



MORIN BUILDING
 8570 EXECUTIVE PARK AVENUE
 FAIRFAX, VIRGINIA 22031

Date Issued: March 13, 2024
 To: All Prospective Bidders
 Issued by: Rodney Ward, Procurement Specialist
 Subject: Addendum #3 to IFB # 23-086 - Filter Rehabilitation and Media Replacement

The following modifications are made to IFB 23-086 through Addendum No. 3. Modifications are highlighted in **Red** for Additions and **Black** for Deletions.

Response to Questions

Question 1: What granular activated carbon (GAC) is FW supplying?

Answer: Current GAC is F816. GAC characteristics are in-line with the following:

Parameter	Test Method	Typical parameter
Total Surface Area	ASTM 6556	950-1050 mg/g
Apparent Density (backwashed and drained)	ASTM 2854	28-29 lb/ft ³
Water Soluble Ash	AWWA 604-18	1 percent maximum
Acid Solubility	AWWA B100	5 percent maximum
Pore Vol, <200 nm	ISO 1590-02 40-pt Nitrogen Absorption/Desorption Isotherm	Total: 0.9 – 1.0 mL/g. Reported in Macro, Meso, and Micro Pore volume;
Pore Vol., 200 nm to 3000 nm	ISO 1590-01 Mercury Intrusion Analysis	Mesopore Volume: >0.1 mL/g
Iodine Number	ASTM D4607	875 mg/g minimum
Moisture	ASTM D2867	2 percent maximum
Abrasion Number	AWWA 604-18	80 percent retention minimum
Percent Phosphate (water soluble)	Calgon Carbon Test Method 45 or similar method	0.10 percent maximum
Screen Size by Weight, US Sieve Sizes	ASTM D2862	On 8 mesh 15 percent max Through 16 Mesh 5 percent max
Apparent specific gravity (wetted)	ASTM C128	1.30 to 1.40
Effective size	ASTM D2862	1.35 to 1.45 mm
Uniformity Coefficient	ASTM D2862	1.40 maximum

Question 2: How old is the grout in the filters?

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Answer: The Griffith Treatment Plant facility went online in 2006 with the infrastructure primarily being put in place between 2002 and 2006. Bidders may presume the grout has been in place for 22 years.

Question 3: Is the existing GAC a candidate for regeneration?

Answer: No. Regeneration is not being considered under this solicitation.

Question 4: Are you providing supersacs for storing media being removed?

Answer: Supersac availability for used media is the responsibility of the Contractor., The Contractor shall factor providing supersacs into Bid Item No. 2.

Question 5: Does the old material go into supersacs for disposal?

Answer: Yes. As per Section 2, Part C item 1 of the IFB, the Contractor is responsible for bagging the used media and loading it into the third-party waste hauler transport.

Question 6: Does each two-inch lift of gravel require backwashing?

Answer: FW cannot dictate whether the Contractor's preferred approach to placing level, two-inch lifts of each gravel size that meets specifications of Section 2, Part D, item 7, will require backwashing of each lift.

Question 7: Can the used media (e.g., old GAC and filter sand) be comingled for disposal?

Answer: Yes, sand and GAC may be removed from the filter and comingled in supersacs for disposal.

Question 8: Clarify the number of different sizes.

Answer: There are four different gravel sizes placed in two-inch high lifts as per the table in Section 2, Part D, Item 7.

Changes to Scope of Work

(See Section 2, Part A, item 2, for revised change.)

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2 SPECIFICATIONS & SCOPE OF WORK

A. Overview

1. FW is soliciting Bids from qualified Bidders to provide FW with filter rehabilitation and media replacement for the Griffith Water Treatment Plant. It operates 14 double-bay, Granular Activated Carbon filter beds, and six of the 14 filter beds will be rehabbed by this solicitation. Each filter bay's dimensions are 34-ft. x 17-ft. for a total, per filter area of 1156 square feet. Filters are equipped with an air scour system for use during backwashing. The six filters covered under this solicitation have the originally constructed cross-section (from bottom to top): LEOPOLD S-Type Underdrains equipped with IMS cap, ten inches depth filter sand, and 72 inches depth Granular Activated Carbon (GAC).
2. Basic scope of this rehabilitation effort for six of the filters is the replacement of the IMS cap from the S-underdrain with 12 inches of filter media support gravel (consisting of **five four** different gravel sizes in 2-in. deep lifts), and the replacement of the filter sand and GAC (GAC material supplied by others and is not the responsibility of the Bidders). These six filters will be completed on a schedule of two per year, each requiring a separate mobilization. Each filter shall be completed within 45 days from the agreed upon Contractor mobilization date, FW Project Officer will provide written Notice to Proceed for each filter bed. Filter bed rehabilitation may not occur concurrently with another onsite filter and will have at least 30 days between successive rehabs.
3. The Contractor will not begin any work or move any equipment to the job site without prior written authorization to commence by the FW Project Officer. FW will not be responsible for any expenses incurred by the Contractor due to non-compliance with this procedure. The Contractor shall be responsible for meeting with FW staff prior to shipping any materials and for providing all safety equipment prior mobilizing and commencing any work.
4. FW will only provide new GAC media, all other filter media and materials shall be provided by the Contractor.
5. Two filters are planned to be completed each contract year (Initial Contract Term and two Renewal Contract), subject to Board approval. Should operational priorities prevent completing all six filters in three contract years, FW reserves the right to renew the Contract until all six filters have been completed.

