTRACTOR, written on CONTRACTOR letterhead.

7.5 Comprehensive Auto Liability Insurance

Comprehensive Auto Liability Insurance covering all owned, non-owned and hired vehicles used in connection with the performance of work under this Agreement, with a combined single limit of liability for bodily injury and property damage no less than:

A. Any Auto (Symbol 1)
Combined Single Limit (Each Accident) - $1,000,000

B. Hired Autos (Symbol 8)
Combined Single Limit (Each Accident) - $1,000,000

C. Non-Owned Autos (Symbol 9)
Combined Single Limit (Each Accident) - $1,000,000

If work under this Agreement includes transportation of hazardous materials, policy shall include pollution liability coverage equivalent to that provided by the latest version of the ISO pollution liability broadened endorsement for auto and the latest version of the ISO Motor Carrier Act endorsement, equivalents or broader language.

If CONTRACTOR requests reduced limits under a Personal Auto Liability Policy and it is agreed to by the CITY, coverage shall include Bodily Injury limits of $100,000 per person/$300,000 per occurrence and Property Damage limits of $300,000 per occurrence.

7.6 Umbrella/Excess Liability Insurance

Umbrella/Excess Liability Insurance in the amount of **$2,000,000** as determined appropriate by the CITY depending on the type of job and exposures contemplated. Coverage must be follow form of the General Liability, Auto Liability and Employer's Liability. This coverage shall be maintained for a period of no less than the later of three (3) years after the delivery of goods/services or final payment pursuant to this Agreement.

The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.

7.7 Professional Liability/Errors & Omissions Insurance

Professional Liability/Errors & Omissions Insurance with a limit of liability no less than **$1,000,000** per wrongful or negligent act. This coverage shall be maintained for a period of no less than three (3)

years after the delivery of goods/services final payment pursuant to this Agreement. Retroactive date, if any, to be no later than the first day of service to the CITY. *(Limit to align with size and scope of the Agreement and exposure inherent with operation/services being performed. For Construction projects: Increase to ten (10) years.)*

7.8 Environmental/Pollution Liability Insurance

Environmental/Pollution Liability insurance shall be required with a limit of no less than $1,000,000 per wrongful act. Coverage shall include: CONTRACTOR's completed operations, sudden, accidental and gradual pollution conditions. This coverage shall be maintained for a period of no less than the later of three (3) years after the delivery of goods/services or final payment pursuant to this Agreement. Retroactive date, if any, to be no later than the first day of service to the CITY. *(Limit to align with size and scope of the Agreement and exposure inherent with operation/services being performed. For Construction projects: Increase to ten (10) years)*

The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.

7.9 Required Endorsements

A. The City of Pembroke Pines shall be named as an Additional Insured on each of the Liability Policies required herein.

B. Waiver of all Rights of Subrogation against the CITY.

C. Thirty (30) Day Notice of Cancellation or Non-Renewal to the CITY.

D. CONTRACTOR's policies shall be Primary & Non-Contributory.

E. All policies shall contain a "severability of interest" or "cross liability" clause without obligation for premium payment of the CITY.

F. The City of Pembroke Pines shall be named as a Loss Payee on all Property and/or Inland Marine Policies as their interest may appear.

7.10 Additional Requirements

A. Any and all insurance required of the CONTRACTOR pursuant to this Agreement must also be required by any subcontractor in the same limits and with all requirements as provided herein, including naming the CITY as an additional insured, in any work that is subcontracted unless such subcontractor is covered by the protection afforded by the CONTRACTOR and provided proof of such coverage is provided to CITY. The CONTRACTOR and any subcontractors shall maintain such policies during the term of this Agreement.

B. The CITY reserves the right to require any other additional types of insurance coverage and/or higher limits of liability it deems necessary based on the nature of work being performed under this Agreement.

C. The insurance requirements specified in this Agreement are minimum requirements and in no way reduce any liability the CONTRACTOR has assumed in the indemnification/hold harmless section(s) of this Agreement.

SECTION 8 - GENERAL TERMS AND CONDITIONS

8.1 EXAMINATION OF CONTRACT DOCUMENTS

Before submitting a Proposal, each Proposer should:

A. consider federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost or performance of the work,

B. study and carefully correlate the Proposer's observations with the Proposal Documents; and

C. notify the Purchasing Manager of all conflicts, errors and discrepancies, if any, in the Proposal Documents.

The Proposer, by and through the submission of a Proposal, agrees that Proposer shall be held responsible for having familiarized themselves with the nature and extent of the work and any local conditions that may affect the work to be done and the services, equipment, materials, parts and labor required.

8.2 CONFLICT OF INSTRUCTIONS

If a conflict exists between the General Conditions and Instructions stated herein and specific conditions and instructions contained in specifications, the specifications shall govern.

8.3 ADDENDA or ADDENDUM

A formal solicitation may require an Addendum to be issued. An addendum in some way may clarify, correct or change the original solicitation (i.e. due date/time, specifications, terms, conditions, line item).

Bidders must register for an account on the City's e-Procurement Portal, hosted by OpenGov. Once the bidder has completed registration, they will receive addenda notifications via email by clicking "Follow" on this project. Ultimately, it is the sole responsibility of each bidder to periodically check the site for any addenda at https://procurement.opengov.com/portal/pembrokepines.

Consultants are cautioned not to consider verbal modifications to the solicitation, as the addendum issued through OpenGov will be the only official method whereby changes will be made.

8.4 INTERPRETATIONS AND QUESTIONS

If the Proposer is in doubt as to the meaning of any of the Proposal Documents, is of the opinion that the Conditions and Specifications contain errors or contradictions or reflect omissions, or has any question concerning the conditions and specifications, the Proposer shall submit a question for interpretation or clarification.

The City requires all questions relating to the solicitation to be submitted through the **"Question & Answer"** tab, for the specific project, on the City's e-Procurement Portal, located at https://procurement.opengov.com/portal/pembrokepines. Questions and inquiries must be received by the **"Question Due Date"** stated in the solicitation. Questions received after the **"Question Due**

Date" shall not be answered. Interpretations or clarifications in response to such questions will be issued via OpenGov. Bidders may also click "Follow" on this solicitation to receive an e-mail notification(s) when answers are posted. It is the responsibility of the bidder to check the website for answers to inquiries. The issuance of a response via OpenGov is considered an Addendum and shall be the only official method whereby such an interpretation or clarification will be made.

OpenGov Support is also available to assist proposers with submitting their proposal and to ensure that proposers are submitting their proposals correctly. Proposers should ensure that they contact OpenGov support, with ample time before the bid closing date and time, via one of the following methods:

A. Chat (preferred method): Click the button in the lower right-hand corner of the portal when logged in.
B. E-mail:support@opengov.com
C. Phone: 1 (605) 336-7167
D. https://opengov.my.site.com/support/s/contactsupport

For all other questions related to this solicitation, please contact the Procurement Department at purchasing@ppines.com.

8.5 RULES, REGULATIONS, LAWS, ORDINANCES and LICENSES

The awarded contractor shall observe and obey all laws, ordinances, rules, and regulations of the federal, state, and CITY, which may be applicable to the service being provided. The awarded firm shall have or be responsible for obtaining all necessary permits or licenses required, if necessary, in order to provide this service.

Proposer warrants by submittal that prices quoted here are in conformity with the latest federal price guidelines, if any.

8.6 WARRANTIES FOR USAGE

Whenever a bid is sought, seeking a source of supply for a specified time for materials or service, the quantities or usage shown are estimated only. No guarantee or warranty is given or implied by the City as to the total amount that may or may not be purchased from any resulting contracts. These quantities are for proposer's information only and will be used for tabulation and presentation of bid.

8.7 BRAND NAMES

If and wherever in the specifications a brand name, make, name of manufacturer, trade name, or vendor catalog number is mentioned, it is for the purpose of establishing a grade or quality of material only. Since the City does not wish to rule out other competition and equal brands or makes, the phrase "OR EQUAL" is added. However, if a product other than that specified is bid, Proposers shall indicate on their proposal and clearly state the proposed substitution and deviation. It is the **consultant's responsibility** to provide any necessary documentation and samples within their bid submittal to prove that the product is equal to that specified. Such samples are to be furnished before the date of bid opening, unless otherwise specified. Additional evidence in the form of

documentation and samples may be requested if the proposed brand is other than that specified. The City retains the right to determine if the proposed brand shall be considered as an approved equivalent or not.

8.8 QUALITY

All materials used for the manufacture or construction of any supplies, materials, or equipment covered by this bid shall be new, the latest model, of the best quality, and highest grade workmanship, unless otherwise noted.

8.9 SAMPLES

Samples, when requested, must be furnished before, or at the bid opening, unless otherwise specified, and delivered free of expense to the City and if not used in testing or destroyed, will upon request within thirty (30) days of bid award be returned at the proposer's expense.

8.10 ESTIMATED QUANTITIES

No guarantee is expressed or implied as to the total quantity of commodities/services to be purchased pursuant to this solicitation. Estimated quantities will be used for comparison and ranking purposes only. The City is not obligated to contract for a given amount of commodities/services subsequent to the award of this solicitation. The City reserves the right to issue separate purchase orders as needed, issue a blanket purchase order, and release partial quantities, or any combination of the preceding as deemed necessary by the City.

8.11 DEVELOPMENT COSTS

Neither the City nor its representatives shall be liable for any expenses incurred in connection with the preparation, submission or presentation of a Bid in response to this solicitation. All information in the Bid shall be provided at no cost to the City.

8.12 PRICING

Prices should be stated in units of quantity specified in the bidding specifications. In case of discrepancy in computing the amount of the bid, the unit prices quoted will govern.

Proposer warrants by virtue of bidding that prices, terms, and conditions quoted in his bid will be firm for acceptance for a period of ninety (90) days from date of bid opening unless otherwise stated by the City or proposer.

8.13 DELIVERY POINT

All items shall be delivered F.O.B. destination, and delivery cost and charges included in the bid price. Failure to do so may be cause for rejection of bid.

8.14 TAX EXEMPT STATUS

The City is exempt from Florida Sales and Federal Excise taxes on direct purchase of tangible property.

8.15 CONTRACT TIME

By virtue of the submission of the Proposal, Proposer agrees and fully understands that the completion time of the work of the Contract is an essential and material condition of the Contract and that time is of the essence. The Successful Proposer agrees that all work shall be prosecuted regularly, diligently and uninterrupted at such rate of progress as will ensure full completion thereof within the time specified. Failure to complete the work within the time period specified shall be considered a default.

In addition, time will be of the essence for any orders placed as a result of this bid. Purchaser reserves the right to cancel such orders, or part thereof, without obligation if delivery is not made at the time(s) or place(s) specified.

8.16 COPYRIGHT OR PATENT RIGHTS

Proposer warrants that there have been no violations of copyrights or patent rights in manufacturing, producing, or selling other goods shipped or ordered as a result of this bid, and seller agrees to hold the purchaser harmless from any and all liability, loss or expense occasioned by such violation.

8.17 ANTI-TRUST VIOLATIONS

Pursuant to Section 287.137, Florida Statutes, as may be amended, a person or an affiliate who has been placed on the antitrust violator vendor list following a conviction or being held civilly liable for an antitrust violation may not submit a bid, proposal, or reply for any new contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply for a new contract with a public entity for the construction or repair of a public building or public work; may not submit a bid, proposal, or reply on new leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a new contract with a public entity; and may not transact new business with a public entity.

8.18 PUBLIC ENTITY CRIMES

Pursuant to Sec. 287.133(2)(a), Fla. Stat., a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime or who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

Pursuant to Sec. 287.134(2)(b), Fla. Stat., a public entity may not accept any bid, proposals, or replies from, award any contract to, or transact any business with any entity or affiliate on the discriminatory vendor list for a period of 36 months following the date that entity or affiliate was placed on the discriminatory vendor list unless that entity or affiliate has been removed from the list. A public entity that was transacting business with an entity at the time of the discrimination resulting in that entity being placed on the discriminatory vendor list may not accept any bid, proposal, or reply from, award any contract to, or transact any business with any other entity who is under the

same, or substantially the same, control as the entity whose name appears on the discriminatory vendor list so long as that entity's name appears on the discriminatory vendor list.

The Sworn Statement of Public Entity Crime Affidavit Form, in the Submittal Documents section on the OpenGov portal for this solicitation, includes documentation that shall be executed by an individual authorized to bind the Proposer. The Proposer further understands and accepts that any contract issued as a result of this solicitation shall be either voidable or subject to immediate termination by the City. In the event there is any misrepresentation or lack of compliance with the mandates of Section 287.133 or Section 287.134, respectively, Florida Statutes. The City in the event in such termination, shall not incur any liability to the Proposer for any goods, services or materials furnished.

8.19 CONFLICT OF INTEREST

The award of any contract hereunder is subject to the provisions of Chapter 112, Florida Statutes. Proposers must disclose with their Proposal the name of any officer, director, partner, proprietor, associate or agent who is also an officer or employee of CITY or any of its agencies. Further, all Proposers must disclose the name of any officer or employee of CITY who owns, directly or indirectly, an interest of five percent (5%) or more in the Proposer 's firm or any of its branches or affiliate companies.

8.20 FACILITIES

The City reserves the right to inspect the Proposer's facilities at any time with prior notice.

8.21 ENVIRONMENTAL REGULATIONS

CITY reserves the right to consider Proposer's history of citations and/or violations of environmental regulations in determining a Proposer's responsibility, and further reserves the right to declare a Proposer not responsible if the history of violations warrant such determination. Proposer shall submit with the Proposal, a complete history of all citations and/or violations, notices and dispositions thereof. The non-submission of any such documentation shall be deemed to be an affirmation by the Proposer that there are no citations or violations. Proposer shall notify CITY immediately of notice of any citation or violation that Proposer may receive after the Proposal opening date and during the time of performance of any contract awarded to Proposers.

8.22 SIGNATURE REQUIRED

All proposals must be signed with the firm name and by an officer or employee having authority to bind the company or firm by his signature. FAILURE TO PROPERLY SIGN PROPOSAL SHALL INVALIDATE SAME, AND IT MAY NOT BE CONSIDERED FOR AWARD.

The individual executing this Bid on behalf of the Company warrant to the City that the Company is authorized to do business in the State of Florida, is in good standing and that Company possesses all of the required licenses and certificates of competency required by the State of Florida and Broward County to provide the goods or perform the services herein described.

The signed bid shall be considered an offer on the part of the proposer or consultant, which offer shall be deemed accepted upon approval by the City Commission of the City of Pembroke Pines and in case of default on the part of the proposer or consultant after such acceptance, the City of Pembroke Pines may take such action as it deems appropriate including legal action for damages or specific performance.

8.23 MANUFACTURER'S CERTIFICATION

The City of Pembroke Pines reserves the right to request from proposer separate manufacturer certification of all statements made in the proposal.

8.24 MODIFICATION OR WITHDRAWAL OF PROPOSAL

The City recommends for proposers to submit their proposals as soon as they are ready to do so. Please allow ample time to submit your proposals on the OpenGov website. Proposals may be modified or withdrawn prior to the deadline for submitting Proposals.

8.25 PUBLIC BID; BID OPENING AND GENERAL EXEMPTIONS

All submittals received by the deadline will be recorded, and will subsequently be publicly opened on the same business day at 2:30 pm at the office of the City Clerk, 4th Floor, 601 City Center Way, Pembroke Pines, Florida, 33025.

All Proposals received from Proposers in response to the solicitation will become the property of CITY and will not be returned to the Proposers. In the event of Contract award, all documentation produced as part of the Contract shall become the exclusive property of CITY. Proposers are requested to identify specifically any information contained in their Proposals which they consider confidential and/or proprietary and which they believe to be exempt from disclosure, citing specifically the applicable exempting law.

Pursuant to Section 119.071 of the Florida Statutes, sealed bids, proposals, or replies received by a Florida public agency shall remain exempt from disclosure until an intended decision is announced or until 30 days from the opening, whichever is earlier.

Therefore, proposers will not be able to procure a copy of their competitor's bids until an intended decision is reached or 30 days has elapsed since the time of the bid opening.

However, pursuant to Section 255.0518 of the Florida Statutes, when opening sealed bids that are received pursuant to a competitive solicitation for **construction or repairs on a public building or public work**, the entity shall:

A. Open the sealed bids at a public meeting.

B. Announce at that meeting the name of each bidder and the price submitted in the bid.

C. Make available upon request the name of each bidder and the price submitted in the bid.

For solicitations that are **not** for **"construction or repairs on a public building or public work"** the City shall not reveal the prices submitted in the bids until an intended decision is announced or until 30 days from the opening, whichever is earlier.

8.26 RESERVATIONS FOR REJECTION AND AWARD

The City of Pembroke Pines reserves the right to accept or reject any and all bids or parts of bids, to waive irregularities and technicalities, and to request rebids. The City also reserves the right to award a contract on such items(s) or service(s) the City deems will best serve its interests. All bids shall be awarded to the most responsive/responsible proposer, provided the (City) may for good cause reject any bid or part thereof. It further reserves the right to award a contract on a split order basis, or such combinations as shall best serve the interests of the City unless otherwise specified. No premiums, rebates or gratuities permitted, either with, prior to, or after award. This practice shall result in the cancellation of said award and/or return of items (as applicable) and the recommended removal of proposer from bid list(s).

8.27 BID PROTEST

Any protests or challenges to this competitive procurement shall be governed by Section 35.38 of the City's Code of Ordinances.

8.28 INDEMNIFICATION

The Successful Proposer shall pay all claims, losses, liens, settlements or judgments of any nature whatsoever in connection with the subsequent indemnifications including, but not limited to, reasonable attorney's fees (including appellate attorney's fees) and costs.

CITY reserves the right to select its own legal counsel to conduct any defense in any such proceeding and all costs and fees associated therewith shall be the responsibility of Successful Proposer under the indemnification agreement. Nothing contained herein is intended nor shall it be construed to waive City's rights and immunities under the common law or Florida Statute 768.28 as amended from time to time.

Additional indemnification requirements may be included under Special Terms and Conditions and/or as part of a specimen contract included in the solicitation package.

General Indemnification: To the fullest extent permitted by laws and regulations, Successful Proposer shall indemnify, defend, save and hold harmless the CITY, its officers, agents and employees, harmless from any and all claims, damages, losses, liabilities and expenses, direct, indirect or consequential arising out of or in consequential arising out of or alleged to have arisen out of or in consequence of the products, goods or services furnished by or operations of the Successful Proposer or his subcontractors, agents, officers, employees or independent contractors pursuant to or in the performance of the Contract.

Indemnification for Design Professionals and Construction Contracts: The Successful Proposer shall indemnify and hold harmless the CITY, its officers and employees, from any and all liability, losses or damages, including reasonable attorneys' fees and costs of defense, which the CITY, its

officers and employees, may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature to the extent such claims are caused by the negligence, recklessness, or intentional wrongful conduct of the Successful Proposer and other persons employed or utilized by the Successful Proposer during performance of the resulting Agreement.

Patent and Copyright Indemnification: Successful Proposer agrees to indemnify, defend, save and hold harmless the CITY, its officers, agents and employees, from all claims, damages, losses, liabilities and expenses arising out of any alleged infringement of copyrights, patent rights and/or the unauthorized or unlicensed use of any invention, process, material, property or other work manufactured or used in connection with the performance of the Contract, including its use by CITY.

8.29 DEFAULT PROVISION

In the case of default by the proposer or consultant, the City of Pembroke Pines may procure the articles or services from any other sources and hold the proposer or consultant responsible for any excess costs occasioned or incurred thereby.

The City shall be the sole judge of nonperformance, which shall include any failure on the part of the successful Proposer to accept the Award, to furnish required documents, and/or to fulfill any portion of the contract within the time stipulated. Upon default by the successful Proposer to meet any terms of this agreement, the City will notify the Proposer five (5) days (weekends and holidays excluded) to remedy the default. Failure on the Consultant's part to correct the default within the required five (5) days shall result in the contract being terminated and upon the City notifying in writing the Consultant of its intentions and the effective date of the termination. The following shall constitute default:

A. Failure to perform the Work required under the contract and/or within the time required or failing to use the subcontractor, entities and personnel as identified and set forth, and to the degree specified in the contract.

B. Failure to begin the Work under this Bid within the time specified.

C. Failure to perform the Work with sufficient Workers and equipment or with sufficient materials to ensure timely completion.

D. Neglecting or refusing to remove materials or perform new Work where prior Work has been rejected as non-conforming with the terms of the contract.

E. Becoming insolvent, being declared bankrupt, or committing act of bankruptcy or insolvency, or making an assignment renders the successful Proposer incapable of performing the Work in accordance with and as required by the contract.

F. Failure to comply with any of the terms of the contract in any material respect.

In the event of default of a contract, the successful Proposer shall pay all attorney's fees and court costs incurred in collecting any damages. The successful Proposer shall pay the City for any and all costs incurred in ensuing the completion of the project.

Additional provisions may be included in the specimen contract.

8.30 ACCEPTANCE OF MATERIAL

The material delivered under this proposal shall remain the property of the seller until a physical inspection and actual usage of this material and/or services is made and thereafter accepted to the satisfaction of the City and must comply with the terms herein, and be fully in accord with specifications and of the highest quality. In the event the material and/or services supplied to the City are found to be defective or do not conform to specifications, the City reserves the right to cancel the order upon written notice to the seller and return product to seller at the sellers expense.

8.31 LOCAL GOVERNMENT PROMPT PAYMENT ACT

The City complies with Florida Statute 218.70, Local Government Prompt Payment Act.

8.32 SCRUTINIZED COMPANIES LIST

In accordance with Section 287.135, Florida Statues, as amended, a company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of:

A. Any amount if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company is on the Scrutinized Companies that Boycott Israel List, created pursuant to Section 215.4725, Florida Statutes, or is engaged in a boycott of Israel; or

B. One million dollars or more if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company:

    1. Is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Terrorism Sectors List, created pursuant to Section 215.473, Florida Statutes; or

    2. Is engaged in business operations in Syria.

By submitting a bid, proposal or response, the company, its principals or owners, certify that they are not listed on the Scrutinized Companies that Boycott Israel List, Scrutinized Companies with Activities in Sudan List, Scrutinized Companies with Activities in the Iran Terrorism Sectors List, or is engaged in business operations in Syria.

8.33 PUBLIC RECORDS; TRADE SECRET, PROPRIETARY AND CONFIDENTIAL SUBMITTALS

The Proposer's response to this solicitation is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes

Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this solicitation and the Contract to be executed for this solicitation, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the solicitation purporting to require confidentiality of any portion of the Proposer's response to the solicitation, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer's response to the solicitation constitutes a Trade Secret.

Any claim of confidentiality on financial statements must be asserted at the time of submittal. The firm must identify the specific statute that authorizes the exemption from the Public Records Law. Please note that the financial statement exemption provided for in Section 119.071(1)c, Florida Statutes only applies to submittals in response to a solicitation for a "public works" project.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED. ALL DOCUMENTS THAT THE FIRM PURPORTS TO BE CONFIDENTIAL, PROPRIETARY OR A TRADE SECRET SHALL BE UPLOADED TO THE OPENGOV WEBSITE AS A SEPARATE ATTACHMENT CLEARLY IDENTIFYING THE EXEMPTION BEING CLAIMED UNDER FLORIDA STATUTES 119.07.

The city's determination of whether an exemption applies shall be final, and the proposer agrees to defend, indemnify, and hold harmless the city and the city's officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the city's treatment of records as public records.

8.34 PURCHASING AGREEMENTS WITH OTHER GOVERNMENT AGENCIES

It is hereby made part of this solicitation that the submission of any bid response to this advertised request constitutes a bid made under the same or similar terms and conditions, for the same price, or better price, to other government agencies if agreeable by the proposer and the government agency.

At the option of the consultant, the use of the contract resulting from this solicitation may be extended to other governmental agencies, including the State of Florida, its agencies, political subdivisions, counties, and cities.

Each governmental agency allowed by the consultant to use this contract shall do so independently of any other governmental entity. Each agency shall be responsible for its own purchases and shall

be liable only for goods or services ordered, received, and accepted. No agency receives any liability by virtue of this bid and subsequent contract award.

8.35 CONE OF SILENCE

Prohibited Communication: In accordance with the Cone of Silence Ordinance, Section 35.40 of the City's Code of Ordinances, during the course of a sealed competitive solicitation, a cone of silence shall be in effect between:

A. Any person or entity that seeks a contract, contract amendment, award, recommendation, or approval related to a sealed competitive solicitation or that is subject to being evaluated or having its response evaluated in connection with a sealed competitive solicitation, including a person or entity's representative; and

B. The City Manager or any person or group of persons appointed or designated by the City Commission or the City Manager to evaluate, select, or make a recommendation to the City Commission or the City Manager regarding a sealed competitive solicitation, including any member of the selection/evaluation committee.

Effective Dates: A cone of silence shall be in effect during a sealed competitive solicitation process beginning upon the advertisement for the sealed competitive solicitation or during such other procurement activities as declared by the City Commission, and shall terminate at the time the City Commission takes final action or gives final approval of a contract, rejects all bids or responses to the sealed competitive solicitation, or takes other action which ends the sealed competitive solicitation process.

Permitted Communication: The cone of silence shall not apply to:

A. Written or oral communications with legal counsel for the city, the Procurement Department staff for the city, and the person or persons designated in the sealed competitive solicitation as the contact person for clarification or information related to the sealed competitive solicitation.

B. Public presentations, asking questions, or providing feedback at pre-bid meetings, site visits or conferences or at a selection, evaluation or negotiation meeting related to the sealed competitive solicitation.

C. Contract negotiations with the selected entity.

Violations: Any action in violation of this section shall be cause for disqualification of the bid or the proposal.

8.36 E-VERIFY

Contractor certifies that it is aware of and complies with the requirements of Section 448.095, Florida Statues, as may be amended from time to time and briefly described herein below.

A. Definitions for this Section:

1. "Contractor" means a person or entity that has entered or is attempting to enter into a contract with a public employer to provide labor, supplies, or services to such employer in exchange for salary, wages, or other remuneration. "Contractor" includes, but is not limited to, a vendor or consultant.
2. "Subcontractor" means a person or entity that provides labor, supplies, or services to or for a contractor or another subcontractor in exchange for salary, wages, or other remuneration.
3. "E-Verify system" means an Internet-based system operated by the United States Department of Homeland Security that allows participating employers to electronically verify the employment eligibility of newly hired employees.

B. Registration Requirement; Termination:
Pursuant to Section 448.095, Florida Statutes, effective January 1, 2021, Contractors, shall register with and use the E-verify system in order to verify the work authorization status of all newly hired employees. Contractor shall register for and utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of:

1. All persons employed by a Contractor to perform employment duties within Florida during the term of the contract; and
2. All persons (including subvendors / subconsultants / subcontractors) assigned by Contractor to perform work pursuant to the contract with the City of Pembroke Pines. The Contractor acknowledges and agrees that registration and use of the U.S. Department of Homeland Security's E-Verify System during the term of the contract is a condition of the contract with the City of Pembroke Pines; and
3. The Contractor shall comply with the provisions of Section 448.095, Fla. Stat., "Employment Eligibility," as amended from time to time. This includes, but is not limited to registration and utilization of the E-Verify System to verify the work authorization status of all newly hired employees. Contractor shall also require all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the contract. Failure to comply will lead to termination of this Contract, or if a subcontractor knowingly violates the statute, the subcontract must be terminated immediately. Any challenge to termination under this provision must be filed in the Circuit Court no later than twenty (20) calendar days after the date of termination. Termination of this Contract under this Section is not a breach of contract and may not be considered as such. If this contract is terminated for a violation of the statute by the Contractor, the Contractor may not be awarded a public contract for a period of one (1) year after the date of termination.

8.37 JESSICA LUNSFORD ACT

Background screening requirements for Consultant's performing services for or at City's Charter Schools.

A. Except as provided in §§1012.467 or 1012.468, Florida Statutes, non-instructional school employees or contractual personnel who:

   1. are permitted access on school grounds when students are present,

   2. have direct contact with students or,

   3. have access to or control of school funds must meet level 2 screening requirements as described in §1012.32, Florida Statutes. Contractual personnel shall include any Contractor, individual, or entity under contract with the City engaged to perform services for or at City's Charter Schools.

B. Every 5 years following employment or entry into a resulting contract in a capacity described in subsection (A), each person who is so employed or under contract with the City must meet level 2 screening requirements as described in §1012.32, Florida Statutes, at which time the City shall request the Department of Law Enforcement to forward the fingerprints to the Federal Bureau of Investigation for the level 2 screening. If, for any reason following employment or entry into a resulting contract in a capacity described in subsection (A), the fingerprints of a person who is so employed or under contract with the City are not retained by the Department of Law Enforcement under §1012.32(3)(a) and (b), Florida Statutes, the person must file a complete set of fingerprints with the City. Upon submission of fingerprints for this purpose, the City shall request the Department of Law Enforcement to forward the fingerprints to the Federal Bureau of Investigation for the level 2 screening, and the fingerprints shall be retained by the Department of Law Enforcement under §1012.32(3)(a) and (b), Florida Statutes. The cost of the state and federal criminal history check required by level 2 screening shall be borne by the Consultant, or the person fingerprinted. Under penalty of perjury, each person who is employed or engaged to perform a resulting contract in a capacity described in subsection (A) must agree to inform his or her employer or the party with whom he or she is under contract within 48 hours if convicted of any disqualifying offense while he or she is employed or under a resulting contract in that capacity.

C. If it is found that a person who is employed or under contract in a capacity described in subsection (A) does not meet the level 2 requirements, the person shall be immediately suspended from working in that capacity and shall remain suspended until final resolution of any appeals.

8.38 PROHIBITION AGAINST CONSIDERING SOCIAL, POLITICAL OR IDEOLOGICAL INTERESTS IN GOVERNMENT CONTRACTING

Bidders are hereby notified of the provisions of Section 287.05701, Florida Statutes, as amended, that the City will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the City's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

City of Pembroke Pines
Procurement
Mark Gomes, Procurement Director
601 City Center Way, Pembroke Pines, FL 33025
(954) 431-4884

ADDENDA REPORT

RFQ No. PSUT-25-06

Engineering Services for Ion Exchange Addition to the Water Treatment Plant for PFAS Removal

RESPONSE DEADLINE: June 10, 2025 at 2:00 pm

Wednesday, July 2, 2025

Addenda Issued:

Addendum #1

May 21, 2025 3:34 PM

Please use the See What Changed link to view all the changes made by this addendum.

Please note that the estimated design costs reflected in the document have been revised from $1,090,000 to $5,450,000, which includes design, permitting and bidding services.

Addenda Acknowledgements:

Addendum #1

Proposal	Confirmed	Confirmed At	Confirmed By
Carollo Engineers, Inc.	X	May 26, 2025 6:59 PM	Stacey Biggs
WSP USA Inc.	X	Jun 10, 2025 9:43 AM	Nancy Cortes
Hazen and Sawyer	X	Jun 9, 2025 12:59 PM	Julie Forgione

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD[YY)

PRODUCER

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

INSURED

YOUR COMPANY NAME HERE

INSURER A:
INSURER B,
INSURER C,
INSURER D,
INSURER E,

Companies providing coverage

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AG6REGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DDIYY)	POLICY EXPIRATION DATE (MM/DDIYY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$
	COMMERCIAL GENERAL LIABILITY				FIRE DAMAGE (Any one fire)	$
	CLAIMS MADE OCCUR				MED EXP (Any one person)	$
					PERSONAL & ADV INJURY	$
					GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$
	policy project loc					
	AUTOMOBILE LIABILITY					
	ANY AUTO					
	ALL OWNED AUTOS					
	SCHEDULED AUTOS					
	HIRED AUTOS					
	NON-OWNED AUTOS					
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
					AGG	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	OCCUR CLAIMS MADE				AGGREGATE	$
						$
	DEDUCTIBLE					$
	RETENTION $					$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				WC STATU-TORY LIMITS / OTH-ER	
					E.L. EACH ACCIDENT	$
					E.L. DISEASE - EA EMPLOYEE	$
					E.L. DISEASE - POLICY LIMIT	$
	OTHER					

Must Include General Liability

SAMPLE CERTIFICATE

Certificate must contain wording similar to what appears below

DESCRIPTION OF OPERATIONS/LOCATIONSIVEHICLES/EXCL

"THE CERTIFICATE HOLDER IS NAMED AS ADDITIONALLY INSURED WITH REGARD TO GENERAL LIABILITY"

CERTIFICATE HOLDER

ADDITIONAL INSURED; INSURER LETTER:

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT.

City of Pembroke Pines
601 City Center Way
Pembroke Pines FL 33025

City Must Be Named as Certificate Holder

AUTHORIZED REPRESENTATIVE

ACORD 25-S (7/97)

ENGINEERING DESIGN SERVICES AGREEMENT BETWEEN THE CITY OF PEMBROKE PINES AND CONTRACTOR/CONSULTANT... NAME (Example)

THIS AGREEMENT ("Agreement"), dated _____, is entered into by and between:

THE CITY OF PEMBROKE PINES, a municipal corporation of the State of Florida with a business address of **601 City Center Way, Pembroke Pines, FL 33025**, hereinafter referred to as "CITY",

and

CONTRACTOR/CONSULTANT... NAME (Example), a **a For Profit Corporation** as listed with the Florida Division of Corporations, authorized to do business in the State of Florida, and with a business address of **Contractor Street Address, , City, State Zip Code,** hereinafter referred to as "CONSULTANT". "CITY" and "CONSULTANT" may be collectively referred to herein as "Parties" and individually as "Party".

W I T N E S S E T H:

In consideration of the mutual terms and conditions, promises, covenants and payments hereinafter set forth, CITY and CONSULTANT agree as follows:

ARTICLE 1
PREAMBLE

In order to establish the background, context and form of reference for this Agreement, and to generally express the objectives and intentions of the respective Parties herein, the following statements, representations, and explanations shall be accepted as predicates for the undertakings and commitments included within the provisions which follow, and may be relied upon by the Parties as essential elements of the mutual considerations upon which this Agreement is based.

1.1 On , the CITY advertised its notice to bidders of the CITY's desire to hire a firm to provide **Engineering Design Services** services, as more particularly described in **Exhibit "«Exhibit Letter/Number»"** attached hereto and by this reference made a part hereof, for the said bid entitled:

""

«Invitation for Bid ("IFB") #

1.2 On **,** the bids were opened at the offices of the City Clerk.

1.3 On _____, the CITY's evaluation committee certified CONSULTANT as qualified to provide the professional services as described in **Exhibit "A"** and selected CONSULTANT as the most highly qualified to perform the required services in accordance with the Consultant's Competitive Negotiation Act ("CCNA"), §287.055, Florida Statutes.

1.4 On _____, the CITY awarded the bid to CONSULTANT and authorized the proper CITY officials to negotiate and enter into this Agreement with CONSULTANT to govern the services more particularly described herein below.

1.5 Negotiations pertaining to the services to be performed by the CONSULTANT were undertaken in accordance with the CCNA, §287.055, Florida Statutes, and this Agreement incorporates the results of such negotiations.

1.6 The services provided by CONSULTANT pursuant to this Agreement shall comply with the definition of "professional services" in Section 287.055(2)(a), Florida Statutes, as amended from time to time.

1.7

ARTICLE 2
SERVICES AND RESPONSIBILITIES

2.1 CONSULTANT hereby agrees to perform the services for **«Service_Description»**, as more particularly described in **Exhibit "A"** attached hereto and by this reference made a part hereof. CONSULTANT agrees to do everything required by this Agreement.

2.2 CONSULTANT shall furnish all services, labor, equipment, and materials necessary and as may be required in the performance of this Agreement, except as otherwise specifically provided for herein, and all services required under this Agreement shall be performed in a professional manner.

2.3 CONSULTANT hereby represents to CITY, with full knowledge that CITY is relying upon these representations when entering into this Agreement with CONSULTANT, that CONSULTANT has the professional expertise, experience, and manpower to perform the services to be provided by CONSULTANT pursuant to the terms of this Agreement.

2.4 CONSULTANT assumes professional and technical responsibility for performance of its services to be provided hereunder in accordance with recognized professional and ethical guidelines established by their profession. If within one (1) year following completion of its services, such services fail to meet the aforesaid standards, and the CITY promptly advises CONSULTANT thereof in writing, CONSULTANT agrees to re-perform such deficient services without charge to the CITY.

2.5 The relationship between CITY and CONSULTANT created hereunder and the services to be provided by CONSULTANT pursuant to this Agreement are non-exclusive. CITY shall be free to pursue and engage similar relationships with other contractors to perform the same or similar services performed by CONSULTANT hereunder, so long as no other consultant shall be engaged to perform the specific project(s) assigned to CONSULTANT while CONSULTANT is so engaged without first terminating such assignment. CONSULTANT shall be free to pursue relationships with other parties to perform the same or similar services, whether or not such relationships are for services to be performed within the City of Pembroke Pines, so long as no such relationship shall result in a conflict of interest, ethical or otherwise, with the CITY's interests in the services provided by CONSULTANT hereunder.

2.6 CONSULTANT shall not utilize the services of any sub-consultant without the prior written approval of CITY.

2.7 CONSULTANT shall comply with the applicable provisions of the City of Pembroke Pines Code of Ordinances. CONSULTANT shall require that all sub-consultants comply with the applicable provisions of the City of Pembroke Pines Code of Ordinances.

