Cape Fear
Public Utility Authority
Stewardship. Sustainability. Service.

Update on CFPUA Response to Cape Fear River Water Quality Concerns

October 26, 2017

House Bill 56 – Interim Report

1. Study identification and deployment of treatment alternatives ($100,000)

2. Ongoing water monitoring ($85,000)

3. Information sharing
   - Interim Report (no later than December 1, 2017)
   - Final Report (no later than April 1, 2018)

Response Measures Underway

1. Water treatment alternative evaluation for removing PFASs, Gen-X and emerging compounds
   - Screening technologies
     - Desktop study
     - Bench-top study (ACT column)
     - Pilot Scale Study

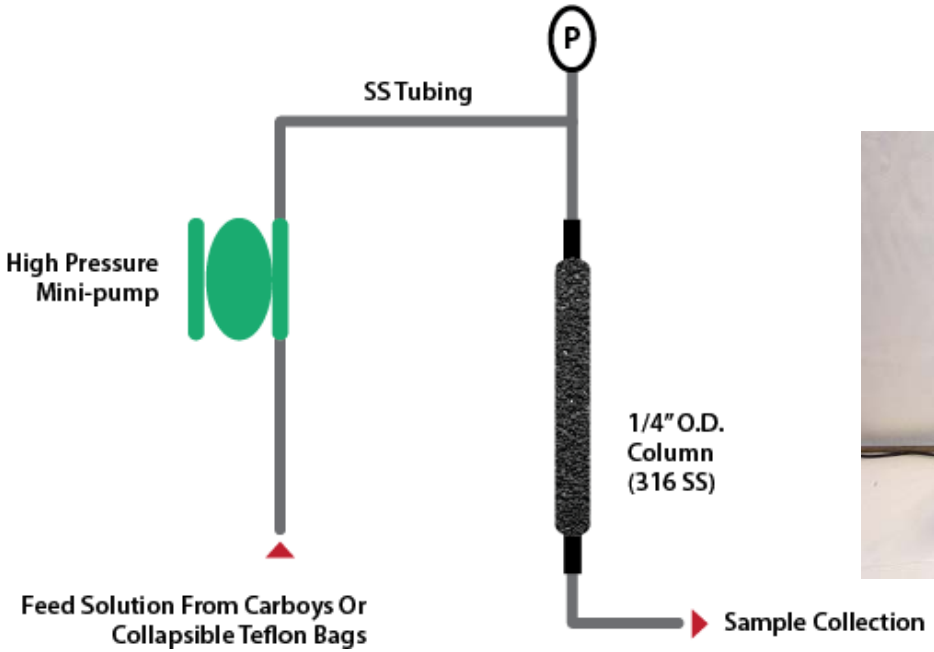
2. Water supply monitoring
   - UNCW support contract
   - Routine testing

3. Information sharing through website
   - Water test results
   - Monthly report deliverables from Black & Veatch

Advanced Treatment in Place

Technology	Barrier to Contaminant
• Ozonation	• Pathogens • Pharmaceuticals • Endocrine disruptors • Taste & odor causing compounds
• Biological Filtration	• Taste & odor causing compounds • Disinfection byproduct precursors
• Ultraviolet Disinfection	• Cryptosporidium (disinfection)