B. Mobilization and Demobilization

1. Contractor shall provide all labor, materials, and equipment as required to complete one filter from start to finish including: remove existing filter media GAC, sand from the enclosed filter building, and load the waste material into a contracted waste hauler (by others, coordinated by FW).

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2. Contractor shall clean up all debris, surplus equipment and materials and remove them from the site between filter jobs, unless otherwise coordinated with the FW Project Officer.

C. Remove Waste GAC and Sand for Disposal by Others (i.e., FW-provided 3rd Party Waste Hauler)

1. Contractor shall remove GAC and sand for disposal. Contractor shall fill supersacs with spent material and stage along Plant roadways to facilitate Contractor access for loading supersacs into roll on/roll off dumpsters, flatbed, or dump trailers. Supersacks will then be loaded by the Contractor into appropriate disposal transportation when available. (NOTE: FW will not be responsible for delay to media removal if the Contractor is not prepared and flexible to loading different containers; although FW is coordinating the disposal, due to the disposal logistics (namely traffic) beyond FW control, the Contractor shall accommodate different waste storage methods.
2. Total 3rd party disposal weights for prior filters have been between 150 and 225 tons (GAC and sand comingled); estimated number of dump trailer loadings with supersacs of spent material is 15. Past experience has shown that loading supersacs into a dump trailer takes about 45 minutes.
3. **Sand and GAC may be removed from the filter and comingled in supersacs for disposal.**

D. Underdrain Repair: IMS Cap Removal, Chamfer Removal, Underdrain Clean-out and Repair, Chamfer Repair and Reinstallation, and Installation of Support Gravel.

1. Contractor shall remove all existing IMS filter caps without damaging the underdrain blocks (all blocks to remain) and inspect the underdrains for excessive build-up of filter media within the blocks. Caps may be disposed of in FW-provided solid waste roll-off at loading dock.
2. Repair locations shall be photographed by the Contractor and inspected by FW Project Officer prior to proceeding and afterwards to document repairs completed.
3. Contractor shall remove filter block retaining chamfers (aka grout fillet) along each filter cell's inlet and end wall; existing inlet wall chamfer is concrete grout over stainless L-angle (to be reused) anchored to filter wall while end wall is concrete grout only (figures and photo example will be provided at the mandatory site visit.)
4. The Contractor shall remove all debris such as chipped grout, IMS cap anchor screws, and remaining media from the filter and underdrain including but not limited to:
 - a. Underdrain blocks may be cut to allow vacuum access to the underdrains from above and shall be repaired with fusion welding IAW manufacturer's guidance.

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- b. Any modifications made to the existing underdrain blocks to facilitate used media removal shall be repaired according to Leopold manufacturer recommendations and shall be integrity tested with backwash and air scour prior to installation of new support media.
- 5. Contractor shall repair any gaps between the filter bay walls and the ends of underdrain blocks by applying a backing rod and filling with a two-part flowable epoxy SIKA 32 Hi-Mod (or equivalent) to seal any gaps without blocking underdrain passageways.
- 6. Contractor shall replace the chamfers (L-angle and anchors may be re-used) as such:
 - a. Filter wall at chamfers shall be clean and prepared for proper grout adherence.
 - b. Chamfer grout shall be SIKA 122 two-part system or equivalent.
 - c. Test chamfer integrity with a full backwash and air scour cycle once chamfer grouting is cured IAW manufacturer recommendations.
- 7. Contractor shall furnish and install new 12-in. deep, graded gravel bed material in separate, levelled, 2-inch lifts as follows:

SUPPORT GRAVEL - 10% Extra Included for Losses in Handling

3/4" x 1/2"	2" Depth (Top)
1/4" x 1/8"	2" Depth
1/8" x 1/16"	2" Depth
1/4" x 1/8"	2" Depth
1/2" x 1/4"	2" Depth
3/4" x 1/2"	2" Depth (Bottom)
	+10% Extra for Losses in Handling

E. Install Filter Media (GAC and Sand)

- 1. Contractor shall furnish and install new 10-in. deep sand material over the gravel without disrupting gravel as follows:

Filter Sand – 10-in. depth plus 1/4" skimming allowance.

Effective Size - 0.45 - 0.55 mm

Uniformity Coefficient - 1.40 or less

(Contractor shall provide Material Analysis confirming filter sand properties)

- 2. Sand shall be backwashed and then skimmed by the Contractor and final depth shall be 10-in.