ARTICLE 3
TERM AND TERMINATION

3.1 The services herein required shall commence upon full execution of this Agreement and not later than seven (7) days after the date that CONSULTANT receives CITY's Notice to Proceed. The services shall be completed within **thirty (30) calendar days** from issuance of CITY's Notice to Proceed, subject to any permitted extensions of time pursuant to this Agreement and any amendments and/or addenda thereto. For the purposes of this Agreement, the term "completion" shall mean the satisfactory completion and final inspection of the Property by the CITY.

3.2 **Termination for Convenience**. This Agreement may be terminated by CITY for convenience, upon providing thirty (30) calendar days of written notice to CONSULTANT for such termination in which event CONSULTANT shall be paid its compensation for services performed before the termination date, including services reasonably related to termination.

3.3 **Default by CONSULTANT**. In addition to all other remedies available to CITY, this Agreement shall be subject to cancellation by CITY for cause, should CONSULTANT neglect or fail to perform or observe any of the terms, provisions, conditions, or requirements herein contained, if such neglect or failure shall continue for a period of thirty (30) calendar days after receipt by CONSULTANT of written notice of such neglect or failure.

3.4 In the event that the CONSULTANT abandons this Agreement or causes it to be terminated, CONSULTANT shall indemnify the CITY against any loss pertaining to this termination up to a maximum of the full contracted fee amount. All finished or unfinished documents, data, studies, plans, surveys, and reports prepared by CONSULTANT shall become the property of CITY and shall be delivered by CONSULTANT to CITY immediately.

ARTICLE 4
COMPENSATION AND METHOD OF PAYMENT

4.1 CONSULTANT shall be entitled to invoice CITY for services performed and properly invoiced in accordance with this Agreement. The total compensation amount paid to CONSULTANT for the services herein required shall not exceed _____ **DOLLARS AND _____ CENTS (0.00)**.

4.2 CITY will make its best efforts to pay CONSULTANT within thirty (30) days of receipt of proper invoice, which invoice must include the total shown to be due. Invoices submitted to the CITY shall include information such as, but not limited to, the date(s) of service, staff classification, the amount of time spent, a description of the service(s), and any other information reasonably required by CITY.

4.3 **Method of Billing and Payment**. All payments shall be governed by the Local Government Prompt Payment Act, as set forth in Part VII, Chapter 218, Florida Statutes. The CITY shall within thirty (30) calendar days, from the date the CITY approves the Application for Payment, pay the CONSULTANT the amount approved by the City Engineer or his or her assignees. Payment will be made to CONSULTANT at:

«Vendor_Name»
Attn: «Vendor_Contact_Title»
«Vendor_Address_Line_1»
«Vendor_Address_Line_2»

4.4 **Contingency or Allowance**. Any contingency or allowance amount provided for herein authorizes the CITY to execute change orders up to the amount of the contingency or allowance without the need to obtain additional Commission approval. In addition, CITY shall utilize the contingency or allowance to reimburse CONSULTANT for the related permit, license, impact or inspection fees. Payments will be made to CONSULTANT based on the actual cost of permits upon submission of paid permit receipts. It is hereby understood and agreed that the CONSULTANT shall not expend any dollars in connection with the contingency or allowance without the expressed prior written approval of the CITY's authorized representative. Any contingency or allowance funds that have not been utilized at the end of the project will remain with the CITY, the CONSULTANT shall only be paid for the proposed project cost as approved by the City Commission along with any contingency or allowance expenses that were approved by the CITY's authorized representative. If the permit fees exceed the contingency or allowance CITY will reimburse the CONSULTANT the actual amount of the permit fees required for project completion.

ARTICLE 5
CHANGES TO SCOPE OF SERVICES AND ADDITIONAL SERVICES

5.1 CITY or CONSULTANT may request changes that would increase, decrease, or otherwise modify the Scope of Services, as described in **Exhibit "A"** to be provided under this Agreement as described in Article 2. These changes may affect the monthly compensation accordingly. Such

changes or additional services must be in accordance with the provisions of the Code of Ordinances of the CITY, and must be contained in a written amendment, executed by the Parties hereto, with the same formality, equality and dignity herewith prior to any deviation from the terms of this Agreement, including the initiation of any additional or extra services.

5.2 In no event will the CONSULTANT be compensated for any services which have not been described either herein or in a separate written agreement executed by the Parties hereto.

ARTICLE 6
INDEMNIFICATION

6.1 The CONSULTANT shall indemnify and hold harmless the CITY, its officers and employees, from liability, losses or damages, including reasonable attorneys' fees and costs of defense, which the CITY, its officers and employees, may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature arising out of, relating to or resulting from the negligence, recklessness, or intentional wrongful misconduct of CONSULTANT, and other persons employed or utilized by CONSULTANT during performance of this Agreement. The CONSULTANT shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind or nature in the name of the CITY, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorneys' fees which may issue thereon.

6.2 Parties understand and agree that the covenants and representations relating to this indemnification provision shall survive the term of this Agreement and continue in full force and effect as to the Party's responsibility to indemnify.

6.3 Nothing contained herein is intended nor shall be construed to waive CITY's rights and immunities under the common law or §768.28, Florida Statutes, as may be amended from time to time.

ARTICLE 7
INSURANCE

7.1 The CONSULTANT expressly understands and agrees that any insurance protection required by this Agreement or otherwise provided by the CONSULTANT shall in no way limit the responsibility to indemnify, keep and save harmless and defend the CITY or its officers, employees, agents and instrumentalities as herein provided.

7.2 CONSULTANT AND ALL SUBCONSULTANTS, SHALL NOT BE ALLOWED TO commence work under this AGREEMENT until the CONSULTANT has obtained all insurance required by this Insurance Section, including the purchase of a Policy of Insurance naming the City of Pembroke Pines as an Additional Named Insured, which Insurance Policy and its terms must be agreed to and approved in writing by the Risk Manager for the City of Pembroke Pines, nor shall any SUBCONSULTANT be allowed to commence work under this AGREEMENT until the SUBCONSULTANT complies with the Insurance requirements required by this Insurance Section, including the duty to purchase a Policy of Insurance which names the City of Pembroke

Pines as an Additional Named Insured, which Insurance Policy and its terms are agreed to and approved in writing by the Risk Manager for the City of Pembroke Pines.

7.3 Certificates of Insurance, reflecting evidence of the required insurance, shall be filed with the CITY's Risk Manager prior to the commencement of this Agreement. Policies shall be issued by companies authorized to do business under the laws of the State of Florida. The insurance company shall be rated no less than "A" as to management, and no less than "Class VI" as to financial strength according to the latest edition of Best's Insurance Guide published by A.M. Best Company.

7.4 Certificates of Insurance shall provide for thirty (30) calendar days' prior written notice to the CITY in case of cancellation or material changes in the policy limits or coverage states. If the carrier cannot provide thirty (30) calendar days' notice of cancellation, either the CONSULTANT or their Insurance Broker must agree to provide notice.

7.5 Insurance shall be in force until all obligations required to be fulfilled under the terms of the Agreement are satisfactorily completed as evidenced by the formal acceptance by the CITY. In the event the insurance certificate provided indicates that the insurance shall terminate and lapse during the period of this Agreement, the CONSULTANT shall furnish, at least forty-five (45) calendar days prior to the expiration of the date of such insurance, a renewed certificate of insurance as proof that equal and like coverage for the balance of the period of the Agreement and extension thereunder is in effect. The CONSULTANT shall neither commence nor continue to provide any services pursuant to this Agreement unless all required insurance remains in full force and effect. CONSULTANT shall be liable to CITY for any lapses in service resulting from a gap in insurance coverage.

7.6 REQUIRED INSURANCE

CONSULTANT shall be required to obtain all applicable insurance coverage, as indicated below, prior to commencing any work pursuant to this Agreement:

Yes No

✓ ☐ 7.6.1 Comprehensive General Liability Insurance written on an occurrence basis including, but not limited to: coverage for bodily injury and property damage, personal & advertising injury, products & completed operations, and contractual liability. Coverage must be written on an occurrence basis, with limits of liability no less than:

1. Each Occurrence Limit - $1,000,000
2. Personal & Advertising Injury Limit - $1,000,000
3. General Aggregate Limit - $2,000,000
4. Products & Completed Operations Aggregate Limit - $2,000,000

Aggregate Reduction: CONTRACTOR shall advise the CITY in the event any aggregate limits are reduced below the required per-occurrence limit. At its own expense, the CONTRACTOR will reinstate the aggregate limits to comply with the minimum requirements and shall furnish the CITY with a new certificate of insurance showing such

coverage is in force.

Products & Completed Operations Coverage shall be maintained for the later of three (3) years after the delivery of goods/services or final payment under the Agreement. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No
✓ ☐ 7.6.2 Workers' Compensation and Employers' Liability Insurance covering all employees, and/or volunteers of the CONSULTANT engaged in the performance of the scope of work associated with this Agreement. In the case any work is sublet, the CONSULTANT shall require the subcontractors similarly to provide Workers' Compensation Insurance for all the latter's employees unless such employees are covered by the protection afforded by the CONSULTANT. Coverage for the CONSULTANT and all subcontractors shall be in accordance with applicable state and/or federal laws that may apply to Workers' Compensation Insurance with limits of liability no less than:

1. Workers' Compensation:	Coverage A –	Statutory
2. Employers Liability:	Coverage B	$500,000 Each Accident
		$500,000 Disease – Policy Limit
		$500,000 Disease – Each Employee

If CONSULTANT claims to be exempt from this requirement, CONSULTANT shall provide CITY proof of such exemption for CITY to exempt CONSULTANT.

Yes No
☐ × 7.6.3 Comprehensive Auto Liability Insurance covering all owned, non-owned and hired vehicles used in connection with the performance of work under this Agreement, with a combined single limit of liability for bodily injury and property damage no less than:

1. Any Auto (Symbol 1)
   Combined Single Limit (Each Accident) - $1,000,000
2. Hired Autos (Symbol 8)
   Combined Single Limit (Each Accident) - $1,000,000
3. Non-Owned Autos (Symbol 9)
   Combined Single Limit (Each Accident) - $1,000,000

If work under this Agreement includes transportation of hazardous materials, policy shall include pollution liability coverage equivalent to that provided by the latest version of the ISO pollution liability broadened endorsement for auto and the latest version of the ISO Motor Carrier Act endorsement, equivalents or broader language.

Yes No
☐ × 7.6.3.1 If CONSULTANT requests reduced limits under a Personal Auto Liability Policy and it is agreed to by the CITY, coverage shall include Bodily Injury limits of $100,000 per person/$300,000 per occurrence and Property Damage limits of $300,000 per occurrence

Yes No

☐ ✖ 7.6.4 Umbrella/Excess Liability Insurance in the amount of $2,000,000.00 as determined appropriate by the CITY depending on the type of job and exposures contemplated. Coverage must be follow form of the General Liability, Auto Liability and Employer's Liability. This coverage shall be maintained for a period of no less than the later of three (3) years after the delivery of goods/services or final payment pursuant to this Agreement. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No

✓ ☐ 7.6.5 Professional Liability/Errors & Omissions Insurance with a limit of liability no less than $1,000,000 per wrongful or negligent act. This coverage shall be maintained for a period of no less than three (3) years after the delivery of goods/services final payment pursuant to this Agreement. Retroactive date, if any, to be no later than the first day of service to the CITY.

Yes No

☐ ✖ 7.6.6 Environmental/Pollution Liability insurance shall be required with a limit of no less than $1,000,000 per wrongful act. Coverage shall include: CONSULTANT's completed operations, sudden, accidental and gradual pollution conditions. This coverage shall be maintained for a period of no less than the later of three (3) years after the delivery of goods/services or final payment pursuant to this Agreement. Retroactive date, if any, to be no later than the first day of service to the CITY. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No

☐ ✖ 7.6.7 Cyber Liability including Network Security and Privacy Liability with a limit of liability no less than $1,000,000 per loss. Coverage shall include liability arising from: theft, dissemination and/or use of confidential information stored or transmitted in electronic form, unauthorized access to, use of, or tampering with computer systems, including hacker attacks or inability of an authorized third party to gain access to your services, including denial of service, and the introduction of a computer virus into, or otherwise causing damage to, a customer's or third person's computer, computer system, network, or similar computer-related property and the data, software and programs thereon. If vendor is collecting credit card information, it shall cover all PCI breach expenses. Coverage is to include the various state monitoring and state required remediation as well as meet the various state notification requirements. This coverage shall be maintained for a period of no less than the later of three (3) years after delivery of goods/services or final payment of the Agreement. Retroactive date, if any, to be no later than the first day of service to the CITY. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No

☐ ✖ 7.6.8 Crime Coverage shall include employee dishonesty, forgery or alteration, and computer fraud in an amount of no less than $1,000,000 per loss. If CONSULTANT is physically located on CITY's premises, a third-party fidelity coverage extension shall apply.

Yes No

☐ ☒ 7.6.9 Garage Liability & Garage-keepers Legal Liability for those that manage parking lots for the CITY or service CITY vehicles. Coverage must be written on an occurrence basis, with limits of liability no less than $1,000,000 per Occurrence, including products & completed operations. This coverage shall be maintained for a period of no less than the later of three (3) years after the delivery of goods/services or final payment of this Agreement. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No

☐ ☒ 7.6.10 Liquor Liability for those in the business of selling, serving or furnishing of any alcoholic beverages, whether licensed or not, shall carry a limit of liability of no less than $1,000,000 per occurrence. Coverage shall be maintained for the later of three (3) years after the delivery of goods/services or final payment under the Agreement. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No

☐ ☒ 7.6.11 Sexual Abuse & Molestation for any agreement involving a vulnerable population. Limits shall be no less than $500,000 per occurrence. This coverage shall be maintained for a period of no less than the later of three (3) years after the delivery of goods/services or final payment of this Agreement. Retroactive date, if any, to be no later than the first day of service to the CITY. **The City of Pembroke Pines must be shown as an additional insured with respect to this coverage. The CITY's additional insured status shall extend to any coverage beyond the minimum limits of liability found herein.**

Yes No

☐ ☒ 7.6.12 Builder's Risk Insurance shall be "All Risk" for one hundred percent (100%) of the completed value of the project that is the subject of this Agreement with a deductible of not more than five percent (5%) for Named Windstorm and $20,000 per claim for all other perils. The Builder's Risk Insurance shall include interests of the CITY, the CONSULTANT and subcontractors of the project. The CONSULTANT shall include a separate line item for all costs associated with the Builder's Risk Insurance Coverage for the project. The CITY reserves the right at its sole discretion to utilize the CONSULTANT's Builder's Risk Insurance or for the CITY to purchase its own Builder's Risk Insurance for the Project. Prior to the CONSULTANT purchasing the Builder's Risk insurance for the project, the CONSULTANT shall allow the CITY the opportunity to analyze the CONSULTANT's coverage and determine who shall purchase the coverage. Should the CITY utilize the CONSULTANT's Builder's Risk Insurance, the CONSULTANT shall be responsible for all deductibles. If the CITY chooses to purchase the Builder's Risk Coverage on the project, the CONSULTANT shall provide the CITY with a change order deduct for all premiums and costs associated with the Builder's Risk insurance in their schedule. Should the CITY choose to utilize the CITY's Builder's Risk Program, the CITY shall be responsible for the Named Windstorm Deductible and the CONSULTANT shall be responsible for the All Other Perils Deductible.

If and when 100% is not available or reasonable, the CITY Risk Manager is to make the determination as to what limits are appropriate for the given project.

Yes No

☐ ✖ 7.6.13 Other Insurance

7.7 REQUIRED ENDORSEMENTS

7.7.1 The City of Pembroke Pines shall be named as an Additional Insured on each of the Liability Policies required herein.
7.7.2 Waiver of all Rights of Subrogation against the CITY.
7.7.3 Thirty (30) calendar day Notice of Cancellation or Non-Renewal to the CITY.
7.7.4 CONSULTANT's policies shall be Primary & Non-Contributory.
7.7.5 All policies shall contain a "severability of interest" or "cross liability" clause without obligation for premium payment of the CITY.
7.7.6 The City of Pembroke Pines shall be named as a Loss Payee on all Property and/or Inland Marine Policies as their interest may appear.

7.8 Any and all insurance required of the CONSULTANT pursuant to this Agreement must also be required by any subcontractor in the same limits and with all requirements as provided herein, including naming the CITY as an additional insured, in any work that is subcontracted unless such subcontractor is covered by the protection afforded by the CONSULTANT and provided proof of such coverage is provided to CITY. The CONSULTANT and any subcontractors shall maintain such policies during the term of this Agreement.

7.9 The CITY reserves the right to require any other additional types of insurance coverage and/or higher limits of liability it deems necessary based on the nature of work being performed under this Agreement.

7.10 The insurance requirements specified in this Agreement are minimum requirements and in no way reduce any liability the CONSULTANT has assumed in the indemnification/hold harmless section(s) of this Agreement.

ARTICLE 8
NON-DISCRIMINATION AND EQUAL OPPORTUNITY EMPLOYMENT

During the performance of the Agreement, neither the CONSULTANT nor any subcontractors shall discriminate against any employee or applicant for employment because of race, religion, color, gender, national origin, sex, age, marital status, political affiliation, familial status, sexual orientation, or disability if qualified. CONSULTANT will take affirmative action to ensure that employees are treated during employment, without regard to their race, religion, color, gender, national origin, sex, age, marital status, political affiliation, familial status, sexual orientation, or disability if qualified. Such actions must include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. CONSULTANT shall agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause. CONSULTANT further agrees that it will ensure that subcontractors, if any, will be made aware of and will comply with this

nondiscrimination clause.

ARTICLE 9
INDEPENDENT CONTRACTOR

This Agreement does not create an employee/employer relationship between the Parties. It is the intent of the parties that the CONSULTANT is an independent contractor under this Agreement and not the CITY's employee for all purposes, including but not limited to, the application of the Fair Labor Standards Act minimum wage and overtime payments, Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, the State Workers' Compensation Act, and the State unemployment insurance law. The CONSULTANT shall retain sole and absolute discretion in the judgment of the manner and means of carrying out CONSULTANT's activities and responsibilities hereunder provided, further that administrative procedures applicable to services rendered under this Agreement shall be those of CONSULTANT, which policies of CONSULTANT shall not conflict with CITY, State, or United States policies, rules or regulations relating to the use of CONSULTANT's funds provided for herein. The CONSULTANT agrees that it is a separate and independent enterprise from the CITY, that it has full opportunity to find other business, that it has made its own investment in its business, and that it will utilize a high level of skill necessary to perform the work. This Agreement shall not be construed as creating any joint employment relationship between the CONSULTANT and the CITY and the CITY will not be liable for any obligation incurred by CONSULTANT, including but not limited to unpaid minimum wages and/or overtime premiums.

ARTICLE 10
AGREEMENT SUBJECT TO FUNDING

This Agreement shall remain in full force and effect only as long as the expenditures provided for in the Agreement have been appropriated by the City Commission of the City of Pembroke Pines in the annual budget for each fiscal year of this Agreement, and is subject to termination based on lack of funding.

ARTICLE 11
UNCONTROLLABLE FORCES

Neither CITY nor CONSULTANT shall be considered to be in default of this Agreement if delays in or failure of performance shall be due to Uncontrollable Forces, the effect of which, by the exercise of reasonable diligence, the non-performing Party could not avoid. The term "Uncontrollable Forces" shall mean any event which results in the prevention or delay of performance by a Party of its obligations under this Agreement and which is beyond the reasonable control of the nonperforming Party. It includes, but is not limited to: fire, flood, earthquakes, storms, lightning, epidemic, pandemic, acts of God, war, riot, civil disturbance, sabotage, and governmental actions. Neither Party shall, however, be excused from performance if nonperformance is due to forces, which are preventable, removable, or remediable, and which the nonperforming Party could have, with the exercise of reasonable diligence, prevented, removed, or remedied with reasonable dispatch. The nonperforming Party shall, within a reasonable time of being prevented or delayed from performance by an uncontrollable force, give written notice to

the other Party describing the circumstances and uncontrollable forces preventing continued performance of the obligations of this Agreement.

ARTICLE 12
GOVERNING LAW AND VENUE

This Agreement shall be governed by and construed in accordance with the laws of the State of Florida as now and hereafter in force. The venue for any and all claims or actions arising out of or related to this Agreement shall be in Broward County, Florida.

ARTICLE 13
SIGNATORY AUTHORITY

CONSULTANT shall provide CITY with copies of requisite documentation evidencing that the signatory for CONSULTANT has the authority to enter into this Agreement.

ARTICLE 14
DEFAULT OF CONTRACT & REMEDIES

14.1 **Damages**. CITY reserves the right to recover any ascertainable actual damages incurred as a result of the failure of CONSULTANT to perform in accordance with the requirements of this Agreement, or for losses sustained by CITY resultant from CONSULTANT's failure to perform in accordance with the requirements of this Agreement.

14.2 **Correction of Services**. If, in the judgment of CITY, the services provided by CONSULTANT do not conform to the requirements of this Agreement, or if the services exhibit poor workmanship, CITY reserves the right to require that CONSULTANT correct all deficiencies in the services to bring the services into conformance without additional cost to CITY, and / or replace any personnel who fail to perform in accordance with the requirements of this Agreement. CITY shall be the sole judge of non-conformance and the quality of services.

14.3 **Default of Contract**. The occurrence of any one or more of the following events shall constitute a default and breach of this Agreement by CONSULTANT for which CITY may terminate for cause:

14.3.1 The abandonment, unnecessary delay, refusal of, or failure to comply with any of the terms of this Agreement or neglect, or refusal to comply with the instructions of the Recreation and Cultural Arts Director relative thereto.

14.3.2 The failure by CONSULTANT to observe or perform any of the terms, covenants, or conditions of this Agreement to be observed or performed by CONSULTANT, where such failure shall continue for a period of seven (7) calendar days after written notice thereof by CITY to CONSULTANT; provided, however, that if the nature of CONSULTANT 's default is such that more than seven (7) calendar days are reasonably required for its cure, then CONSULTANT shall not be deemed to be in default if

CONSULTANT commences such cure within said seven (7) calendar day period and thereafter diligently prosecutes such cure to completion.

14.3.3 The assignment and/or transfer of this Agreement or execution or attachment thereon by CONSULTANT or any other Party in a manner not expressly permitted hereunder.

14.3.4 The making by CONSULTANT of any general assignment or general arrangement for the benefit of creditors, or the filing by or against CONSULTANT of a petition to have CONSULTANT adjudged a bankruptcy, or a petition for reorganization or arrangement under any law relating to bankruptcy (unless, in the case of a petition filed against CONSULTANT, the same is dismissed within sixty (60) calendar days); or the appointment of a trustee or a receiver to take possession of substantially all of CONSULTANT's assets, or for CONSULTANT's interest in this Agreement, where possession is not restored to CONSULTANT within thirty (30) calendar days; for attachment, execution or other judicial seizure of substantially all of CONSULTANT's assets, or for CONSULTANT's interest in this Agreement, where such seizure is not discharged within thirty (30) calendar days.

14.4 **Remedies in Default.** In case of breach of this Agreement by CONSULTANT, CITY shall notify CONSULTANT, in writing, of such abandonment, delay, refusal, failure, neglect, or default and direct CONSULTANT to comply with all provisions of the Agreement. If the abandonment, delay, refusal, failure, neglect or default is not cured within seven (7) calendar days of when notice was sent by CITY, CITY may declare a default of the Agreement and notify CONSULTANT of such declaration of default and terminate the Agreement.

14.4.1 Upon such declaration of default, all payments remaining due CONSULTANT at the time of default, less all sums due CITY for damages suffered, or expenses incurred by reason of default, shall be due and payable to CONSULTANT.

14.4.2 CITY may complete the Agreement, or any part thereof, either by day labor or re-letting a contract for the same, and procure services necessary for the completion of the Agreement, and charge the cost of same to CONSULTANT with the costs incident thereto to such default.

14.4.3 In the event CITY completes the Agreement at a lesser cost than would have been payable to CONSULTANT under this Agreement, if the same had been fulfilled by CONSULTANT, CITY shall retain such differences. Should such cost to CITY be greater, CONSULTANT shall pay the amount of such excess to the CITY.

14.4.4 Notwithstanding the other provisions in this Article, CITY reserves the right to terminate the Agreement at any time, whenever the service provided by CONSULTANT fails to meet reasonable standards of the trade after CITY gives written notice to the CONSULTANT of the deficiencies as set forth in the written notice within seven (7) calendar days of the receipt by CONSULTANT of such notice from CITY.

ARTICLE 15
BANKRUPTCY

It is agreed that if CONSULTANT is adjudged bankrupt, either voluntarily or involuntarily, then this Agreement shall terminate effective on the date and at the time the bankruptcy petition is filed.

ARTICLE 16
DISPUTE RESOLUTION

In the event that a dispute, if any, arises between CITY and CONSULTANT relating to this Agreement, performance or compensation hereunder, CONSULTANT shall continue to render service in full compliance with all terms and conditions of this Agreement as interpreted by CITY regardless of such dispute. CONSULTANT expressly agrees, in consideration for the execution of this Agreement, that in the event of such a dispute, if any, it will not seek injunctive relief in any court, but will negotiate with CITY for an adjustment on the matter or matters in dispute and, upon failure of said negotiations to resolve the dispute, may present the matter to a court of competent jurisdiction in an appropriate suit therefore instituted by it or by CITY.

ARTICLE 17
PUBLIC RECORDS

17.1 The City of Pembroke Pines is public agency subject to Chapter 119, Florida Statutes. The CONSULTANT shall comply with Florida's Public Records Law. Specifically, the CONSULTANT shall:

17.1.1 Keep and maintain public records required by the CITY to perform the service;

17.1.2 Upon request from the CITY's custodian of public records, provide the CITY with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law;

17.1.3 Ensure that public records that are exempt or that are confidential and exempt from public record disclosure requirements are not disclosed except as authorized by law for the duration of the Agreement term and, following completion of the Agreement, CONSULTANT shall destroy all copies of such confidential and exempt records remaining in its possession after the CONSULTANT transfers the records in its possession to the CITY; and

17.1.4 Upon completion of the Agreement, CONSULTANT shall transfer to the CITY, at no cost to the CITY, all public records in CONSULTANT's possession. All records stored electronically by the CONSULTANT must be provided to the CITY, upon request from the CITY's custodian of public records, in a format that is compatible with the information technology systems of the CITY.

17.2 The failure of CONSULTANT to comply with the provisions set forth in this Article shall constitute a Default and Breach of this Agreement, for which, the CITY may terminate the Agreement in accordance with the terms herein.

IF CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

CITY CLERK
601 CITY CENTER WAY, 4th FLOOR
PEMBROKE PINES, FL 33025
(954) 450-1050
drogers@ppines.com

ARTICLE 18
SCRUTINIZED COMPANIES

18.1 CONSULTANT, its principals or owners, certify that they are not listed on the Scrutinized Companies that Boycott Israel List, Scrutinized Companies with Activities in Sudan List, Scrutinized Companies with Activities in Iran Terrorism Sectors List, or is engaged in business operations with Syria. In accordance with Section 287.135, Florida Statutes, as amended, a company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a contract with any agency or local governmental entity for goods or services of:

18.1.1 Any amount if, at the time bidding on, submitting a proposal for, or entering into or renewing such contract, the company is on the Scrutinized Companies that Boycott Israel List, created pursuant to Section 215.4725, Florida Statutes, or is engaged in a boycott of Israel; or

18.1.2 One million dollars or more if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company:

18.1.2.1 Is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in Iran Terrorism Sectors List, created pursuant to Section 215.473, Florida Statutes; or

18.1.2.2 Is engaged in business operations in Syria.

ARTICLE 19
EMPLOYMENT ELIGIBILITY

19.1 **E-Verify.** CONSULTANT certifies that it is aware of and complies with the

requirements of Section 448.095, Florida Statues, as may be amended from time to time and briefly described herein below.

19.1.1 **Definitions for this Section**.

19.1.1.1 "Contractor" means a person or entity that has entered or is attempting to enter into a contract with a public employer to provide labor, supplies, or services to such employer in exchange for salary, wages, or other remuneration.

19.1.1.2 "Contractor" includes, but is not limited to, a vendor or consultant.

19.1.1.3 "Subcontractor" means a person or entity that provides labor, supplies, or services to or for a contractor or another subcontractor in exchange for salary, wages, or other remuneration.

19.1.1.4 "E-Verify system" means an Internet-based system operated by the United States Department of Homeland Security that allows participating employers to electronically verify the employment eligibility of newly hired employees.

19.2 **Registration Requirement; Termination**. Pursuant to Section 448.095, Florida Statutes, effective January 1, 2021, Contractors, shall register with and use the E-verify system in order to verify the work authorization status of all newly hired employees. Contractor shall register for and utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of:

19.2.1 All persons employed by a Contractor to perform employment duties within Florida during the term of the contract; and

19.2.2 All persons (including subvendors/subconsultants/subcontractors) assigned by Contractor to perform work pursuant to the contract with the City of Pembroke Pines. The Contractor acknowledges and agrees that registration and use of the U.S. Department of Homeland Security's E-Verify System during the term of the contract is a condition of the contract with the City of Pembroke Pines; and

19.2.3 The Contractor shall comply with the provisions of Section 448.095, Fla. Stat., "Employment Eligibility," as amended from time to time. This includes, but is not limited to registration and utilization of the E-Verify System to verify the work authorization status of all newly hired employees. Contractor shall also require all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. The Contractor shall maintain a copy of such affidavit for the duration of the contract. Failure to comply will lead to termination of this Contract, or if a subcontractor knowingly violates the statute, the subcontract must be terminated immediately. Any challenge to termination under this provision must be filed in the Circuit Court no later than twenty (20) calendar days after the date of termination. Termination of this Contract under this Section is not a breach of contract and may not be considered as such. If this contract is terminated for a violation of the statute by the Contractor, the Contractor may not be awarded a public contract for a period of one (1) year after the date

of termination.

ARTICLE 24
EQUAL BENEFITS FOR EMPLOYEES

24.1 CONSULTANT certifies that it is aware of the requirements of Section 35.39 of the CITY's Code of Ordinances and certifies that (**check only one box below)**:

☐ CONSULTANT currently complies with the requirements of Section 35.39 of the CITY's Code of Ordinances; or
☐ CONSULTANT will comply with the conditions of Section 35.39 of the CITY's Code of Ordinances; or
☐ CONSULTANT will not comply with the conditions of Section 35.39 of the CITY's Code of Ordinances; or
☐ CONSULTANT does not comply with the conditions of Section 35.39 of the CITY's Code of Ordinances because of the following allowable exemption **(check only box below)**:

☐ ---Counter Party---} does not provide benefits to employees' spouses in traditional marriages; or
☐ CONSULTANT provides an employee the cash equivalent of benefits because CONSULTANT is unable to provide benefits to employees' Domestic Partners or spouses despite making reasonable efforts to provide them. To meet this exception, CONSULTANT shall provide a notarized affidavit that it has made reasonable efforts to provide such benefits. The affidavit shall state the efforts taken to provide such benefits and the amount of the cash equivalent. Case equivalent means the amount of money paid to an employee with a Domestic Partner or spouse rather than providing benefits to the employee's Domestic Partner or spouse. The case equivalent is equal to the employer's direct expense of providing benefits to an employee's spouse; or
☐ CONSULTANT is a religious organization, association, society, or any non-profit charitable or educational institution or organization operated, supervised, or controlled by or in conjunction with a religious organization, association, or society; or
☐ CONSULTANT is a governmental agency.

24.2 Except where federal or state law mandates to the contrary, a contractor awarded a contract pursuant to a competitive solicitation shall provide benefits to Domestic Partners and spouses of its employees, irrespective of gender, on the same basis as it provides benefits to employees' spouses in traditional marriages.

24.3 CONSULTANT shall provide the City Manager and his/her designee, access to its records for the purpose of audits and/or investigations to ascertain compliance with the provisions of this Article, and upon request shall provide evidence that the CONSULTANT is in compliance with

the provisions of this Article upon the renewal of this Agreement or when the City Manager or his/her designee receives a complaint or has reason to believe CONSULTANT may not be in compliance with the provisions of this Article. Records shall include but not be limited to providing the City Manager and his/her designee with certified copies of CONSULTANT's records pertaining to its benefits policies and its employment policies and practices.

24.4 CONSULTANT must conspicuously make available to all employees and applicants for employment the following statement:

> **"During the performance of a contract with the City of Pembroke Pines, Florida, the CONSULTANT will provide Equal Benefits to its employees with spouses, as defined by Section 35.39 of the City of Pembroke Pines Code of Ordinances, and its employees with Domestic Partners and all Married Couples".**

If CONSULTANT has questions regarding the application of Section 35.39 of the City of Pembroke Pines Code of Ordinances to CONSULTANT's duties pursuant to this Agreement, contact Human Resources at (954) 954-392-2092 or cmaglio@ppines.com.

24.5 By executing this Agreement, CONSULTANT certifies that it agrees to comply with the above and Section 35.39 of the City of Pembroke Pines Code of Ordinances, as may be amended from time to time.

ARTICLE 25
MISCELLANEOUS

25.1 **Ownership of Documents**. Reports, surveys, plans, studies and other data provided in connection with this Agreement are and shall remain the property of CITY whether or not the project for which they are made is completed. CITY hereby agrees to use CONSULTANT's work product for its intended purposes.

25.2 **Legal Representation**. It is acknowledged that each party to this Agreement had the opportunity to be represented by counsel in the preparation of this Agreement, and accordingly, the rule that a contract shall be interpreted strictly against the party preparing same shall not apply herein due to the joint contributions of both Parties.

25.3 **Records**. CONSULTANT shall keep such records and accounts and require any and all subcontractors to keep records and accounts as may be necessary in order to record complete and correct entries as to personnel hours charged to this engagement, and any expenses for which CONSULTANT expects to be reimbursed. Such books and records will be available at all reasonable times for examination and audit by CITY and shall be kept for a period of ten (10) years after the completion of all work to be performed pursuant to this Agreement. Incomplete or incorrect entries in such books and records will be grounds for disallowance by CITY of any fees or expenses based upon such entries. All records shall be maintained and available for disclosure, as appropriate, in accordance with Chapter 119, Florida Statutes.

25.4 **Assignments; Amendments**. This Agreement, and any interests herein, shall not be assigned, transferred or otherwise encumbered, under any circumstances, by CONSULTANT without the prior written consent of CITY. For purposes of this Agreement, any change of ownership of CONSULTANT shall constitute an assignment which requires CITY approval. However, this Agreement shall run to the benefit of CITY and its successors and assigns.

It is further agreed that no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity herewith.

25.5 **No Contingent Fees**. CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for CONSULTANT to solicit or secure this Agreement, and that it has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for CONSULTANT any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the award or making of this Agreement. For the breach or violation of this provision, CITY shall have the right to terminate the Agreement without liability at its discretion, to deduct from the contract price, or otherwise recover the full amount of such fee, commission, percentage, gift or consideration.

25.6 **Notice**. Whenever any party desires to give notice unto any other party, it must be given by written notice, sent by certified United States mail, with return receipt requested, addressed to the party for whom it is intended and the remaining party, at the places last specified, and the places for giving of notice shall remain such until they shall have been changed by written notice in compliance with the provisions of this section. For the present, CONSULTANT and CITY designate the following as the respective places for giving of notice:

CITY
Charles F. Dodge, City Manager
City of Pembroke Pines
601 City Center Way, 4th Floor
Pembroke Pines, Florida 33025
Telephone No. (954) 450-1040

Copy To:
Samuel S. Goren, City Attorney
Goren, Cherof, Doody & Ezrol, P.A.
3099 East Commercial Boulevard, Suite 200
Fort Lauderdale, Florida 33308
Telephone No. (954) 771-4500
Facsimile No. (954) 771-4923

CONSULTANT **Primary Contact Name, Primary Contact Title**
CONTRACTOR/CONSULTANT... NAME (Example)
Contractor Street Address,
City, State Zip Code
E-mail: **e-mail@emailaddress.com**
Telephone No: **(000) 000-0000**
Cell phone No: **(000) 000-0000**
Facsimile No:

25.7 **Binding Authority**. Each person signing this Agreement on behalf of either party individually warrants that he or she has full legal power to execute this Agreement on behalf of the party for whom he or she is signing, and to bind and obligate such party with respect to all provisions contained in this Agreement.

25.8 **Headings.** Headings herein are for convenience of reference only and shall not be considered on any interpretation of this Agreement.

25.9 **Exhibits**. Each exhibit referred to in this Agreement forms an essential part of this Agreement. The exhibits if not physically attached should be treated as part of this Agreement and are incorporated herein by reference.

25.10 **Severability**. If any provision of this Agreement or application thereof to any person or situation shall to any extent, be held invalid or unenforceable, the remainder of this Agreement, and the application of such provisions to persons or situations other than those as to which it shall have been held invalid or unenforceable shall not be affected thereby, and shall continue in full force and effect, and be enforced to the fullest extent permitted by law.

25.11 **Extent of Agreement and Conflicts**. This Agreement represents the entire and integrated agreement between CITY and CONSULTANT and supersedes all prior negotiations, representations or agreements, either written or oral. In the event of a conflict between this Agreement, **Exhibit "A"**, and **Exhibit "B"**, this Agreement shall govern, then **Exhibit "A"**, and then **Exhibit "B"**.

25.12 **Waiver**. Failure of CITY to insist upon strict performance of any provision or condition of this Agreement, or to execute any right therein contained, shall not be construed as a waiver or relinquishment for the future of any such provision, condition, or right, but the same shall remain in full force and effect.

