

FLORIDA RURAL WATER ASSOCIATION

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March 24, 2023

Mr. Robert Domingue
Columbia County Utilities Superintendent
135 NE Hernando Ave, Suite 203
Phone: (386)-984-5872
Email: rdomingue@columbiacountyfla.com

**Re: Hydrogen Peroxide to Improve Water Quality and Reduce Disinfection By-Products, Color, Taste and Odor
Columbia County Utilities, Columbia Co., PWS: 2124413**

Dear Mr. Domingue:

Florida Rural Water Association (FRWA) would be pleased to assist Columbia County Utilities with actions to improve water quality and better reduce color, taste, odor and reduce the potential for producing Disinfection By-Products (DBPs).

DBPs are formed when chlorine combines with naturally occurring organics in the raw water. Water age (time in storage and the distribution system), high chlorine feed rates, and heat all increase DBP formation. Impurities in raw water such as iron, sulfur, organics, tannins, color, odor, taste, hardness, etc. increase chlorine demands. High chlorine feed rates increase DBP formation, so improving water quality (and by extension reducing chlorine demand) reduces DBPs. FRWA recommends a multi-pronged approach to DBP reduction – flushing, tank mixing, and treatment changes (such as preoxidation).

Chemical preoxidation involves the injection of an oxidant (in this case hydrogen peroxide) prior to chlorine injection in order to chemically react with the disinfection byproduct precursors (the organics) in order to remove them from the water prior to chlorination. These DBP precursors, when removed, often take the form of solid particulate matter that may need to be filtered out, or allowed to settle out, prior to chlorination. Hydrogen peroxide (H₂O₂) is an alternative oxidant and disinfectant that can be substituted as a pre-oxidation agent. Chlorine must still be used to disinfect the water at the plant before distribution to the public.

Hydrogen Peroxide Usage and Chemical Costs. The estimated Hydrogen Peroxide usage will be based on onsite Jar Tests performed by your FRWA Water Circuit Rider. We understand the currently permitted water plant capacity is 320,000 gpd (0.320 MGD), the Average Day Demand is 94,973 gpd and Maximum Daily Demand is 319,000 gpd. Both of these flows were used to estimate the usage of Hydrogen Peroxide. Assuming a feed rate of 3.0 mg/L, your system will perform as follows.

Criteria	At Current Flows (94,973 gpd ADD)
35% H ₂ O ₂ Solution Use:	0.71 gpd
Estimated Monthly Cost ¹ :	\$170
Cost per 1,000 gallons:	\$1.79

Recommendations. We will discuss, consider, and recommend appropriate adjustments to the water treatment plant including addition of Hydrogen Peroxide (H₂O₂) as a pre-oxidant to treat iron, sulfur, tannins, and other impurities in the raw water. This will allow Fort White to supply higher quality water to its customers, reduce chlorine feed rates, and reduce blackwater issues. Peroxide has been proven effective in many other systems.

Information Required From You. Before we begin work on your project we must have all the listed information about your system. If you have any questions please ask for clarification. The FRWA Circuit Rider can also work with you and confirm you included everything prior to sending.

1. **Sign and return the Attached Agreement.** Please sign the FRWA Specific Assistance Agreement below and return it to FRWA.

- Once we have the signed agreement we will send an invoice with a link to pay the 50% contribution on-line (or you can mail a check for that amount).
 - The remainder to be invoiced as work progresses.
- When work is complete, FRWA will send a DRAFT of the Final Certification Package along with a final invoice. Once final payment is received, FRWA will release the signed and sealed package to you and FDEP.

2. **Raw Water Quality Report for Wells (or representative wells).** Please provide a Raw Water Quality Report for your Wells. The results should include, at a minimum:

- | | |
|--------------------------------------|--|
| ▪ Total Dissolved Solids (TDS) * | ▪ Calcium Hardness, as CaCO ₃ |
| ▪ Temperature and pH * | ▪ Iron |
| ▪ Alkalinity, as CaCO ₃ * | ▪ Hydrogen Sulfide * |
| ▪ Total Organic Carbon (TOC) | ▪ Manganese |

* Note: Fred Handy, FRWA Water Circuit Rider can help you with these water characteristics if you don't have them readily available.

3. **DBP Compliance Information.** Please provide a map showing the location where Fort White is currently testing for DBPs throughout the distribution system and the results of these tests.

¹ Based on 35% Hydrogen Peroxide at \$12 per gallon.

4. **Location of Manual and Automatic Flushing Hydrants.** Please provide a map showing the location where Fort White flushes dead ends and other water mains. Please indicate these locations are Manual or Automatic Flushing Hydrants.

FRWA Scope of Work and Information We Have or Will Gather.