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3. Contractor shall install 200,000 lbs. of Granular Activated Carbon (furnished by FW) to each filter by weight (estimated at 6-ft. Depth, 100,000lbs per bay). Then backwash, drain, and take a measurement to confirm depth of filter bed.
4. **The Granular Activated Carbon to be furnished by FW is F816. GAC characteristics are in-line with the following:**

Parameter	Test Method	Typical parameter
Total Surface Area	ASTM 6556	950-1050 mg/g
Apparent Density (backwashed and drained)	ASTM 2854	28-29 lb/ft ³
Water Soluble Ash	AWWA 604-18	1 percent maximum
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Pore Vol., 200 nm to 3000 nm		
Iodine Number	ASTM D4607	875 mg/g minimum
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Effective size	ASTM D2862	1.35 to 1.45 mm
Uniformity Coefficient	ASTM D2862	1.40 maximum

F. Additional Requirements

1. All work shall be performed at the Griffith Water Treatment Plant, 9600 Ox Road, Lorton, VA 22079.
2. While a 24/7 Operation, Plant access is restricted; work schedules and material deliveries must be coordinated in advance with Plant personnel to ensure adequate access, and to avoid/minimize impacts to water production activities. For the purpose of this Bid, Contractor work hours are: 6:30 am to 4:30 pm M-F except on FW holidays. (Alternative work hours may be agreed upon between FW project manager and Contractor.)
3. Only one filter may be out of service at a time.
4. Draining of the filter is through a four-inch drain line. FW will provide a trash pump to accelerate dewatering and can take up to 8 hours. Contractor shall provide additional sump pumps in the filter bay discharging to waste plume to accelerate the dewatering process.

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5. Access through walls of filter gallery is 8-inch diameter pipe sleeves at three locations along the filter gallery (figures available during mandatory site visit).
6. Contractor shall provide a site safety plan for FW records, any personnel safety gear necessary for safely performing this work, and seven lockout/tagout locks.
7. Filter media provided by the Contractor, as described in Scope of Work shall meet:
 - a. American Water Works Association Standard B100-16 for Filtering Material <https://engage.awwa.org/PersonifyEbusiness/Bookstore/Product-Details/productId/54642184> and
 - b. Listed under the National Sanitation Foundation Standard 61 - Process Media. https://d2evkimvhatqav.cloudfront.net/documents/NSF-ANSI_61_watemarked.pdf?v=1594929800
8. Contractor shall provide all supplies needed to refurbish the filter(s). The word “Supplies” should include but not be limited to:
 - a. Items needed for turnkey project and not be limited to hand tools, small equipment, shovels, grinders, pneumatic tools and/or dewatering pumps, and power cords, and scaffolds, ladders and any lifting mechanism, safety apparatus or other support equipment necessary to complete the project.
9. As the filters are operated biologically, filter media disinfection is not required prior to or following placement. Rather, each media type shall be backwashed, skimmed as necessary, and rinsed with Plant’s filter effluent water, respectively, following installation. No skimming required of GAC; after GAC is installed to correct depth, filter will be extensively backwashed by FW until fines and filter to waste turbidity are acceptable.
10. Onsite Contractor staff shall coordinate with FW Project Officer for any necessary filter backwashes and rinses necessary to grade and wash out fines of each media level.
11. Interior and exterior work areas and limits of disturbance shall be organized by the Contractor daily, before leaving for weekend, and at the completion of each filter improvement, to include removal of construction debris and pallets.
12. Contractor shall keep job site clean and orderly both inside the filter gallery and outside the filter building and on FW’s Plant streets.
 - a. Materials and equipment shall not be left onsite from one filter job to the next unless the FW Project Officer provide prior written authorization.
 - b. Indoor floor areas trafficked by Contractor personnel shall be protected with rolls of cardboard or equivalent.
 - c. Gas powered tools or pumps shall not be used indoors.

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13. Contractor shall conduct operations in such a manner as to avoid damage to other site facilities (controls, building, security gate and fencing, etc.) Any such damage shall be repaired by the Contractor at no additional cost to FW.
14. Contractor shall document through photos and field logs each major step of the filter rehab and provide to FW Project Officer throughout the filter rehab process.
15. FW will provide:
 - a. Dump truck with driver for transport and disposal of sand.
 - b. New GAC in 1.1-3k lb., palletized supersacks by Others.
 - c. Spent GAC transportation and disposal by Others.
 - d. Access to a roll-off dumpster for Contractor to use in disposing of removed IMS caps.
 - e. 120V power
 - f. One 400-gpm, gas-powered trash pump and associated suction and discharge piping for removing water from the filter to the outside.
 - g. A fire hydrant with potable water capable of at least 60 psi and 400-600gpm.
 - h. Operator control for periodic filter backwashing, rinsing, and draining.

ACKNOWLEDGED BY:

FOR: _____

Company Name

Date

Signature of Authorized Agent

Printed/Typed Name

Title