25.13 **Attorneys' Fees**. In the event that either party brings suit for enforcement of this Agreement, each party shall bear its own attorney's fees and court costs, except as otherwise provided under the indemnification provisions set forth herein above.

25.14 **Protection of CITY Property**. At all times during the performance of this Agreement, CONSULTANT shall protect CITY's property from all damage whatsoever on account of the work being carried on under this Agreement.

25.15 **Counterparts and Execution**. This Agreement may be executed by hand or electronically

in multiple originals or counterparts, each of which shall be deemed to be an original and together shall constitute one and the same agreement. Execution and delivery of this Agreement by the Parties shall be legally binding, valid and effective upon delivery of the executed documents to the other party through facsimile transmission, email, or other electronic delivery.

25.16 **No Waiver of Sovereign Immunity**. Nothing contained herein is intended nor shall be construed to waive the CITY's rights and immunities under the common law of Section 768.28, Florida Statutes, as may be amended from time to time.

25.17 **No Third Party Beneficiaries**. The services to be performed by the CONSULTANT are intended solely for the benefit of the CITY. No person or entity not a signatory to this Agreement shall be entitled to rely on the CONSULTANT's performance of its services hereunder, and no right to assert a claim against the CONSULTANT by assignment of indemnity rights or otherwise shall accrue to a third party as a result of this Agreement or the performance of the CONSULTANT's services hereunder.

25.18 **Human Trafficking**. Pursuant to Section 787.06(13), Fla. Stat., nongovernmental agencies contracting with CITY are required to provide an affidavit attesting that the nongovernmental agency does not use coercion for labor or services as defined within Section 787.06, Fla. Stat. By executing this Agreement and submitting the executed required affidavit, the CONSULTANT represents and warrants that it does not use coercion for labor or services as provided by state law.

25.19 **Discriminatory Vendor List**. Pursuant to Section 287.134(2)(a), Fla. Stat., an entity or affiliate, as defined in Section 287.134(1), who has been placed on the discriminatory vendor list may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor or consultant under a contract with any public entity; and may not transact business with any public entity. By executing this Agreement, the COLLEGE represents and warrants that neither it nor any of its affiliates is currently on the discriminatory vendor list.

25.20 **Antitrust Violations**. Pursuant to Section 287.137, Florida Statutes, as may be amended, a person or an affiliate who has been placed on the antitrust violator vendor list (electronically published and updated quarterly by the State of Florida) following a conviction or being held civilly liable for an antitrust violation may not submit a bid, proposal, or reply for any new contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply for a new contract with a public entity for the construction or repair of a public building or public work; may not submit a bid, proposal, or reply on new leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a new contract with a public entity; and may not transact new business with a public entity. By entering into this Agreement, CONSULTANT certifies neither it nor its affiliate(s) are on the antitrust violator vendor list at the time of entering this Agreement. False certification under this paragraph or being subsequently added to that list will result in termination of this Agreement, at the option of the CITY consistent with Section 287.137, Florida Statutes, as amended.

25.21 **Public Entity Crimes**. Pursuant to Section 287.133(2)(a), Fla. Stat., a person or affiliate, as defined in Section 287.1 33(1), Fla. Stat., who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor or consultant under a contract with any public entity; and may not transact business with any public entity in excess of thirty-five thousand dollars ($35,000.00) for a period of thirty-six (36) months following the date of being placed on the convicted vendor list. By executing this Agreement, the CONSULTANT represents and warrants that neither it nor any of its affiliates is currently on the convicted vendor list.

25.22 PURSUANT TO SECTION 558.0035, FLORIDA STATUTES, AN INDIVIDUAL EMPLOYEE OR AGENT OF THE CONSULTANT MAY NOT BE HELD INDIVIDUALLY LIABLE FOR ECONOMIC DAMAGES RESULTING FROM NEGLIGENCE UNDER THIS AGREEMENT IF THE CONDITIONS OF SECTION 558.0035, FLORIDA STATUTES, AS AMENDED FROM TIME TO TIME, ARE SATISFIED.

25.23 **Compliance with Statutes**. It shall be the CONSULTANT's responsibility to be aware of and comply with all statutes, ordinances, rules, orders, regulations and requirements of all local, City, state, and federal agencies as applicable; **specifically the Jessica Lunsford Act – Chapter 1012, Florida Statutes, which provides for the screening of individuals who are vendors or contractors with a Florida public school or district**.

25.24 **Additional Background Screening Requirements**. In addition, to any other background screening requirements that may be required in this Agreement and/or by statutes, ordinances, rules, orders, regulations and requirements of all local, City, state, and federal agencies, the CONSULTANT shall ensure that all employees that are proving services to the CITY, shall complete and pass a **Level II background check**.

25.25 **Compliance with Foreign Entity Laws**. CONTRACTOR ("Entity") hereby attests under penalty of perjury the following:

25.25.1 Entity is not owned by the government of a foreign country of concern as defined in Section 287.138, Florida Statutes. (Source: § 287.138(2)(a), Florida Statutes);

25.25.2 The government of a foreign country of concern does not have a controlling interest in Entity. (Source: § 287.138(2)(b), Florida Statutes);

25.25.3 Entity is not owned or controlled by the government of a foreign country of concern, as defined in Section 692.201, Florida Statutes. (Source: § 288.007(2), Florida Statutes);

25.25.4 Entity is not a partnership, association, corporation, organization, or other combination of persons organized under the laws of or having its principal place of business in a foreign country of concern, as defined in Section 692.201, Florida Statutes, or a subsidiary of such entity. (Source: § 288.007(2), Florida Statutes);

25.25.5 Entity is not a foreign principal, as defined in Section 692.201, Florida Statutes. (Source: § 692.202(5)(a)(1), Florida Statutes); and,

25.25.6 Entity is in compliance with all applicable requirements of Sections 692.202, 692.203, and 692.204, Florida Statutes.

SIGNATURE PAGE AND
AFFIDAVIT OF COMPLIANCE WITH
HUMAN TRAFFICKING LAWS FOLLOW

IN WITNESS OF THE FOREGOING, the Parties have set their hands and seals the day and year first written above.

CITY:

CITY OF PEMBROKE PINES, FLORIDA

APPROVED AS TO FORM:

_____ BY: _____

Print Name: _____ MAYOR ANGELO CASTILLO
OFFICE OF THE CITY ATTORNEY

ATTEST: BY: _____

_____ CHARLES F. DODGE, CITY MANAGER

DEBRA E. ROGERS, CITY CLERK

CONSULTANT:

CONTRACTOR/CONSULTANT... NAME (Example)

Signed By: _____

Printed Name: _____

Title: _____

AFFIDAVIT OF COMPLIANCE WITH HUMAN TRAFFICKING LAWS

In accordance with section 787.06 (13), Florida Statutes, the undersigned, on behalf of the entity listed below ("Entity"), hereby attests under penalty of perjury that:

1. The Affiant is an officer or representative of the Entity entering into an agreement with the City of Pembroke Pines.

2. The Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes, entitled "Human Trafficking".

3. The Affiant is authorized to execute this Affidavit on behalf of the Entity.

4. I understand that I am swearing or affirming under oath to the truthfulness of the claims made in this affidavit and that the punishment for knowingly making a false statement includes fines and/or imprisonment.

5. Pursuant to Sec. 92.525(2), Fla. Stat., under penalties of perjury, I declare that I have read the foregoing affidavit of compliance with Human Trafficking Laws and that the facts stated in it are true.

FURTHER AFFIANT SAYETH NAUGHT.

DATE:_____

ENTITY: **CONTRACTOR/CONSULTANT... NAME (Example)**

SIGNED BY:_____

NAME:_____

TITLE:_____

Utilities Department Water Treatment Plant

TECHNICAL MEMORANDUM

PFAS Treatment Feasibility Evaluation

March 2025 / Final (Revised March 20, 2025)

carollo

Utilities Department Water Treatment Plant

TECHNICAL MEMORANDUM

PFAS Treatment Feasibility Evaluation

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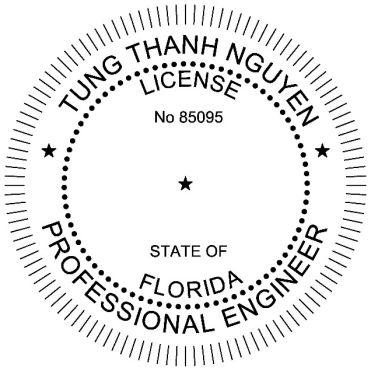


This item has been digitally signed and sealed by Tung Thanh Nguyen on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

2728 NORTH UNIVERSITY DRIVE, BUILDING 2700 ▪ CORAL SPRINGS, FLORIDA 33065 ▪ P 954-837-0030

Contents

Appendices

Tables

Figures

Abbreviations

AACE	AACE International
$CaCO_3$	calcium carbonate
Carollo	Carollo Engineers
City	City of Pembroke Pines
CU	color units
DIW	deep injection well
DOM	dissolved organic matter
EBCT	empty bed contact time
FIX	fixed-bed ion exchange
FS200	Fluoro-Sorb 200
FTS	fluorotelomer sulfonate
GAC	granular activated carbon
gpm	gallons per minute
HBWC	health-based water concentration
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid
HI	Hazard Index
HLR	hydraulic loading rate
IX	ion exchange
MCLs	maximum contaminant level
MCLGs	maximum contaminant level goals
MDL	method detection limit
MG	million gallons
mgd	million gallons per day
mg/L	milligrams per liter
mL/min	milliliters per minute
MRL	method reporting limit
ng/L	nanograms per liter
NF	nanofiltration
NPDWR	National Primary Drinking Water Regulations
NPV	net present value
O&M	operations and maintenance
PFAS	per- and polyfluoroalkyl substance
PFBA	perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFCAs	perfluoroalkyl carboxylic acids
PFD	process flow diagram
PFDA	perfluorodecanoic acid
PFHpA	perfluoroheptanoic acid

PFHpS	perfluoroheptane sulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexane sulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid
PFPeA	perfluoropentanoic acid
PFPeS	perfluoropentanesulfonic acid
PFSAs	perfluoroalkyl sulfonic acids
psi	pounds per square inch
RAA	running annual average
RCRA	Resource Conservation and Recovery Act
RO	reverse osmosis
RSSCT	Rapid Small-Scale Column Test
SFWMD	South Florida Water Management District
SU	standard units
T&O	taste and odor
TOC	total organic carbon
UCMR5	Unregulated Contaminant Monitoring Rule
USEPA	United States Environmental Protection Agency
Water ARC®	Carollo's Water Applied Research Center
WTP	water treatment plant
WUP	Water Use Permit

EXECUTIVE SUMMARY

ES.1 Overview

The City of Pembroke Pines (City) requested Carollo Engineers (Carollo) to provide a feasibility evaluation and economics analysis study for treatment of per- and polyfluoroalkyl substance (PFAS) at the City's Water Treatment Plant (WTP). The study's overarching goal is to identify the most cost-effective treatment approach to address PFAS contamination in the City's groundwater supply and help the City comply with the upcoming National Primary Drinking Water Regulations (NPDWR) for PFAS that are being promulgated by the US Environmental Protection Agency (USEPA).

The USEPA is requiring that public water systems meet these new regulatory requirements by April 26, 2029. In addition, compliance monitoring and public notification will start as soon as April 26, 2027. This means that the City will be required to report PFAS levels in its annual Consumer Confidence Reports (CCRs).

For this evaluation, a range of treatment alternatives, including granular activated carbon (GAC), single-reuse ion exchange (IX) resin, a novel PFAS-specific adsorbent, and high-pressure membranes, such as nanofiltration (NF) or reverse osmosis (RO) were evaluated. Conceptual designs and cost estimates were then developed to identify the most cost-effective alternative while also meeting the City's water quality and operation goals.

The recommended treatment alternative is to expand the existing City WTP's regenerable fixed-bed ion exchange (FIX) system to provide for more total organic carbon (TOC) removal and to add a PFAS treatment process, consisting of 10 lead-lag trains of IX pressure vessels. The estimated capital cost for the regenerable FIX system expansion and the addition of a PFAS treatment facility using IX resin is $54.5 million dollars. This is the least costly alternative of the four treatment options considered. NF or RO was not recommended due to the high capital and operating costs, concerns with the potential variability of treatment performance, and South Florida Water Management District (SFWMD) withdrawal permitting issues that will be discussed further in the study.

In order to meet EPA's compliance deadline, the City should proceed without delay in the procurement, design, and construction process of the treatment enhancements to its WTP. A detailed schedule is discussed further in the study.

Note: The costs shown in this study reflect an accuracy range from (-30 percent to +50 percent) in accordance with AACE. The applicable cost level classification for this evaluation was selected as a Class 4 Estimate, which reflects an order of magnitude estimate and is customarily used for screening and preliminary budget allocations before a detailed design is developed. Refer to Section 6, Cost Estimates for details.

SECTION 1 INTRODUCTION

The overarching goal of this study is to provide the required analysis and information for the City to make a sound decision on a treatment approach that will meet the City's water quality and operation goals to comply with the upcoming NPDWR for PFAS.

1.1 Project Objectives

The key objectives of this feasibility study were to:

- Determine the extent of PFAS treatment needed to meet the compliance requirements.
- Identify the most appropriate and cost-effective treatment and pretreatment approach to meet the City's water quality and operation goals.
- Define the next steps in the implementation of the selected PFAS treatment process through conceptual system design.
- Conduct life-cycle cost analysis to inform PFAS treatment economics at the City's WTP.

1.2 Background

1.2.1 Pembroke Pines Water Treatment Plant

The City owns and operates the Pembroke Pines WTP, which consists of lime softening, granular media filtration, side-stream regenerable FIX, disinfection, and finished water storage. A process flow diagram (PFD) of the existing treatment train is shown in Figure 1.1. An aerial view of the WTP and the main facilities is shown in Figure 1.2. The WTP's rated treatment capacity is 18 million gallons per day (mgd). The Water Use Permit (WUP) No. 06-00135-W issued by the South Florida Water Management District (SFWMD) permits the City an average Biscayne Aquifer groundwater allocation of 15.6 mgd, of which, 3.12 mgd is for the Central Wellfield and 12.48 mgd is for the Eastern Wellfield. In this study, the assumed design capacity for the PFAS treatment process is 18 mgd so as to match the current WTP capacity rating.

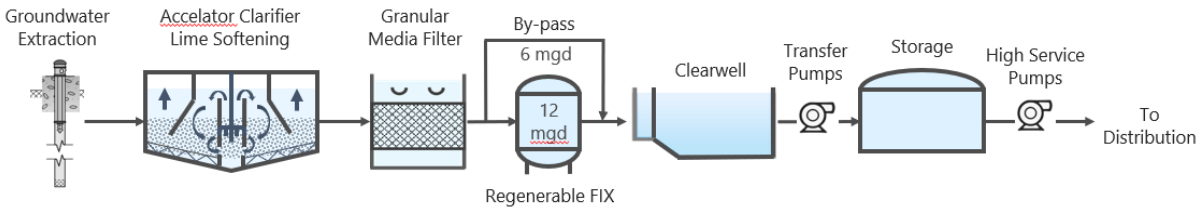


Figure 1.1 PFD of the Existing Treatment Train at the City's WTP

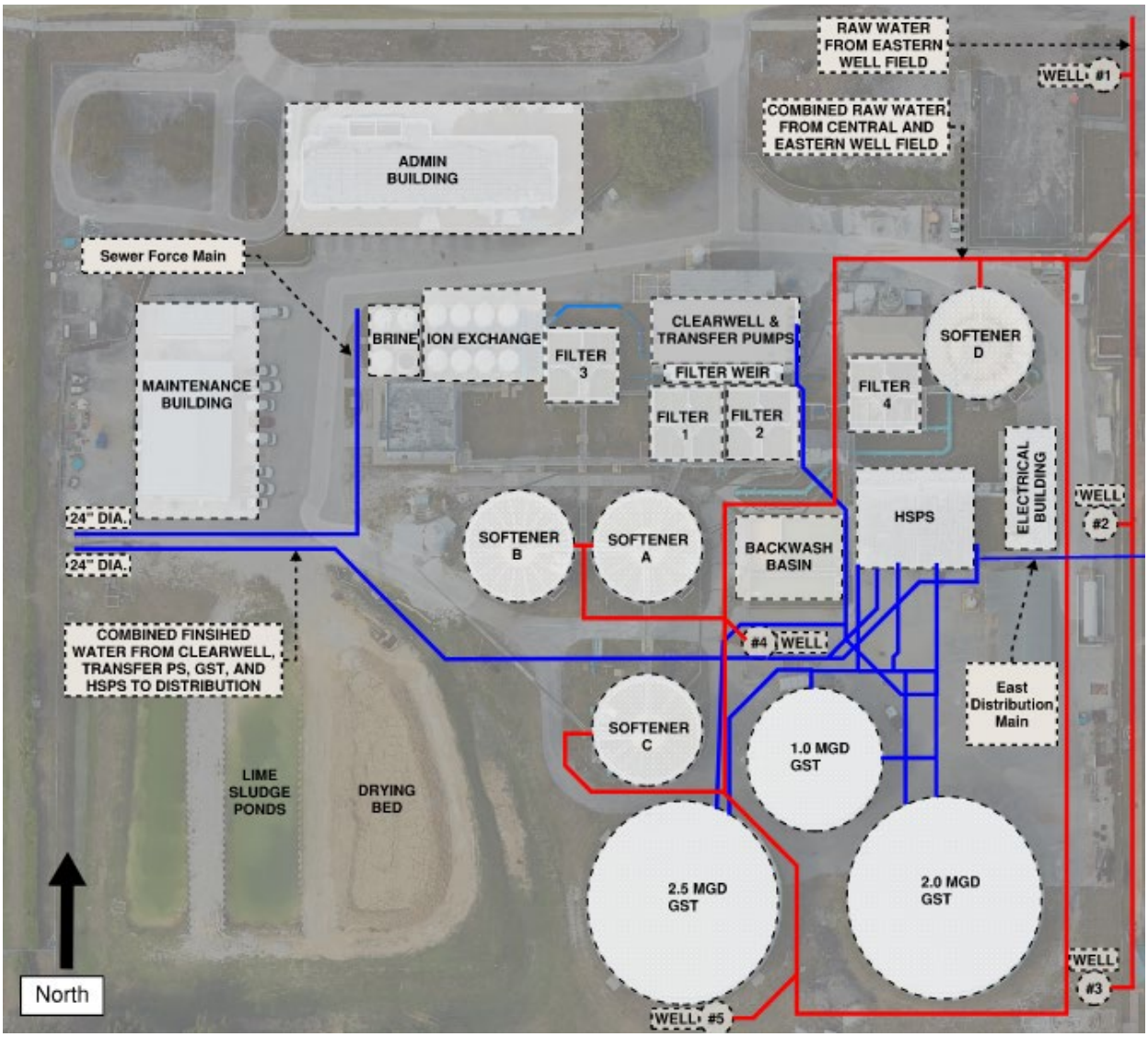


Figure 1.2 Aerial View of the City's WTP and Main Treatment Facilities

1.2.1.1 Raw Water System Overview

The WTP obtains its groundwater supply from two wellfields. The Eastern Wellfield is located about one mile east of the WTP and consists of four wells, while the Central Wellfield is located onsite at the WTP and consists of five wells. According to the SFWMD WUP, all nine wells are equipped with vertical turbine pumps, and the pumping capacities are as listed in Table 1.1.

Table 1.1 Summary of Raw Groundwater Extraction Wells and Pumping Capacities for the East and Central Wellfields

Wellfield	Well No.	Well Diameter (inch)	Well Depth (feet)	Pump Capacity (gpm)	Rated Total Dynamic Head (feet)
Central	1	12	112.5	2,000	45
	2	12	112	1,000	32
	3	12	111	525	58
	4	16	144	2,100	43
	5	16	115	2,350	57
East	6	10	94	1,580	52
	9	18	125	3,000	60
	10	18	123	2,800	60
	11	18	125	2,800	60

Notes:
gpm - gallons per minute

1.2.1.2 Regenerable Fixed-Bed Ion Exchange System Overview

Dissolved organic matter (DOM), often characterized by TOC or dissolved organic carbon, can negatively impact PFAS treatability of adsorption processes, such as GAC and IX resin. Historically, the City's WTP has been challenged with color from DOM present in the groundwater supply. As a result, a regenerable FIX system was implemented at the WTP for color (i.e., DOM or TOC) removal following conventional lime softening and granular media filtration.

The regenerable FIX system is located downstream of the granular media filters and consists of eight 12-foot diameter pressure vessels. The FIX system is divided into two treatment trains. Each train consists of four treatment units (i.e., pressure vessels) and three dedicated feed pumps. The feed water for the regenerable FIX system primarily comes from filter No. 3. However, system piping allows for effluent from any filters to feed the regenerable FIX system. A schematic of the flow configurations among the filters, the regenerable FIX system, and the clearwell is depicted in Figure 1.3. The regenerable FIX system design criteria are summarized in Table 1.2.

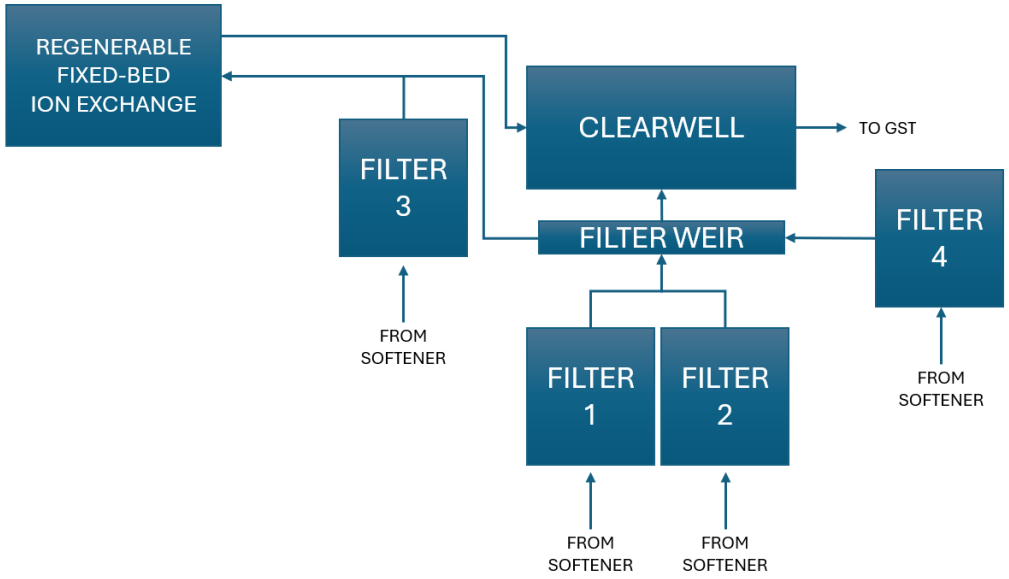


Figure 1.3 Flow Configurations Among Granular Media Filters, Regenerable FIX System, and the Clearwell at the WTP

Table 1.2 Critical Design Criteria for the Existing Regenerable FIX System

Parameter	Units	Value
Number of Treatment Trains	-	2
Number of Pressure Vessels per Treatment Train	-	4
Total Number of Pressure Vessels	-	8
Design Treatment Capacity	mgd	12
Design Treatment Flow per Vessel	mgd	1.5
Vessel Internal Diameter	feet	12
HLR at Design Flow	gpm/square feet	9.2
Resin Type	-	Type I Strong Base Anion Exchange
Resin Volume per Vessel	cubic feet	424
EBCT at Design Flow	minute	3.0
Resin Bed Depth	feet	3.75
Design Regeneration Waste Volume per Vessel	gallons/regeneration	20,300
Design Backwash Flow Rate	gpm	340
Design Slow Rinse Flow Rate	gpm	107
Design Fast Rinse Flow Rate	gpm	1,050
Design Salt Usage per Regeneration Cycle	pounds	4,200

Notes:
EBCT - empty bed contact time; HLR - hydraulic loading rate

For color or TOC removal, the spent FIX resin needs to be regenerated once the target effluent color or TOC concentration is reached. Alternatively, spent resin is regenerated based on system throughput or the total volume of water treated between two regeneration cycles. According to the resin analysis performed by Kurita® in February 2024, the existing strong base anion exchange resin was moderately fouled by DOM, and only 68 percent total resin capacity remained. Due to concerns about resin fouling and potential deterioration in resin performance, each vessel is currently scheduled to regenerate after a system throughput of 8 million gallons (MG) of water treated. This regeneration frequency is greater than the initial throughput (i.e., 10 MG) recommended by the resin manufacturer, aiming at maintaining the performance of the FIX system and the treated water quality. In addition to regenerating the resin at a higher frequency, the City also performed a "caustic squeeze" in August 2024, which is a cleaning procedure with a more aggressive regenerant chemical (i.e., sodium hydroxide) to restore the resin capacity lost from organic fouling. Follow-up resin analysis performed by Kurita® in December 2024 indicated a slight increase in total resin capacity but is expected to continue to degrade. Although the resin capacity was not fully restored, the treatment performance remains acceptable. Therefore, continued performance monitoring, subsequent cleaning when required, and proactive planning for resin replacement are recommended. A phased schedule for resin replacement (e.g., replace resin in one to two vessels at a time) are recommended as the resin approaches its typical life expectancy (i.e., 10 years).

1.2.2 PFAS

1.2.2.1 Background

PFAS constitute a large family of manufactured chemicals that have been used in a wide range of consumer, commercial, and industrial products such as nonstick cookware, waterproof clothing, and firefighting foams since the 1940s. PFAS are chemically, biologically, and thermally stable and can accumulate in humans, animals, and the environment over time. Today, PFAS are ubiquitous in every stage of the water cycle at trace concentrations (i.e., parts per trillion or nanograms per liter [ng/L]). Exposure to PFAS can result in adverse health outcomes, such as developmental effects, cancer, liver effects, immune effects, and thyroid effects, among others.

1.2.2.2 National Primary Drinking Water Regulations for PFAS

In April 2024, the United States Environmental Protection Agency (USEPA) announced the NPDWRs for six PFAS. Table 1.3 lists the finalized MCLs and maximum contaminant level goals (MCLG) for individual PFAS.

Table 1.3 National Primary Drinking Water Regulation for Six PFAS

Compound	MCL (Enforceable Levels)	MCLG (Health-Based, Non-Enforceable Levels)
PFOS	4.0 ng/L (1)	Zero
PFOA	4.0 ng/L	Zero
PFHxS	10 ng/L	10 ng/L
PFNA	10 ng/L	10 ng/L
HFPO-DA (commonly referred to as GenX chemicals)	10 ng/L	10 ng/L
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1.0 (unitless) HI	1.0 (unitless) HI

Notes:
HFPO-DA - hexafluoropropylene oxide dimer acid; HI - hazard index; PFBS - perfluorobutanesulfonic acid; PFHxS - perfluorohexane sulfonic acid; PFNA - perfluorononanoic acid; PFOA - perfluorooctanoic acid; PFOS - perfluorooctane sulfonic acid
(1) All MCL compliance will be determined based on running annual average (RAA) concentrations from quarterly sampling.

The HI is calculated as a sum of fractions of the measured concentration of each of the four PFAS divided by its corresponding health reference value (i.e., health-based water concentration, [HBWC]), as shown in the following equation.

$$HI = \frac{[PFBS]}{2{,}000\ ng/L} + \frac{[PFHxS]}{10\ ng/L} + \frac{[PFNA]}{10\ ng/L} + \frac{[HFPO\text{-}DA]}{10\ ng/L}$$

In addition, the final rule requires public water systems to monitor these PFAS, notify the public of their levels in drinking water by April 26, 2027, and comply with the MCLs by April 26, 2029.

1.2.3 Existing Water Supply Assessment

1.2.3.1 South Florida Water Management Water Use Permit

The WTP water supply is permitted under WUP No. 06-00135-W issued by the SFWMD in 2010 with an annual groundwater allocation of 5,696 MG, or an average of 15.6 mgd from the Biscayne Aquifer. The permit specifies the following key withdrawal limitations and will expire on August 18, 2030:

- Maximum annual withdrawal of 1,139 MG (3.12 mgd) from the Central Wellfield (on-site).
- Maximum monthly withdrawal of 103.29 MG (0.28 mgd) from the Central Wellfield (on-site).
- Maximum annual withdrawal of 4,556 MG (12.48 mgd) from the East Wellfield (off-site).
- Maximum monthly withdrawal of 413.16 MG (1.13 mgd) from the East Wellfield (off-site).

According to the City of Pembroke Pines Utilities Comprehensive Master Plan (Jacobs, 2023), records of daily raw and treated water flows between 2015 and 2020 showed an average finished water production rate of 13.4 mgd, which is below the current groundwater allocation of 15.6 mgd. In addition, the most recent maximum day demand was recorded at 16.42 mgd, which is below the plant's rated capacity of 18 mgd. However, if a high-pressure membrane-based technology is implemented, such as NF (with typical 85 percent recovery), the raw water supply required would have to be increased to 21.2 mgd. This conversion would affect the City's capability to stay within the current groundwater allocation without considering an increase to the current withdrawal permit, alternative water supplies, such as aquifer storage and recharge, increased water conservation measures, or reuse.

SECTION 2 WATER QUALITY ASSESSMENT

2.1 Raw Water Quality

The historical raw water quality data are reported in this section to document the key characteristics of the source water as they relate to the current finished water quality goals and how these will impact future PFAS treatment performance. Table 2.1 summarizes the concentration distributions for pH, alkalinity, calcium hardness, magnesium hardness, total hardness, iron, and color in the raw groundwater supply.

Table 2.1 Summary of Historical Raw Groundwater Quality

Parameter	Units	5th Percentile	Median, or 50th Percentile	95th Percentile
pH	SU	7.1	7.5	7.8
Calcium Hardness	mg/L as $CaCO_3$	175	208	245
Magnesium Hardness	mg/L as $CaCO_3$	8	24	59
Total Hardness	mg/L as $CaCO_3$	207	232	270
Alkalinity	mg/L as $CaCO_3$	179	209	256
Iron	mg/L	0.77	0.97	1.3
Apparent Color	CU	40	51	66

Notes:
$CaCO_3$ - calcium carbonate; CU - color units; mg/L - milligrams per liter; SU - standard units

PFAS occurrence in the raw groundwater supply was characterized once for individual wells on October 17, 2023. Table 2.2 summarizes the PFAS sampling results for each groundwater well from the October 2023 sampling event. Among the six regulated PFAS, PFOA and PFOS were found at concentrations exceeding their respective MCLs of 4.0 ng/L. Therefore, a treatment process is required for the City to comply with the upcoming NPDWR for PFAS.

Table 2.2 PFAS Sampling Results for Individual Wells From the October 2023 Sampling Event

PFAS	Units	Raw Groundwater Wells								
		PW-1	PW-2	PW-3	PW-4	PW-5	PW-6	PW-9	PW-10	PW-11
PFBA	ng/L	9	5.4	4.1	8.3	7.7	14	18	11	17
PFPeA	ng/L	16	9.2	8.1	16	15	22	45	18	40
PFHxA	ng/L	12	7.1	6.3	11	11	13	35	13	28
PFHpA	ng/L	6.1	4.1	3.3	6.1	5.8	6	14	7.1	14
PFOA	**ng/L**	**11**	**8**	**6**	**8.7**	**9.6**	**15**	**12**	**15**	**16**
PFNA	**ng/L**	**1.7**	**1.6 J**	**1.6**	**1.8**	**1.7**	**3.4**	**2.8**	**2.9**	**3**
PFDA	ng/L	1.0 J (1)	<1.7 (2)	<1.6	<1.7	<1.6	2.3	1.2 J	1.6 J	1.3 J
PFBS	**ng/L**	**6.8**	**3.6**	**2.7**	**8.1**	**6.6**	**16**	**11**	**14**	**12**
PFPeS	ng/L	<1.7	<1.7	<1.6	<1.7	<1.6	<1.7	<1.7	<1.7	0.98 J
PFHxS	**ng/L**	**6.8**	**4.3**	**3.6**	**7.4**	**6.2**	**5.4**	**6.2**	**8.1**	**8.3**

PFAS	Units	Raw Groundwater Wells								
		PW-1	PW-2	PW-3	PW-4	PW-5	PW-6	PW-9	PW-10	PW-11
PFHpS	ng/L	<1.7	<1.7	<1.6	<1.7	<1.6	<1.7	<1.7	1.0 J	0.88 J
PFOS	ng/L	32	23	21	34	29	61	37	64	53
6:2 FTS	ng/L	9.5	7.3	10	4.4	11	<4.2	77	2.4 J	64
8:2 FTS	ng/L	<1.7	<1.7	<1.6	<1.7	1.1 J	<1.7	7.8	<1.7	6.2

Notes:
FTS - fluorotelomer sulfonate; PFBA - perfluorobutanoic acid; PFDA - perfluorodecanoic acid; PFHpA - perfluoroheptanoic acid; PFHpS - perfluoroheptane sulfonic acid; PFHxA - perfluorohexanoic acid; PFPeA - perfluoropentanoic acid; PFPeS - perfluoropentanesulfonic acid

(1) A J-flagged value, indicating an estimated concentration above the laboratory method detection limit (MDL) but below the method reporting limit (MRL).
(2) Values with "<" represent less than the MRL for a specific PFAS.
(3) Regulated PFAS are highlighted in bold, with HFPO-DA or GenX not shown because it was not detected in any of the raw groundwater wells.

2.2 Finished Water Quality

As the PFAS treatment process is typically integrated at the end of a treatment train, preceding disinfection and finished water storage, the finished water quality can be considered as representative of the feed water quality for the required PFAS treatment process. Historical finished water quality is listed below in Table 2.3.

Table 2.3 Summary of Historical Finished Water Quality for the City's WTP

Parameter	Units	5th Percentile	Median or 50th Percentile	95th Percentile
pH	SU	8.5	9.0	9.7
Calcium Hardness	mg/L as $CaCO_3$	53	69	90
Total Hardness	mg/L as $CaCO_3$	64	79	100
Alkalinity	mg/L as $CaCO_3$	30	46	70
Iron	mg/L	0.01	0.06	0.21
Apparent Color	CU	2	8	18
Total Chlorine	mg/L as chlorine	3.2	3.9	4.5
Turbidity	nephelometric turbidity unit	0.09	0.24	0.84

Regarding PFAS, two finished water samples were collected and analyzed in March and September 2023 as part of the fifth Unregulated Contaminant Monitoring Rule (UCMR5) requirements. Detectable PFAS results from the two UCMR5 sampling events are summarized in Table 2.4. Although no paired raw and finished water samples have been collected and analyzed for PFAS, their concentrations were generally comparable between the raw groundwater and the finished water from different sampling events, indicating no significant PFAS removal by the existing treatment processes at the WTP.

Based on the available PFAS occurrence data, PFOA and PFOS are the driving PFAS elements in the City's groundwater supply, requiring approximately 70 percent and 90 percent removal to meet their respective MCLs. Given the high levels of PFAS removal required, the treatment for the entire WTP flow is required and a blended approach where only part of the flow is treated is not adequate to meet the finished water PFAS goals.

Table 2.4 Summary of UCMR5 Finished Water PFAS Sampling Results

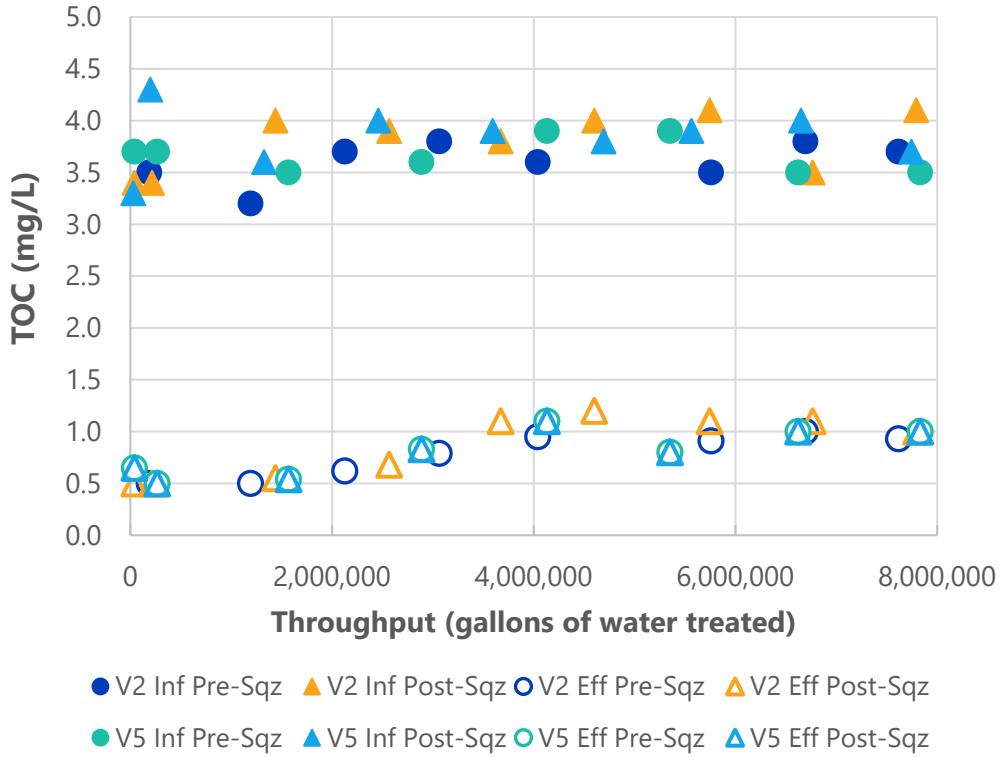
PFAS	Units	Sampling Date	Result	MCL
PFBA	ng/L	3/17/2023	12.2	-
	ng/L	9/12/2023	9.2	
PFBS	ng/L	3/17/2023	9.8	-
	ng/L	9/12/2023	7.1	
PFPeA	ng/L	3/17/2023	23.9	-
	ng/L	9/12/2023	17.7	
PFHxA	ng/L	3/17/2023	18.4	-
	ng/L	9/12/2023	13.4	
PFHxS	ng/L	3/17/2023	9.1	10
	ng/L	9/12/2023	6.1	
PFHpA	ng/L	3/17/2023	10.0	-
	ng/L	9/12/2023	6.7	
PFOA	ng/L	3/17/2023	14.4	4.0
	ng/L	9/12/2023	10.2	
PFOS	ng/L	3/17/2023	34.7	4.0
	ng/L	9/12/2023	23.3	
6:2 FTS	ng/L	3/17/2023	39.1	-
	ng/L	9/12/2023	28.0	

2.3 Total Organic Carbon Treatment Performance by the Existing Regenerable Fixed-Bed Ion Exchange System

The design capacity for the regenerable FIX system is 12 mgd, which is two-thirds of the WTP's rated treatment capacity (i.e., 18 mgd). Treated effluent from the regenerable FIX system and bypass flow from the filters are blended at an approximate ratio of 2:1 in the clearwell for final disinfection.