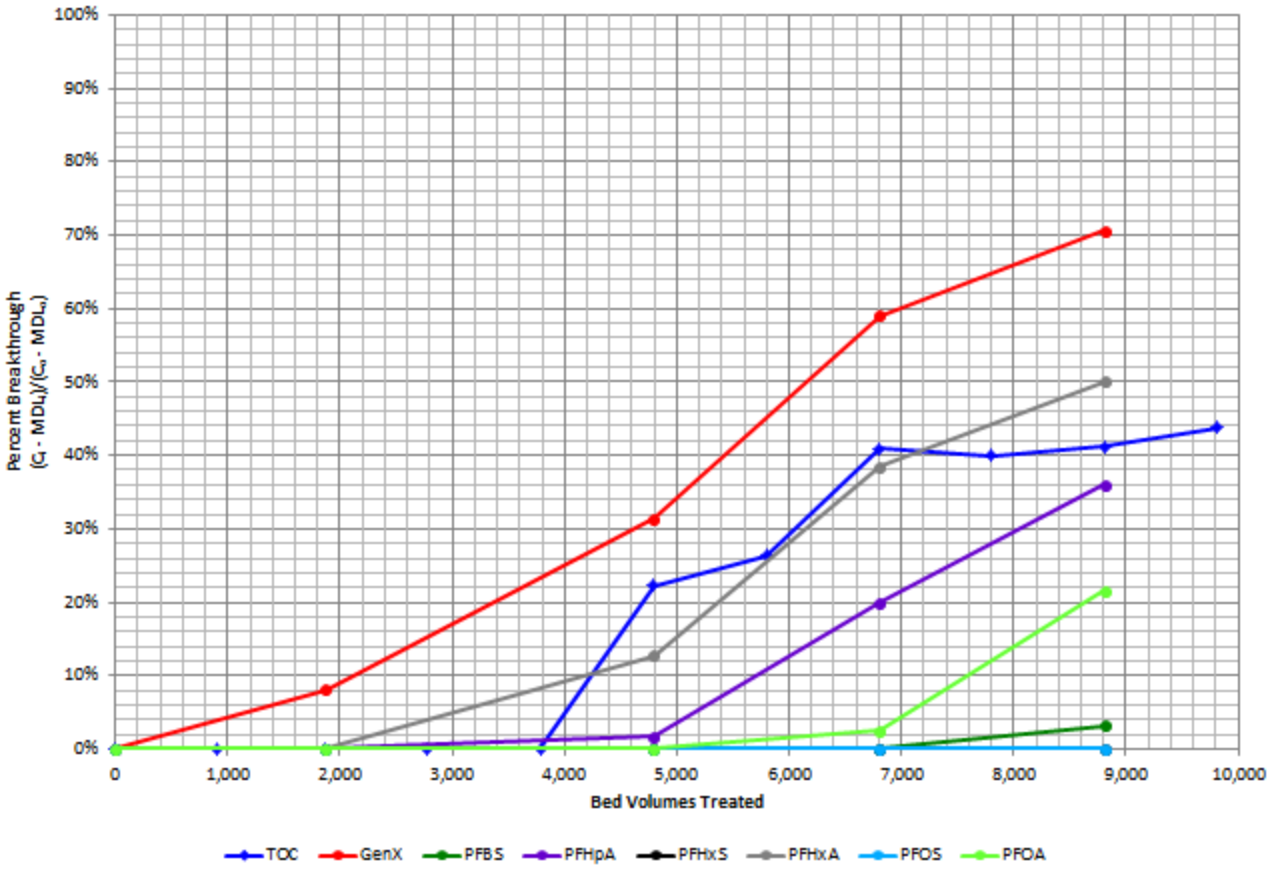
Accelerated Column Test (ACT)



GAC Pilot Testing

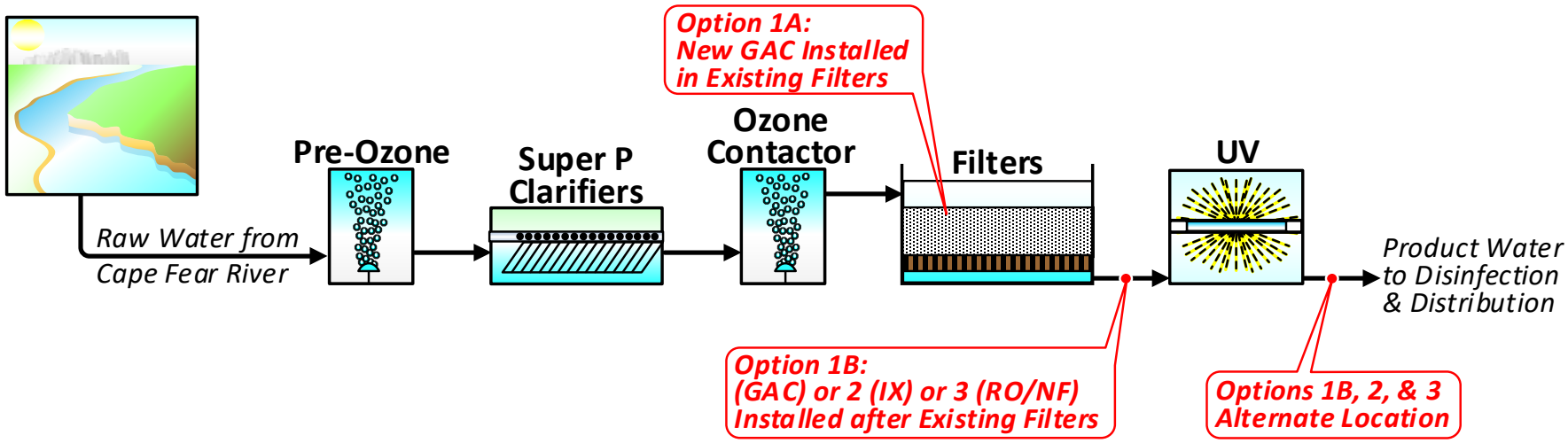
Ion-Exchange Resin Testing

Preliminary GAC Data



- Evaluate multiple fluorinated compounds and others of emerging concern
- Determine break-through over time
- Determine suitability and operating cost
- 6-12 months before treatment decisions are made