1. **Hydrogen Peroxide Jar Test** – Fred Handy, FRWA Circuit Rider will perform a jar test on your well water to determine the optimal dosing for peroxide.
2. **Sanitary Survey** – We will download a copy of your most recent Sanitary Survey (FDOH Inspection).
3. **Historic Water Demand** – We will download the water demands / flows for the last 2-years Total Demand, Average Daily Demand, and Maximum Daily Demand from the FDEP database.
4. **Disinfection By-Product Results** – We will download the DBP results from the FDEP database.
5. **Final Certification.** FRWA will provide the Final Certification based on the redline markups, photographs, and bacteriological results. When work is complete, FRWA will send a Draft of the Final Certification along with a final invoice. Once final payment is received, FRWA will release the signed and sealed Final Certification to you and FDEP.

If this project description is inaccurate please let us know by return mail – we want to clearly understand your project and expectations.

We are here to help you as a FRWA Membership benefit and ask that you provide a contribution of **\$2,875** to FRWA in aid of engineering assistance for the work described above – *if you were not a FRWA member we would have asked for a \$5,000 contribution.* Please provide \$1,725 up front and the remainder will be invoiced as work progresses. *Engineering consultants often charge anywhere from \$12,000 to \$15,000 for this type of engineering report and assistance.*

Options for Your Project: As we described, you have several options to obtain the required Specific Assistance needed for your system:

1. You can hire a consulting firm at ANYTIME to do the work for you!
 - If you are able to hire a consulting firm we encourage you to do so.
 - If you need immediate assistance and cannot wait for FRWA Engineers to get to your project.
2. If you request FRWA assistance as a membership benefit:
 - Make a \$2,875 contribution to support FRWA's Engineering Program.
 - Please provide \$1,725 up front and the remainder will be invoiced as work progresses.
 - When work is complete, FRWA will send a Draft of the Final Certification along with a final invoice. Once final payment is received, FRWA will release the signed and sealed Final Certification to you and FDEP.
 - You must **commit to collecting the data listed** above

- You must be a **FRWA Member** and commit to long-term membership
- We ask that you **be patient** – we have lots of work and few engineers
- ~~You agree to hold FRWA and consultants harmless for our assistance efforts (does not apply to cities, counties, and governmental entities)~~

Please sign the enclosed FRWA Specific Assistance Agreement and return it to FRWA for our files. Because you have requested FRWA's Specific Assistance you should be willing to enter into this agreement and acknowledge that FRWA is non-profit membership association and this service is a membership benefit. FRWA is dedicated to assisting water and wastewater systems provide Floridians with an ample, affordable supply of high quality drinking water and efficient/effective wastewater treatment.

Sincerely,

Peyton Piotrowski

Sterling L. Carroll, P.E.
FL PE # 46151
FRWA State Engineer

Copy: Fred Handy, FRWA Water Circuit Rider
Peyton Piotrowski, FRWA Engineer

Please review sign and return the acknowledgment below:

FRWA Specific Assistance Agreement / Acknowledgment

Columbia County Utilities (hereafter referred to as “FRWA Member”) requests FRWA's assistance and by doing so willingly and freely enters into this agreement for FRWA membership assistance with your **Hydrogen Peroxide to Improve Water Quality and Reduce Disinfection By-Products, Color, Taste and Odor**.

The FRWA Member understands that FRWA Engineers have a heavy backlog of work, cannot immediately work on this project because you serve statewide needs, and are assisting members on a first come first served basis.

~~This agreement is made upon the express condition that the FRWA Member agrees to hold the Florida Rural Water Association, its agents, employees, and consultants harmless for any loss, damage, expense, cost, or legal liability.~~ **The FRWA Member understands it can hire a consulting firm to do the work at any time in lieu of making a \$2,875 contribution to support FRWA’s Engineering Program.** The FRWA Member is responsible for paying all FDEP permit application fees directly to the Agency (we will verify this amount with FDEP). **Please send \$1,725 upfront and the remainder will be invoiced as work progresses.** When work is complete, FRWA will send a Final Draft along with a final invoice. Once final payment is received, FRWA will release the signed and sealed Final Deliverable to you and FDEP.

The FRWA Member acknowledges that FRWA is non-profit membership association dedicated to assisting water and wastewater systems provide Floridians with an ample affordable supply of high quality water. Further the FRWA Member agrees to commit to gather the data, maps, and information about its own system; and recognizes the backlog of work and is willing to be patient until FRWA can get to its project; and appreciates this membership service.

The FRWA Member has the option to hire an engineering consultant at any time, if the project cannot wait for FRWA Engineers’ availability – FRWA would be happy to provide a refund.

FRWA Member: Columbia County Utilities

Signature: _____ Date: _____

Please RSVP by April 25, 2023! Because FRWA engineering services are in high demand we ask for your response to this offer within 30-days. If you need more time for your decision-making process just let us know!

We understand if you choose to proceed in another way and support you in that decision. We’re always here to assist water and wastewater systems. Please drop a quick line to let us know or sign the agreement and return it to us. If we have not heard from you within 30-days we will assume that this offer has expired and remove your system off our list of utilities desiring FRWA engineering services