In addition to regenerating the spent resin at a higher frequency, targeting a system throughput of 8 MG, the City performed a "caustic squeeze" in August 2024, which is a cleaning procedure to restore the resin capacity from organic fouling. As part of this study, Carollo systematically evaluated the TOC treatment performance of the regenerable FIX system before and after the caustic squeeze to determine the effectiveness of this cleaning procedure.

Carollo sampled TOC in the FIX system feed and in Vessels 2 and 5 effluents on a daily basis between two regeneration cycles as well as before and after caustic squeeze. The resulting TOC sampling data are listed in Figure 2.1. The results are used to determine if current resin generation frequency is optimal and if the fouled resin capacity is restored by a caustic squeeze.



Notes: Influent (solid symbols) and effluent (empty symbols) TOC concentrations for Vessel 2 (train 1) and Vessel 5 (train 2) before (circles) and after (triangles) caustic squeeze.

Figure 2.1 FIX Influent and Effluent TOC Concentrations as a Function of Throughput (Total Volume of Water Treated per Vessel) Before and After Caustic Squeeze

Key observations from the TOC characterization task are noted as follows:

- Results indicated that filter effluent (i.e., feed water for the two FIX treatment trains) TOC was stable, with an average TOC concentration of approximately 4 mg/L.
- Effluent TOC increased as a function of system throughput or total volume of water treated per vessel, ranging from 0.5 mg/L right after regeneration up to 1.0 mg/L at the end of the operation time (or after 8 MG of water treated by each vessel). This is consistent with typical regenerable FIX performance since it is a non-steady state treatment process.
- High TOC percent removal (i.e., 80 percent at the beginning of a new service cycle to 70 percent before the next regeneration cycle) was achieved despite the loss of resin capacity due to organic fouling. Subsequent resin testing by Kurita in December 2024, indicated a slight increase in resin capacity, however, this is expected to continue to degrade. Continued monitoring, cleaning, and phased replacement of resin is recommended.
- The post-caustic squeeze effluent TOC concentrations overlapped with those obtained before the resin cleaning procedure, which indicates that caustic squeeze had no impact on TOC treatment performance by the regenerable FIX system.

The level of TOC pretreatment attained by the existing regenerable FIX system makes the downstream PFAS treatment more viable and cost-effective. This will be discussed in detail in the following section.

SECTION 3 TREATMENT TECHNOLOGY EVALUATION

PFAS treatment technologies are rapidly evolving, and a variety of treatment technologies have been evaluated for PFAS treatment in drinking water. The conventional treatment processes commonly used for drinking water treatment, such as lime softening, granular media filtration, and chlorination, cannot effectively remove PFAS. Currently, only a few treatment technologies are mature enough and appropriate for full-scale drinking water treatment. However, novel or proprietary adsorbents have emerged in recent years and have demonstrated efficient PFAS removal. Advanced treatment processes that can effectively remove PFAS from drinking water include:

- GAC.
- IX resin.
- Novel adsorbent such as Fluoro-Sorb® 200 (FS200).
- High-pressure membranes (i.e., NF or RO).

Each of these technologies has its unique advantages and challenges for PFAS treatment, which are discussed in the following sections. It should be noted that the USEPA has only designated GAC, IX resin, and high-pressure membranes as best available technologies for PFAS treatment in drinking water.

3.1 Granular Activated Carbon

GAC is a porous material with a very high specific surface area that is effective for the adsorption of many dissolved contaminants. Studies and full-scale installations have shown GAC can effectively remove PFAS from drinking water. In general, GAC adsorbs PFOA, PFOS, and other long-chain PFAS better than shorter-chain PFAS. GAC also provides secondary benefits as a treatment barrier for other contaminants, such as disinfection byproduct precursors (i.e., TOC), taste and odor (T&O) compounds, and volatile organic compounds. GAC performance for PFAS treatment can vary widely depending on carbon type, EBCT, adsorber configuration (lead-lag vs. staged-parallel), influent PFAS concentration and speciation, and the presence of competing adsorbates such as TOC.

GAC can be installed in gravity contactors or pressure vessels. Typically, gravity contactors are better suited to large-scale systems (e.g., surface water treatment facilities) and when large pressure drops are undesirable because of their effect on existing plant hydraulics. Pressure vessels enclose the GAC and can be operated over a wide range of flow rates. Pressure vessels are modular and thus provide high operation flexibility, particularly for small-scale systems or applications where treatment flows are highly variable. The limiting factor is that vessel volumes are standardized, and large number of treatment units would be required as the treatment capacity increases. Lastly, gravity contactors or water retaining concrete structures are more complex to design and construct than pressure vessels and will take longer to implement.

While GAC is four to five times less expensive than IX resin on a unit volume basis, a longer EBCT is required (typically, 10 to 20 minutes) for post-filter GAC adsorbers, resulting in a larger system footprint and higher capital costs. GAC backwashing and rinsing are critical during system startup and in the period following GAC changeout to remove fines from the virgin or reactivated GAC. Additionally, arsenic can leach from bituminous coal-based GAC during startup, which can be addressed by sufficient backwashing or providing the facility with ability to waste initial adsorber effluent (i.e., filter-to-waste). Alternatively, pre-acid-rinsed or pre-conditioned GAC can be used to strip arsenic prior to GAC installation, but pre-treated GAC often has a higher unit cost than non-acid-rinsed or non-pretreated GAC.

PFAS treatment by GAC is a non-destructive process and will generate a treatment residual that contains PFAS. For this reason, GAC replacement requires proper disposal of the spent media. The hazardous classification of PFAS-laden spent media and its disposal requirements are uncertain. However, the current best practice is to utilize turnkey service providers (e.g., Calgon Carbon, Evoqua, Aqueous Vet, etc.) to haul away the spent GAC while supplying virgin GAC for replacement. The spent GAC is typically regenerated, reactivated, and then re-sold to non-potable users instead of being returned to the treatment facility for reuse. If PFAS-laden GAC is classified as hazardous waste under Resource Conservation and Recovery Act (RCRA), the spent GAC will need to be thermally regenerated and reactivated at a RCRA Subtitle C permitted hazardous GAC reactivation facility, resulting in an increase in long-term operations and maintenance (O&M) costs associated with GAC changeouts.

3.2 Ion Exchange

The IX treatment process typically consists of pressure vessels filled with IX resin that removes dissolved contaminants as water passes through the resin bed. Non-regenerable (or single-use) strong base anion exchange resin in the chloride form is commonly used for PFAS treatment. Contaminant removal occurs when the anionic contaminant, such as PFAS, exchanges with the chloride counter ion. PFAS removal by IX resin occurs through dual mechanisms, including classic "exchange" reactions and via PFAS adsorption to the resin beads. A visualization of the IX mechanism is presented in Figure 3.1. Depending on the presence of co-contaminants (e.g., TOC, nitrate, etc.), competition for adsorption sites can be observed, decreasing PFAS removal efficiency.

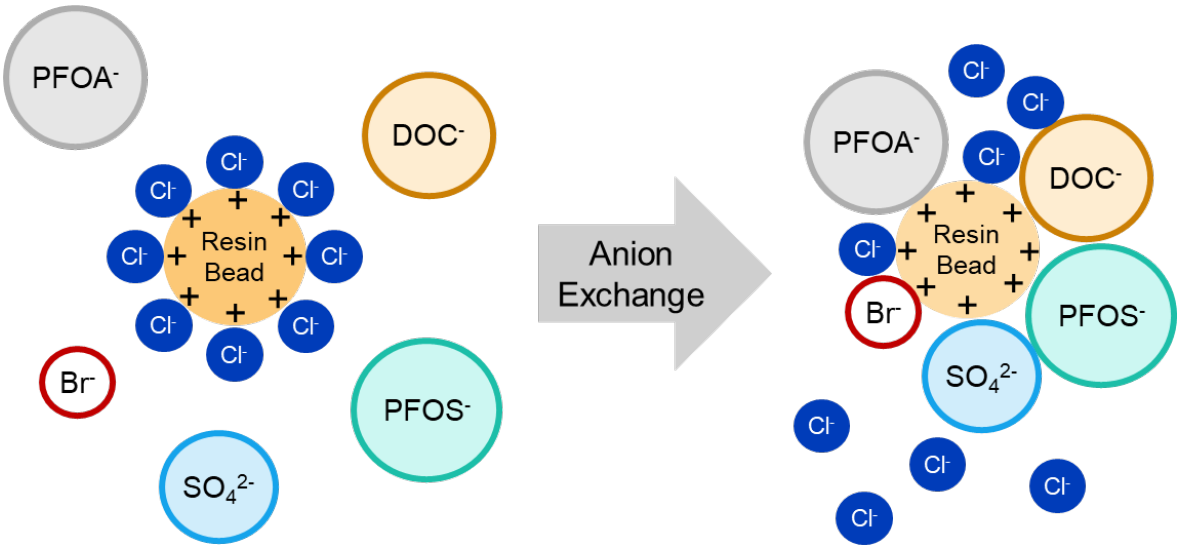


Figure 3.1 Visualization of PFOA, PFOS, and Other Anionic Contaminant Removal Through IX

While IX resin is four to five times the cost of GAC on a unit volume basis, shorter EBCT is required (typically, 2 to 3 minutes per vessel), resulting in fewer treatment units required, a smaller system footprint, and lower capital investments. However, PFAS-adsorbing IX resin does not remove other contaminants of concern and therefore does not provide secondary water quality benefits as GAC does.

It is noteworthy that IX resin is sensitive to chlorine and other oxidants, which can cause resin degradation before exhaustion. IX resin is also susceptible to solids fouling so the reliable removal of influent TOC is critical for this process.If present, residual chlorine will need to be quenched prior to the PFAS-adsorbing IX process to protect the resin from potential oxidation and degradation, like in the existing regenerable FIX system used for TOC removal.

Following exhaustion of the PFAS removal capacity, the spent single-use IX resin will also require proper disposal. The current best practice is to utilize turnkey service providers (e.g., Calgon Carbon, Evoqua, AqueoUS Vets, etc.) to haul away the spent resin while supplying virgin resin for replacement. The spent resin is typically incinerated at an RCRA Subtitle C permitted hazardous waste incineration facility instead of being landfilled, even though PFAS-laden IX resin has not been classified as hazardous water treatment residual under RCRA.

3.3 Novel Adsorbent Fluoro-Sorb 200

In addition to GAC and IX resin, novel adsorbents, such as CETCO FS200, are under development for drinking water PFAS treatment. FS200 is a National Science Foundation 61 certified, proprietary, surface-modified bentonite clay material. FS200 has shown promise in removing both long- and short-chain PFAS in pilot-scale treatment studies, and there are approximately 20 ongoing pilot studies in the Northeast US and in the state of California for PFAS treatment in surface and groundwater supplies.

FS200 also has been claimed to be less susceptible to chlorine oxidation and organic fouling than GAC or IX resin, which are desirable characteristics for the application in this study. However, there currently is only one full-scale drinking water treatment installation of FS200, located at the New Jersey American Water's 1.2-mgd Beckett Station groundwater treatment facility in Swedesboro, New Jersey (installed in 2023). FS200 was selected over GAC and IX resin at this facility because it is more chlorine tolerant and avoids a dechlorination step between the existing greensand filters for manganese removal and PFAS treatment. Due to the one single installation, there is limited understanding of the operational requirements for FS200 and its long-term performance and life-cycle cost for PFAS treatment.

Due to limited full-scale installations, FS200 media has not been replaced and the best practice for spent FS200 disposal remains unknown. However, based on personal communications with turnkey service providers, the spent FS200 could be incinerated at an RCRA Subtitle C permitted hazardous waste incineration facility due to the similarity between FS200 and IX resin in media volume.

While novel adsorbents have limited records in full-scale drinking water applications, both GAC and IX pressure vessels can be designed to accommodate alternative adsorbents in the future if they prove advantageous as the technology matures.

3.4 Nanofiltration and Reverse Osmosis Membranes

Pressure membranes, such as NF and RO, broadly remove both long- and short-chain PFAS and other dissolved constituents, including TOC, hardness, salts, and pathogens. NF/RO systems are currently used in many communities in Florida mainly for groundwater softening or desalination, such as brackish groundwater supplies from the Floridan Aquifer.

It is noteworthy that different NF/RO membranes have varying treatment effectiveness for PFAS. Currently, there is a lack of full-scale performance data for various membrane products in PFAS treatment. Since treatment performance depends on site-specific water quality conditions, bench and pilot-scale NF/RO testing would be recommended if membrane-based treatment technologies are selected for further consideration for full-scale implementation at the City's WTP.

Membrane systems typically carry high capital and operating costs relative to other treatment technologies but also provide benefits and levels of treatment unattainable by other technologies. For example, hardness and total dissolved solids reduction can also be accomplished with pressure membranes, but not with the other evaluated technologies.

The pumping requirements for NF/RO systems typically result in high energy costs. Perhaps most importantly, reject stream (or "brine") management and disposal is often a limiting factor that determines the feasibility of this technology. Water recovery of two- to three-stage NF/RO systems typically ranges from 70 to 85 percent, with brine compromising the remaining 15 to 30 percent of the total treatment flow. Innovative RO technologies, such as closed-circuit RO and flow reversal RO with multiple stages, can bring overall water recovery rates upwards of 90 to 95 percent. However, this still results in approximately 5 to 10 percent of the total treatment flow as waste streams, which is costly from a water resources perspective as well as from a brine management and disposal perspective.

Sewer discharge permitting of PFAS-laden brine could be extremely challenging thus limiting the application of NF/RO for PFAS treatment. Deep injection well (DIW) disposal, while high in capital and O&M costs, has previously proven to be a viable option in Florida for brine disposal at several facilities. There are increasing concerns about PFAS being recycled back into the aquatic environment and the regulatory landscape for disposal of PFAS laden concentrate and solids is uncertain at this time.

If a high-pressure membrane-based technology is implemented to produce 18 mgd permeate flow, at a hypothetical 85 percent recovery rate, the raw water supply required (21.2 mgd) will exceed the permit allocation (15.6 mgd) as early as 2025. Alternative water supplies, such as additional Biscayne Aquifer allocations, new extraction wells for supplies from the Floridan Aquifer, and other strategies as potable reuse would need to be further investigated to make up the identified water shortfall. Based on recent experience on similar projects, SFWMD may not approve additional withdrawal allocations from the Biscayne Aquifer needed to implement membrane technology.

3.5 Summary of Treatment Technology Evaluation

Table 3.1 presents a comparison of PFAS treatment technologies mentioned above and their respective advantages and disadvantages.

Table 3.1 Comparison of Available Treatment Technologies for PFAS

Technology	Advantages	Disadvantages
GAC	▪ Proven advanced water treatment technology for PFAS removal. ▪ Provides a treatment barrier for other contaminants (e.g., disinfection byproduct precursors, T&O compounds, etc.). ▪ Lower head loss than IX, which requires lower energy use from pumping and standby generation power perspectives. ▪ Upstream process upsets and water quality changes that result in particulates accumulating in the GAC can be easily backwashed out. ▪ Spent GAC can be regenerated, reactivated, and re-sold to non-potable water sectors to lower media costs. ▪ Treatment units (e.g., pressure vessels) can be readily retrofit with either IX resin or novel adsorbents, maximizing flexibility for changing water quality, treatment goals, or treatment technology in the future.	▪ Longer EBCT is required, resulting in a larger system footprint. ▪ Less effective in short-chain PFAS removal. ▪ GAC fouling by competing contaminants (e.g., TOC) can lead to early PFAS breakthrough or frequent GAC changeout. ▪ Non-steady state treatment process, requiring attentive monitoring of PFAS breakthrough from treatment units to schedule GAC replacements.
IX	▪ Proven advanced water treatment technology for PFAS removal. ▪ Faster adsorption kinetics, shorter EBCT, and a smaller system footprint. ▪ Treatment units (i.e., pressure vessels) can be designed to accommodate novel adsorbents (but not GAC due to smaller vessel size), providing flexibility for changing water quality, treatment goals, or treatment technology in the future.	▪ Resin fouling by competing contaminants (e.g., TOC) can lead to early PFAS breakthrough or frequent resin changeout. ▪ Greater head loss than GAC, which requires higher energy use from pumping and standby generation power perspectives. ▪ Upstream process upsets and water quality changes that result in particulates accumulating in the IX resin bed require removal of the top layer of resin, which is maintenance intensive. Backwashing during normal operation is strictly not recommended by resin suppliers. ▪ Does not remove TOC or other dissolved constituents and does not provide secondary water quality benefits. ▪ Non-steady state treatment process, requiring attentive monitoring of contaminant breakthroughs from treatment units to schedule resin replacements. ▪ PFAS-specific IX resin is non-regenerable. Disposal of spent resin through high-temperature incineration is the only water treatment residual handling approach at present.

Technology	Advantages	Disadvantages
Novel Adsorbents	▪ Pilot studies have shown effectiveness in removing both long- and short-chain PFAS. ▪ Less impacted by chlorine oxidation and TOC fouling than GAC and IX resin. ▪ Faster adsorption kinetics and shorter EBCT, which are comparable to that of IX systems (typically 3 minutes). ▪ Lower unit media cost ($/cubic feet) than IX resin.	▪ Limited full-scale installations for PFAS drinking water treatment (one installation at a 1.2-mgd groundwater well facility in 2023). ▪ Limited understanding of long-term performance, system O&M, spent media disposal, and life-cycle costs due to limited number of full-scale installations.
High-Pressure Membranes	▪ Broadly removes both long- and short-chain PFAS. ▪ Removes other constituents, including TOC, hardness, salinity, and pathogens. ▪ Produces excellent treated water quality. ▪ Steady-state treatment process. ▪ Has potential to remove a wider range of contaminants including future regulated contaminants. However, these are not identified at this time and is difficult to quantify expected performance.	▪ Highest capital and O&M costs among all treatment alternatives. ▪ Produces a large volume of concentrate that is challenging and costly to dispose of via a DIW. ▪ Result in a potential shortfall of raw water supplies that is challenging and costly to make up (e.g. additional allocations from the Biscayne Aquifer, new extraction wells to withdraw supply from the Floridan Aquifer, or other strategies such as potable reuse). ▪ Requires post-membrane treatment to ensure stable finished water quality.

SECTION 4 RAPID SMALL-SCALE COLUMN TEST

4.1 Rapid Small-Scale Column Test Background and Objectives

Rapid Small-Scale Column Tests (RSSCTs) can assess PFAS breakthrough behavior in a small fraction (i.e., one to 10 percent) of the time and cost required for a pilot study. This short operation time of the bench-scale miniature columns enables a quick turnaround of the testing results to facilitate expeditious decision making. The cost of RSSCT is less compared to pilot testing because they require less time, media, sample volume, and less PFAS sampling and analysis. Overall, RSSCTs are a small investment compared to the potential cost implications of technology implementation at the full-scale.

As part of this study, RSSCTs were conducted at Carollo's Water Applied Research Center (Water ARC®) to provide an expedited evaluation of the most suitable and cost-effective PFAS treatment technology to meet the City's PFAS treatment goals. The key objectives of bench-scale RSSCTs were to:

- Inform PFAS treatment technology selection.
- Determine TOC pretreatment needs.
- Determine critical design criteria.
- Estimate media use rate and the resulting O&M costs associated with media changeout.

Detailed RSSCT system setup, column design, feed water characterization, testing results, and conclusions are contained in Appendix A. A summary of the key RSSCT findings is provided in this section.

4.2 Rapid Small-Scale Column Test Design

RSSCTs were designed to simulate full-scale design criteria for GAC, IX, and FS200 systems. System throughput is expressed in the number of days a single GAC, IX, or FS200 adsorber will be in service rather than number of bed volumes to account for the different design EBCTs for GAC, IX resin, and FS200.

System throughput can be calculated using the following equation:

$$Throughput\ (days) = \frac{No.of\ Bed\ Volumes\ (unitless) \times Design\ EBCT(minutes)}{24\frac{hours}{day} \times 60\frac{minutes}{hour}}$$

Effluent from each GAC column was sampled every 4,000 to 7,000 bed volumes for PFAS and every 10,000 to 25,000 bed volumes for IX resin or FS200. The TOC breakthrough was monitored in each column effluent at the same time as PFAS to determine if TOC could be used as a performance indicator for PFAS. Detailed RSSCT design parameters are listed in Table 4.1.

Table 4.1 RSSCT Column Designs for GAC, IX Resin, and FS200

	Parameter	Units	GAC	IX	Fluoro-Sorb
Full-Scale Adsorber	Feed Water		High and Low TOC Feed(1)		
	Supplier	--	Calgon	Purolite	CETCO
	Product	--	Filtrasorb 400	PFA694E	FS200
	Sieve Size	--	12×40	20×35	20×40
	RSSCT Design Model	--	Hybrid	Constant Diffusivity	Constant Diffusivity
	Diffusivity Factor, X	--	0.25	0	0
	EBCT	minute	12.5	2.0	3.0
	HLR	gpm/square feet	6.3	12.6	12.6
Bench-Scale RSSCT Column	Ground Particle Sieve Size	--	100×200	100×200	100×200
	Scaling Factor	--	8.5	6.1	5.7
	HLR	gpm/square feet	6.3	12.6	12.6
	Volumetric Flow Rate	mL/min	4.6	9.1	9.1
	EBCT for Miniature Columns	minute	0.297	0.059	0.094
	RSSCT Duration in Bed Volumes	bed volume	65,000	350,000	280,000
	Simulated Media Service Time	days	564	535	583
		years	1.5	1.5	1.5

Notes:
mL/min - milliliters per minute
(1) In order to evaluate the impact of TOC on PFAS treatment performance by GAC, IX resin, and FS200, two samples were collected from the City's WTP for bench-scale RSSCTs. The first sample was the feed water to the regenerable FIX system (or FIX influent), and the other sample was the FIX effluent after TOC pretreatment.

4.3 Feed Water Quality Characterization

RSSCT feed water samples were collected at the City's WTP upstream and downstream of the regenerable FIX process on September 17, 2024. The collected sample was shipped to Carollo's Water ARC®, and all samples were filtered using a 0.45-µm cartridge filter upon sample receiving. Cartridge filtration was performed to prevent particulate fouling of the high-pressure liquid chromatography pumps used for feeding the miniature bench-scale columns. Table 4.2 summarizes the feed water quality and PFAS characterization results. Notably, PFOS concentration was shown to be much lower in the FIX effluent (i.e., 18 ng/L) than in the FIX influent (i.e., 53 ng/L), indicating potential PFOS removal by the regenerable FIX process. Even though the extent of PFOS removal (i.e., 66 percent) is not high enough to meet the PFOS MCL of 4.0 ng/L, the regenerable FIX process could lower the PFOS mass loading, thus improving PFOS adsorption performance by the downstream adsorption process. Although limited full-scale performance data are currently available, PFOS removal through the regenerable IX processes (either in fixed-bed ion change or suspended IX configuration) has been reported before, and its removal is likely due to the high hydrophobicity of PFOS and its strong bonding with the resin via hydrophobic interactions.

Table 4.2 RSSCT Feed Water Quality Characterization Results

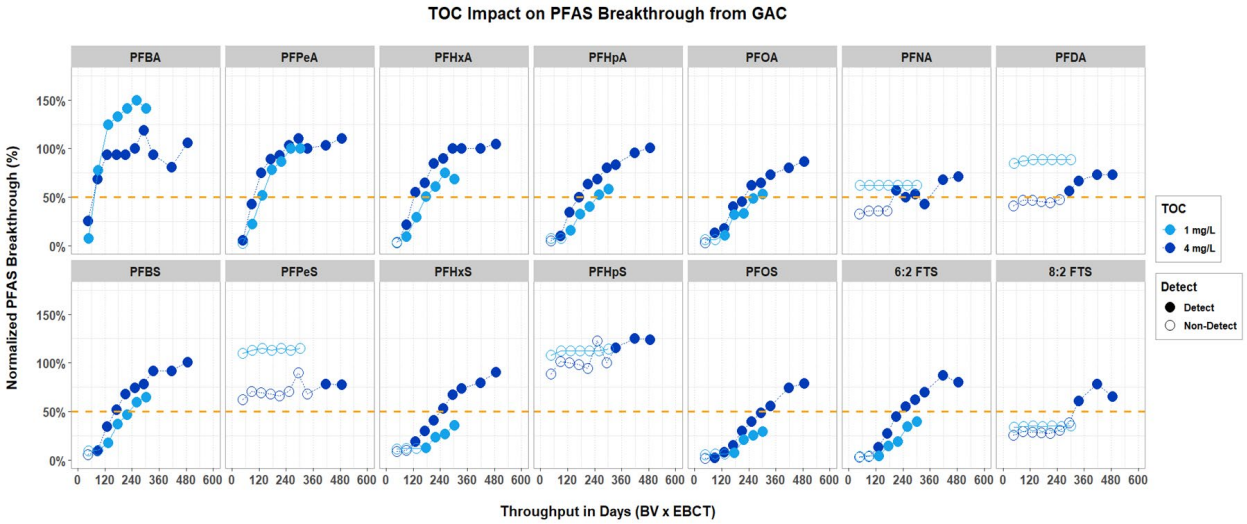
Class	Parameter	Units	FIX Influent	FIX Effluent
General Water Quality	pH	SU	8.5	8.3
	UV Absorbance at 254 nm	cm^{-1}	0.125	0.022
	TOC	mg/L	4.1	1.0
PFCAs	PFBA (C4)	ng/L	18	17
	PFPeA (C5)	ng/L	28	25
	PFHxA (C6)	ng/L	21	16
	PFHpA (C7)	ng/L	9.8	8.2
	PFOA (C8)	ng/L	14	11
	PFNA (C9)	ng/L	2.5	1.9 J (1)
	PFDA (C10)	ng/L	1.4 J	1.3 J
PFSAs	PFBS (C4)	ng/L	10	6.7
	PFPeS (C5)	ng/L	1.1 J	0.9 J
	PFHxS (C6)	ng/L	8.5	6.0
	PFHpS (C7)	ng/L	1.2 J	0.7 J
	PFOS (C8)	ng/L	53	18
FTS	6:2 FTS	ng/L	44	35
	8:2 FTS	ng/L	3.1	2.3

Note:
PFCAs - perfluoroalkyl carboxylic acids; PFSAs - perfluoroalkyl sulfonic acids
(1) A J flagged value, indicating an estimated concentration above the laboratory MDL but below the MRL for the specific PFAS.

4.4 Rapid Small-Scale Column Test Results

4.4.1 Granular Activated Carbon

Breakthrough curves for a total of 14 detectable PFAS, including seven PFCAs (C4 to C10 PFCAs), five PFSAs (C4 to C8 PFSAs), and two FTS (6:2 FTS and 8:2 FTS), are presented in Figure 4.1 for Calgon F400 GAC between the low-TOC (i.e., 1 mg/L) FIX effluent and the high-TOC (i.e., 4 mg/L) FIX influent. As discussed above, DOM (characterized by TOC) can compete with PFAS for active adsorption sites within the GAC, causing earlier PFAS breakthrough. Results of the RSSCTs demonstrated the rapid fouling of GAC by TOC as an earlier PFAS breakthrough was observed across all detectable compounds in the presence of 4 mg/L of TOC. Moreover, the impact of TOC on PFAS breakthrough was relatively consistent across all PFAS, including C4 to C10 PFCAs, C4 to C8 PFSAs, and two FTS, suggesting relatively uniform selectivity of GAC towards various PFAS in these two feed waters.

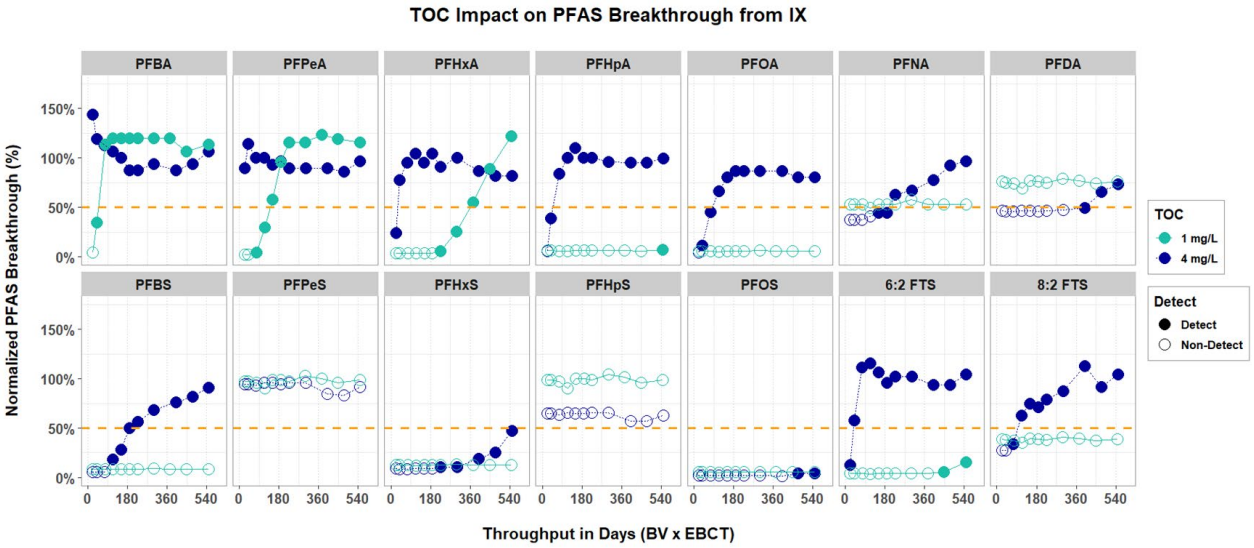


Notes: Normalized PFAS breakthrough curves were shown as a function of system throughput in number of days in operation. RSSCT results for the low-TOC FIX effluent sample are represented in light-blue circles, whereas results for the high-TOC FIX influent sample are represented in dark-blue circles. Any detectable (i.e., >MDL) PFAS concentrations are shown in solid symbols. In contrast, non-detect results are shown in open circles at the corresponding MDLs for the specific PFAS as well as the specific sample. The orange dashed line indicates 50 percent PFAS breakthrough, and the resulting throughputs (i.e., BV50) are often used to indicate GAC adsorption capacity for the contaminant of interest.

Figure 4.1 Normalized PFAS (C/C_0) Breakthrough Curves From Calgon F400 GAC Columns

4.4.2 Ion Exchange

Breakthrough curves for 14 detectable PFAS are presented in Figure 4.2 for Purolite PFA694E IX resin between the low-TOC (i.e., 1 mg/L) FIX effluent and the high-TOC (i.e., 4 mg/L) FIX influent. Following the same trends observed for GAC, PFAS were shown to break through much faster from the IX columns in the presence of higher concentration of TOC. More importantly, adsorption performance deteriorated more significantly for IX resin than for GAC when TOC increased from 1 mg/L to 4 mg/L, particularly for PFCAs. For instance, PFOA remained non-detectable in the column effluent in the presence of 1 mg/L of background TOC, while PFOA reached 100 percent or complete breakthrough after 180 days when background TOC was increased to 4 mg/L. Similar trends were observed for PFHpA, PFNA, PFDA, PFBS, PFHxS, PFOS, 6:2 FTS, and 8:2 FTS. The significant decrease in resin performance at higher TOC concentration suggests that IX resin is more susceptible to TOC fouling than GAC, and the impact of TOC fouling is more apparent for less-adsorbing PFAS, such as the PFCAs.

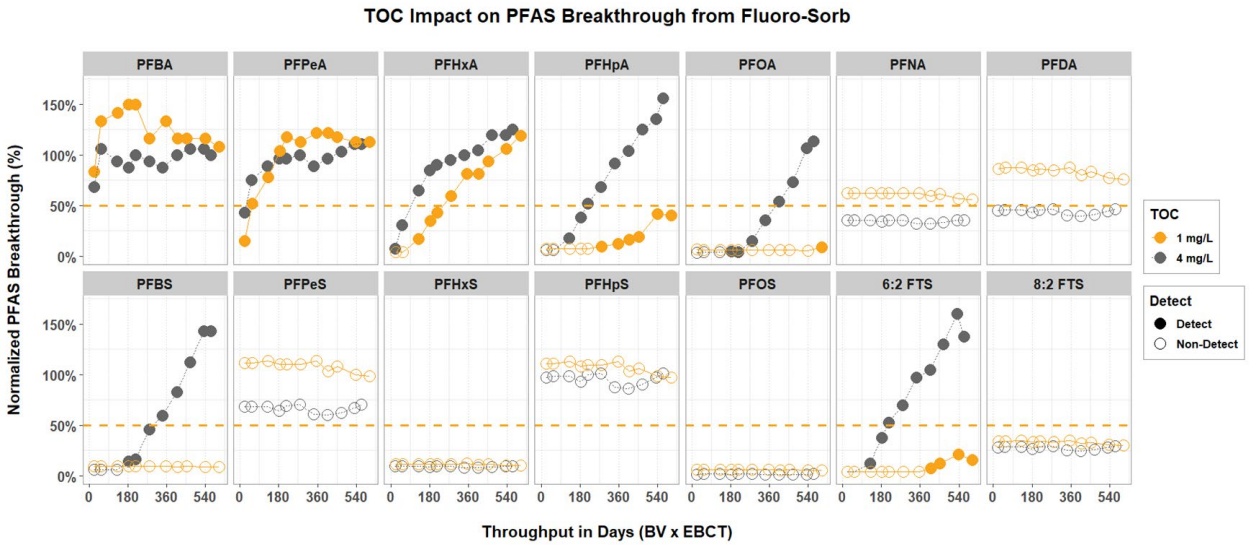


Notes: Normalized PFAS breakthrough curves were shown as a function of system throughput in number of days in operation. RSSCT results for the low-TOC FIX effluent sample are represented in turquoise circles, whereas results for the high-TOC FIX influent sample are represented in navy circles. Any detectable (i.e., >MDL) PFAS concentrations are shown in solid symbols. In contrast, non-detect results are shown in open circles at the corresponding MDLs for the specific PFAS as well as the specific sample. The orange dashed line indicates 50 percent PFAS breakthrough, and the resulting throughputs (i.e., BV50) are often used to indicate IX resin adsorption capacity for the contaminant of interest.

Figure 4.2 Normalized PFAS (C/C_0) Breakthrough Curves From Purolite PFA694E IX Resin Columns

4.4.3 FS200

Breakthrough curves for 14 detectable PFAS are presented in Figure 4.3 for CETCO FS200 between the low-TOC (i.e., 1 mg/L) FIX effluent and the high-TOC (i.e., 4 mg/L) FIX influent. In general, FS200 outperformed GAC and IX resin in the removal of all PFAS at both background TOC concentrations. In fact, long-chain PFCAs (i.e., PFNA and PFDA), and most PFSAs (i.e., PFPeS, PFHxS, PFHpS, and PFOS), as well as 8:2 FTS remained non-detect in all FS200 column effluents under both TOC conditions. The RSSCT results generally suggest that FS200 is less susceptible to TOC fouling than GAC and IX resin, and FS200 has high selectivity and adsorption capacity for PFSAs.