Location of Options on Treatment Process Diagram

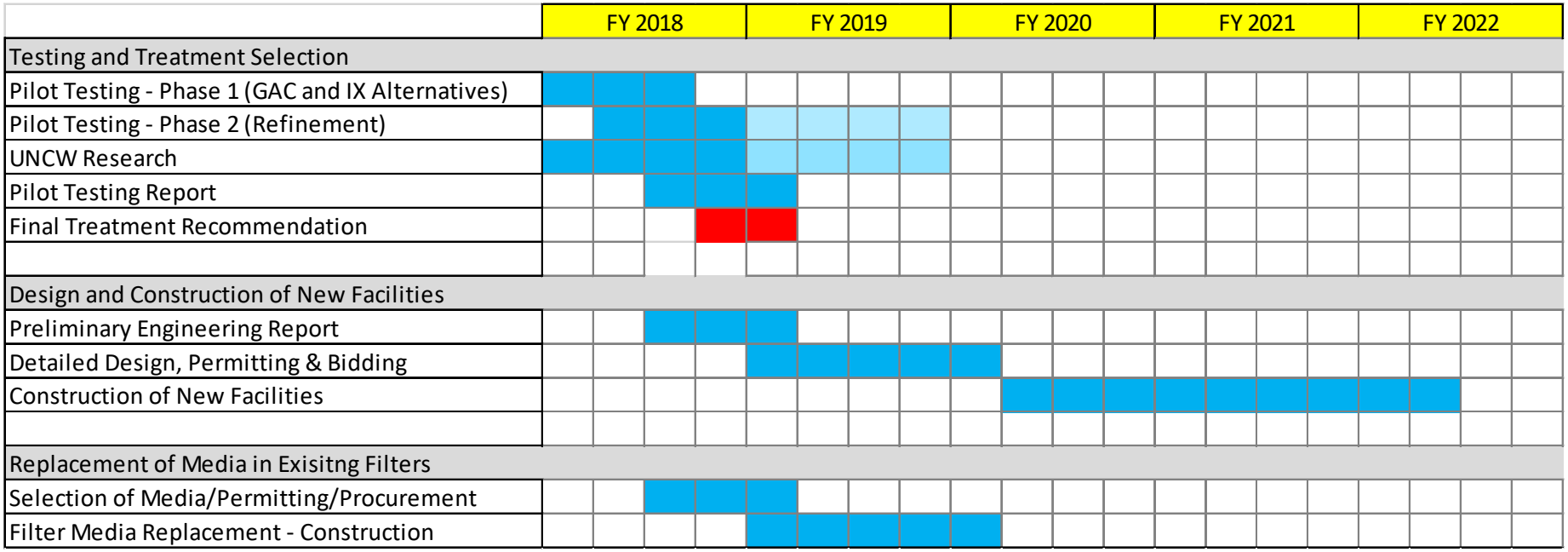


Summary

DESCRIPTION	GAC in Existing Filters	OPT 1-B, GAC Contactors Post-Filtration	Deep Bed Version of 1B	RO/NF Post-Filtration
Initial Cost	$1.7 million	$28 million	$32 million	$113 million
Annual Operating Costs	$2.0 million minimum/yr	$3.3 million/yr to $6.3 million/yr	$3.4 million to $6.4 million/yr	$3.3 million/yr

- GAC operating costs are based on 6,000 to 12,000 Bed Volumes (BV) based on experience elsewhere with PFAS removal, but not Gen-X. Site specific GAC testing is being conducted to determine the correct BV to assume for treating Cape Fear River water.
- Option 1A's initial cost includes an initial load of GAC media and one-time replacement of sand and gravel. (e) The options would have higher initial costs if standby filters/contactors were added to provide full capacity when units are off-line during GAC replacement events.
- A detailed cost opinion was not prepared for Ion Exchange (IX); however, it is the engineer's opinion that TPW for IX would be roughly in line with Post GAC. As a contingency CFPUA is conducting IX testing.

Schedule



* Subject to CFPUA Board approval.

Cape Fear Public Utility Authority

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