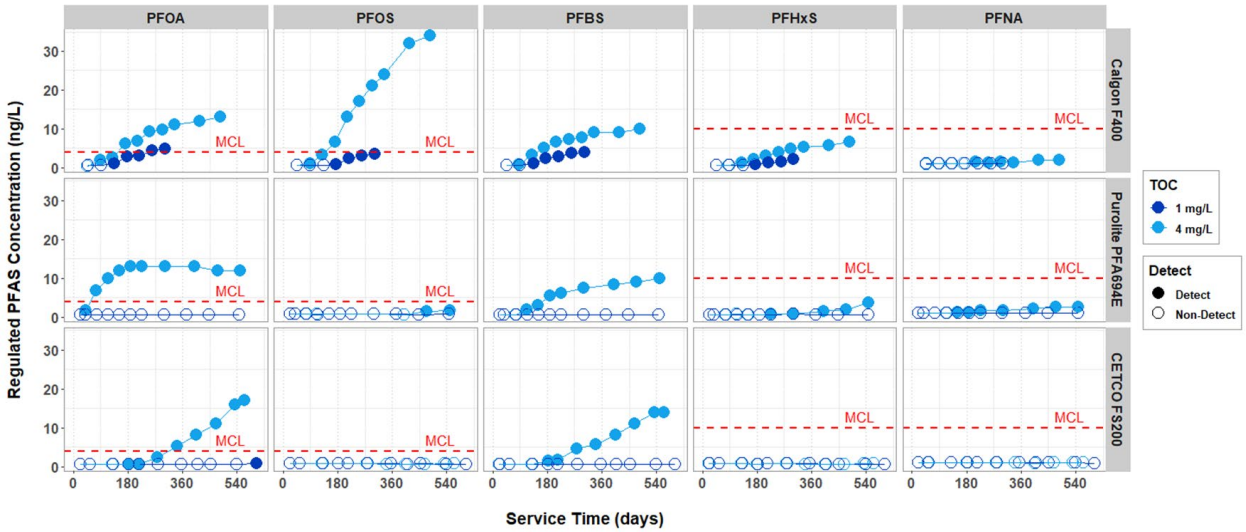


Notes: Normalized PFAS breakthrough curves were shown as a function of system throughput in number of days in operation. RSSCT results for the low-TOC FIX effluent sample are represented in orange circles, whereas results for the high-TOC FIX influent sample are represented in dark-grey circles. Any detectable (i.e., >MDL) PFAS concentrations are shown in solid symbols. In contrast, non-detect results are shown in open circles at the corresponding MDLs for the specific PFAS as well as the specific sample. The orange dashed line indicates 50 percent PFAS breakthrough, and the resulting throughputs (i.e., BV50) are often used to indicate FS200 adsorption capacity for the contaminant of interest.

Figure 4.3 Normalized PFAS (C/C_0) Breakthrough Curves From CETCO Fluoro-Sorb 200 (FS200) Columns

4.4.4 Regulated PFAS and Media Use Rate

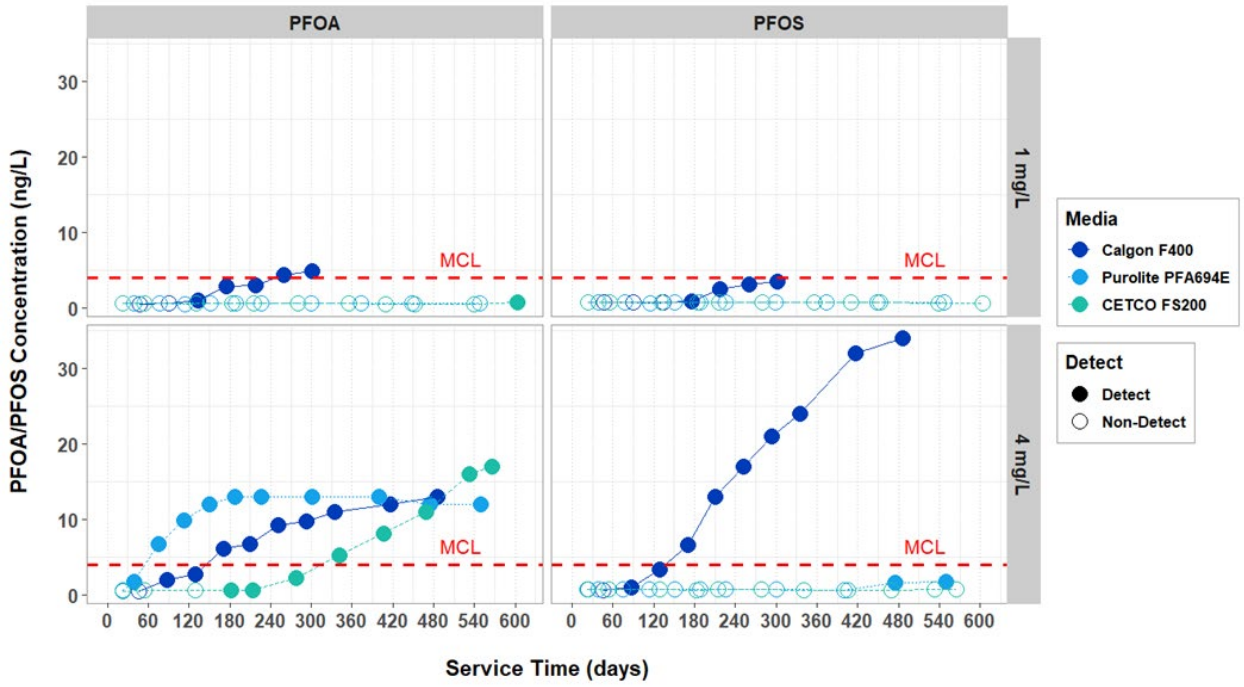
Regulated PFAS breakthrough under low- and high-TOC conditions from GAC, IX resin, and FS200 are compared below in Figure 4.4. Among the six regulated PFAS, HFPO-DA (or GenX) was not detected in the feed water, and thus, results are not shown for this PFAS. RSSCT results indicated that PFHxS and PFNA concentrations in the RSSCT column effluents remained below their respective MCLs of 10 ng/L, regardless of media type and background TOC concentrations. Although PFBS breakthrough was observed, there is no proposed MCL for this PFAS, and the corresponding concentration that would impact HI calculations (HBWC for PFBS is 2,000 ng/L) is well above that found in the feed water. For these reasons, only PFOA and PFOS would drive media selection and change out frequency for the City to meet the compliance requirements for PFAS.



Notes: Regulated PFAS breakthrough curves from Calgon F400 GAC, Purolite PFA694E IX resin, and CETCO FS200 as a function of system throughput in number of days in operation. RSSCT results for the low-TOC FIX effluent sample are represented in dark-blue circles, whereas results for the high-TOC FIX influent sample are represented in light-blue circles. Any detectable (i.e., >MDL) PFAS concentrations are shown in solid symbols. In contrast, non-detect results are shown in open circles at the corresponding MDLs for the specific PFAS as well as the specific sample. The red dashed lines indicate respective MCLs for the regulated PFAS.

Figure 4.4 Regulated PFAS Breakthrough Curves

Figure 4.5 summarizes the treatment performance of Calgon F400 GAC, Purolite PFA694E IX resin, and CETCO FS200 for PFOA and PFOS removal only. The top panel compares PFOA and PFOS breakthroughs from the three types of media in the presence of 1 mg/L of background TOC, whereas the bottom panel compares PFOA and PFOS breakthroughs in the presence of 4 mg/L of background TOC. Setting the treatment targets for PFOA and PFOS at their respective MCLs of 4.0 ng/L, the resulting service times for a single adsorber (e.g., lead pressure vessel containing GAC, IX resin, or FS200) are summarized in Table 4.3.



Notes: PFOA and PFOS breakthrough curves from Calgon F400 GAC (dark-blue circles), Purolite PFA694E IX resin (light-blue circles), and CETCO FS200 (turquoise circles) as a function of system throughput in number of days in operation. PFOA and PFOS breakthroughs for the low-TOC FIX effluent sample are shown in the top panel, whereas breakthrough curves for the high-TOC FIX influent sample are shown in the bottom panel. Any detectable (i.e., >MDL) PFOA and PFOS concentrations are shown in solid symbols. In contrast, non-detect results are shown in open circles at the corresponding MDLs for the specific PFAS as well as the specific sample. The red dashed lines indicate respective MCLs for PFOA and PFOS.

Figure 4.5 PFOA and PFOS Breakthrough Curves

Table 4.3 Estimated Single-Adsorber Media Changeout Frequency

Feed Water TOC	Media	Driving PFAS (The PFAS That Breaks Through Earlier)	Single-Adsorber Service Time in Meeting PFOA and PFOS MCLs of 4.0 ng/L	
			Days	Months
1 mg/L	GAC	PFOA	240	8
	IX Resin	PFOA	540	18
	FS200	PFOA	600	20
4 mg/L	GAC	PFOS	120	4
	IX Resin	PFOA	60	2
	FS200	PFOA	300	10

In general, IX resin and FS200 significantly outperformed GAC in treating PFAS in the presence of low concentration of TOC (i.e., 1 mg/L). According to the RSSCT breakthrough curves shown in Figure 4.5, it is estimated that IX resin can last for approximately 18 months in a single adsorber (e.g., a lead pressure vessel), while FS200 can last for about 20 months. This compares to eight months of estimated service time for a single GAC adsorber, treating the same feed water to meet effluent PFOA goal of 4.0 ng/L. When background TOC concentration increased to 4 mg/L, IX became a non-viable treatment technology as resin was estimated to be changed out once every two months. The estimated service times for GAC and FS200 under high TOC conditions were five months and 10 months, respectively.

Overall, GAC was shown to be a non-viable PFAS treatment option for the City due to moderate PFOA and PFOS concentrations in the feed water (i.e., requires high extents of treatment) and GAC fouling by TOC. IX resin is a cost-effective PFAS treatment option, but only when treating low-TOC feed water. In contrast, FS200 showed the most promising PFAS treatment results as it outperformed both GAC and IX resin at both TOC concentrations evaluated. Estimated single adsorber FS200 service times ranging from 10 to 20 months, treating low- and high-TOC feed water, respectively.

Overall, RSSCT results revealed the critical role of TOC levels in determining PFAS treatment feasibility and economics. IX resin or FS200 can last over a year in the lead adsorbers at design EBCT when treating FIX effluent with low TOC interference. When background TOC concentration was high (i.e., 4 mg/L) without the regenerable FIX process, only the novel adsorbent FS200 resulted in acceptable PFAS treatment performance and reasonable media changeout frequency. For this reason, it is recommended that the City expand the existing regenerable FIX system from side-stream to full-stream treatment to further reduce TOC loading onto the downstream PFAS treatment process to prolong media life and lower PFAS treatment costs as a result of media changeout.

SECTION 5 TREATMENT ALTERNATIVES ANALYSIS AND CONCEPTUAL SYSTEM DESIGN

5.1 Short-Listed Treatment Alternatives

Based on the above testing results from RSSCTs, the treatment alternatives that include expanding the existing regenerable FIX process were shortlisted for further evaluation and conceptual design in this section. In addition, high-pressure membranes, such as NF, were also shortlisted for alternatives analysis. The four short-listed treatment alternatives for conceptual design are summarized in Figure 5.1.

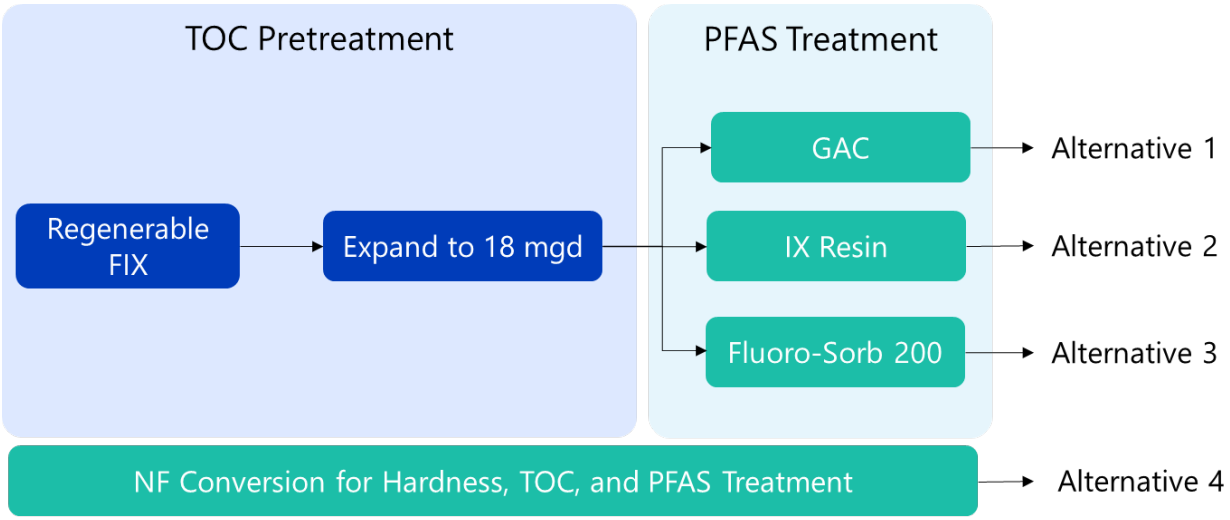


Figure 5.1 Short-Listed Treatment Alternatives

5.2 Site Utilization

During conceptual design, multiple siting options within the WTP were considered for potential use for the proposed PFAS treatment facility. Figure 5.2 shows a map of all potential siting locations outlined below.

- Location No. 1 - Existing Front Admin Parking Lot (Northwest).
- Location No. 2 - Existing Maintenance Building (East).
- Location No. 3 - Front Gate Entrance (Northeast).
- Location No. 4 - Existing 1 MG Ground Storage Tank Area (South).

As shown in Figure 5.2, Location No. 2 is proposed on and around the existing maintenance building and parking area used by plant staff. The existing maintenance building will require relocation if Location No. 2 is utilized for any proposed treatment alternative. Locations No. 1, 3, and 4 have been identified as potential options for a new maintenance building and parking area if Location No. 2 is utilized. If the maintenance building is proposed to be relocated to Location No. 1, additional information is needed for building setback requirements, utility conflicts, structural information on the existing building adjacent to Location No.1 or permitting requirements regarding the canal adjacent to the WTP and east of N. University Boulevard. Similarly, if the maintenance building requires relocation within Location No. 3, additional information is needed for building setback requirements and utility conflicts. Lastly, if the maintenance building and parking area require relocation to Location No. 4, the existing 1 MG storage tank will need to be demolished, and the existing subsurface WTP piping in this area will require concrete encasement for protection against building settlement or other structural or geotechnical concerns. It is not recommended to relocate the 1 MG storage tank, and if Location No. 4 is to be utilized, the overall finished water storage capacity at the WTP will be reduced.

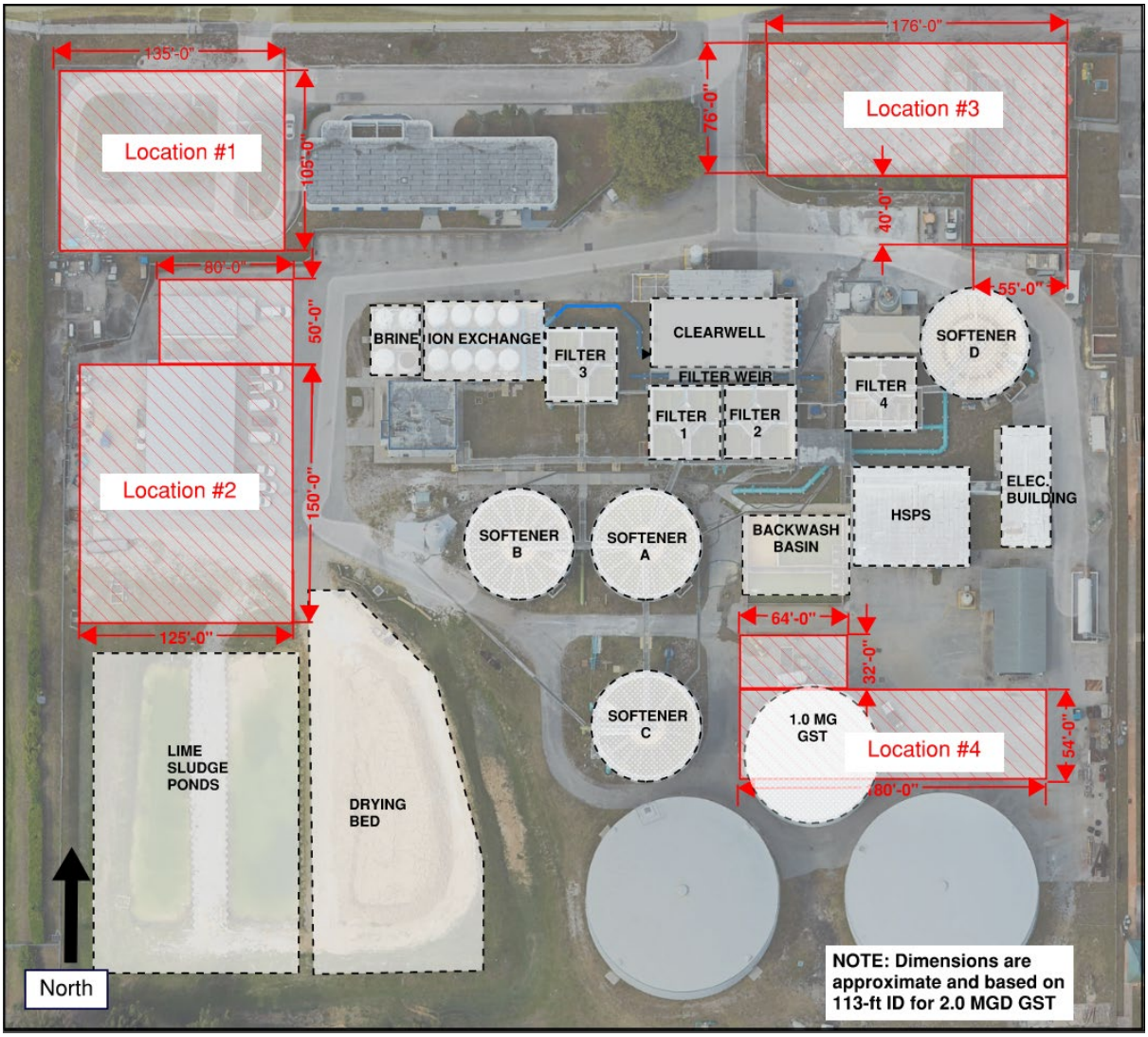


Figure 5.2 Potential Siting Options Within the WTP That Were Considered During Conceptual Design for the Proposed PFAS Treatment Facility

5.3 Treatment Alternatives Analysis and Conceptual Design

5.3.1 Alternative 1 - Expand Existing Regenerable Fixed Ion Exchange System + PFAS Treatment by Granular Activated Carbon

5.3.1.1 Process Flow Diagram

Alternative 1 will include expanding the existing regenerable FIX system from 12 mgd to 18 mgd treatment capacity, removing the 6 mgd filter effluent bypass around the regenerable FIX system, and adding intermediate transfer pumps and GAC adsorbers in lead-lag pressure vessel configuration. A PFD for Alternative 1 is provided in Figure 5.3.

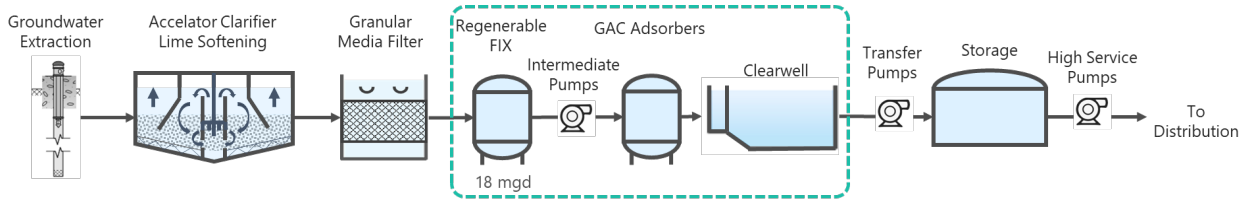
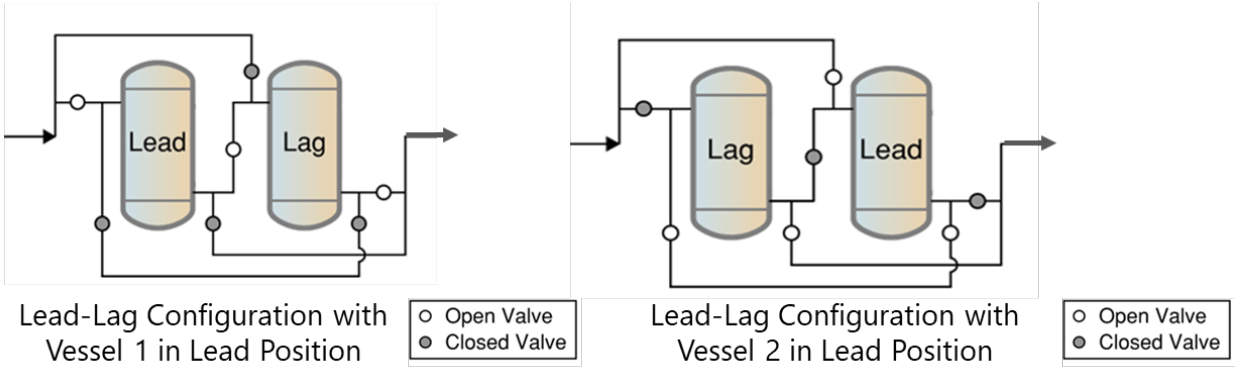


Figure 5.3 PFD for Treatment Alternative 1

5.3.1.2 Granular Activated Carbon Pressure Vessels in Lead-Lag Configuration

Lead-lag treatment configuration increases the amount of GAC inventory available and provides system redundancy during the GAC changeout period to maintain the City's PFAS treatment goals. However, lead-lag treatment configuration requires higher capital investments (i.e., more treatment units required) and a larger system footprint.

The PFD for lead-lag GAC pressure vessels is presented in Figure 5.4, where vessel 1 can be in the lead position, or vessel 2 can be in the lead position when spent GAC in vessel 1 is changed out.



Notes: The diagram on the left shows vessel 1 in the lead position, while the diagram on the right shows vessel 2 in the lead position.

Figure 5.4 PFD for Pressure Vessels in Lead-Lag Configuration

5.3.1.3 Design Criteria

Table 5.1 outlines the design criteria for expanding the existing regenerable FIX treatment system from 12 mgd to 18 mgd or with 6 mgd additional treatment capacity. Table 5.2 outlines the proposed design criteria for GAC pressure vessels in lead-lag configuration.

Table 5.1 Regenerable FIX System Design Criteria for 6 mgd Expansion

Parameter	Units	Value
Treatment Flow	mgd	18
Number of Vessels, Existing	No.	8
Number of Vessels, Expansion	No.	4
Total number of Vessels	No.	12 (8 Existing + 4 Expansion)
Treatment Configuration	-	Staged-Parallel
Design Treatment Flow per Vessel	mgd	1.5
Vessel Internal Diameter	feet	12
HLR at Design Flow	gpm/square feet	9.2
Resin Type	-	Type I Strong Base Anion Exchange
Resin Volume per Vessel	cubic feet	424
EBCT at Design Flow	minute	3.0
Resin Bed Depth	feet	3.75
Design Regeneration Waste Volume per Vessel	gallons	20,300
Design Backwash Flow Rate	gpm	340
Design Slow Rinse Flow Rate	gpm	107
Design Fast Rinse Flow Rate	gpm	1050
Design Salt Usage per Regeneration Cycle	pounds	4,200

Table 5.2 Design Criteria for GAC Pressure Vessels for PFAS Treatment

Parameter	Unit	Value		
		Average Day Flow	Maximum Day Flow	Rated Capacity
Design Treatment Flow	mgd	13.7	16.4	18.0
	gpm	9,521	11,389	12,500
Number of Treatment Trains	No.	16	16	16
Configuration	-	Lead-Lag		
Total No. of Vessels	No.	32	32	32
Flow per Treatment Train/Vessel	mgd	0.9	1.0	1.1
	gpm	595	712	781
Vessel Diameter	feet	12	12	12
Vessel Area	square feet	113	113	113
HLR (N)	gpm/square feet	5.3	6.3	6.9

Parameter	Unit	Value		
		Average Day Flow	Maximum Day Flow	Rated Capacity
Media Type	-	Calgon F400 or Equivalent GAC		
GAC Apparent Density	pounds/cubic feet	33.71	33.71	33.71
GAC Volume per Vessel	cubic feet	1,187	1,187	1,187
	gallons	8,876	8,876	8,876
GAC Bed Depth	feet	10.5	10.5	10.5
EBCT per Vessel	minute	14.9	12.5	11.4
EBCT per Train	minute	29.8	24.9	22.7

5.3.1.4 Conceptual Layout for Treatment Alternative 1

This GAC system conceptual design allows each GAC pressure vessel to serve as the lead or lag vessel. However, the large number of vessels required results in a large system footprint. A conceptual layout has been developed, as shown in Figure 5.5 and indicates the GAC treatment facility may fit within Location No. 1 and Location No. 2.

To expand the regenerable FIX system, it is proposed that the brine tanks be relocated to the south of the existing FIX vessels so that the additional four vessels could be added to the west side of the existing FIX facility. A blending tank is also proposed, which is intended to equalize effluent from all four granular media filters to allow for the treatment of the entire plant flow by regenerable FIX, followed by GAC for PFAS removal. The GAC effluent will be returned to the clearwell for final disinfection. This modification will alleviate the reliance on the clearwell influent weir for flow equalization and simplify the flow configuration from filtration to final disinfection processes.

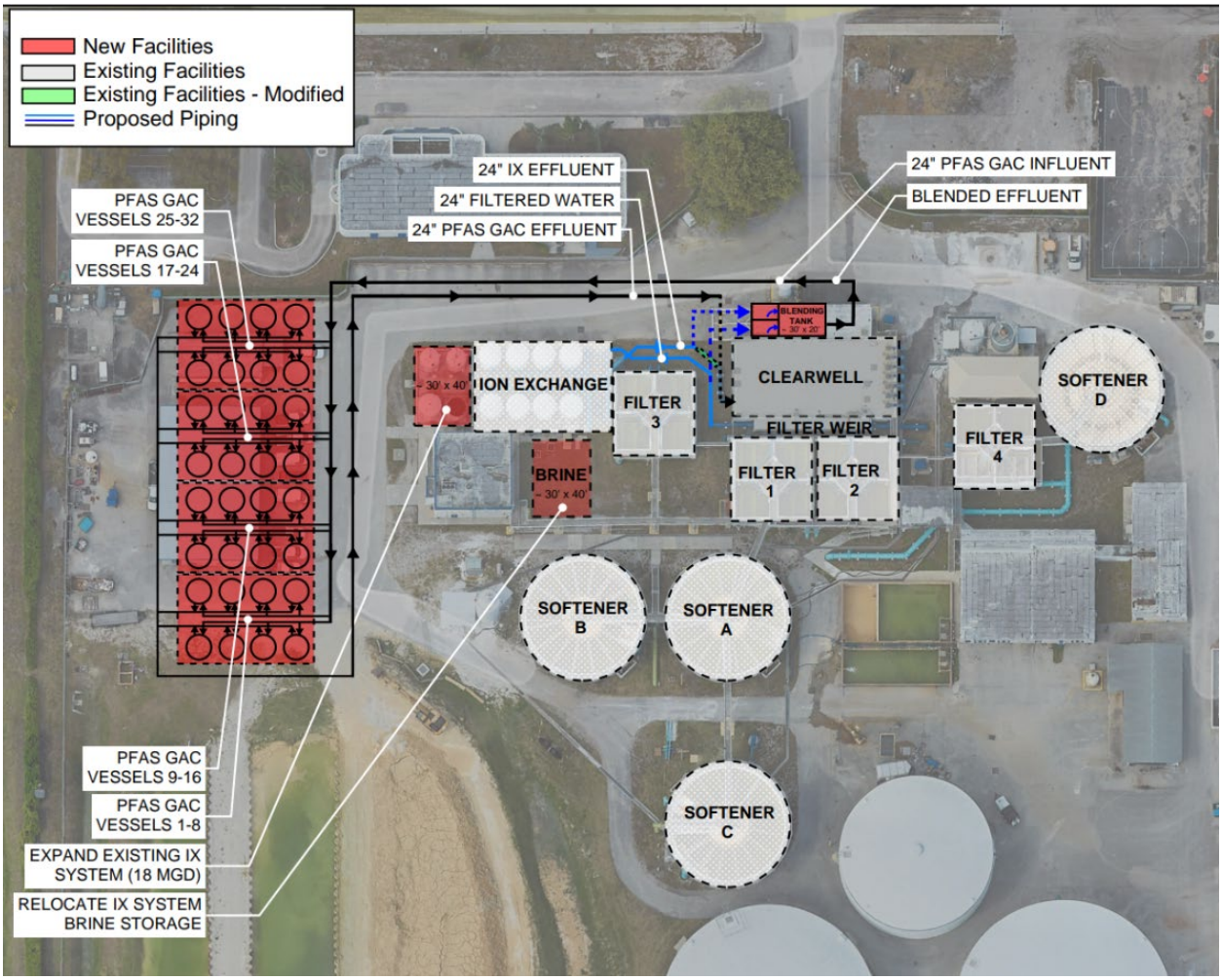


Figure 5.5 Potential Site Layout for Treatment Alternative 1 - Regenerable FIX Process Expansion and the Addition of GAC Pressure Vessels for PFAS Treatment

5.3.2 Alternative 2 - Expand Existing Regenerable Fixed-Bed Ion Exchange System + PFAS Treatment by Ion Exchange Resin

5.3.2.1 Process Flow Diagram

Alternative 2 will include expanding the existing regenerable FIX system from 12 mgd to 18 mgd treatment capacity, removing the 6 mgd filter effluent bypass around the regenerable FIX system, and adding intermediate transfer pumps and IX adsorbers in lead-lag pressure vessel configuration. A PFD for Alternative 2 is provided in Figure 5.6.

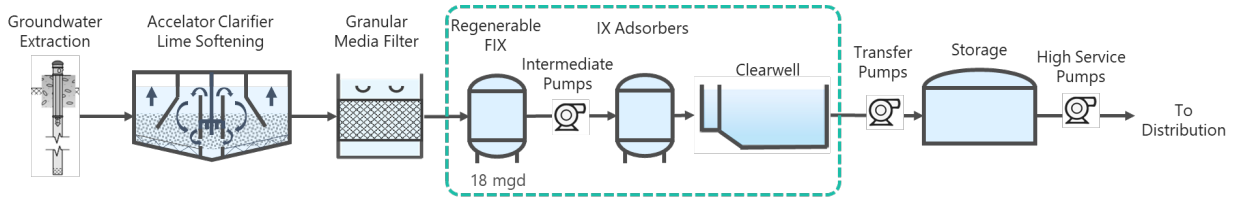


Figure 5.6 PFD for Treatment Alternative 2

5.3.2.2 Design Criteria

The design criteria for the expansion of the existing regenerable FIX treatment system from 12 mgd to 18 mgd, or with 6 mgd additional treatment capacity, were outlined previously in Table 5.1. Table 5.3 outlines the proposed design criteria for IX pressure vessels in lead-lag configuration. It is noteworthy that the pressure vessels are convertible and can be used to accommodate the novel adsorbent, FS200, if this adsorbent is to be tested in one or several full-scale treatment trains or for future media conversion as the technology matures.

Table 5.3 Design Criteria for IX Pressure Vessels for PFAS Treatment

Parameter	Units	Value		
		Average Day Flow	Maximum Day Flow	Rated Capacity
Design Treatment Flow	mgd	13.7	16.4	18.0
Number of Treatment Trains	No.	10	10	10
Treatment Configuration		Lead/Lag		
Total No. of Vessels	No.	20	20	20
Flow per Treatment Train/Vessel	mgd	1.4	1.6	1.8
	gpm	952	1,139	1,250
Vessel Diameter	feet	12	12	12
Vessel Area	square feet	113	113	113
HLR	gpm/square feet	8.4	10.1	11.1
Media Type	--	Single-use Strong Base IX Resin for PFAS		

Parameter	Units	Value		
		Average Day Flow	Maximum Day Flow	Rated Capacity
Media Volume per Vessel	cubic feet	420	420	420
	gallons	3,142	3,142	3,142
Media Bed Depth	feet	3.7	3.7	3.7
EBCT per Vessel	minute	3.3	2.8	2.5
EBCT per Train	minute	6.6	5.5	5.0

5.3.2.3 Conceptual Layout for Treatment Alternative 2

Similar to Alternative 1, each pressure vessel can be in the lead or the lag position. A conceptual site layout has been developed, as shown in Figure 5.7 for Alternative 2. Due to the smaller number of treatment trains required, the PFAS treatment facility may fit within Location No. 3, which will cause minimal disturbances to the existing WTP from a constructability perspective.

To expand the regenerable FIX system, it is proposed that the brine tanks be relocated to the south of the existing FIX vessels so that the additional four vessels could be added to the west side of the existing FIX facility. A blending tank is also proposed to equalize effluent from all four granular media filters. This will allow the treatment of the entire plant flow by regenerable FIX, followed by IX resin for PFAS removal before the treated effluent is returned to the clearwell for final disinfection. This modification will alleviate the reliance on the clearwell influent weir for flow equalization and simplify the flow configuration from filtration to final disinfection processes.

Figure 5.7 Potential Site Layout for Treatment Alternative 2 - Regenerable FIX Process Expansion and the Addition of Pressure Vessels for PFAS Treatment Using IX Resin

5.3.3 Alternative 3 - Expand Existing Regenerable Fixed-Bed Ion Exchange System + PFAS Treatment by FS200

5.3.3.1 Process Flow Diagram

Alternative 3 will include expanding the existing regenerable FIX system from 12 mgd to 18 mgd treatment capacity, removing the 6 mgd filter effluent bypass around the regenerable FIX system, and adding intermediate transfer pumps and FS200 adsorbers in lead lag pressure vessel configuration. The PFD for Alternative 3 is the same as that for Alternative 2, which is shown in Figure 5.6.

5.3.3.2 Design Criteria

The design criteria for the expansion of the existing regenerable FIX treatment system from 12 mgd to 18 mgd, or with 6 mgd additional treatment capacity, were outlined previously in Table 5.1. Table 5.4 outlines the proposed design criteria for FS200 pressure vessels in lead-lag configuration. As mentioned in Section 5.3.2.2, IX pressure vessels are convertible and can be used to accommodate the novel adsorbent, FS200. Theoretically, FS200 pressure vessels would follow the same critical design criteria as those established for IX pressure vessels. However, due to the lack of full-scale implementations, limited data is available regarding the maximum HLR for FS200 without causing head loss or other operation issues. In fact, prior to a pilot study in the state of California, CETCO noted that they had observed media compaction and rapid head loss accumulation at higher HLRs, prompting them to recommend a maximum HLR of 9.5 gpm/square feet for FS200. For this reason, the pressure vessel system was more conservatively designed in this study for FS200 with a lower maximum HLR. Vessel convertibility from IX resin to FS200 warrants further investigation and validation, including bench- and/or pilot-scale studies if this treatment alternative is selected for full-scale implementation at the City's WTP.

Table 5.4 Design Criteria for FS200 Pressure Vessels for PFAS Treatment

Parameter	Units	Value		
		Average Day Flow	Maximum Day Flow	Rated Capacity
Design Treatment Flow	mgd	13.7	16.4	18.0
Number of Treatment Trains	No.	12	12	12
Treatment Configuration		Lead/Lag		
Total No. of Vessels	No.	24	24	24
Flow per Treatment Train/Vessel	mgd	1.1	1.4	1.5
	gpm	793	949	1,042
Vessel Diameter	feet	12	12	12
Vessel Area	square feet	113	113	113
HLR	gpm/square feet	7.0	8.4	9.2
Media Type	--	CETCO FS200		
Media Volume per Vessel	cubic feet	420	420	420
	Gallons	3,142	3,142	3,142
Media Bed Depth	feet	3.7	3.7	3.7
EBCT per Vessel	minute	4.0	3.3	3.0
EBCT per Train	minute	7.9	6.6	6.0

5.3.3.3 Conceptual Layout for Treatment Alternative 3

Same as Alternatives 1 and 2, each pressure vessel can be in the lead or the lag position. A conceptual site layout has been developed, as shown in Figure 5.8 for Alternative 3. Similar to Alternative 2, the PFAS treatment facility may fit within Location No. 3, which will cause minimal disturbances to the existing WTP from a constructability perspective.

Figure 5.8 Potential Site Layout for Treatment Alternative 3 - Regenerable FIX Process Expansion and the Addition of Pressure Vessels for PFAS Treatment Using FS200

5.3.4 Alternative 4 - Converting From Lime Softening and Regenerable Fixed-Bed Ion Exchange to Nanofiltration

5.3.4.1 Process Flow Diagram

In this treatment alternative, the conventional lime softening, granular media filtration, and regenerable FIX processes will be replaced with NF (or RO). The NF facility will be designed for a total permeate flow of 18 mgd with N+1 redundancy. To produce 18 mgd of treated water, the required feed water flow will be 21.2 mgd (refer to Section 2 for more detailed discussion on raw water supply limitations).

Ancillary components to the membrane system include cartridge filters for particulate removal, chemical systems including sulfuric acid, sodium hydroxide, and anti-scalant, and a clean-in-place system for membrane cleaning. A separate electrical room will be located in the proposed membrane treatment building for the required pump drives and new electrical distribution equipment.

Additional components to be designed will include a series of degassifiers, a blending chamber for permeate flow prior to entering the existing clearwell, and a DIW for membrane concentrate disposal. The high-pressure membrane process will likely require electrical power distribution upgrades to operate at much higher pressure.

A PFD for Alternatives 4 is provided in Figure 5.9, assuming the use of NF membrane.

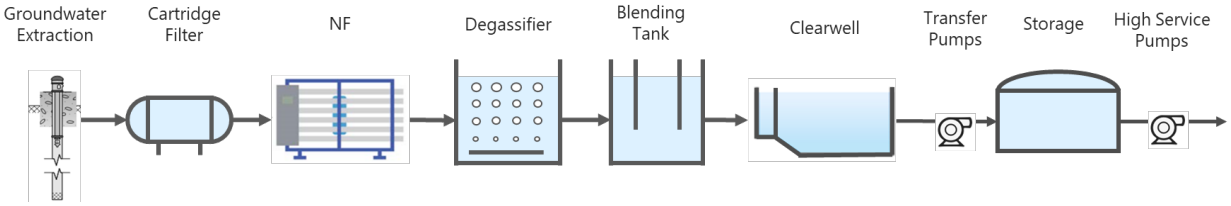


Figure 5.9 PFD for Treatment Alternative 4

5.3.4.2 Design Criteria

To achieve the design permeate flow of 18 mgd, the proposed design criteria for the membrane system are outlined in Table 5.5.

Table 5.5 High-Pressure Membrane System Design Criteria

Parameter	Units	Value
Design Permeate Flow	mgd	18
Number of Treatment Trains (N)	No.	5
Number of Redundant Trains (N+1)	No.	1
Treatment Flow per Train (N)	mgd	3.6
Projected Recovery	%	85%
Number of Treatment Stages	No.	2
Estimated Operating Pressure	psi	75-100 psi
Number of Feed Pumps	No.	5+1
Number of Cartridge Filters	No.	3+1

Notes:
psi - pounds per square inch

5.3.4.3 Conceptual Layout for Treatment Alternative 4

It is proposed that the membrane treatment facility be at the location of the existing maintenance building. This location provides the necessary footprint for the new membrane facility and the accessibility for construction, and it minimizes potential impacts on plant operation during start-up and commissioning. The associated DIW will be located north of the treatment building in the existing administration building parking lot. With the addition of the membrane treatment facility, the following facilities could be relocated or repurposed for other uses:

- The existing maintenance building and parking lot are to be relocated.

- The perimeter fence for the west and north of the property will need to be aligned.

After the successful commissioning of the new NF treatment facility, the existing treatment could be demolished or remain on site:

- Lime softener Units A, B, C, and D.
- Lime storage and feed equipment.
- Sludge pond and lime residual drying bed.
- Filters 1,2,3, and 4.
- Filter backwash basin.
- Regenerable FIX pressure vessels.
- Brine tanks.

Detailed site layout is shown in Figure 5.10.

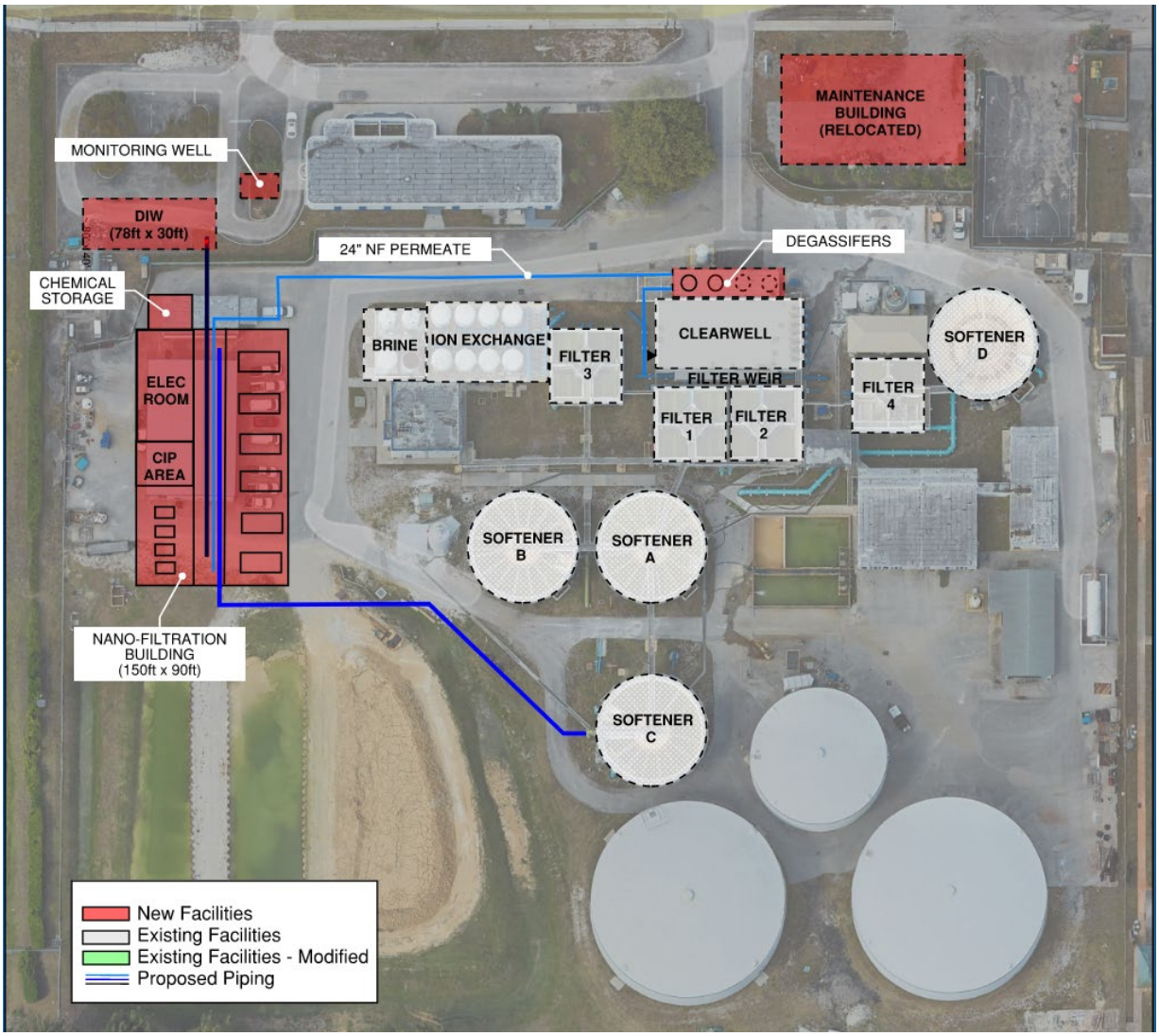


Figure 5.10 Potential Site Layout for Treatment Alternative 4 - Conversion From Lime Softening and Regenerable FIX to High-Pressure Membrane

SECTION 6 COST ESTIMATES

6.1 Capital, Operations and Maintenance, and Life-Cycle Costs

6.1.1 Capital Cost Estimation

Estimates for probable construction costs were developed in accordance with requirements from the AACE. The applicable cost level classification for this evaluation was selected as a Class 4 Estimate, which reflects an order of magnitude estimate and is customarily used for screening and preliminary budget allocations before a detailed design is developed. The project definition at this stage is typically a conceptual design level up to about 15 percent, and the expected accuracy range is between -30 percent and +50 percent. If budgeting is required early-on, it is recommended that the upper range is utilized until additional cost information and project risks and uncertainties are defined. The capital costs estimate for each of the alternatives reflects the following key assumptions:

- Alternative 1 - Expand regenerable FIX and add GAC adsorbers for PFAS treatment:
  - Existing FIX will be expanded to 18 mgd treatment capacity to ensure low TOC feed for the downstream GAC treatment facility.
  - Upgrades to the existing FIX include new intermediate transfer pumps.
  - New brine system constructed so existing brine tanks can be relocated to allow for FIX expansion.
  - New blending tank to provide flow equalization and bypass flexibility during construction and operations.
  - New GAC treatment facility, including 16 lead-lag trains of 12-foot diameter pressure vessels (i.e., 32 vessels) with intermediate pumping.
  - GAC backwash tank and pumping system.
  - Existing lime-softening and filter system rehabilitation.
- Alternative 2 - Expand regenerable FIX and add IX adsorbers for PFAS treatment:
  - Existing FIX will be expanded to 18 mgd treatment capacity to ensure low TOC feed for the downstream IX treatment facility.
  - Upgrades to existing FIX include new intermediate transfer pumps.
  - New brine system constructed so existing brine tanks can be relocated to allow for FIX expansion.
  - New blending tank to provide flow equalization and bypass flexibility during construction and operations.
  - New IX treatment facility, including 10 lead-lag trains of 12-foot diameter pressure vessels (i.e., 20 vessels) with intermediate pumping.
  - Existing lime-softening and filter system rehabilitation.
- Alternative 3 - Expand regenerable FIX and add FS200 adsorbers for PFAS treatment:
  - Existing FIX will be expanded to 18 mgd treatment capacity to ensure low TOC feed for the downstream IX treatment facility.
  - Upgrades to existing FIX include new intermediate transfer pumps.
  - New brine system constructed so existing brine tanks can be relocated to allow for FIX expansion.

  - » New blending tank to provide flow equalization and bypass flexibility during construction and operations.
  - » New FS200 treatment facility, including 12 lead-lag trains of 12-foot diameter pressure vessels (i.e., 24 vessels) with intermediate pumping.
  - » Existing lime-softening and filter system rehabilitation.
- Alternative 4 - Conversion from lime softening and regenerable FIX to high-pressure membrane (NF/RO):
  - » New NF facility, including NF building, NF treatment skids, pretreatment, and chemical systems.
  - » New DIW for concentrate disposal.
  - » New blending tank and degassifiers.
  - » Provisions for alternative water supply for projected raw water shortfall were not included in the cost estimation.

6.1.2 Operations and Maintenance and Life-Cycle Cost Estimation

Annual O&M and life-cycle costs in terms of 20-year net present value (NPV) for each treatment alternative were also estimated. Table 6.1 presents a summary of estimated costs for the four shortlisted treatment alternatives. Details of the cost estimates and the associated assumptions are referred to in Appendix B.

Table 6.1 Summary of Estimated Capital, Annual O&M, and 20-Year Life-Cycle Costs for Four Short-Listed Treatment Alternatives

Alternatives	1	2	3	4
Description	Expand FIX + GAC	Expand FIX + IX	Expand FIX + FS200	NF/RO
Capital Cost (1)	$72.8M *($51.0 - $109.3M)*	$54.5M *($38.1 - $81.7M)*	$60.0M *($42.0 - $90.0M)*	$140.8M *($98.5 - $211.1M)*
Annual O&M Costs (PFAS Treatment Only)	$7.1M	$6.3M	$6.3M	$9.8M
20-Year NPV (2)	$218M	$179M	$187M	$343M

Note:
(1) Values in parentheses represent AACE Class 4 estimate accuracy range (-30% to+50%).
(2) NPV estimate reflects the upper contingency range for Class 4 capital cost.

Figure 6.1 through Figure 6.3 present bar charts for capital, O&M, and life-cycle cost estimates. All estimated costs are in 2024 dollars. See Appendix B for detailed breakdowns and assumptions made for this cost estimation.

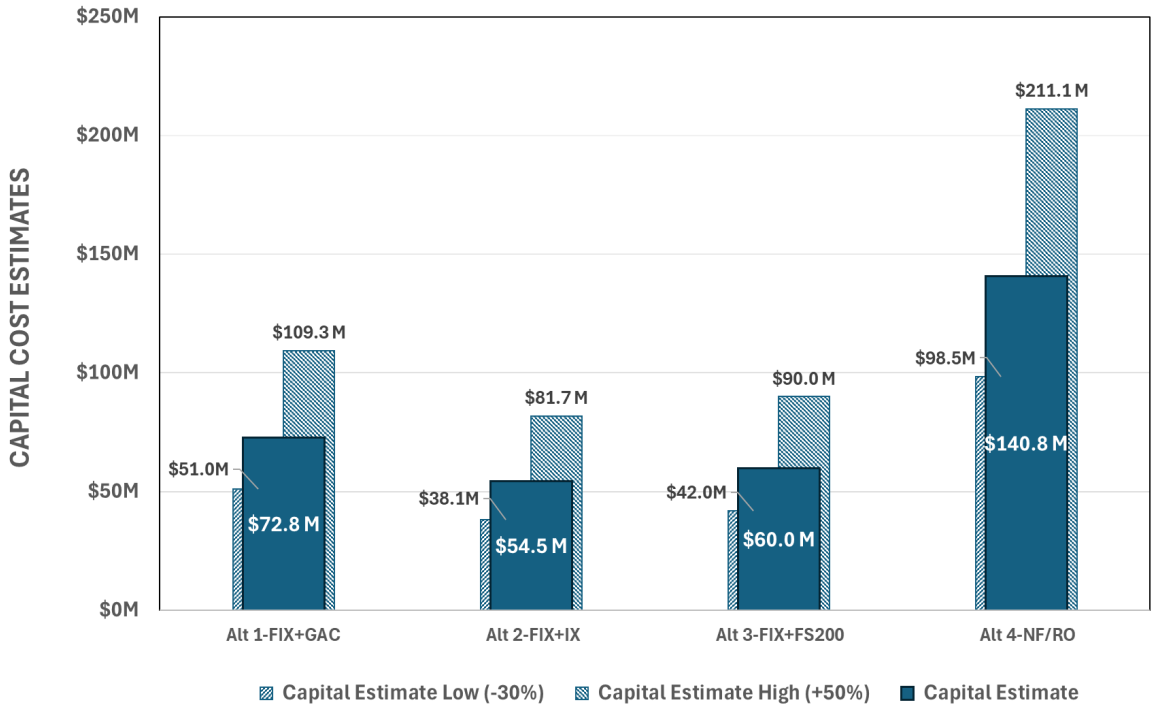


Figure 6.1 Summary of PFAS Treatment Capital Cost Estimates (AACE Class 4)

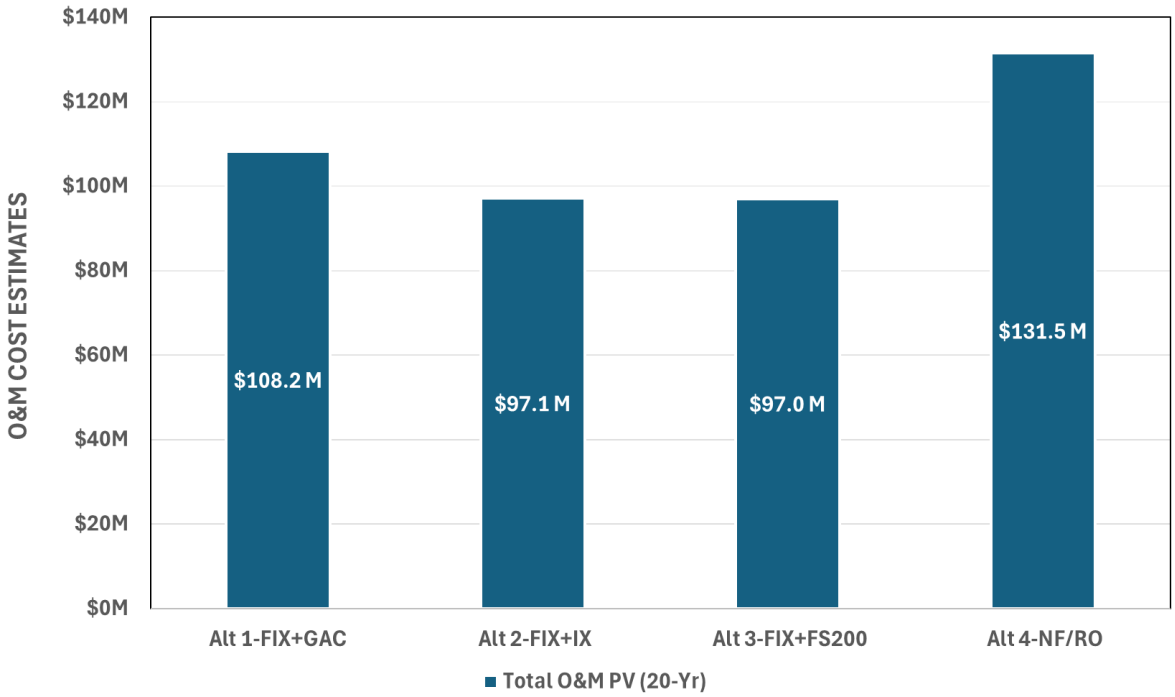


Figure 6.2 Summary of PFAS Treatment O&M Cost Estimates (20-Year)

The estimated capital and O&M costs were further utilized to estimate the 20-year NPV. The NPV is the present value of capital and O&M costs of a project over a specified period of time. The NPV approach is a common evaluation criterion for comparing the long-term cost of treatment alternatives. The 20-year analysis period is commonly used because the 20-years mark is when major renewal and replacement of treatment components are required. It should be noted that this 20-year period does not indicate the duration required for PFAS removal. It is anticipated that the need for PFAS treatment will continue to evolve, including that f more PFAS are to be regulated with respective MCLs or regulated as a mixture using the HI approach.

The following general assumptions were used in the economic evaluation:

- Present Worth Geometric Gradient - this allows for capturing increasing O&M costs over the life of the evaluation period.
- Escalation/Inflation - 3.5 percent.
- Discount Rate - 7.5 percent.
- Evaluation Period - 20 years.

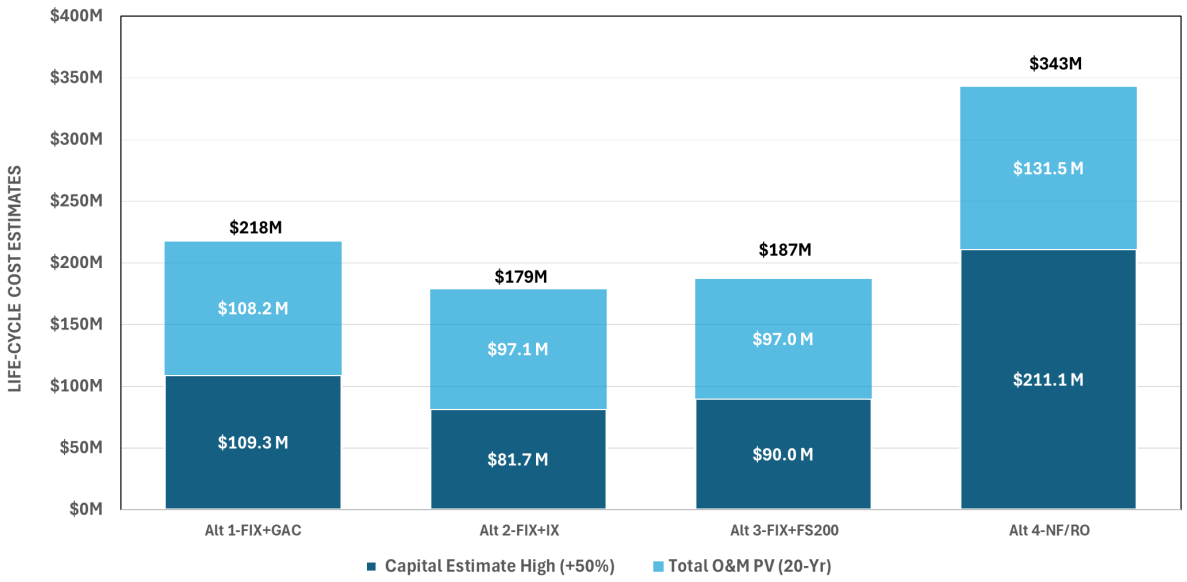


Figure 6.3 Summary of PFAS Treatment Life-Cycle Cost Estimates

SECTION 7 RECOMMENDATIONS AND NEXT STEPS

Carollo recommends that the City proceed with a PFAS treatment facility design at the City's WTP to comply with the upcoming NPDWRs for PFAS. Based on treatment performance, site constraints, cost considerations, and non-cost considerations, the recommended treatment alternative is to employ a PFAS adsorption process using IX resin, along with an expansion to the existing regenerable FIX system to maintain the TOC concentrations in the feed water to or below 1 mg/L going to the PFAS treatment system. This level of TOC pretreatment is critical in minimizing long-term O&M costs associated with media changeout for PFAS treatment. IX resin is the recommended PFAS treatment technology for the City's WTP because of the lowest capital, annual O&M, and life-cycle costs. In addition, the non-cost factors are listed in Section 3 and should be considered when making the final decision on PFAS treatment technology selection.

The recommended next steps for the implementation of a PFAS treatment facility are depicted in Figure 7.1. As previously noted, the compliance schedule established by USEPA is April 26, 2029. However, there are several critical milestones that precede the regulatory enforcement date. Specifically, compliance monitoring will start on April 26, 2027. Following this date, public waters utilities will have to report PFAS levels in the annual Consumer Confidence Reports and are required to provide public notices for monitoring violations. In addition, because the MCL compliance is based on RAA concentrations, the first quarterly sample towards RAA calculation will start in April 2028. This effectively makes April 2028 the operational deadline for PFAS treatment facility.

With these constraints, the critical path for implementation currently proceeds through design, construction, and start-up and commissioning. The schedule is very compressed and only allows approximately 15 months for design (including procurement) and 24 months for construction (excluding bidding and award). It is recommended that City proceed promptly to design phase and actively identify schedule risks and manage potential delays in order to meet the compliance schedule.

Table 7.1 Implementation Schedule Duration and Milestones

Task	Duration	Milestones (1)
PFAS Study	-	February 2025
Procurement- Engineering Services	6 months	August 2025
Design Phase	12 months	August 2026
Permitting	3 months	November 2026
Procurement - Construction	4 months	March 2027
Construction Phase	24 months	March 2029
Initial PFAS Monitoring Ends	-	April 26, 2027
Compliance Monitoring Starts	-	April 26, 2027
Quarterly PFAS Sampling for RAA Calculation Starts	-	April 26, 2028
MCL Compliance Starts	-	April 26, 2029

Notes:
(1) Assume procurement starts on March 1, 2025.

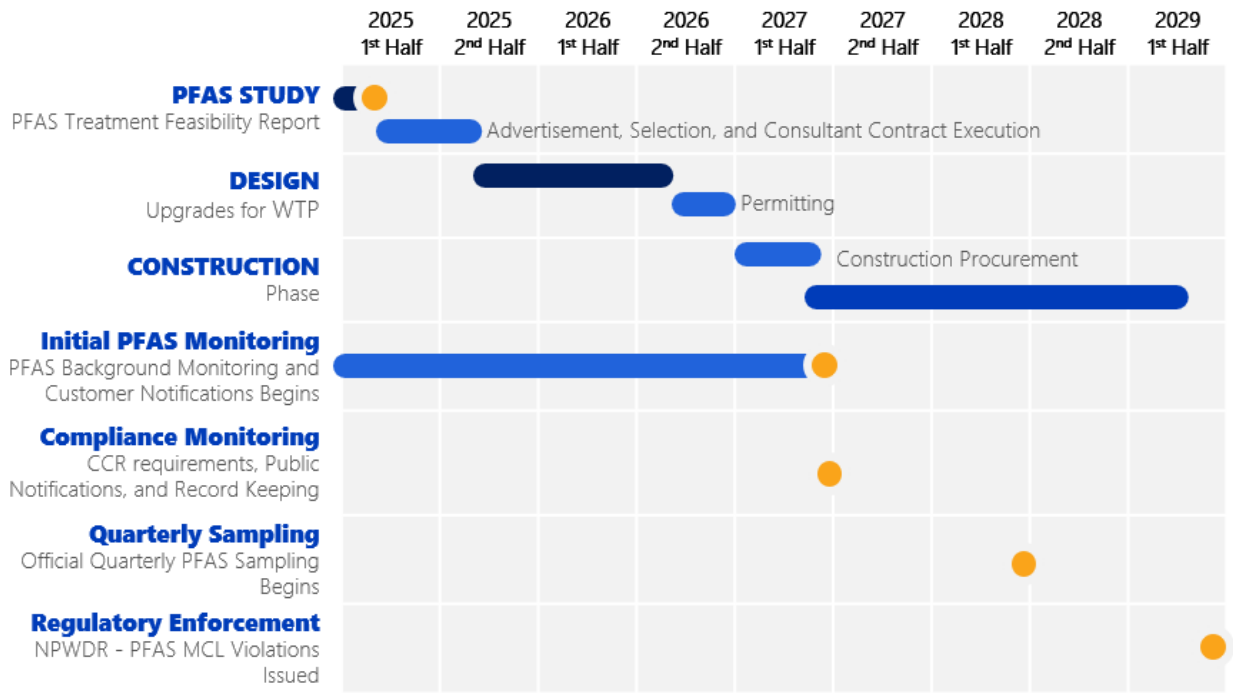


Figure 7.1 Proposed Implementation Schedule

APPENDIX A

SUMMARY OF KEY RSSCT FINDINGS

City of Pembroke Pines

PFAS Treatment Feasibility Evaluation

Progress Meeting

Work in Progress Updates

December 5, 2024

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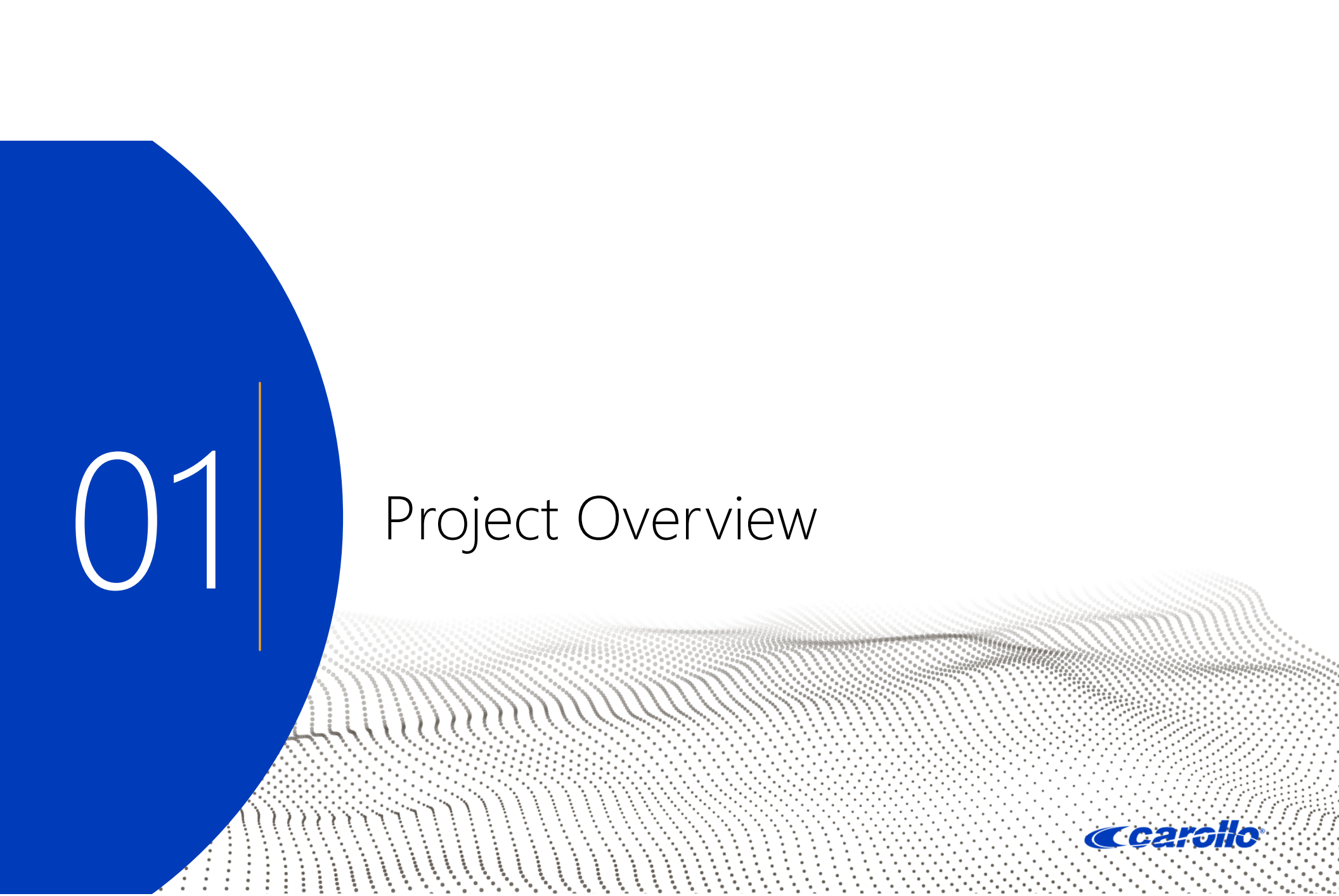
01

Project Overview



Conclusions from Water Quality Data Review (Recap from May 2024)

- Moderate PFOA and PFOS concentrations in the finished water.
  - » ~70% PFOA removal to meet MCL
  - » ~90% PFOS removal to meet MCL
- Need full-flow PFAS treatment without bypass.
- The presence of TOC/color determines PFAS treatment feasibility and economics.
- Need to evaluate the necessity of expanding the existing regenerable FIX for TOC/color removal to make downstream PFAS treatment more cost-effective.

Compound	Units	Final MCL	Mar 2023 UCMR5	Sep 2023 UCMR5
PFOA	ng/L	4.0	14.4	10.2
PFOS	ng/L	4.0	34.7	23.3
PFHxS	ng/L	10	9.1	6.1
PFNA	ng/L	10	ND	ND
HFPO-DA (GenX)	ng/L	10	ND	ND
PFBS	ng/L	--	9.8	7.1
Hazard Index (HI)	--	1.0	0.9	0.6

Project Objectives

Systematically evaluate the feasibility of PFAS treatment by GAC, IX, and FS <u>with</u> and <u>without</u> pretreatment for TOC removal.

- How much TOC makes PFAS treatment infeasible and cost-prohibitive?

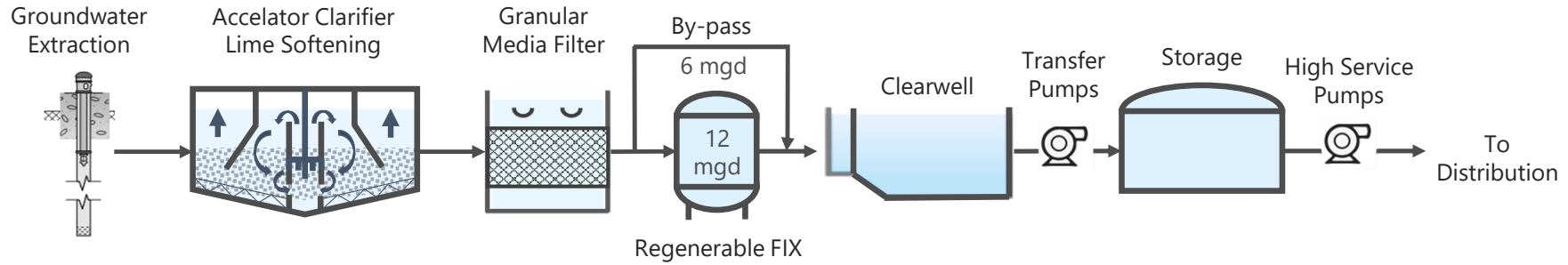
Evaluate the impact of TOC on different media types and different PFAS species.

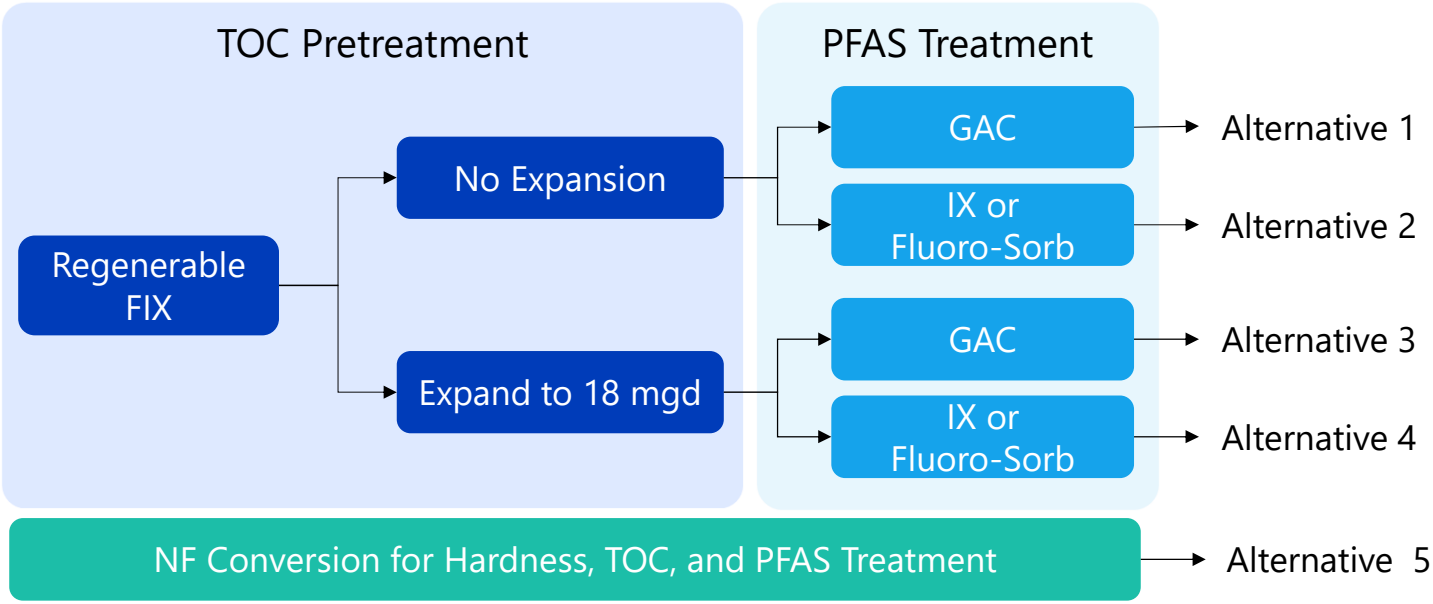
- Which media is more resistant to organics fouling?
- How does TOC impact different PFAS: who's driving media changeout?

Identify the breakeven point between pretreatment costs for TOC removal and O&M savings for PFAS treatment.

- Is it necessary to expand the existing regenerable FIX for more TOC removal?

Treatment Alternatives Drivers – TOC & PFAS

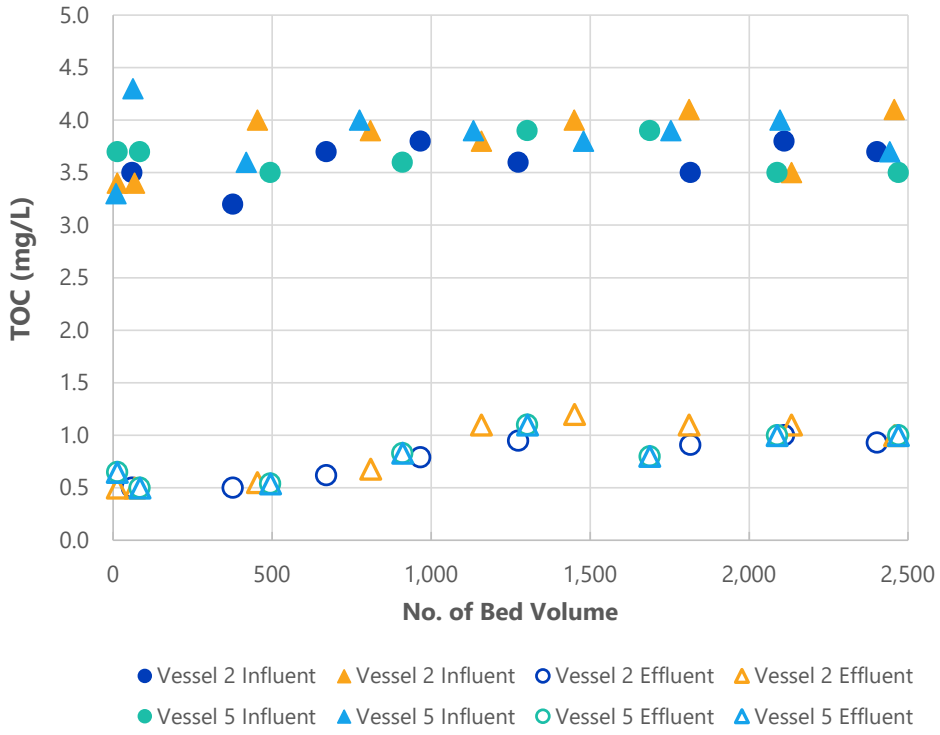


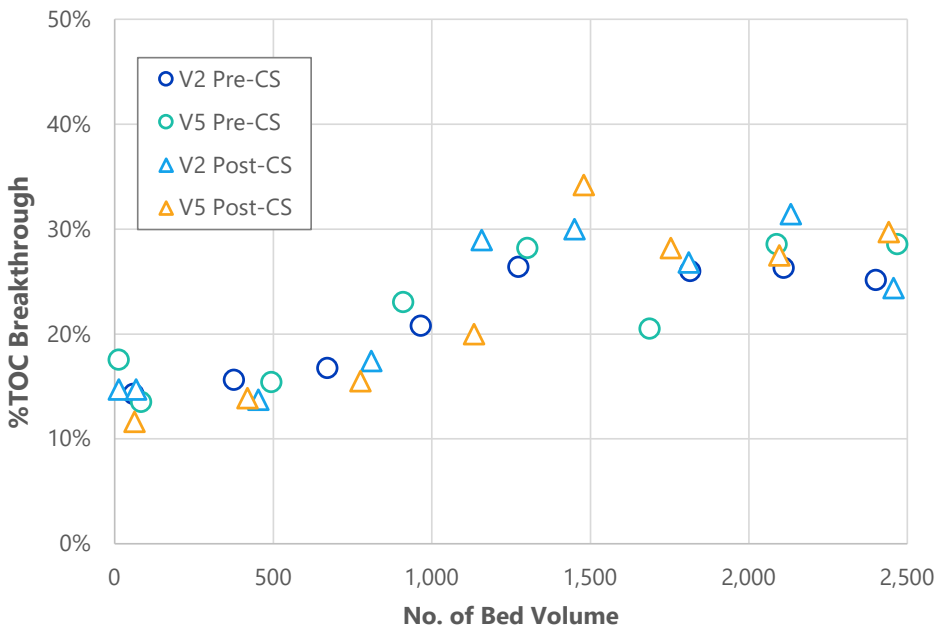


02

Full-scale Regenerable FIX Sampling Results

TOC Sampling Suggested Regenerable IX is Highly Effective in TOC Removal and Caustic Squeeze Does not Impact Performance





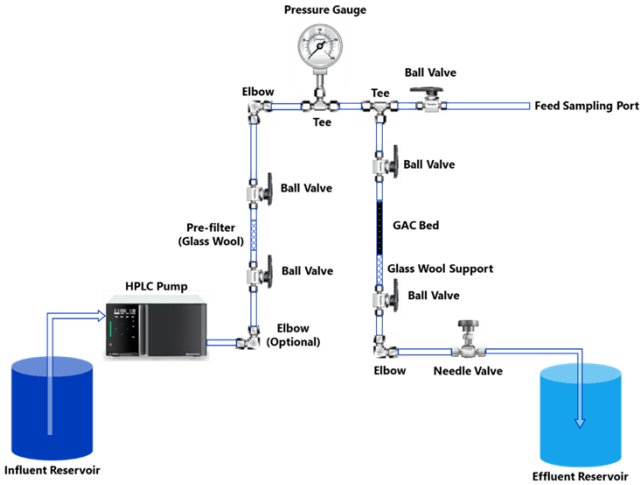
03

Rapid Small-Scale Column Test (RSSCT) Results

RSSCT Design

Parameter		Units	Column GAC	Column IX	Column FS
Full-Scale Adsorber	Source		High and Low TOC Feed		
	Supplier	--	Calgon	Purolite	CETCO
	Product	--	F400	PFA694E	FS 200
	Type	--	12×40	20×35	20×40
	RSSCT Method	--	Hybrid	CD	CD
	Diffusivity Factor, X	--	0.25	0	0
Bench-Scale RSSCT Column	Empty Bed Contact Time	min	**12.5**	**2.0**	**3.0**
	Hydraulic Loading Rate	gpm/ft^2	**6.3**	**12.6**	**12.6**
	Scaling Factor	--	8.5	6.1	5.7
	Empty Bed Contact Time	min	0.297	0.059	0.094
	Duration	BV	**65,000**	**350,000**	**280,000**
		days	564	535	583
		years	1.5	1.5	1.5

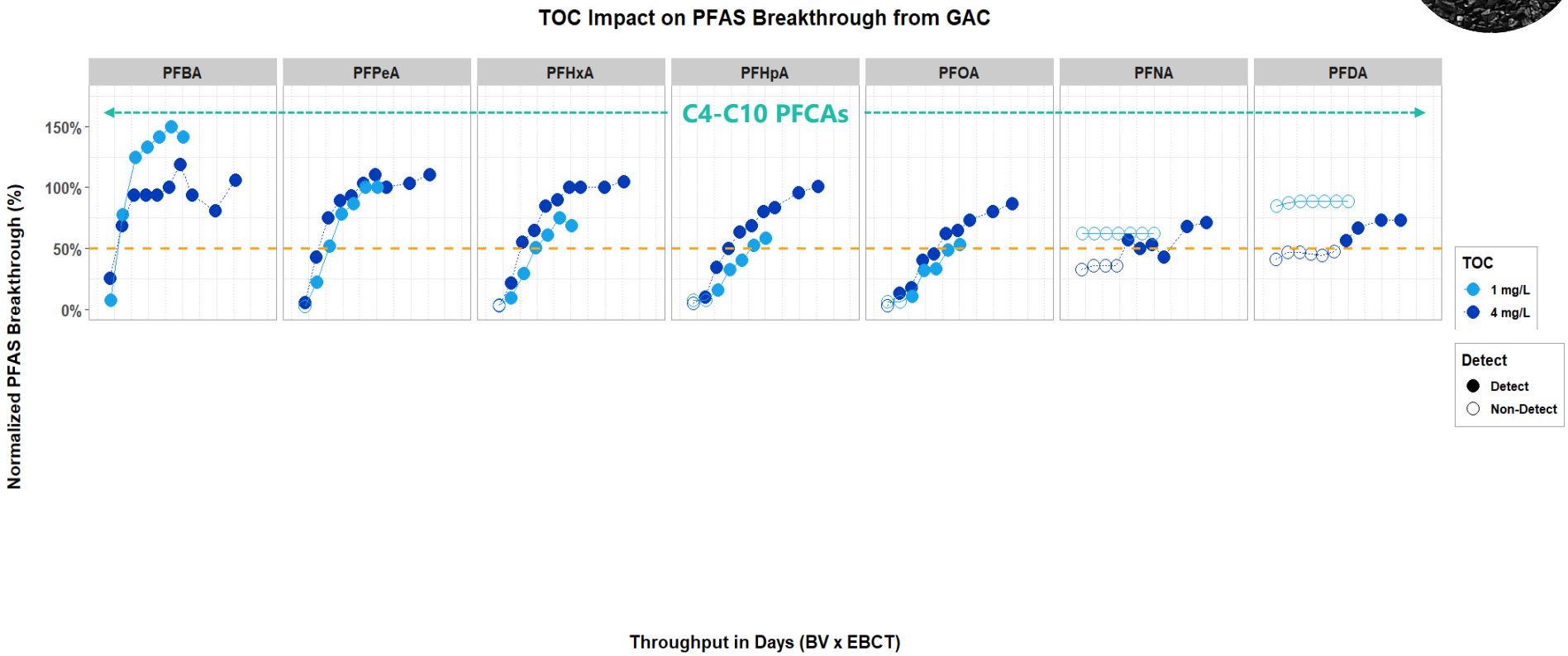
RSSCTs were performed on regenerable FIX combined feed and combined effluent.
2 feed waters × 3 media types = 6 RSSCTs



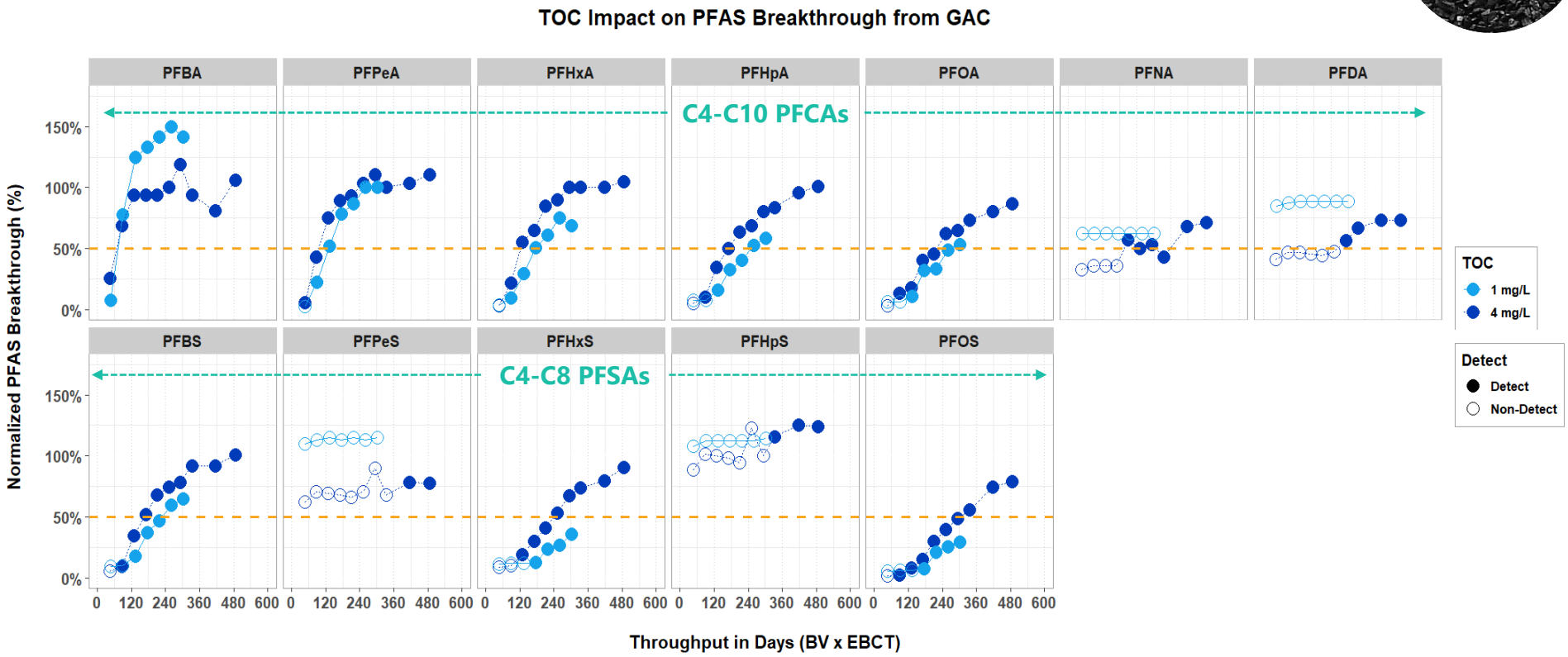
Feed Water Characterization—Regenerable IX Was Found to Remove PFOS

	Parameter	Units	IX Influent	IX Effluent	UCMR5 Mar 2023	UCMR5 Sep 2023	MCL
General Water Quality	pH	S.U	8.5	8.3	NA	NA	
	UV254	cm^{-1}	0.125	0.022	NA	NA	
	TOC	**mg/L**	**4.1**	**1.0**	NA	NA	
PFCAs	PFBA (C4)	ng/L	18	17	12.2	9.2	
	PFPeA (C5)	ng/L	28	25	23.9	17.7	
	PFHxA (C6)	ng/L	21	16	18.4	13.4	
	PFHpA (C7)	ng/L	9.8	8.2	10.0	6.7	
	PFOA (C8)	**ng/L**	**14**	**11**	14.4	10.2	4.0
	PFNA (C9)	ng/L	2.5	1.9 J	ND	ND	10
	PFDA (C10)	ng/L	1.4 J	1.3 J	ND	ND	
PFSAs	PFBS (C4)	ng/L	10	6.7	9.8	7.1	
	PFPeS (C5)	ng/L	1.1 J	0.9 J	ND	ND	
	PFHxS (C6)	ng/L	8.5	6.0	9.1	6.1	10
	PFHpS (C7)	ng/L	1.2 J	0.7 J	ND	ND	
	PFOS (C8)	**ng/L**	**53**	**18**	34.7	23.3	4.0
FTS	**6:2 FTS**	**ng/L**	**44**	**35**	39.1	28.0	
	8:2 FTS	ng/L	3.1	2.3	ND	ND	

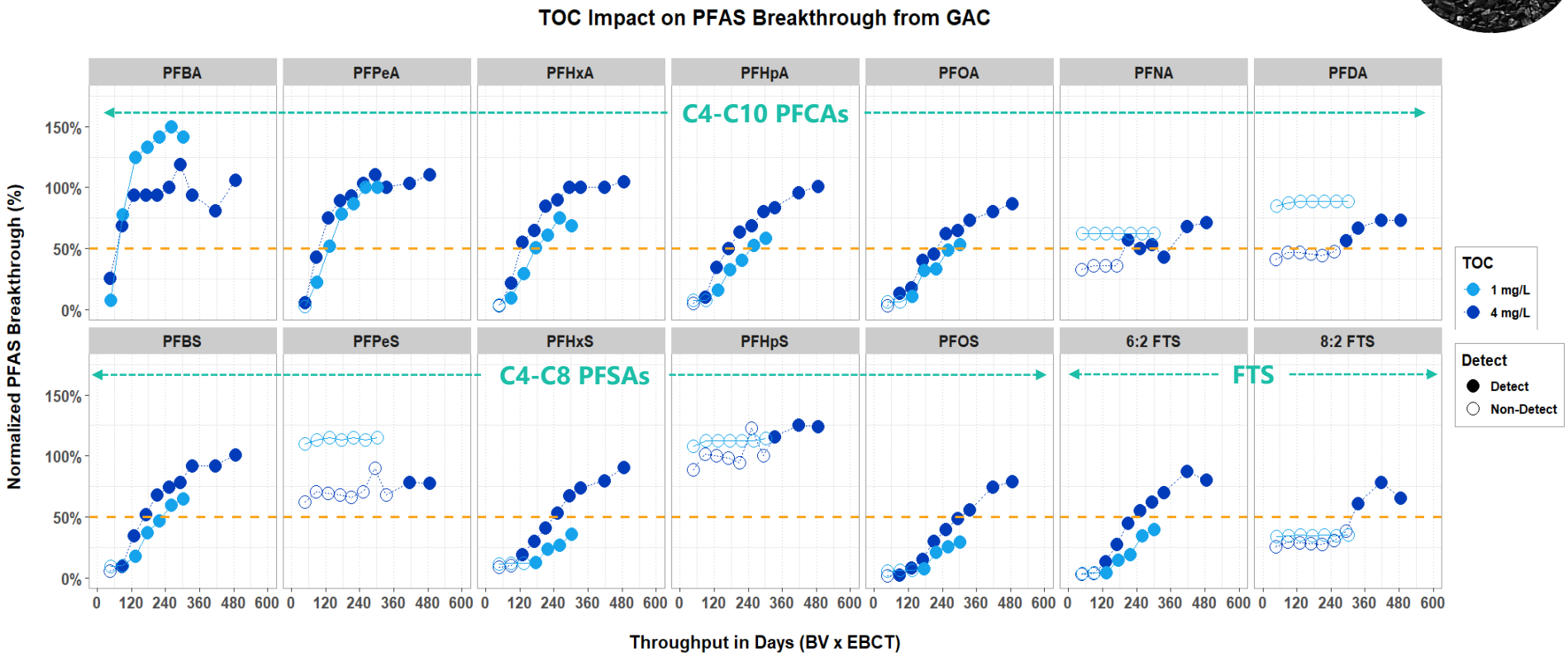
Higher TOC, Earlier PFAS Breakthrough and the Impact of TOC Was Consistent Across the Board of Different PFAS - GAC



Higher TOC, Earlier PFAS Breakthrough and the Impact of TOC Was Consistent Across the Board of Different PFAS - GAC

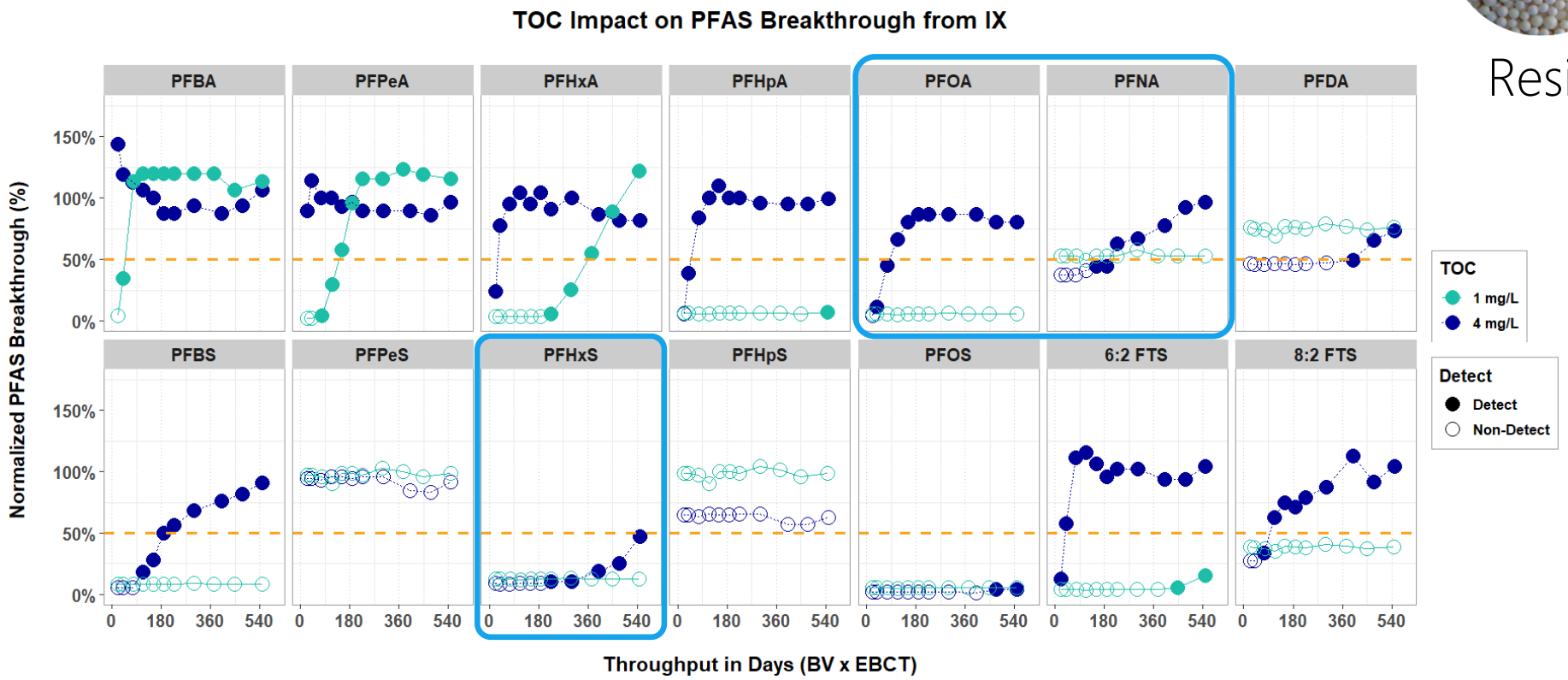


Higher TOC, Earlier PFAS Breakthrough and the Impact of TOC Was Consistent Across the Board of Different PFAS - GAC



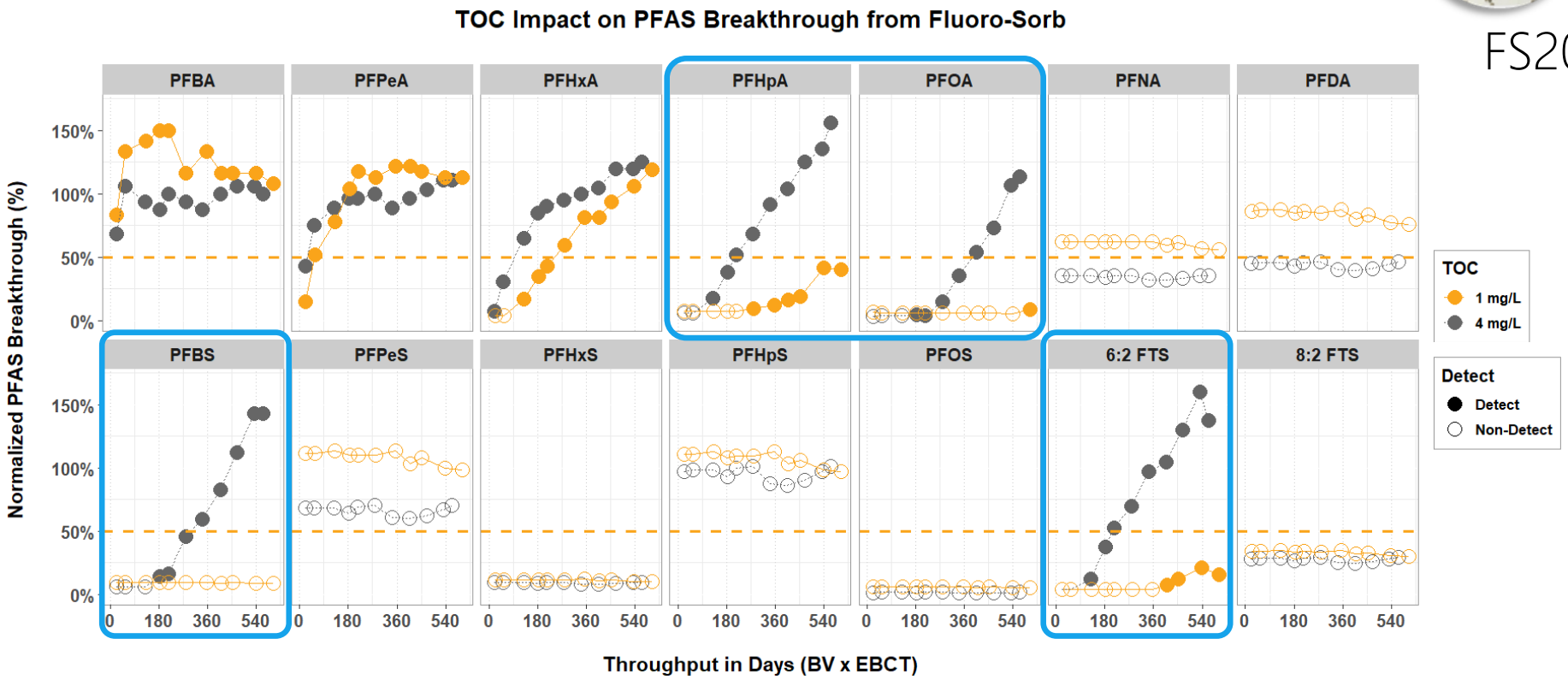
More Apparent Deterioration in IX Performance at Higher TOC

Resin

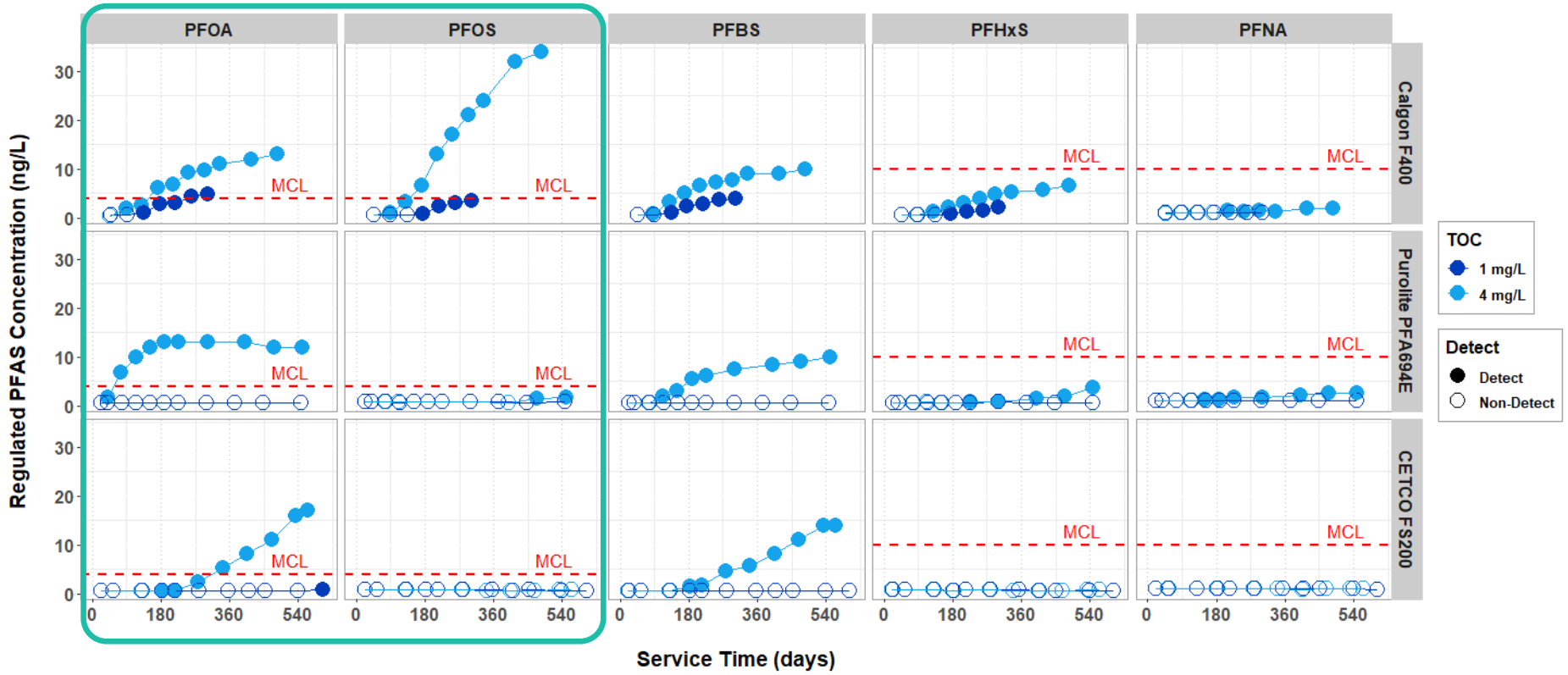


TOC Only Impacts PFHxA, PFHpA, PFOA, PFBS, and 6:2 FTS Breakthrough from FS200

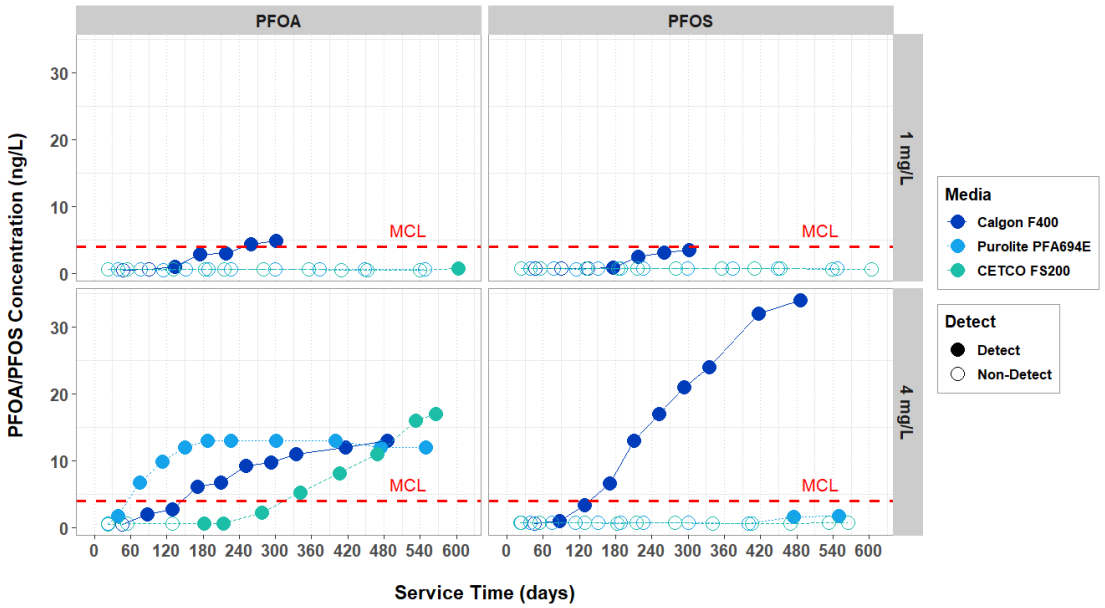
FS200



Among the 6 Regulated PFAS, PFOA and PFOS Drive Media Selection and Changeout Frequency



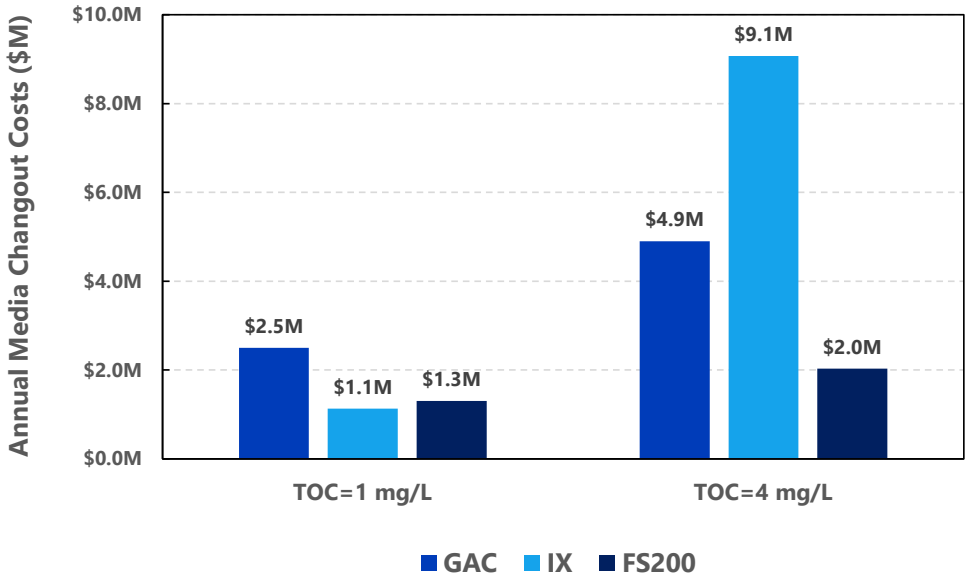
IX and FS200 Outperformed GAC in Treating Low-TOC Feed. GAC and IX are Not Economically Feasible for PFAS Treatment under High-TOC



Feed TOC	Media		PFOA		PFOS	
			Days	Months	Days	Months
1 mg/L	GAC	✗	240	**8**	300	**10**
	IX	✓	540	**18**	540	**18**
	FS200	✓	600	**20**	600	**20**
4 mg/L	GAC	✗	150	**5**	120	**4**
	IX	✗	60	**2**	570	**19**
	FS200	✓	300	**10**	570	**19**

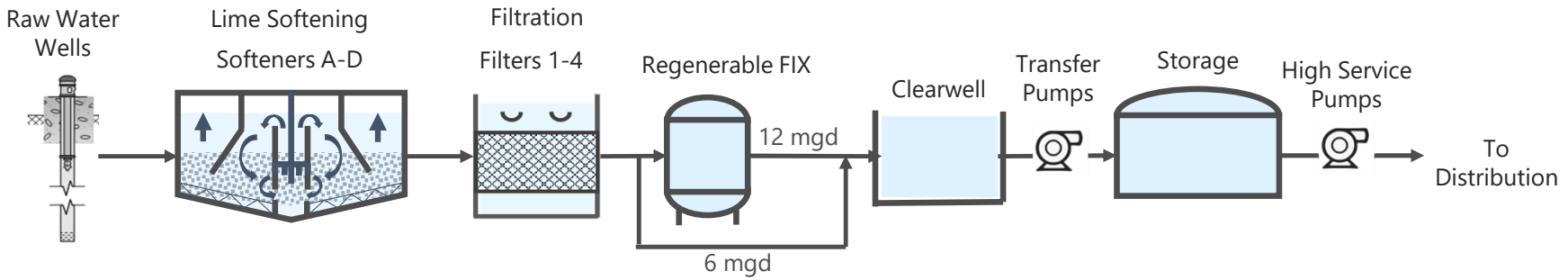
$2.5M/Year Cost Savings for GAC and $8.0M/Year for IX by Reducing Feed Water TOC from 4 mg/L to 1 mg/L

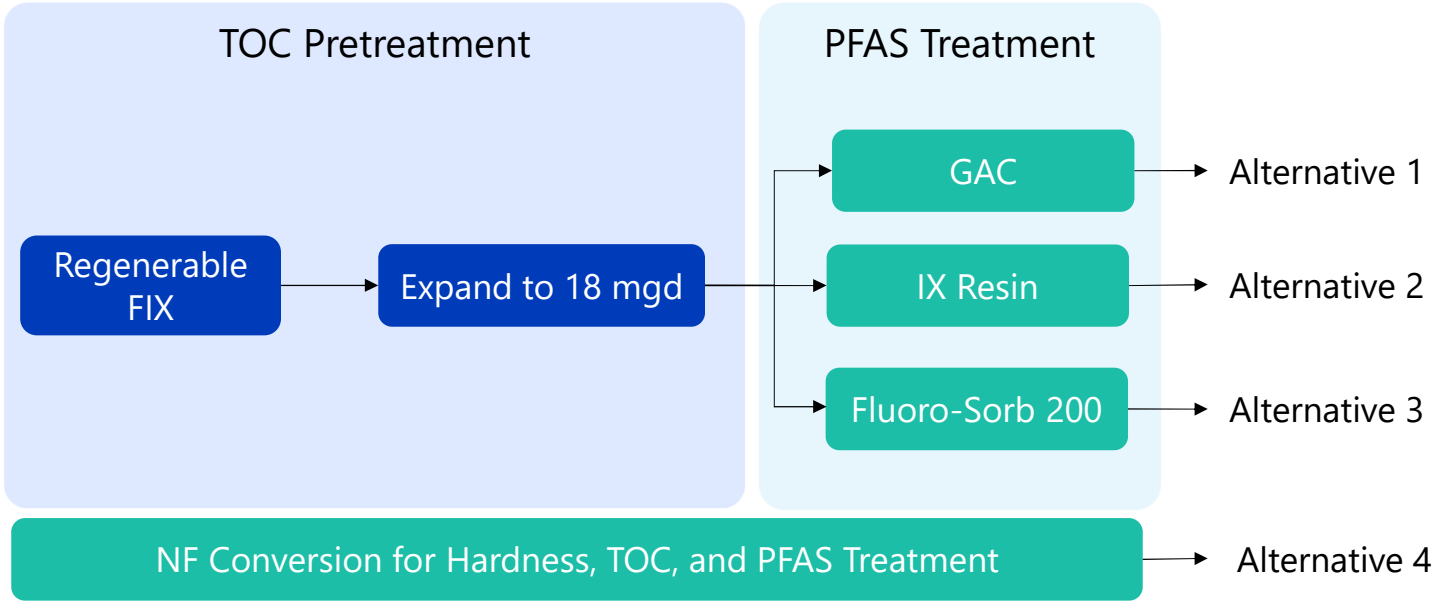
- Design Capacity: 18 mgd
- Media Changeout Costs:
  - GAC: $2.5/lb.
  - IX Resin: $450/ft^3
  - FS200: $350/ft^3



Parameter	Unit	Value
Design Capacity	mgd	18
Treatment Trains (N)	**No.**	**12**
No. of Vessels per Train	No.	1
Flow per Train (N)	gpm	1,042
Vessel Diameter	**ft**	**12**
Hydraulic Loading Rate (N)	gpm/ft^2	9.2
Resin Volume per Vessel	ft^3	420
EBCT per Vessel (N)	min	3.0
Throughput	MG	8.0
	BV	2,546
	days	5.3
Vessel with Resin	$/vessel	355,000
Total Construction	**$M**	**$11.8M**
4 Additional FIX	**$M**	**$4.0M**
Salt Use per Regeneration	lb	4800
Salt Cost	$/lb.	0.1
Annual Salt Cost	**$M/yr**	**$0.4M/yr**

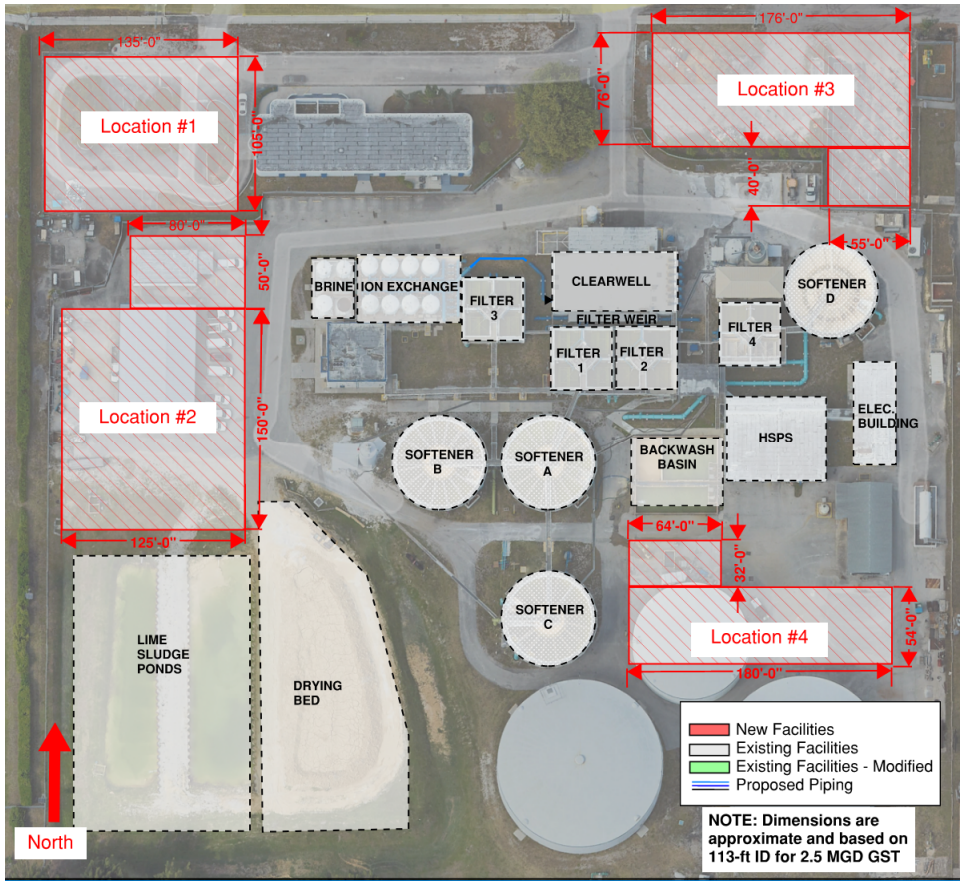
Shortlisted Treatment Alternatives





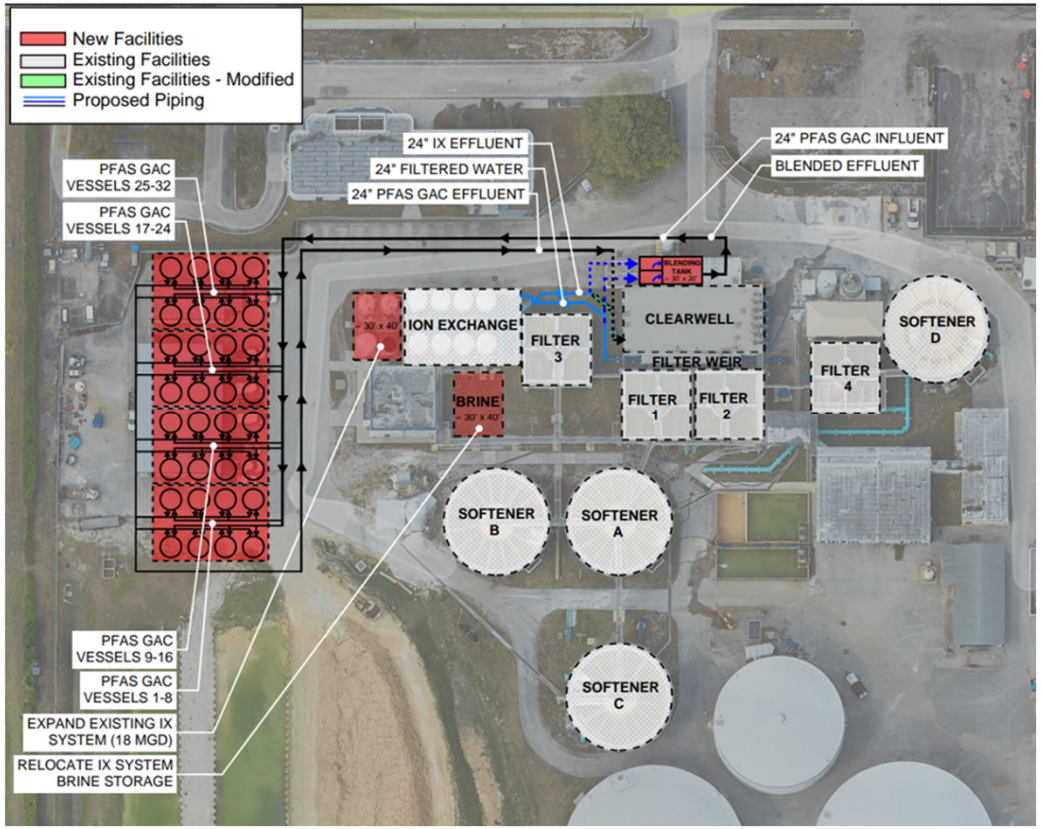
Site Utilization Options

- Location 1- Existing Parking Lot
- Location 2- Maintenance Building
- Location 3- Front Entrance
- Location 4 – Existing GST



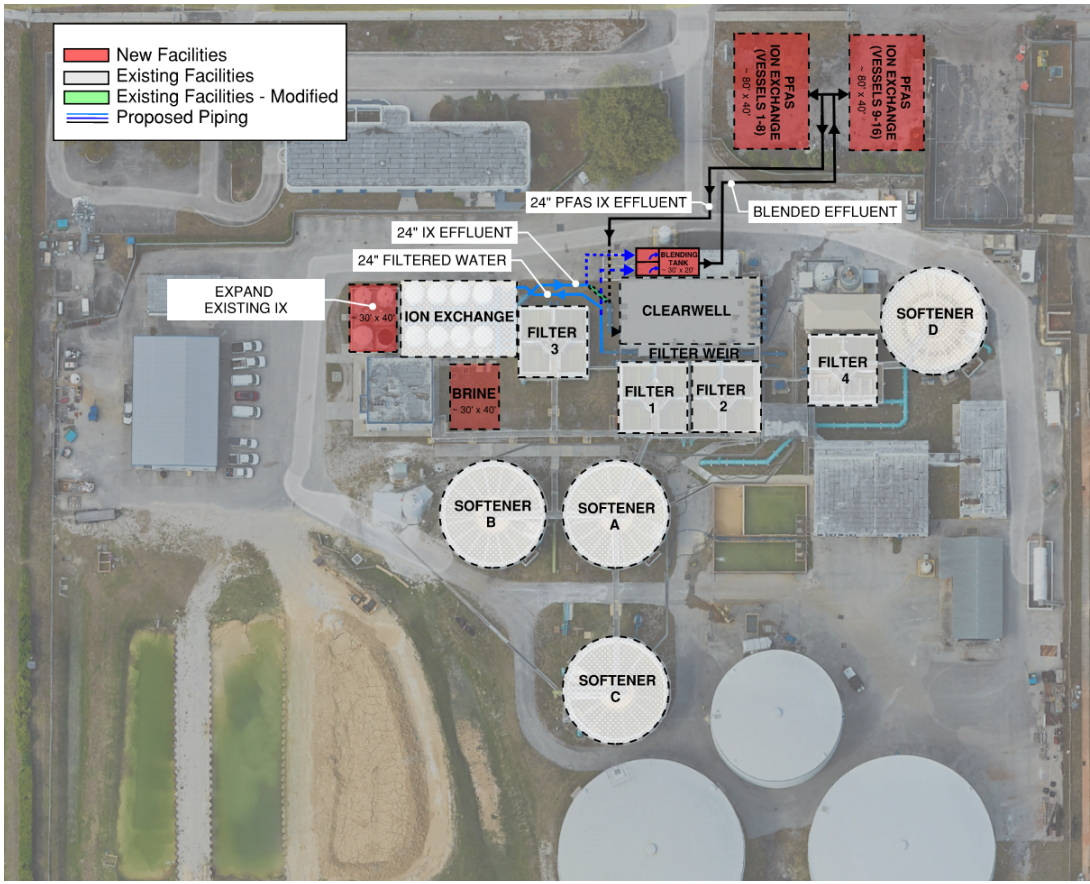
Conceptual GAC Layout

- Options for FIX expansion dependent of O&M cost and operational flexibility
- Relocate brine system for FIX expansion
- New GAC facility located at the current maintenance building and parking lot
- New blending tank for flow EQ and bypass



Conceptual IX Layout

- Options for FIX expansion dependent of O&M cost and operational flexibility
- Relocate brine system for FIX expansion
- New IX facility located at the front entrance
- New blending tank flow EQ and bypass

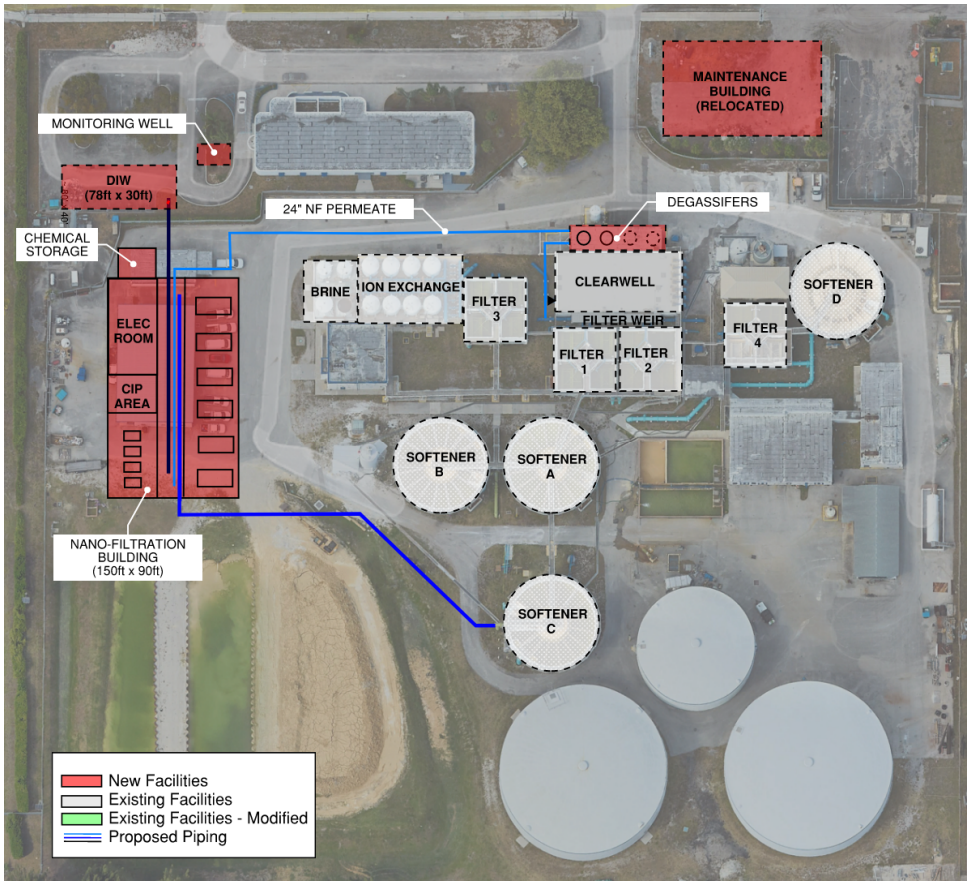


Conceptual FS200 Layout

- Options for FIX expansion dependent of O&M cost and operational flexibility
- Relocate brine system for FIX expansion
- New IX facility located at the front entrance
- New blending tank flow EQ and bypass

Conceptual NF Layout

- New NF Building 150ft x 90ft
- New DIW and monitoring well
- Yard Piping
- Degassifier and blending tank



04

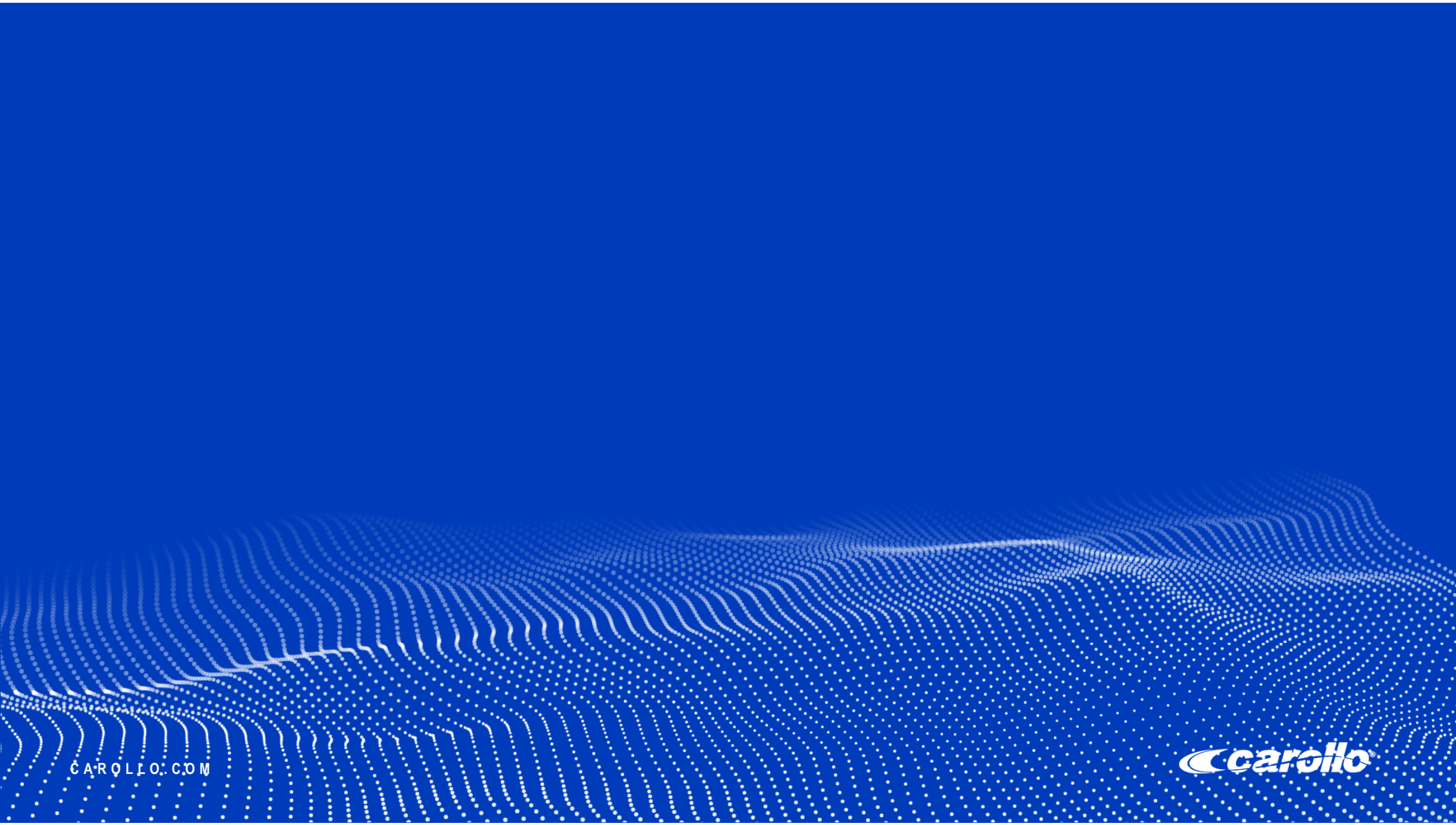
Recommendations and Next Steps

Recommendations and Next Steps

- Complete PFAS facility conceptual design and layout
  - » Existing IX- with and without expansion
  - » PFAS treatment with IX and Fluoro-sorb
  - » Membrane filtration
- Complete life cycle cost analysis for each treatment alternative
- Fluoro-Sorb has demonstrated effectiveness for removing PFAS; longer operating life under higher TOC loading
  - » If selected as the treatment technology, a pilot study is recommended.
  - » Operation-related evaluation:
    - Particulate fouling?
    - Biofouling?
    - Impact of residual chloramine on FS200?

Data Request

- Existing Drawings (AutoCAD) for Phase 1 and 2 Expansion
- Lime costs – annual budget or bid pricing
- Sludge hauling costs – contract or budget
- Electrical Bill – Need current rates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APPENDIX B

DETAILED BREAKDOWN AND ASSUMPTIONS FOR COST ANALYSIS

Expand Exisitng IX & GAC Vessals for PFAS

GAC CAPITAL COST ESTIMATE

Classification	Quantity	Units	Unit Cost	Subtotal	Installation Factor	Installation Subtotal	Total Cost
Direct Cost							
Water Treatment System							
Expand Existing IX (TOC)	4	EA	$ 275,000	$ 1,100,000	50%	$ 550,000.00	$ 1,650,000
New IX-TOC Pumps	6	EA	$ 50,000	$ 300,000	50%	$ 150,000.00	$ 450,000
New Brine System	1	LS	$ 500,000	$ 500,000	30%	$ 150,000.00	$ 650,000
Demo Existing Brine System	1	EA	$ 50,000	$ 50,000	25%	$ 12,500.00	$ 62,500
New Blend Tank	1	LS	$ 450,000	$ 450,000	50%	$ 225,000.00	$ 675,000
New GAC System	16	LS	$ 750,000	$ 12,000,000	50%	$ 6,000,000	$ 18,000,000
GAC Vessel Feed Pumps	8	EA	$ 50,000	$ 400,000	50%	$ 200,000	$ 600,000
GAC Backwash Storage Tank	1	EA	$ 75,000	$ 75,000	25%	$ 18,750	$ 93,750
GAC Backwash Pumps	3		$ 50,002	$ 150,006	50%	$ 75,003	$ 225,009
Blend Tank to GAC Vessel Piping (24")	550	LF	$ 350	$ 192,500	50%	$ 96,250.00	$ 288,750
GAC Vessel to Clearwell Piping (24")	750	LF	$ 350	$ 262,500	50%	$ 131,250.00	$ 393,750
Subtotal Facility and Equipment							**$ 23,088,759**
Other							
Future (Redudant IX-TOC) Expansion	4	LS	$ 500,000	$ 2,000,000	30%	$ 600,000	$ 2,600,000
LS Rehabilitation including FIX Media	1	LS	$ 5,000,000	$ 5,000,000	0%	$ -	$ 5,000,000
Filter Rehabilitation and Upgrades	1	LS	$ 5,000,000	$ 5,000,000	0%	$ -	$ 5,000,000
I&C (estimate as % of Facility)		%	20%	$ 4,617,752	0%	$ -	$ 4,617,752
Piping, Valves, and Flow Meters (estimate as % of Facility)		%	20%	$ 4,617,752	0%	$ -	$ 4,617,752
Electrical (estimate as % of Facility)		%	20%	$ 4,617,752	0%	$ -	$ 4,617,752
Subtotal Other Cost							**$ 26,453,000**
Design Contingency		%	30%			$ -	$ 6,926,628
Total Direct Costs							**$ 56,468,387**
Indirect Cost							
General Conditions			5%				$ 2,823,000
Bonds and Insurance			2%				$ 1,129,368
Overhead, Profit, and Risk			15%				$ 8,470,000
Taxes (on total direct construction costs unless exempted or pre-purchase)			7%				$ 3,953,000
Total Indirect Cost							**$ 16,375,368**
Total Construction Cost							**$ 72,844,000**
Engineering, Administration, and Legal			25%				**$ 18,211,000**
Total Capital Cost and Engineering Costs							**$ 91,055,000**

Estimate of Probable Construction Cost:

AACE Class 4 Estimate Low	-30%	**$**	**50,990,800**
AACE Class 4 Estimate High	50%	**$**	**109,266,000**

GAC ANNUAL OPERATION & MAINTENANCE COSTS

Classification	Quantity	Units	Unit Costs	Extended Cost
GAC Change-out Cost/Vessal	40,000	lb	$ 2.50	$ 100,000
Qty of Vessel Change-outs per year	25.0	No./yr		$ 2,500,000
Brine Regeneration	1.0	LS	$ 400,000	$ 400,000
Power	2,500,000	kWh/yr	$ 0.15	$ 375,000
Chemicals Cost (Process Specific) - Lime	1	LS	$ 1,500,000	$ 1,500,000
pH Adjustment (post LS CO2)	1	LS	$ 400,000	$ 400,000
Sludge Hauling Cost	1	LS	$ 800,000.00	$ 800,000
Subtotal of Annual O&M				**$ 5,975,000**
Maintenance Contingencey (% of Major Capital Equipment)			5%	$ 1,154,438
Total Annual O&M				**$ 7,129,000**

Assumptions:

(1) Costs in 2024 dollars and not escalated to mid-point of construction

(2) Buy American provisisions for federally-funded infrastructure not considered

(3) Federal regulations related to dispostal of PFAS waste streams not considered

Expand Exisitng IX & IX-Resin for PFAS

IX CAPITAL COST ESTIMATE

Classification	Quantity	Units	Unit Cost	Subtotal	Installation Factor	Installation Subtotal	Total Cost
Direct Cost							
Water Treatment System							
Expand Existing IX (TOC)	4	EA	$ 300,000	$ 1,200,000	50%	$ 600,000.00	$ 1,800,000
New IX-TOC Pumps	6	EA	$ 50,000	$ 300,000	50%	$ 150,000.00	$ 450,000
New Brine System	1	LS	$ 500,000	$ 500,000	30%	$ 150,000.00	$ 650,000
Demo Existing Brine System	1	EA	$ 50,000	$ 50,000	25%	$ 12,500.00	$ 62,500
New Blend Tank	1	LS	$ 450,000	$ 450,000	50%	$ 225,000.00	$ 675,000
New IX-PFAS System	10	LS	$ 750,000	$ 7,500,000	$ 1	$ 3,750,000	$ 11,250,000
IX-PFAS Feed Pumps	6	EA	$ 50,000	$ 300,000	$ 1	$ 150,000	$ 450,000
Blend Tank to IX-PFAS Piping (24")	200	LF	$ 350	$ 70,000	50%	$ 35,000.00	$ 105,000
IX-PFAS to Clearwell Piping (24")	275	LF	$ 350	$ 96,250	50%	$ 48,125.00	$ 144,375
Subtotal Facility and Equipment							**$ 15,586,875**
Other							
Future (Redudant IX-TOC) Expansion/Redundancy	4	LS	$ 500,000	$ 2,000,000	30%	$ 600,000	$ 2,600,000
LS Rehabilitation	1	LS	$ 5,000,000	$ 5,000,000	0%	$ -	$ 5,000,000
Filter Rehabilitation and Upgrades	1	LS	$ 5,000,000	$ 5,000,000	0%	$ -	$ 5,000,000
I&C (estimate as % of Facility)		%	20%	$ 3,117,375	0%	$ -	$ 3,117,375
Piping, Valves, and Flow Meters (estimate as % of Facility)		%	20%	$ 3,117,375	0%	$ -	$ 3,117,375
Electrical (estimate as % of Facility)		%	20%	$ 3,117,375	0%	$ -	$ 3,117,375
Subtotal Other Cost							**$ 21,952,000**
Design Contingnency		%	30%		0%	$ -	$ 4,676,063
Total Direct Costs							**$ 42,214,938**
Indirect Cost							
General Conditions			5%				$ 2,111,000
Bonds and Insurance			2%				$ 844,299
Overhead, Profit, and Risk			15%				$ 6,332,000
Taxes (on total direct construction costs unless exempted or pre-purchase; FL Rules)			7%				$ 2,955,000
Total Indirect Cost							**$ 12,242,299**
Total Construction Cost							**$ 54,457,000**
Engineering, Administration, and Legal			25%				**$ 13,614,250**
Total Capital Cost and Engineering Costs							**$ 68,071,250**

Estimate of Probable Construction Cost:

AACE Class 4 Estimate Low	-30%	**$ 38,119,900**
AACE Class 4 Estimate High	50%	**$ 81,685,500**

IX ANNUAL OPERATION & MAINTENANCE COSTS

Classification	Quantity	Units	Unit Costs	Extended Cost
IX Resin Change-out Cost/Vessal	420	ft3	$ 450	$ 189,000
Qty of Vessel Change-outs per year	10.0	No./yr		$ 1,890,000
Brine Regeneration	1.0	LS	$ 400,000	$ 400,000
Power	3,500,000	kWh/yr	$ 0.15	$ 525,000
Chemicals Cost (Process Specific) - Lime	1	LS	$ 1,500,000	$ 1,500,000
pH Adjustment (post LS CO2)	1	LS	$ 400,000	$ 400,000
Sludge Hauling Cost	1	LS	$ 800,000.0	$ 800,000
Subtotal of Annual O&M				**$ 5,515,000**
Maintenance Contingencey (% of Major Capital Equipment)			5%	$ 779,344
Total Annual O&M				**$ 6,294,000**

Assumptions:

(1) Costs in 2024 dollars and not escalated to mid-point of construction

(2) Buy American provisisions for federally-funded infrastructure not considered

(3) Federal regulations related to dispostal of PFAS waste streams not considered

Expand Exisitng IX & Fluorosorb for PFAS

FS200 CAPITAL COST ESTIMATE

Classification	Quantity	Units	Unit Cost	Subtotal	Installation Factor	Installation Subtotal	Total Cost
Direct Cost							
Water Treatment System							
Expand Existing IX (TOC)	4	EA	$ 300,000	$ 1,200,000	50%	$ 600,000.00	$ 1,800,000
New IX-TOC Pumps	6	EA	$ 50,000	$ 300,000	50%	$ 150,000.00	$ 450,000
New Brine System	1	LS	$ 500,000	$ 500,000	30%	$ 150,000.00	$ 650,000
Demo Existing Brine System	1	EA	$ 50,000	$ 50,000	25%	$ 12,500.00	$ 62,500
New Blend Tank	1	LS	$ 450,000	$ 450,000	50%	$ 225,000.00	$ 675,000
New IX-PFAS System	12	LS	$ 750,000	$ 9,000,000	$ 1	$ 4,500,000	$ 13,500,000
IX-PFAS Feed Pumps	6	EA	$ 50,000	$ 300,000	$ 1	$ 150,000	$ 450,000
Blend Tank to IX-PFAS Piping (24")	200	LF	$ 350	$ 70,000	50%	$ 35,000.00	$ 105,000
IX-PFAS to Clearwell Piping (24")	275	LF	$ 350	$ 96,250	50%	$ 48,125.00	$ 144,375
Subtotal Facility and Equipment							**$ 17,836,875**
Other							
Future (Redudant IX-TOC) Expansion/Redundancy	4	LS	$ 500,000	$ 2,000,000	30%	$ 600,000	$ 2,600,000
LS Rehabilitation	1	LS	$ 5,000,000	$ 5,000,000	0%	$ -	$ 5,000,000
Filter Rehabilitation and Upgrades	1	LS	$ 5,000,000	$ 5,000,000	0%	$ -	$ 5,000,000
I&C (estimate as % of Facility)		%	20%	$ 3,567,375	0%	$ -	$ 3,567,375
Piping, Valves, and Flow Meters (estimate as % of Facility)		%	20%	$ 3,567,375	0%	$ -	$ 3,567,375
Electrical (estimate as % of Facility)		%	20%	$ 3,567,375	0%	$ -	$ 3,567,375
Subtotal Other Cost							**$ 23,302,000**
Design Contingnency		%	30%		0%	$ -	$ 5,351,063
Total Direct Costs							**$ 46,489,938**
Indirect Cost							
General Conditions			5%				$ 2,324,000
Bonds and Insurance			2%				$ 929,799
Overhead, Profit, and Risk			15%				$ 6,973,000
Taxes (on total direct construction costs unless exempted or pre-purchase; FL Rules)			7%				$ 3,254,000
Total Indirect Cost							**$ 13,480,799**
Total Construction Cost							**$ 59,971,000**
Engineering, Administration, and Legal			25%				**$ 14,992,750**
Total Capital Cost and Engineering Costs							**$ 74,963,750**

Estimate of Probable Construction Cost:

AACE Class 4 Estimate Low	-30%	**$ 41,979,700**
AACE Class 4 Estimate High	50%	**$ 89,956,500**

FS200 ANNUAL OPERATION & MAINTENANCE COSTS

Classification	Quantity	Units	Unit Costs	Extended Cost
FS Change-out Cost/Vessal	420	ft3	$ 350.00	$ 147,000
Qty of Vessel Change-outs per year	12.0	No./yr		$ 1,764,000
Brine Regeneration	1.0	LS	$ 400,000	$ 400,000
Power	3,500,000	kWh/yr	$ 0.15	$ 525,000
Chemicals Cost (Process Specific) - Lime	1	LS	$ 1,500,000	$ 1,500,000
pH Adjustment (post LS CO2)	1	LS	$ 400,000	$ 400,000
Sludge Hauling Cost	1	LS	$ 800,000	$ 800,000
Subtotal of Annual O&M				**$ 5,389,000**
Maintenance Contingencey (% of Major Capital Equipment)			5%	$ 891,844
Total Annual O&M				**$ 6,281,000**

Assumptions:

(1) Costs in 2024 dollars and not escalated to mid-point of construction

(2) Buy American provisisions for federally-funded infrastructure not considered

(3) Federal regulations related to dispostal of PFAS waste streams not considered

NF CAPITAL COST ESTIMATE

Classification	Quantity	Units	Unit Cost	Subtotal	Installation Factor	Installation Subtotal	Total Cost
Direct Cost							
Water Treatment System							
NF Building (Foundation and Shell Only)	13,500	SF	$ 550	$ 7,425,000	50%	$ 3,712,500	$ 11,137,500
Catridge Filters	4	EA	$ 125,000	$ 500,000	50%	$ 250,000	$ 750,000
CIP System	1	LS	$ 150,000	$ 150,000	50%	$ 75,000	$ 225,000
Feed Pumps and Local Panel	6	EA	$ 50,000	$ 300,000	50%	$ 150,000	$ 450,000
NF Skids	6	LS	$ 3,000,000	$ 18,000,000	25%	$ 4,500,000	$ 22,500,000
DIW	1	LS	$ 20,000,000	$ 20,000,000	0%	$ -	$ 20,000,000
Chemical System	1	LS	$ 500,000	$ 500,000	50%	$ 250,000	$ 750,000
Blending Tank	1	LS	$ 250,000	$ 250,000	50%	$ 125,000	$ 375,000
Desgassifier (FRP Vessel, Blower, Motor)	3	LS	$ 75,000.00	$ 225,000	30%	$ 67,500	$ 292,500
Raw Water Piping (24")	450	LF	$ 350.00	$ 157,500	0%	$ -	$ 157,500
Permeate Piping (24")	550	LF	$ 350.00	$ 192,500	0%	$ -	$ 192,500
Centrate Piping (16")	200	LF	$ 350.00	$ 70,000	0%	$ -	$ 70,000
Subtotal Facility and Equipment							**$ 56,900,000**
Other							
Relocate Existing Maintenance Building	1	LS	$ 500,000	$ 500,000	0%	$ -	$ 500,000
Site Demolition	1	LS	$ 500,000	$ 500,000	0%	$ -	$ 500,000
Electrical (estimated as % of Facility)		%	20%	$ 11,380,000	0%	$ -	$ 11,380,000
I&C (estimate as % of Facility)		%	20%	$ 11,380,000	0%	$ -	$ 11,380,000
Piping, Valves, and Flow Meters (estimate as % of Facility)		%	20%	$ 11,380,000	0%	$ -	$ 11,380,000
Alternative Water Supply (C51; Floridan Wells, RO)	1	LS		$ -	0%	$ -	$ -
Subtotal Other Cost							**$ 35,140,000**
Design Contingency		%	30%			$ -	$ 17,070,000
Total Direct Costs							**$ 109,110,000**
Indirect Cost							
General Conditions			5%				$ 5,456,000
Bonds and Insurance			2%				$ 2,182,200
Overhead, Profit, and Risk			15%				$ 16,367,000
Taxes (on total direct construction costs unless exempted or pre-purchase; FL Rules)			7%				$ 7,638,000
Total Indirect Cost							**$ 31,643,200**
Total Construction Cost							**$ 140,753,000**
Engineering, Administration, and Legal			25%				**$ 35,188,250**
Total Capital Cost and Engineering Costs							**$ 175,941,250**

Estimate of Probable Construction Cost:

AACE Class 4 Estimate Low	-30%	**$ 98,527,100**
AACE Class 4 Estimate High	50%	**$ 211,129,500**

NF ANNUAL OPERATION & MAINTENANCE COSTS

Classification	Quantity	Units	Unit Costs	Extended Cost
Chemicals Cost (Process Specific)	1	LS	$ 3,600,000	$ 3,600,000
Consumables	1	LS	$ 636,000	$ 636,000
Power for NF	13,500,000	kWh/yr	$ 0.15	$ 2,025,000
Power for DIW	4,500,000	kWh/yr	$ 0.15	$ 675,000
Subtotal of Annual O&M				**$ 6,936,000**
Maintenance Contingencey (% of Major Capital Equipment)			5%	$ 2,845,000
Total Annual O&M				**$ 9,781,000**

Assumptions:

(1) Costs in 2024 dollars and not escalated to mid-point of construction

(2) Buy American provisisions for federally-funded infrastructure not considered

(3) Federal regulations related to dispostal of PFAS waste streams not considered

EVALUATION

Engineering Services for Ion Exchange Addition to the Water Treatment Plant for PFAS Removal

Request For Qualification

Utilities

17551, 88580, 89085, 90900, 91107... show all

Project ID: PSUT-25-06

Release Date: Wednesday, May 7, 2025

Due Date: Tuesday, June 10, 2025 2:00pm

Posted Wednesday, May 7, 2025 11:45am

Bid Unsealed Tuesday, June 10, 2025 2:34pm by Debra Rogers

Pricing Unsealed Tuesday, June 10, 2025 2:34pm by Debra Rogers

All dates & times in Eastern Time

Edit Preview

1. NOTICE

Notice is hereby given that the City Commission of the City of Pembroke Pines is seeking sealed proposals for:

RFQ # PSUT-25-06

Engineering Services for Ion Exchange Addition to the Water Treatment Plant for PFAS Removal

Solicitations may be found on the City of Pembroke Pines website under the Procurement Department at http://www.ppines.com/index.aspx?NID=667, and may be downloaded directly from the OpenGov platform at https://procurement.opengov.com/portal/pembrokepines.

For Technical Support, proposers can reach the OpenGov Service Desk between 7:00 am to 10:00 pm from Monday through Friday via the following methods:

- Chat (preferred method): Click the button in the lower right-hand corner of the portal.
- E-mail: procurement-support@opengov.com
- Phone: 1 (650) 336-7167

If additional help is needed with downloading the solicitation package please contact the Procurement Department at (954) 518-9020 or by email at purchasing@ppines.com. The Procurement Department hours are between 7:00 am to 6:00 pm on Monday through Thursday and is located at 8300 South Palm Drive, Pembroke Pines, FL 33025.

Bidders shall submit all questions regarding this bid via the City's e-Procurement Portal, located at https://procurement.opengov.com/portal/pembrokepines. Please note the deadline for submitting questions. All answers will be posted on the City's e-Procurement Portal. Bidders may also click “Follow” on this bid to receive an email notification when answers are posted. It is the bidder's responsibility to check the portal for updates. Only written responses issued through the OpenGov platform will be considered official for interpretations or clarifications.

Proposals will be accepted until 2:00 pm on Tuesday, June 10, 2025, electronically at https://procurement.opengov.com/portal/pembrokepines/projects/164682.

Bid Opening: The sealed electronic proposals will be publicly opened at 2:30 pm, on the bid due date, by the City Clerk's Office, in the **City Clerk's Office Conference Room located on the 4th Floor in the Charles F. Dodge City Center/**City Hall Administration Building, located at 601 City Center Way, Pembroke Pines, Florida, 33025.

Virtual Bid Opening: In light of public health concerns and to ensure accessibility for all, the City encourages interested parties, consultants, and the public to participate virtually via live streaming instead of attending the meeting in person. As a result, meetings may be a combination of in-person and virtual, all as provided by law. To virtually attend the bid opening, please use the Cisco Webex Meetings platform.

Virtual Meeting Details:

- WebEx Meeting Link: https://ppines.webex.com/meet/purchasing
- Cisco Webex Meeting Number: 717 019 586
- Join by Phone Number: +1-408-418-9388

The public may download the **Cisco Webex Meetings app** from https://www.webex.com/downloads.html/.

To ensure an efficient meeting process, participants are requested to mute their audio and camera during the meeting. While the public is welcome to attend the virtual bid opening, **please note that active participation and commenting will not be allowed during the proceedings.**

For further information about the bid opening or assistance in accessing the virtual meeting, please contact:

Nicolas Rodriguez or other Procurement Staff in the Procurement Department
City of Pembroke Pines
8300 South Palm Drive,
Pembroke Pines, FL 33025
(954) 518-9020 Ext: 59021 or 954-518-9020
purchasing@ppines.com

City of Pembroke Pines
Procurement
Mark Gomes, Procurement Director
601 City Center Way, Pembroke Pines, FL 33025
(954) 431-4884

QUESTION & ANSWER REPORT

RFQ No. PSUT-25-06

Engineering Services for Ion Exchange Addition to the Water Treatment Plant for PFAS Removal

RESPONSE DEADLINE: June 10, 2025 at 2:00 pm

Wednesday, July 2, 2025

Approved, Unanswered Questions

2. No subject

May 27, 2025 7:13 PM

Question: Given that the PFAS Rule is a new Rule and not a pollutant that was targeted for removal until the recent PFAS MCL, and since the most recent IX projects in Florida were constructed in the last 10 years, would the City consider extending the date of completion of all the reference projects, including the ones required in question 3.10 of the questionnaire, to 10 years?

May 27, 2025 7:13 PM

3. Project Timeline

May 27, 2025 5:13 PM

Question: What is the City of Pembroke Pines' position regarding the recently modified EPA PFAS compliance deadline (extended from 2029 to 2031)? Specifically, what impact will this change have on the project timeline outlined in Section 2.8: Project Timeline and Section 5: Willingness to Meet Time and Budget Requirements of the RFP, if any?

May 27, 2025 5:13 PM

Approved, Answers Provided

1. No subject

May 20, 2025 4:58 PM

Question: Section 2.4 of RFQ #PSUT-25-06, reads as follows: The City has not established a budget for this project or the consultant fees, however, staff estimates the construction cost of this project to be approximately $54.5 million, and the professional services are estimated at $1,090,000. Would you please confirm that the estimated budget for professional services is in fact $1,090,000? This figure differs from the amount outlined in the recently approved motion by the City Commission, which lists an estimated budget for professional services of $5,450,000.

May 20, 2025 4:58 PM

Answered : Please see Addendum # 1, which revises the professional services fee from $1,090,000 to $5,450,000, which includes design, permitting and bidding services.

May 21, 2025 3:36 PM

4. SF330 Project Limit

May 27, 2025 5:02 PM

Question: Is there a minimum or maximum number of projects we may include in the Standard Form 330 Section F?

May 27, 2025 5:02 PM

Answered : Please include at least 5 projects, as this is how many references we are requesting in the bid package. You may include more if you would like.

Jun 3, 2025 9:55 AM

5. SF330 Resume Limit

May 27, 2025 5:03 PM

Question: Is there a minimum or maximum number of resumes we may include in the Standard Form 330 Section E?

May 27, 2025 5:03 PM

Answered : Please include a resume for every person that was listed in Standard Form 330 Section C "Proposed Team".

Jun 3, 2025 10:05 AM

6. Section 3.6: Years of Experience

May 27, 2025 5:12 PM

Question: Section 3.6 of RFQ #PSUT-25-06 states: "How many years of experience do you have? Please provide proof of such experience." Could you please confirm whether this refers to the firm's experience or the experience of each proposed key personnel? If it refers to key personnel, would the

resumes provided in Section E suffice as proof of experience? If it refers to the firm's experience, should we also include years of experience and proof from our subconsultants?

May 27, 2025 5:12 PM

Answered : This question is in reference to the staff personnel that will be assigned to this project.

Jun 10, 2025 10:40 AM